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DOCTORAL
CONFERENCE



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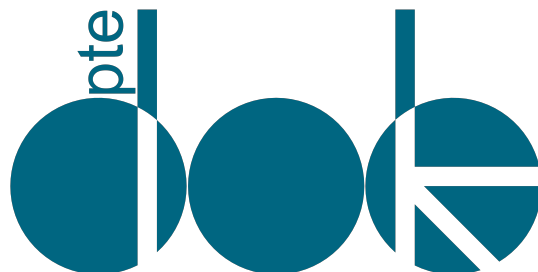
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Presidential Welcome Speech

Dear Participants and Guests,

On behalf of the Doctoral Students Association of the University of Pécs, I would like to thank you for your participation in the 10th Jubilee Interdisciplinary Doctoral Conference!

We have been facing huge challenges over the past two years, both in our professional and personal lives. In these difficult times, it is even more important that science should seek answers to the questions that arise, and to never lose our determination and passion towards it, until our lives can get back to normal.

While some parts of our work can be done online, it is my strongly held opinion that certain essential aspects of scientific life - such as conferences – should continue to take place, maintaining the health of the academic sector. This is what our goal was with this event, which we hope will serve as a starting point for future collaborations, in addition to providing you with an opportunity for presenting your professional results. The fact that this years - jubilee – conference attracted nearly 400 young minds from over 40 disciplines shows that Hungary's PhD community – despite the hardships caused by the pandemic - is in a good shape today, and just as dedicated to the advancement of science as ever.

Finally, I would like to thank all the kind participants of the conference for choosing our event to present their latest research results, I hope we will meet again next year at the 11th Interdisciplinary Doctoral Conference!

Best regards,



Márton Balogh
president
University of Pécs
Doctoral Student Association

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Gazdasági és polgári jog

Economic and Civil Law

The practice of the foreseeability clause

dr. László Schmidt¹

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My research topic is the liability for damages caused by non-performance of an obligation, non-contractual liability for damages, and the foreseeability clause. I wrote my thesis about the liability for the damages caused by defective performance. The foreseeability clause is not only important in the field of the civil law, but also in the field of the labor law, and the economic law (legal liability of the executive officers).

The role of the foreseeability in the contract law is dual: a) base of the liability which means that the party who is breaching the contract can be held liable for damages he could foresee, and b) the amount of damages for the loss caused by non-performance in the obligee's property, including lost income, is such sum as the obligee is able to verify that the loss, as the potential consequence of non-performance, was foreseeable at the time of the conclusion of the contract.

The foreseeability clause can also be applied in the field of tort law.

In Hungary, the judicial practice also applied the limitation of the liability for the damages, long before it showed up in the new civil code as a substantive law or statutory provision.

The foreseeability clause also applied in the UN Convention on Contracts for the International Sale of Goods (CISG; Vienna Convention).

In my presentation, and in my publication, I would like to demonstrate some interesting case-law about the foreseeability clause from the Anglo-Saxon law (e.g.: *Hadley v Baxendale*, *Victoria Laundry v Newman Industries*, *The Heron II* etc.).

Keywords: foreseeability, liability, contract law, tort law

Practical experiences of the foreign currency lending

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This study examines the experiences and the risk of the foreign currency lending. The global financial crisis of 2008 put many insolvent debtors and their families in the private sector in a hopeless situation. Based on the financial crisis the EUR and CHF exchange rates increased significant in Hungary. Insolvent debtors have filed number of civil lawsuits against the financial institutions referring to unfair market behavior, and breach of contract. Due to the crisis the Curia also formulated guidelines to develop the case law and to unify the jurisprudence. The author examines why the effects of the foreign exchange crisis in Hungary were more serious than in other Central and Eastern European countries, and whether there were any measures that could have reduce the consequences of the crisis.

Results: The previous state aid scheme had been changed significant, and the citizens turned instead to the foreign currency loans. The foreign currency landing, as a modern financial product on the private sector contained unexpected hazard. This hazard was not foreseeable neither by the government, by the National Bank, or by the debtors themselves. The control mechanism of the official supervisor bodies was not sufficient. The financial awareness of the citizens was on a low standard.

Conclusions: It is very important to assemble and use an effective inspection and supervision mechanism in connection to the financial products. One of the most important issues is supporting raising financial awareness and educating citizens. Secondly, is to grow control mechanism of the National Bank to strengthen market surveillance to prevent irresponsible lending.

Keywords: foreign currency lending, real estate, financial crisis, financial awareness

Singapore: zero to crypto

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After independence in 1965, Singapore embarked on a rapid economic development path as one of the Asian region's small tigers [1]. And today, as well as being one of the world's business hubs, Singapore is also home to a number of blockchain companies. Singapore's ability to absorb crypto has been greatly boosted by China's crypto ban in the second quarter of 2021, and the favourable solutions of the Payment Services Act of Singapore, which came into force in 2020. These facts could lead to a mass emergence of crypto exchanges in Singapore in the long term. The aim of this paper is to briefly illustrate how a country with a near-zero entrepreneurial culture, after becoming self-sufficient, has become a dominant and popular crypto sector player through a number of processes.

Results: Singapore discovered decades ago that innovation and the right adaptation of digitalisation can help businesses grow and prosper in the long run. Today, it is pushing to enforce the legal operation of crypto services, including crypto exchanges, to ensure that they are safe to use.

Conclusions: In addition to China, there is also a trend in many countries around the world to discourage the spread of cryptocurrencies, in particular by making it impossible for crypto exchanges to operate. Singapore on the other hand, can be considered as a crypto-friendly country, which can currently be a haven for legally operating crypto exchanges.

References:

[1]] Santhi S. Dr, Saravanakumar Ar: *The Economic Development of Singapore: A Historical Perspective 2020; in Aut Aut Research Journal. XI: 441-459.*

Keywords: Singapore, MAS, blockchain, cryptocurrency, crypto exchanges

The civil liability of self-driving cars

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Introduction: My research is about the civil liability of self-driving cars, how it is regulated now and how the existing system could be changed. Furthermore it is important to focus on the necessity of the automatization in this field, what are the presumptions related to possible damages occurred based on human errors in the present transportation methods.

Goal: The goal of my research is find the problems relating every possible legal basis of the liability of these cars and to find the optimal solution.

Methodology: Since such cars are not existing yet, the only method of my research is to read publications, consult with experts and discuss the topic with professionals and non-professional as well to find a widely accepted legal structure. Judicial decisions are not available yet, so the only source is the legal literature.

Presentation of the results: In my presentation I intend to present the possible legal basis of the civil liability of self-driving cars after introducing the levels of automatization and explaining where the technic stand at the present. Furthermore I would present some statistics and previous accidents, why the automatization and self-driving cars are a huge advantage for making transportation safer and why the existing tort law faces problems. This will be followed by the existing legal basis, so product liability, liability for highly dangerous activities and the general prohibition of torts, what are the disadvantages for the possibly liable person and what challenges do these people face by causing damages with automated cars.

Conclusions: With a short comparison I would like to introduce another concept of tort law from the US legal literature, the corporate liability for automatization which I think could be the solution through a state fund for those damages that occurred in dilemma situations and no one should be held liable but it also won't be acceptable if the plaintiff did not get any compensation.

Keywords: civil liability, tort law, self-driving cars

Food Sovereignty in the Discourse of Competition Law

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The presentation aims to place the notion of food sovereignty in the discourse of competition law. In the literature the goals of competition law are heavily debated in the last four decades, nevertheless no studies have dealt with these objectives from a sector-specific approach. This presentation intends to fill in this gap with regard to agriculture and the food supply chain, by doing so through the prism of food sovereignty. Although the conflicting paradigms of food security and food sovereignty are most present and delicate at international level, in particular with regard to the issues of international trade in agri-food products, it does not mean that these notions cannot be interpreted within the framework of narrower territorial units. One of the strengths of food sovereignty lays in its multi-interpretability, thus we aim to conceptualise and theorise it in the discourse of competition law.

The presentation proceeds in seven parts. First, it provides a brief introduction to the elements of food sovereignty which present us with insights on its perceptions of competition and competition law. Second, we sketch up the objectives of competition law from a comparative perspective. On the one hand, we deal with that of the United States of America, given that the US has always played a pioneering role in competition law (antitrust law), and on the other hand, we map the competition law goals of the European Union. The dominant approach in the USA in the last four decades indicates that framing food sovereignty in the US antitrust law discourse is not too profitable because of its single-factor viewpoint of economic efficiency. On the contrary, the EU has a much broader standpoint when it comes to the goals of competition law which enables us to take into account important elements of the food sovereignty paradigm. Third, we present the findings of the few ordoliberal thinkers who turned to the problems and questions of agriculture. Fourth, we aim to theorise sovereignty in food sovereignty, in parallel with bringing it into line with ordoliberalism. Prima facie all of the above, and in particular the USA's standpoint towards antitrust could result in the conclusion that the US have no special competition laws concerning the agricultural sector and the food supply chain, nonetheless the reality is somewhat different. Therefore, fifth, we list those competition-related laws of both the EU and the US which provide special treatment to agriculture and the food supply chain. Sixth, we conclude.

Conclusions: An ordoliberal competition policy followed by the EU is suitable to take into account the competition-related elements of the food sovereignty definition, while the dominant consumer welfare approach of the USA in the last four decades is not. However, it does not mean that the latter does not handle the agricultural and food sectors relatively separate from its general antitrust regime. Regardless of the prevailing approach towards general competition/antitrust law, the agricultural and food sectors have maintained their relative independence which is underpinned by the special competition and trade-related laws of these sectors in both the EU and the USA.

Keywords: food sovereignty, competition law, ordoliberalism, multifunctional agriculture, EU, USA

Approaches of civil and common law to lay participation

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Lay participation is considered one of the symbols of participatory justice especially in the countries with a democratic context but its exercise as a democratic value, is not only relying on democratic approach of the governments but also relying on the historical and socio economical background of each society. Lay participation in courts can enhance civil activity of citizens. From other hand, there is always the fear that citizens without any legal studies can harm the justice in the general and some scholars are skeptical of the necessity of lay participation and calling for the abolition of the all lay-jury in order to avoiding their uncontrolled and unreviewable decisions.

Actually lay participation is developed by common law system and nowadays this system widely enjoy from it but the civil law system couldn't integrate this institution in its legal system properly and it is limited in most of the countries with civil law tradition.

In the legal studies for analyzing the topic, especially in the case where one institution is transplanted from other jurisdictions, the comparative studies is something inevitable and here United Kingdom as cradle of common law and France as cradle of civil law systems are in the core of this comparative studies.

Keywords: Lay Participation, Common Law, Civil Law, Participatory Justice

A vállalati compliance, a lobby, a sikerdíj és a befolyás vásárlása, befolyással üzérkedés problematikája a magyar jogban

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Bevezetés: Magyarországon 2011. január 1. napján veszttette hatályát a lobbitevékenységről szóló 2006. évi XLIX. törvény. A törvénynek az volt az egyik legfőbb célja, hogy meghatározza a megbízás alapján folytatott érdekérvényesítés szabályait, azaz, jogi környezetet teremtsen magának a lobbitevékenységnek. Az elmúlt bő tíz évben a tárgyban nem született új jogszabály, az Országgyűlés elé csupán 2018. június 26. napján terjesztették elő a T/705. számú törvényjavaslatot a gazdasági érdekérvényesítés nyilvánosságáról és a lobbisták nyilvántartásáról, valamint egyes törvények antikorrupciós tárgyú módosításáról. A már hatályon kívül helyezett norma az értelmező rendelkezései között (5. § c) pont) tárgyalta a lobbitevékenység fogalmát. E szerint „közhatalmi döntés befolyásolását vagy érdekérvényesítést célzó minden olyan tevékenység vagy magatartás, melyet megbízás alapján, üzletszerűen folytatnak”. A benyújtott, de el nem fogadott törvényjavaslat pedig már – helyesen – tartalmazta a gazdasági célú befolyásolás definícióját (1. § (2) bek. c) pont).

Eredmények: Mivel jelenleg nincs hatályban lévő lobbitorvényünk, az első hipotézisem, hogy törvényi szinten szabályozott rendszer, pontosan körülhatárolt, a lehető legprecízebben megfogalmazott terminus technicusok (pl. befolyásol) nélkül rendkívül nehéz megítélni az eljáró érdekérvényesítő természetes személy által kifejtett magatartás jogszerű vagy jogellenes, azaz, adott esetben büntetőjogba ütköző voltát.

Az állítás alátámasztásául látni kell, hogy mind a befolyás vásárlása, mind pedig a befolyással üzérkedés büntettének tényállási eleme a (jogtalan) befolyásol(ás), még hozzá azzal, hogy a deliktum már akkor diszpozíciószerű, ha az elkövető csak hivatkozik a befolyásolásra. Ennél a pontnál szintén értelmet nyer a jogalkotói mulasztás, hiszen a szakirodalomban egyöntetű az az álláspont, amely szerint befolyásolni lehet (sőt, adott esetben kell is) jogszerűen. Második hipotézisem, hogy a jogalkotásban keletkezett és meglévő űrt betölteni törekszik a compliance és az ahhoz kapcsolódó whistleblowing jogintézményei.

Következtetések: Habár hazánkban a compliance, compliance-kultúra még nem kellő mértékben hatja át a vállalati szférát (erőteljesen főként a pénzügyi szektorban van jelen), a gazdasági szervezetek egyre inkább építik ki saját megfelelési struktúrájukat a visszaélések minél hatékonyabb megelőzése érdekében. A vezetők, tagok számára ez kiemelt jelentőséggel bír, tekintettel arra, hogy a jogalkotó a jogi személlyel szemben is súlyos szankciókat helyez kilátásba, amennyiben a bűncselekményt annak felhasználásával, annak érdekében, vagy tevékenységi körében követték el. A compliance jogintézmény „alkalmazásával” – amely párhuzamosan egy lobbitorvény okozta joghézagot is képes betölteni - egy olyan belső védelmi mechanizmust lehet kidolgozni (főként pszeudonormákkal), amelynek segítségével a korrupciós bűncselekmények elkövetése egyrészt megelőzhető, másrészt utólag felderíthető lenne. Ennek egyik legfontosabb pillére a whistleblowing.

Támogatás: Az Innovációs és Technológiai Minisztérium ÚNKP-20-3 kódszámú Új Nemzeti Kiválósági Programjának a Nemzeti Kutatási, Fejlesztési és Innovációs Alapból finanszírozott szakmai támogatásával.

Kulcsszavak: criminal compliance, vállalati visszaélés, whistleblowing, befolyással üzérkedés, befolyás vásárlása

Az e-sport (és az információs társadalom) jelenségéhez kapcsolódó jogtudat

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A 21. század 4. ipari forradalmának digitális világa érdekesítően alakítja át társadalmunk alapvető rendjét, hétköznapijainkat és a tudományt is és többek között olyan alapvető kérdéseket reformál, mint az emberi civilizáció hajnala óta¹ konzerválódott, tan- és történelemkönyveinkben és nem utolsósorban jogtudatunkban konszenzust nyert jelenség: a sport. A szabadidő eltöltésének újkori vívmánya, a videójáték, melynek első szabadalmi bejegyzését 1947-ben kérelmezték², olyan gyorsan került az otthonokból hatalmas arénákba nézők ezrei közé, hogy sem a sport-, sem a jog-, sem a közgazdaságtudományok nem voltak képesek egyelőre elfogadott definícióval, sőt, írásmóddal sem előállni. Az e-sport szereplői gyakran a sportokhoz hasonlatossá, illetve azzal egy szintűvé emelik kommunikációjukban az e-sportot, pedig jogi értelemben erre kevés kilátás van. Az előadásban azt szeretném vizsgálni, hogy mely jogtudat, illetve jogszociológiai attitűd engedi meg (indikálja) azt az iparág szereplői számára, hogy úgy tegyenek minden törvényi rendelkezés ellenére, mintha az e-sport sport volna. Az információs társadalom több jelensége küzd hasonló problémával, melyeknek néhány további gondolatot szentelek.

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[2] Jelen hivatkozás az Amerikai Egyesült Államok Szabadalmi Hivatalának szabadalmi bejegyzését tartalmazza, a citáció kiemeli a szabadalmi joghoz kapcsolódó személyhez fűződő jogok természetes személy jogosultjait, a vagyoni jogosult jogi személyt, a bejegyzés évét és azonosítószámát: Thomas T. Goldsmith, J r., Cedar Grove, and Estle Ra'y Man'n, Upper Montclair, N. J., assigns to Allen: B. Du Mont Laboratories, Inc., Passaic, I N. J., a corporation of Delaware I {application January '25, 1947, Serial No. 724,444.

Kémiai és vegyipari szekció



Chemistry and Chemical Industry

Determination of polyethylene glycol 400 excreted in the urine by MALDI coupled to time-of-flight mass spectrometry

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Polyethylene glycol (PEG) is a linear, chemically inert and can be produced in various chain lengths and molecular weights. PEG 400 is used as a permeability probe to examine gastrointestinal tract that can be involved in the pathogenesis of some inflammatory diseases. [1]. MALDI-TOF mass spectrometry and Mass-Remainder Analysis (MARA) [2] methodology was developed and validated for the quantitation of PEG 400 excreted in human urine after oral administration as a rapid and robust method. Compared to previous methods [3, 4], our method provides faster and more sensitive quantification of PEG 400 without any major sample pre-treatment or chromatographic separation.

Results: The percentage of intestinal permeability of nine ions corresponding to PEG 400 oligomers at m/z 305, 349, 393, 437, 481, 525, 569, 613 and 657 were determined. Methoxy poly(ethylene glycol) was used as an internal standard. The relative standard deviations of the analysis of PEG 400 in urine samples were lower than 15%. We also found that stability of PEG 400 in urine samples are quite stable. Recovery of PEG 400 in the spike samples which kept at room temperature for 3 months showed very similar results.

Conclusions: This method is reproducible to quantify PEG400 content in human urine. Our recent invented data mining method MARA speeds the evaluation of the peaks up and provides higher mass accuracy.

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Keywords: polyethylene glycol, intestinal permeability, MALDI-TOF, MARA

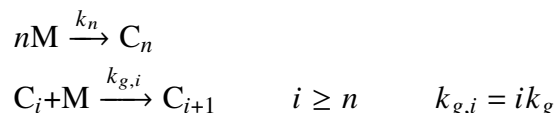
A comparison of the stochastic and deterministic approaches in a nucleation-growth type model of nanoparticle formation

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A kinetic model describing nanoparticle formation is presented here using both the deterministic and stochastic approaches. The model starts from monomer units, some of which combine in a seed formation reaction. Second-order particle growth between a particle and a monomer unit follows, the rate constant of which is proportional to the mass of the growing nanoparticle.



The system of simultaneous ordinary differential equations characterizing this system with dimensionless variables is as follows:

$$\frac{dm}{d\tau} = -n\alpha m^n - \sum_{i=n}^{\infty} mc_i$$

$$\frac{dc_n}{d\tau} = \alpha m^n - nmc_n$$

$$\frac{dc_i}{d\tau} = (i-1)mc_{i-1} - imc_i \quad i > 1$$

Results: Exact analytical solutions are derived for the time dependence of the concentrations of all different kinds of nanoparticles, as well as the cube-root number-average size of the nanoparticles.[1] These are compared with the results of simulations using the Gillespie algorithm [2] and this is used for different kernel functions, as well.

Conclusions: An interesting aspect of this system is that the very high number of different species guarantees that the individual concentrations or particle numbers are extremely low, yet the deterministic approach still gives a description that seems acceptable for interpreting experimental results.[3,4]

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Keywords: kinetic differential equations, analytical solution, Gillespie algorithm, kernel functions

Develop of bioorthogonally applicable fluorogenic probes for multicolor imaging

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Advances in microscopy techniques enabled investigation of cellular structures in the sub-diffraction range (<200 nm). When examining several biomolecules or biological processes at the same time, a number of problems may arise. The biggest concern in multicolor fluorescent imaging is posed by chromatic aberration i.e., different wavelength light beams cannot be focused into the same plane, which causes fringes of color along the boundaries of the dark and bright parts of the image. This problem can be addressed by the use of dyes, which can either be excited at the same wavelength or can be detected in the same window. In both case, probes with large Stokes-shift are necessary, often in combination with small Stokes-shift dyes. The number of such large Stokes-shift dyes and dye pairs are limited. Further problems may arise during imaging due to auto- and background fluorescence, both impairing the achievable signal-to-noise ratio. While autofluorescence is easily handled by the use of large Stokes-shift probes or probes excitable toward the red edge of the spectrum, background fluorescence of non-specifically bound probes is best addressed by the use of fluorogenic probes. Tetrazine modulated fluorogenic probes are remarkable examples due to the combined feature of the tetrazine moiety enabling specific targeting through bioorthogonal ligation and being the modulator (quencher) of fluorescence at the same time.

We have developed a series of tetrazine modulated fluorogenic probes with large Stokes-shifts for multicolor live-cell imaging of intracellular proteins. These probes, either in combination with each other or with other small Stokes-shift probes allow imaging schemes using one detection window upon different excitation wavelengths [1] or single source excitation with multiple emission [2]. While the former combination addresses emission derived chromatic aberration the latter reduces excitation derived chromatic errors. At the same time, the large Stokes-shifts and the fluorogenic nature keeps auto- and background fluorescence at a low level.

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Acknowledgements: LP2013-55/2013, NKFIH-K-131439 KEP-10, FIKU, NKFIH-K-123917, PD-135121

Keywords: fluorogenic, probes, bioorthogonal, microscopy

Production of chiral L-phenylpropanol by enantioselective biocatalysts

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The aim of this research is the bioconversion of racemic phenylpropionaldehyde to chiral L-phenylpropanol, which is an intermediate compound of various active pharmaceutical ingredients [1]. As drug industry requires pure enantiomers because of their different biological effect, application of proper enantioselective catalyst is of primary importance. In most cases, enzymes can fulfil this requirement, as they are usually highly enantioselective. However, alcohol dehydrogenase (ADH), which is an applicable catalyst for the present reaction, needs NADH cofactor to convert the substrate. Therefore, cofactor regeneration is essential step of the process to provide appropriate product formation.

In this research, two different biocatalysts, an isolated enzyme preparation (horse liver ADH expressed in *Escherichia coli*) and a whole-cell catalyst (*Saccharomyces cerevisiae*) were investigated. To characterise the process and the catalysts, enzyme kinetic, enantioselectivity, reaction rate and mass transfer were measured with different analytical methods, mainly gas chromatography and spectrophotometry.

Results: Based on the results, there are several differences between the applied catalysts. In case of *S. cerevisiae*, substrate limited kinetic and approx. 70 % enantioselectivity was experienced. In contrast, almost 100 % enantioselectivity was achieved applying isolated enzyme. The rate-limiting step of the whole process is substrate conversion in case of whole-cell catalyst, however, in case of isolated enzyme, cofactor-regeneration restricted product formation.

Conclusions: Concerning enantioselectivity, isolated enzyme is definitely the better option. However, whole-cell catalyst is not limited by cofactor-regeneration, furthermore, it is not necessary to give additional cofactor to the reaction medium as the cell contains the required amount of it. Since enzyme purification and cofactor production are quite expensive processes, applying whole-cell catalyst has an economical advantage compared to isolated ADH.

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Keywords: alcohol dehydrogenase, whole-cell biocatalyst, L-phenylpropanol

Determination of PAH contamination levels in breast milk samples from Hungarian volunteering mothers using HPLC/FLD

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Polycyclic aromatic hydrocarbons (PAHs) –a large group of different organic compounds-can be extremely hazardous to human health due to their carcinogenicity and toxicity. PAHs are present in the environment as products of incomplete combustion processes of organic compounds. The general population is exposed to PAHs through diet, air inhalation and/or dermal contacts (1). Following mothers' exposure, a part of PAHs might be transferred into breast milk and PAH exposure may result in adverse effects in breastfeeding infants (2).

The aim of this study was to determine PAH content in 28 breast milk samples obtained from Hungarian volunteering mothers using high-performance liquid chromatography with fluorescence detection (HPLC/FLD).

The sample preparation includes liquid-liquid extraction of 5 ml mother milk with of 65:35 acetonitrile/water ratio followed by clean up and concentration step with solid phase extraction (SPE). 13 US EPA PAHs (United States, Environmental Protection Agency) were determined by HPLC/FLD. The method was validated using parameters such as linearity, limit of detection (LOD), limit of quantification (LOQ), accuracy and reproducibility.

The concentration of total PAHs was calculated in each breast milk sample, and toxicity was assessed using toxic equivalent quantity (TEQ). All 28 breast milk samples were positive for at least 10 PAHs. Acenaphthene and Anthracene were the most frequently detected PAHs in the samples, followed by Pyrene, Phenanthrene and Fluorene. Benzo[a]pyrene, the most carcinogenic PAH were detected in the 82% of samples. Dibenzo (a,h)anthracene and Benzo(g,h,i)perylene were not detected in the analysed samples. The Toxicity Equivalence Values (TEQ) were ranging from $\Sigma_{ng}TEQ$ 0.001344/mL to $\Sigma_{ng}TEQ$ 0.35447/mL.

The developed method provides a fast and sensitive tool to detect PAHs in human breast milk.

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Keywords: Polycyclic aromatic hydrocarbon, liquid-liquid Extraction-SPE, HPLC-FLD, breast milk

Determination of endocrine disrupting compounds in water by ultra performance liquid chromatography-tandem mass spectrometry

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Background: In recent decades new environmental pollutants of anthropogenic origin have been raised. Surface waters are contaminated with endocrine disrupting compounds (EDCs) worldwide. EDCs in the environment disturb the endocrine system of aquatic and terrestrial organisms, causing decreased fecundity, altered mating behavior, developmental disorders, and thyroid dysfunction [1], [2]. Epidemiological studies suggest associations between human exposure to EDCs and reproductive dysfunctions or civilization diseases. Thus, there is a growing interest towards quantitative information about endocrine disruptors in freshwaters. The aim of this work was to develop a solid phase extraction (SPE) and liquid chromatography-tandem mass spectrometry (LC-MS/MS) method for the simultaneous analysis of different EDCs, including estrogens, industrial chemicals, and pharmaceuticals in water. Ultrapure water was spiked with the target analytes at 100 ng/L. SPE was carried out by Dionex SolEx C18 (Thermo Scientific) and Strata X-CW (Phenomenex) cartridges using an automata SPE system. The chromatographic separation was performed on Waters Aquity UPLC BEH C18 column. The mobile phase consisted of water and methanol. The quantitative analysis of the target compounds was performed in multiple reaction monitoring (MRM) mode.

Results: Recoveries obtained by Dionex SolEx C18 SPE cartridges for steroid estrogens were higher. For simultaneous extraction of compounds with various structures, Strata X-CW cartridges are preferable. Limits of detection (LOD) for the selected EDCs varied from 0,05 to 7,5 ng/L in negative ion mode.

Conclusions: The developed method is suitable for the determination of low amounts of EDCs in water. Good recoveries were achieved with the SPE cartridges tested. Chemical derivatization of steroid estrogens with dansyl chloride significantly improved the sensitivity of the method. The LOD values were by orders of magnitude lower in positive ion mode after derivatization.

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Keywords: surface water, solid phase extraction, liquid chromatography tandem mass spectrometry, steroid hormones, derivatization

Neutralization of tricalcium aluminate with various acids

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Alumina is typically refined from bauxite ore *via* the Bayer process, which annually generates more than 2.7 billion tons of red mud worldwide, and this quantity is still growing with 120 million tons in every year [1]. The untreated red mud is still a huge problem all over the world, which is well illustrated by the disaster in Ajka in 2010. The tricalcium aluminate (TCA, $\text{Ca}_3\text{Al}_2(\text{OH})_{12}$) is one of the main components of this extremely alkaline by-product [2]. Based on several studies [3-4], the TCA is one of the solids which cause the extremely high pH of the red mud, therefore, this study is focused on the neutralization of the tricalcium aluminate by various acids: nitric acid, sulfuric acid, and phosphoric acid.

Results: The titration of the TCA suspensions was executed by automatic titrators under N_2 atmosphere. Then the suspensions were filtered, and both the solids and the solutions were investigated with several methods. The destruction of the solid phase was determined *via* XRD and SEM, while the composition of the liquor was monitored by ICP-MS and IC.

Conclusions: During the neutralization of the tricalcium aluminate the acid firstly reacts with the 3 molar $\text{Ca}(\text{OH})_2$ in a very fast reaction, which is sufficient to set $\text{pH}=8$ in most cases. Moreover, at neutral pH the structure of the tricalcium aluminate is completely destroyed or transformed during this process.

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Keywords: Bayer process, tricalcium aluminate, neutralization, acids

Építészet



Architecture

Moisture Content Impact on Wooden Structures

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Introduction: Wooden structures show great durability and strength under optimum conditions, but the aging process of them proves to be faster than in the case of other construction materials. When we are talking about timber damage, the moisture content (MC) has to be taken into account as one of the most important influencing factors. The moisture content value shows the water percentage contained in the wood, thus the change of it leads to shrinkage and swelling of the material associated with changes in the physical and mechanical properties (e.g., strength and physical properties of wood). Moreover, the increasing moisture content can enhance the growth of fungi on the surface of the timber material.

Aim: Finding a relation between the moisture content of the wood and the structural pitfalls behaviour.

Methods: Collect moisture content and climate condition data (indoor and outdoor temperature and relative humidity) in two different sites. Take small samples from various places of the structure and analyze them by scanning electron microscopy. The first site was the Civil Community house (Civil Közösségek Háza, Pécs, Szent István square). Its roof is a wooden structure. The MC measurements were performed in four seasons. The second one is Makovecz lookout tower (Makovecz Imre-kilátó, Budapest). The measurements on the tower covered only the summer period.

Results: based on the collected data from the first site, and performing scanning electron microscopy (SEM) measurements, it could be concluded that the lack of the sealing was translated into higher exposure to temperature and relative humidity (RH) changes, thus to high MC fluctuations. With the change of the RH and temperature the equilibrium moisture content (EMC) value changed as well. The measured MC values differed from the EMC in all seasons, thus the presence of the re-acclimatization process to the new EMC was continuous. Thus, the wooden cells kept absorbing and releasing water to reach EMC point, which combined with the volume changing, caused the appearance of cracks and high deflection. Also, the study shows that the damage of structural elements was affected by the changing of the climate condition.

The second chosen site, showed that the renovated wooden structures resist the changing of the climate conditions, so based on the data collected during the summer period most of the wooden structural elements which form the stairs, had MC less than 6% that means that the paint treated wooden material protected the wooden cells from water. However, the columns which are the primary structural part carrying the main load of the tower, showed 9.5% MC value as an average, therefore they were more exposed to the effect of water.

Keywords: Climate change, Temperature, Relative humidity, Moisture content, Timber, Scanning electron microscope (SEM)

Building Performance requirements to achieve a successful adaptive reuse of the historic building

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The historic buildings face several threatens which cause its deterioration. Taking into account these buildings as part of our architectural, social, cultural and economic reality, more precise basis for dealing with them have to be found. The adaptive reuse policy can be considered as a suitable approach which guarantees conserving and integrating them in the contemporary life. Adaptive reuse has been steadily gaining popularity since it was first recognized as one of the policies of cultural heritage conservation. However, the particularity of the historic buildings brings many challenges to the adaptive reuse, perhaps the most important of them is the effectiveness of the new function within the historic building. Therefore, it appears the importance of the compatibility between the new function and the characteristics of the historic building for assuring continuity of its performance for serving the new occupants. An accurate and scientific analyzing is necessary for all characteristics of the new function and the historic building to reach a great deal of compatibility in the adaptive reuse project.

Results: The success of the adaptive reuse of historic building mainly depends on the building functional effectiveness, which means that the historic building must be suitable for the new function. As far as there is compatibility between the historic building and the new function, the decision-maker and users need the lesser modifications and changes on the historic building, consequently meet the conservation principles in an ideal way. The building performance requirements provide requested guidance for taking the suitable decision for assuring the success of adaptive reuse of the historic building.

Conclusions: The suitability of the historic buildings for their new functions represents a great challenge because of the restrictions related to the conservation principles. These restrictions may require renunciations and prevent the full satisfaction of users' requirements. This may explain the need for an accurate building performance requirement to insure suitable environment for the new function, and therefore assuring the successfulness of the project of adaptive reuse of historic building.

Keywords: Historic building, Adaptive reuse, Building Performance

Constants and Changes in Ecclesiastical Architecture between the Past and the Present in Syria

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Syria had taken a center stage all over the world in its individual artistic characteristics of ecclesiastical architecture from the north to the south. The objective of this study is to provide a clear picture of the external forms of ecclesiastical architecture and their symbolic meanings such as rectangular, centralized, and cruciform plans. Moreover, it aims to illustrate the constants and changes in ecclesiastical architecture through an architectural comparison between two groups of churches. The first group represents churches with a centralized plan: St. George church in Izraa and St. George church in Damascus. Whereas the second one presents a basilica plan: Qalb Loze church in northwestern Syria and St. Andrew church in Latakia.

Regarding the results of this study, it can be stated that the connection with the authenticity of ancient ecclesiastical architecture shows more clearly in St. Andrew church in Latakia than St. George church plan in Damascus. In its sense, St. Andrew church proved through the appearance of western towers, a projecting apse, and a gable roof. While the resemblance of St. George church in Damascus to St. George church in Izraa displays only with the centralized plan.

Keywords: ecclesiastical architecture, symbolism, centralized plan, basilica plan

Klinikai orvostudományok I.



Clinical Sciences I.

New, non-invasive computational fluid dynamic methods in the prediction of coronary artery disease progression

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Introduction: To date, fractional flow reserve (FFR) is the gold standard procedure for assessing the condition of coronary arteries. Although the pathomechanism of coronary stenosis and plaque progression is a well-known and intensively researched area, the significance of patient-specific characteristics and complex blood flow parameters are less well known.

Aim: We aimed to compare the pressure, velocity, and flow values measured by simulation with the invasively measured FFR and coronary flow reserve (CFR) values in patients.

Methods: Models were retrospectively analyzed from angiograms of 16 patients who underwent elective coronarography. Four groups were formed for inflow and outflow profiles with transient flow simulation 1: pressure-pressure profile; 2: velocity-pressure profile with vascular phase shift; 3: modified coronary velocity-pressure profile; 4: corrected flow-pressure profile. A constant pressure, velocity model was used as a pilot study.

Results: In the stationary simulation, a deviation of $5.9\% \pm 0.07$ FFR and $11.5 \pm 0.101\%$ CFR compared to the measured / real values was observed (this showed the best approximation, then the boundary profiles of our transient measurements were examined. In the first group a significant oscillation $>100\%$ deviations was seen, in group 2: $10.91\% \pm 0.091\%$ FFR, $73.41 \pm 0.549\%$, significant CFR deviation, in group 3: $6.93\% \pm 4.74\%$ FFR, $98.08\% \pm 49.85\%$ CFR, in group 4: $13.25\% \pm 5.02\%$ FFR $15.29\% \pm 8.13\%$ CFR was observed compared to the measured values (the latter shows significantly close reliability, the vasodilated vessels can be attributed to the pressure increase observed during the simulation, which is characteristic of the model, as exactly the appropriate elasticity cannot be fully set in the simulation).

Conclusions: The adjustment system is suitable for non-invasive CFR measurement in coronary arteries. Additional flow influencing parameters can be investigated using CFD simulation. Parameters specific to stenotic vascular sections can be used in long-term prognostic and risk estimation systems.

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Keywords: computational fluid dynamics, coronary artery disease, FFR, CFR

The Effects of Daily Air Pressure Change on COPD Patients of Department of Emergency Medicine

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Introduction: Climate and weather events have significant impacts on human health. In the context of climate change, the relevance of these impacts are likely to increase in the future. Today, many studies are focusing on the excess mortality aspects of climate change and weather variability. However, the emergence or worsening of chronic disease symptoms in the context of weather variability is receiving considerably less attention.

Aim: In our presentation, we will present the preliminary results of a study that investigates the relationship between daily cases and weather variation by disease group in the Department of Emergency Medicine, UPMS.

Methods: In the data analysis, particular attention was paid to weather events that can be considered as indirect or direct effects of climate change. After a descriptive analysis of the data, a chi-square test, correlation analysis, and risk estimation were performed.

Results: Based on our results, we found that relatively considerable day-to-day changes in air pressure were identified as a risk factor for both total daily cases and COPD cases.

Conclusions: Based on the results, we aim to develop protective measures that can help reduce health risks by taking advantage of the increasing accuracy of weather forecasting.

Prognostic role of right ventricular and atrial mechanics in systemic sclerosis

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Background: Cardiac involvement implies a worse prognosis in systemic sclerosis (SSc). While the prognostic role of left ventricular diastolic and subclinical systolic dysfunction is well researched, and right ventricular (RV) dysfunction is also reported to have predictive power, little is known about the prognostic value of right atrial (RA) mechanics in this disease. We aimed to investigate the prognostic power of the RA volume, strain and stiffness parameters alone and when added to the echocardiographic marker of RV longitudinal systolic function in SSc patients without manifest pulmonary arterial hypertension (PAH).

Patients and methods: Seventy SSc patients (age: 57 ± 12 years) were enrolled into the study. They underwent standard echocardiographic and tissue Doppler measurements including parameters of RA and RV function at baseline. In addition, 2D speckle tracking technique was used to measure maximal RA volume index and RA reservoir, conduit and contractile strain. RA stiffness was calculated as ratio of the tricuspid E/e' (TriE/e') to reservoir strain (ϵ_R). Survival was assessed after 5 years. Since in some cases the cause of death was unknown, all cause mortality was chosen as outcome. Sequential χ^2 analysis was used to evaluate the incremental prognostic benefit of adding RA volume, strain or stiffness to tricuspid S (TriS).

Results: During the follow-up period of 4.7 ± 0.9 years, 6 patients (8.6%) died. When added to TriS in sequential Cox model, RA stiffness significantly improved the diagnostic performance of the model ($\Delta\chi^2 = 3.950$; $p=0.047$) and remained independent predictor of the outcome (HR 2.460 (1.005-6.021); $p=0.049$). RA Vmax index and strain parameters did not show incremental prognostic value over TriS. Using ROC analysis, RA stiffness ≥ 0.156 was the strongest predictor of mortality (sensitivity=83.3%, specificity =89.1%, AUC=0.859).

Conclusions: RA stiffness is associated with all-cause mortality in SSc patients without PAH independent of and incremental to the RV longitudinal systolic function. It may be proposed as a simple marker for identifying patients with high mortality risk.

Comparative evaluation of the results coming from subnormothermic machine perfusion and static cold storage of the liver

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Introduction: In liver transplantation, the method used in the clinic is cold preservation of the donor organ, however, oxidative stress and cold ischemia can significantly reduce the graft's viability, subsequent survival, and can cause postoperative complications. The aim of our research is to reduce the extent of liver damage, increase tolerance to cold ischemia, and reduce histopathological lesions using ex vivo subnormothermic machine perfusion. [1]

Methods: In the comparative study, three groups underwent cold preservation with IGL-1 solution at 0-4 °C for 45, 90, and 180 minutes, and three other groups underwent immediate, room-temperature, continuous, constant-pressure machine perfusion with Krebs-Henseleit solution for a similar length of time. From the samples, histological sections were examined by HE staining, the severity of tissue oxidative damage and the activity of antioxidant enzymes (SOD, Catalase) were examined by ELISA. Furthermore, perfusate analysis was performed, during the following liver enzyme levels were observed (ALT, AST, LDH).

Results: HE stained histological sections show a significant difference between the study and control groups. Sections of liver tissue preserved in IGL-1 solution show more pronounced structural damage such as dilatation of the veins, sinusoidal congestion, sinus dilatation, hepatocyte vacuolation. The activity of antioxidant enzymes (SOD, Catalase) measured by ELISA showed increased values in the groups treated with continuous machine perfusion compared to the control groups. Liver enzymes measured during perfusate analysis showed a significant increase in the control samples. The MDA study is in progress, during which we expect reduced values compared to the control in the perfused groups.

Conclusions: Based on our results, it can be described that immediate subnormothermic perfusion after liver removal can increase graft viability, reduce the extent of damage caused by oxidative stress, and reduce structural damage.

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Keywords: liver transplantation, cold ischemia, cold preservation, ex vivo subnormothermic liver perfusion

The effects of secondary bile acids in pancreas adenocarcinoma

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Pancreatic adenocarcinoma is one of the most aggressive cancer type and has a very poor prognosis. It is barely recognizable at an early stage, and its symptoms appear almost only when the disease is already at an advanced stage. The exact cause of its development is unknown, but a number of risk factors may be associated with development, such as obesity, smoking, alcoholism, diabetes, and pancreatitis. The human body is colonized by various symbiotic, commensal, and pathogenic microorganisms, that live on the surface of the skin and in the cavities of the body. The collective genome of the microorganisms is called microbiome. The pathogenic dysbiosis of the microbiome is linked with numerous pathophysiological processes such as certain tumor formation processes. Our research group investigates tumor types that are spatially distant from the microbiome and hypothesize that the relationship between the two is established by bacterial metabolites produced by bacteria. These bacterial metabolites travel through the bloodstream to different parts of the body, or even to tumor cells where they can act. Such bacterial metabolites include secondary bile acids (BA) that are formed from primary BAs by intestinal bacteria.

Results: In our experiments, we studied the effects of secondary BAs in Capan-2 pancreatic adenocarcinoma cells. We investigated BAs in concentrations corresponding to their reference (normal) concentrations in human serum. We studied how BAs modulate the different features of pancreatic adenocarcinoma through assessing classical hallmarks of cancer. First, we examined how BAs affect Capan-2 cell proliferation using Sulforhodamine B assay. Then we studied the effect of BAs in the epithelial-mesenchymal transition (EMT) process where we examined the expression of marker genes that play a key role in the EMT process using Western blotting. We also studied how BAs affect the invasiveness of Capan-2 pancreatic adenocarcinoma cells. Finally, we investigated the effects of BAs on oxidative stress, first studying the expression of the antioxidant protein NRF2 and a prooxidant protein iNOS by Western blotting.

Conclusions: Based on our results, it can be said that a secondary bile acid, the ursodeoxycholic acid (UDCA) decreased the proliferative capacity of Capan-2 cells, decreased protein expression of mesenchymal marker genes involved in epithelial-mesenchymal transition, while increased expression of epithelial marker proteins and reduced the invasiveness of Capan-2 cells. The UDCA decreased the level of NRF2 and increased the expression of iNOS protein. Overall our results suggest that UDCA is likely to have anti-tumor activity and inhibit the process of carcinogenesis in pancreatic adenocarcinoma cells.

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Keywords: microbiome, pancreatic adenocarcinoma, bile acids, oxidative stress, epithelialmesenchymal transition

Meta analysis: Prognostic role of cell-free DNA in pancreatic adenocarcinoma

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Introduction: Only 20% of pancreatic ductal adenocarcinoma (PDAC) cases are detected in a resectable stage and up to 80% of these will recur after radical surgery. Better biomarkers are needed to guide the management of this highly lethal disease.

Aim: The aim of our research was to assess the role of cell-free DNA (cfDNA) in evaluating the prognosis of PDAC.

Methods: A systematic literature search was performed in 5 databases based on the PRISMA guideline. Studies reporting on survival of PDAC patients depending on peripheral blood cfDNA status were reviewed. The random effect model with the pooled hazard ratios (HRs) and 95% confidence intervals (95%CI) were used for statistical analysis.

Results: The meta-analysis included 43 studies, summarizing data of 3377 patients. The publications most often analyzed the cut-off value of cfDNA and the KRAS mutations detectable in it. Both the appearance of cfDNA (HR=2.17; 95%CI: 1.63-2.9; I²=63.4%, p=0.000; HR=2.16; 95%CI: 1.57-2.97; I²=62.9%, p=0.004) and the presence of KRAS mutations in it (HR=1.49; 95%CI: 1.17-1.89; I²=86%, p=0.000; HR=1.88; 95%CI: 1.22-2.92; I²=83.5%, p=0.000) were associated with decreased overall survival (OS) and progression-free survival (PFS) respectively in all stages of PDAC. In unresectable cases only cfDNA detection corresponded to decreased PFS (HR=2.46, 95%CI=1.98-3.07, I²=0%) and OS (HR=2.42, 95%CI=1.98-2.95, I²=0%), while KRAS mutation in cfDNA had no significant impact. We analyzed the biomarkers together in resectable cases whereas positivity indicated accelerated progression and shortened survival (PFS: HR=3.572; 95%CI: 2.42-5.28; I²=0.0%; p=0.380).

Conclusions: Our data confirms that cfDNA is reliable for predicting progression and survival in all stages of PDAC, regardless of resectability, whereas a cut-off value for KRAS mutations in cfDNA seems more appropriate in resectable cases.

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Keywords: pancreatic ductal adenocarcinoma, cell-free DNA, liquid biopsy, prognosis

The Role of Network Structure in Visual Cortical Processing

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Cognition emerges by counterstream feedforward and feedback interactions in the large-scale hierarchical network of the cerebral cortex. The counterstream, as a topological feature of the network, is captured by the convergence and divergence of paths through directed links. So defined, the convergence degree (CD) reveals the reciprocal nature of forward and backward connections, and also hierarchically relevant integrative properties of areas. Although cortical dynamics are rooted in the anatomical network, the relationship of structure and function is far from clear. To understand how topology shapes large-scale cortical functioning, and what is the relationship between anatomical (determined by laminar distribution of connections), topological (defined by CD) and functional (determined by causal coupling) hierarchies we analyzed an oscillating neural mass model of hierarchical network dynamics.

Results: Similar to anatomical hierarchy, CD-based topological hierarchy showed high correlation with causal coupling in feedforward gamma and feedback alpha-beta band synchronizations in a subnetwork including low-level visual cortical areas. In contrast, causal coupling did not correlate with edge betweenness, another measure of the importance of network links. Considering the entire network, the CD-based hierarchy correlated well with both the anatomical and functional hierarchy for low-level areas that are hierarchically far apart. Conversely, in a large part of the anatomical network where hierarchical distances are small, correlations were not significant.

Conclusions: These findings indicate that at lower levels of cortical hierarchy interareal connectivity closely shapes large-scale oscillatory dynamics. However, at higher levels hierarchy is not strictly determined, allowing for flexibility in hierarchical interactions needed to cope with varying demands.

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Keywords: brain cortex, network, shortest paths, oscillation, dynamical model, Granger causality, simulation

Ektópiás sejtek vizsgálata az emberi gyrus dentatusban temporális lebeny epilepsziában

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A temporális lebeny epilepszia a leggyakoribb gyógyszerrezisztens epilepszia, aminek a hátterében az agykéreg rendellenes fejlődése is állhat. A kéreg fejlődése során az idegsejtek vándorlása zavart szenvedhet, ezáltal rendellenes helyet elfoglaló, ektópiás sejtek vagy sejtcsoportok alakulnak ki. Vizsgálatunk célja az ektópiás idegsejtek vizsgálata volt az emberi gyrus dentatusban.

Az ektópiás sejteket három kalcium kötő fehérje jelenléte alapján (calretinin, CR; parvalbumin, PV; calbindin, CB) mutattuk ki immunhisztokémiával terápiareszisztens temporális lebeny epilepsziában szenvedő betegek idegsebészeti úton eltávolított hippocampusából származó metszeteken. A preoperatív agyi képalkotó vizsgálat (MRI) alapján négy betegcsoportot vizsgáltunk: 1) hippocampus sclerosis, 2) hippocampus sclerosis és kérgi fejlődési rendellenesség, 3) kérgi fejlődési rendellenesség, 3) MRI által nem kimutatható rendellenesség (MR-negatív). Munkánk fő célja annak vizsgálata volt, hogy: 1) a három kalcium kötő fehérjét expresszáló ektópiás neuronok megjelenése között fellelhető-e kapcsolat, ami az ektópiás neuronok közös eredetére utalhat; 2) az ektópiás neuronok száma és a betegek klinikai adatai között van-e összefüggés. Megfigyeltük, hogy az ektópiás CR-immunreaktív interneuronok területegységre eső átlagos száma a HS csoportban volt a legmagasabb. Az ektópiás PV-immunreaktív sejtek átlagos száma is szintén ebben a csoportban volt a legmagasabb. A szemcsesejt réteg morfológiai besorolását és a CR-immunreaktív ektópiás sejtek számát összehasonlítva szignifikánsan nagyobb számú ektópiás CR-immunreaktív sejtet találtunk azokban az esetekben, ahol a szemcsesejt rétegre a diszperzió volt jellemző.

Az ektópiás PV-immunreaktív sejtek száma szignifikánsan magasabb volt azoknál a betegeknél, akiknél a jobb oldali hippocampust távolították el. Az epilepsziára hajlamosító gyermekkori események és a szemcsesejt réteg morfológiája között szintén összefüggést figyeltünk meg. Az ektópiás CR- és PV-immunreaktív sejtszámok, valamint az ektópiás PV-immunreaktív sejtszámok és CB-immunreaktivitás alapján felállított csoportszámok között szignifikáns összefüggés nem volt. A kalcium kötő fehérjékkel kimutatott ektópiás neuronok megjelenése között csak az ektópiás CR-immunreaktív sejtek száma és a CB-immunreaktív szemcsesejt réteg morfológia alapján kialakított csoportszámok között találtunk összefüggést. Megállapíthatjuk, hogy a jelentős sejtpusztulással járó hippocampus sclerosisban nagyszámú ektópiás sejt található a gyrus dentatusban. Az egyes kalcium kötő fehérjét tartalmazó ektópiás neuroncsoportok megjelenése és denzitása közötti összefüggés hiánya arra utal, hogy a PV, CR és CB tartalmú ektópiás sejtek megjelenése eltérő mechanizmussal történik.

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Keywords: epilepszia, hippocampus, ektópiás neuronok, kalcium kötő fehérjék

Szociál és szervezet pszichológia



Social and Organizational Psychology

First steps towards understanding global climate change's social representations in Hungary

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Introduction: Global climate change is one of the most urgent and complex issues humanity is facing nowadays. Mapping the content, the structure and the possible diversifications of existing knowledge regarding climate change is unavoidable to plan interventions, facilitate the change of attitudes and promote effective individual and societal actions (Batel et al., 2016).

Aim: The aim of this study was to explore Hungarian participants' social representational field of global climate change. Multiple group-identificational levels as relevant variables (Fielding & Hornsey, 2016) related to the perception of phenomenon were also measured.

Methods: Participants (N=311; M_{age}=32.5 years, SD=11.9 years) filled out an online questionnaire, giving free associations to the stimulus word of global climate change. They also answered questions of IWAH (*Identification With All Humanity*) scale which represented their perceived identification related to community, nation and humanity. After descriptive statistics the latter tool underwent cluster analysis, while free associations were analyzed by classical lexicographic and similarity analysis.

Results: The representational field consists mainly of future-oriented contents, negative provisions and urging for solutions (*warming, extinction, joining and future*) which we assume are the consensual meanings of global climate change. According to answers given to IWAH four identification clusters emerged, (1) the first contains those, who do not identify with the categories, (2) the second contains those, who highly identify with each category, (3) the third contains those, who think of themselves as global citizens and (4) the fourth those, who position themselves before all as members of their own community. Patterns of specific thinking concerning solutions and evaluation of the situation could be identified behind every group-identification.

Conclusions: A structured social representation of global climate change shows a consensual negative prevision for the future. It has become clear that behind different knowledge about climate change are different identifications with various groups. Keeping this in mind can be of great help when addressing the public or forming climate policies.

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Keywords: global climate change, social representations, social identity, pro-environmental action, mixed methods

How the Healthy Organization Model helps the Public Administration

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Introduction: According to Lövey and Nadkarni's definition [1], an organisation can be considered healthy if: 1. satisfies customer needs by providing great value for the customer. Thus it earns legitimacy for its existence. 2. satisfies the needs of its members by creating an environment where members develop (grow) and believe that they matter 3. satisfies economic requirements (profitability imposed mainly by markets and regulators) by using resources most efficiently and effectively in its pursuit of objectives. 4. maintains a balance between these three fundamental objectives by considering all three simultaneously 5. lives in harmony with its natural social and economic environment. 6. grows and develops over time, increasing its reach and/or ability to handle complex situations.

Aim and Method: The Hungarian Public Administration have to meet the criterias of a healthy organization to become an attractive workplace for young generations. There is a questionnaire belonging to the Healthy Organization Model, which assesses the organizational diseases and health criterias in organization mostly in private sector. Main questions are: How can the factors of the model be measured in the public sector and how the items of the questionnaire should be modified so that the civil servants would understand it?

Results: Some items of questionnaire can be interpreted differently in public administration: The public administration does not make a profit, but it is expected to use the fixed resources most expeditiously and potently of its internal processes. As a result of the global economic crisis, social trust in public institutions and public administration within the EU has significantly decreased. Members of Generation Y are looking for strong branded employers primarily to look attractive in their career path [2], Generation Z is also attracted by reputable jobs [3]. The public administration also has "customers", they are the citizens. The public administration provides services to citizens, but there is no competitive position because these services are provided only by the state.

Conclusions: In well-functioning organisations, people find joy in their work, which is an inspiration for the best achievement. An organization needs to be healthy to become joyful. To reveal and treat the organizational diseases of the public administration requires an adapted version of the questionnaire.

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Keywords: *Healthy Organization Model, Public Administration, questionnaire adaptation*

Resilience and perceived stress in sport sector during the Covid-19

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Background: As a result of the outbreak of the coronavirus at the end of 2019 (COVID-2019), significant changes took place in all segments of the world, including the sports sector. Among the restrictions, “quarantine” has become a common measure. These restrictions supported people’s health, but their consequences were strongly influencing the sports sector in the sports sector: missed workouts and closed-gate competitions affected the everyday life and wellbeing of employees in this field.

The unpredictability of the situation caused constant stress and cause many conflicts. Adapting to everyday challenges in this changing environment caused increased tense and role conflicts, and a physical and mental challenge. This research was aimed to investigate the wellbeing and attitudes of sport sector employees and athletes, during the COVID-19. The current research can be considered as a pilot study, in the framework of which data collection and analysis are still ongoing.

Methods: In this research the participants were sport sector employees and athletes, but in this study the athlete-sample (N=61) will be analyzed. The athletes (Mage=32.91, SD=12.66) represented different sports and worked in different jobs at the same time. We compiled a questionnaire package using Google Forms. The questionnaire package included a demographic data sheet and the following questionnaires: Perceived Stress Scale (PSS), Copenhagen Psychological Questionnaire and Connor-Davidson Resilience Questionnaire. We asked about the changed sports and working conditions during the Covid-19, the time spent in quarantine, and the perceived dangers associated with attending training sessions.

Results: The results obtained from the pilot measurements show that the restrictions have brought significant changes in the sports sector. The effects of isolation, insecurity and increasing workload are reflected in the extent of perceived stress and the assessment of work-related psychosocial factors. An important result is that the resilience of athletes influences subjective well-being and perception of stress. Thus, this study highlighted the importance of resilience among representatives of the sports sector. These findings show that providing support to increase athletes’ resilience can be one of the key responsibility of sport psychologists. Our goal is to gain a more comprehensive picture of the psychosocial effects of the epidemic on the sports sector through broadening the sample and conducting more differentiated analyzes.

Keywords: Resilience, perceived stress, sport sector, covid-19

The effect of processes involved in emotion regulation on burnout and mental well-being among healthcare workers

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Introduction: Healthcare workers are at high risk of physical, mental and emotional strain, which can easily lead to burnout. The high prevalence of occupational stress has a negative impact on the healthcare workers, the healthcare system and on the patients as well [1]. The optimal quality of the relationship between the patient and the healthcare professional is essential in patient care. Empathy can significantly improve the patient compliance and the disease outcomes [2]. The aim of this study to investigate the impact of occupational stress on emotion regulation, empathy and burnout of healthcare workers. Associations of the increased strain with the quality of the relationship and communication towards the patients are also examined.

Methods: An online survey was filled out by 61 Emergency Department workers. Emotion regulation was assessed with the Cognitive Emotion Regulation Questionnaire, while burnout, wellbeing and mental distress were measured with the Maslach Burnout Inventory and the WHO Wellbeing Index. Depressive symptoms, stress and empathy were examined with the Depression, Anxiety and Stress Scale and the Empathy Quotient-10 questionnaire.

Results: 41% of the HCWs showed symptoms of depression, 42,6 % had increased anxiety level and 49% reported higher stress level. The sample shows higher burnout in depersonalisation and emotional exhaustion. While rumination and catastrophizing increased the risk of burnout, depression, anxiety and stress, positive reconstructing correlated with decreased level of depression and higher level of empathic skills. A significant negative correlation is also observed between the subjective wellbeing, the maladaptive emotion regulation skills and burnout.

Conclusions: The presence of stress, the level of workload, the number of years spent on the field, the recognition and management of different emotions can significantly influence the relationship with the patients and the empathic attitude. Thus, the elevated stress, anxiety, depression and insufficient emotion regulation increase the risk of burnout.

Organisational interventions to reduce stress and improve wellbeing of healthcare workers are essential for decreasing the risk of burnout in order to improve the quality of patient care.

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Keywords: healthcare workers, emotion regulation, burnout, empathy, wellbeing, compliance

Predictors Of Turnover Intention: Generational Perspective

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Abstract: Turnover is very well covered topic, companies and researchers are also motivated to discover all his aspects because it is very costly. In addition to replacement fees, there are hidden costs such as productivity loss, workplace safety issues, and moral damage [1] [2] [3]. This study of employee turnover has attempted to explain why employees leave and how to prevent the drain of employee talent, focusing on a generational perspective (Mannheim).

We examined employees (N=609) from different Hungarian companies and data were collected using an online questionnaire (turnover intention, job satisfaction, demographic questions, qualitative questions). We examined data by One way ANOVA and linear regression. One way analysis of variances detected the differences among the three cohorts in the relation of intention to leave and general job satisfaction. Step wised linear regression analysis was performed examining each cohort to generate different models of predictors of turnover intention.

Results suggest that every generation (X, Y and Z) has a specific pattern of factors which determines their intention to leave. The primary determinant factor for employees of Z (1996-2007) generation is contingency rewards. The nature of work well predicts the turnover intention in case of workers of the Y (1982-1995) generation. In the case of the X (1965-1981) generation, promotion, the nature of work and supervision might predict the intention to leave of employees.

The exploration of different elements of job-satisfaction as predictors of turnover can give support for HR workers, and company leaders manage the team in a multidimensional way. This method is adaptable and might be useable for large companies to planning the employee engagement strategy and find the primary predictors of different employee groups.

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Keywords: generations, employee turnover, job satisfaction, predictors

Közgazdaságtudomány



Economics

“Determination of the suitability of the document sample for the in-depth qualitative content analysis using Mallet Topic Modelling text mining tool”

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Big data analytics (BDA) offer great benefits such as the foundation and source of retaining and gaining competitive advantage. BDA profoundly impacts the organization through more effective operation and management throughout the improvement of decision quality, speed, and accuracy of decision making. The BDA influences marketing function through better targeting, a better relationship with the customers, and a better understanding of the customer's needs. The BDA offers a better and more accurate understanding of market trends, competitors moves and threats, and opportunities.

The aim of the paper is to investigate if the document sample, which is intended for use in qualitative research, is suitable to conduct in-depth content analysis in order to determine challenges that decision-makers face in using Big Data Analytics in the financial sector. This investigation is a subsequence of comprehensive research which has the ultimate goal to answer the following research questions: 1. *What are the challenges that decision-makers in the financial sector companies facing in using BDA solutions?* 2. *How the ranking list of the ten most influential challenges looks?* 3. *What is the level of influence of those ten challenges, measured quantitatively?*

The method used for the document sample content analysis is text mining with Mallet Topic Modelling Tool. The paper brings a detailed explanation of the topic modelling process used for the determination of the relevancy of the document sample for the answering predefined research question. The document sample consists of 99 abstracts from secondary research sources, indexed in Ebsco Discovery Service. For the generation of the document sample, predefined filters and strict criteria have been applied. Three organizational functions, in their generic way, is taken into consideration: Management, Marketing, and Operations.

Results: The results show that the document sample is suitable for in-depth qualitative content analysis. Furthermore, the results indicate that the document sample consists of articles with high relevancy for answering the first research list creation of the most important challenges that decision-makers in financial sector companies are facing in using BDA solutions.

Conclusions: Mallet Topic Modelling solution is a highly efficient text mining tool for determining if the document sample is chosen appropriately. It gives an opportunity in a short period of time to investigate a huge amount of text. Preparation of the document sample for text mining is relatively easy. In the determination of the text, the topics researcher should have appropriate domain knowledge of the research subject.

Keywords: Big data Analytic, Challenges, Document Sample, Topic Modelling Tool, Mallet, Text Mining

Impact of Ethical Leadership on Whistleblowing Intentions with Moderation of Locus of Control and Mediation of Organizational Identification

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Unethical practices have arguably become a part of routine activities in the organizations over the past few decades [1]. The role of whistleblowers has been seen as important and challenging in addressing whistleblowing to business ethics, especially in dealing with questionable activities in a challenging organizational setting [2]. Leader should be a "Moral Person" means that a leader should demonstrate ethical behavior towards their subordinates [3]. Locus of control is the key component that has a strong positive relation with leadership style [4]. Organizational identification, another key concept is the employee's level of commitment to the organization [5].

This study aims to investigate the impact of ethical leadership on whistleblowing intentions by using organizational identification as a mediator and individual locus of control as a moderator. The data was collected from employees (16-17 Gazette Scale) working at the Primary and Secondary Health Care Department by using survey questionnaires through convenience-based sampling. The data was analyzed by using Smart PLS using Structural Equation Model Technique.

Results: Research results show that whistle blowing intentions are directly related to ethical leadership. The analysis also shows that the employees attachment and commitment to the firm (organizational identification) mediates the relation between ethical leadership and whistleblowing intentions.

Conclusions: Study shows that while considering whistleblowing concept, leadership is the key factor which can positively and strongly influences this. Along with help of the present study, leaders may know that the ethical aspect is the most important factor which directly and indirectly affects whistleblowing inside the organization.

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Keywords: Whistleblowing, Ethical Leadership, Public Sector, Organizational Identification, Locus of Control

Consumer misbelieves during food crisis

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Food inequality is all-time high, the population continues to grow as resources continue to deplete. Our food industry is one of the biggest contributor to climate change and pollution, Food accounts for over a quarter (26%) of global greenhouse gas emissions [1]. The food system is vulnerable and inflexible, and cannot cope with the rapid changes and demand growth.

As EU's policies and strategies suggest, we need to set up the foundation now for the future's better food systems that works better for everyone, everywhere [2]. How can we build up food systems that doesn't just survive, but grows and adapts? How can we mitigate the damages the unavoidable changes cause (emerging risks), and make food chains more resilient in uncertain times?

We have all experienced the vulnerability of our food chains as Covid19 has hit the world. In Hungary we have seen empty shelves when businesses and governments assured us that we will have enough food. The participants of the food chains acted unusually, consumers started 'panic buying' and piled up big amounts of non-perishable food, small farmers were not able to sell in the small markets, multinational companies had difficulties due to logistics and changing demand. The biggest cause behind the problems were fear, uncertainty and misbelieves.

What can we learn from previous food crisis to make sense what to do in the future? In this research we have collected and classified the misbelieves in connection with food and Covid19.

Misbelieves are tested amongst university students, with the use of a true or false game. Based on the results these misbelieves will be deactivated with attitude-forming communication tools.

Rapid changes cause unavoidable stress and fear for the participants of the food chain (especially consumers), therefore the avoidable fear (misbelieves) should be eliminated and right food treatment practices and correct behaviour during crisis should be strengthened.

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Keywords: short food supply chain, food system sustainability, food waste, rural development

The Influence of Social Media Marketing on Customer's Brand Loyalty

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Marketing in social media networks is one of the most renowned marketing tools where consumers and shareholders are contributors rather than observers, and each contributing customer turns out to be part of the marketing plans [1]. Therefore, the spread of social media platforms and proportional consumer adoption in recent years has triggered a model shift, considerably changing how customers engage with brands. In the consumer marketing public, customer loyalty has considered a vital goal for companies, they need to use to build their brand image. This paper aims to review various literature on social media marketing and customer's brand loyalty. Identifying the role of the consumer's journey in boosting loyalty in social media and the connection between consumer's post-purchase behaviour and customer's loyalty.

Results: The findings indicate that social media marketing is one of the critical drivers to achieve brand loyalty. Moreover, social media platforms provide direct contact between businesses and customers, allowing businesses to be aware of buyers' thoughts, and buyers can inquire about past purchasers' experiences with a company and trust them rather than relying on what firms advertise about their brands. Therefore, many loyal customers tend to forgive customer-service mishaps, show lower sensitivity to price, and spread encouraging word-of-mouth about the brand to other users and friends on social media platforms. Consequently, consumer loyalty can be an essential seed of continuous development and yield and a robust resource, mainly in social media networks. However, if companies fail to cope with the latest upgrades in social media marketing, there is a low probability they can survive in the current market.

Conclusions: Social media established a new dominant mode of communication that positively affected people's behaviour when engaging in interactive social activities and sharing information about products and services over the internet. This article helps readers gain a better grasp of how social media affects customer's loyalty and how it could be utilised to develop deeper social ties with the public and assist in analysing user behaviour based on their interactions with businesses via social media platforms' offered tools. Also, it offers statistics on the users' behaviour, provides knowledge about rivals' market actions, and enables businesses to contact customers at a lesser cost than the conventional market. This article encourages various firms to allocate a considerable amount of their revenue to leveraging social media to offer their brands to targeted clients at a reasonable price, which benefits their profitability and reputation among customers [2]. Finally, future research should investigate the effect of additional social media characteristics that may affect customer loyalty, such as educational background, age, kind of employment, and income level.

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Keywords: Customer Brand Loyalty; Customer Loyalty Journey; Post Purchase Behavior; Customer Experience; Digital marketing; Social media marketing.

Relationship between the project manager and successful project implementation

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For the implementation of projects, it is essential to appoint the appropriate person to head the project organization, who will manage the organization, compliance with costs and deadlines throughout the project, from preparation to implementation. There are many types of projects, we can talk about software development or serious investments such as stadium construction. Due to the variety of projects, a person with a different education, experience and mentality must be selected. Of course, it is possible to categorize projects at some level and to carry out the selection accordingly, but each project has its own uniqueness, which makes this selection difficult. The labor market is challenging, there are few professionals with project experience, so it is often necessary to start a project with career starters or staff with no project experience. The number of projects is on the rise in all areas of the economy. However, as the number of projects increases, so does the number of unsuccessful projects. My research revealed that one of the main causes of failure is an inadequate project manager. With this study I would like to point out the relationship and importance of the project manager and the project implementation.

Results: According to the results of my research, it was confirmed that there is a significant relationship between successful project implementation and a properly selected project manager.

Conclusions: The appropriate project manager should be employed for the project to be implemented, who has experience in a similar project. You should not hire an inexperienced or otherwise qualified project manager as this can lead to failure.

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Keywords: project, project manager, project implementation, organization, experience

Impact of COVID-19 on BWE research

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COVID 19's impact on economic situation raised the interest of bullwhip effect researchers. Due to the uncertainty and restrictions in place that was resulted by the epidemic outbreak the supply chain performance significantly decreased. Unpredictable circumstances, downtimes, supply issues and staff absences made the planning extremely difficult. The missing perspective on mid- and long-term also impacted the processes. The focus shifted from the potential performance improvement to the daily operation.

The frequency of the presence of the bullwhip effect increased. This is due to the strong connection between the reasons of the phenomenon and the effects of COVID-19. The economic and market environment formed by the regulations on the virus creates ideal environment for the bullwhip effect. Beside the impacts of the virus the missing historical information further complicates the recovery of processes on multiple level of the supply chain. Although daily operation's maintenance is crucial, operational performance also need to be kept in focus. Without keeping the centre of attention at efficiency recovery can be longer. This article aims to match the reasons of the bullwhip effect and the impacts of the COVID-19. The combination of the two shows the strong connection between the occurrence of the phenomenon and the impact of the restrictions. As a result, the understanding of the performance decrease can be deeper, and analyzation of bullwhip effect causes can support in the recovery. It shows lessons learned of COVID-19 from the BWE perspective. As the situation is unprecedented the learnings are aiming to support future cases.

Keywords: COVID-19, bullwhip effect, supply chain performance

Európai jog, nemzetközi jog



European and International Law

International Criminal Cooperation in the European Union: legal framework and considerations regarding the protection of fundamental rights

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The policy of judicial cooperation in criminal matters between the member states of the European Union has been in development since 1992 when the Maastricht Treaty first established the third pillar called Justice and Home Affairs. During almost three decades, the judicial cooperation (from hereinafter referred to as: criminal cooperation) of member states has greatly evolved resulting in it splitting into different areas of cooperation. These areas include among others establishing union agencies aiding criminal cooperation in an EU-wide manner, harmonisation of both substantive and procedural criminal laws of member states and the protection of financial interests of the EU. The aim of this article is to provide a comprehensive overview of one of the major components of the above-mentioned policy, the so-called operational cooperation taking place between member states in criminal matters. Thus, the research concerns European legal instruments such as the European Arrest Warrant and the European Investigation Order underpinning the criminal cooperation of the competent law enforcement and judicial authorities of member states.

This operational cooperation is based on the principle of mutual recognition, and it is greatly influenced by the protection of fundamental rights. Besides providing an overview of the legal framework, the article also explains to what extent the case-law of the Court of Justice of the European Union (from hereinafter referred to as: CJEU) formulates the manner, in which criminal cooperation takes place in the EU by consistently setting out standards of the protection of fundamental rights. To this end, various cases concerning operational tools of criminal cooperation before the CJEU are analysed in the article.

Results: In the recent years, the CJEU has shown great interest in the protection of fundamental rights in the context of criminal cooperation of member states. By setting out new standards of protection, the status of the individual in the EU has been strengthened. On the other hand, such case-law may compromise the principle of mutual recognition so the CJEU must act carefully when setting out these standards in order to avoid hampering the efficiency of criminal cooperation.

Conclusions: In the article, it is shown that the CJEU aspires in its judgements to best protect the fundamental rights of individuals involved in criminal procedures while holding up the efficiency of criminal cooperation as well. In doing so, the CJEU does not only apply the Charter of Fundamental Rights, but it also takes inspiration from the case-law of the European Court of Human Rights thus contributing to the creation of a common European area where fundamental rights are protected by equally high standards in every member state.

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Keywords: *European criminal law, operational cooperation, principle of mutual recognition, principle of mutual trust, fundamental rights*

Regulatory issues of EV charging networks in the European Union

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Introduction: The European Green Deal, announced in December 2019, intends to play an important role in the fight against climate change and in reducing greenhouse gas emissions through electric transport, which requires an extensive EV charging infrastructure. Its Sustainable Mobility policy sets out the need for 13 million zero- or low-emission vehicles on the road across the EU by 2025, to be served by nearly 1 million electric chargers.[1] By 2030, the Sustainable and Smart Mobility Strategy already envisages 30 million zero-emission vehicles and 3 million charging points to meet the CO₂ reduction targets for road transport. [2]

Aims: The aim of this study is to highlight the contribution of current EU regulations to the objectives of the European Green Deal and related policies: how does regulation help the upswing of EV charging networks? Furthermore, how could regulation boost the development of EV charging networks compared to the current situation?

Methods: The methodology is essentially based on the analysis of the current EU legislation, the analysis of policies and international statements, together with the examination of the relevant literature, as well as the grouping of legislation based on their content. In addition, the methodology covers the opinion of some EV charging network operators questioned through interviews.

Results: Within the framework of an exploratory analysis, the study has examined the content of the legislation, grouping them according to their content, how EU legislation currently promotes the spread of EV charging networks, and has pointed out the problems and shortcomings of certain regulations, which, with the help of the literature and recommendations of international organisations, are addressed in 6 proposals for future EU legislation and the relevant bodies and authorities.

Conclusions: In order to develop an efficient EV charging infrastructure, it is essential to transpose Directive 2014/94/EU into a regulation, setting a minimum deployment quota for Member States and a corresponding deployment methodology for 2025 and 2030, as the targets set by Member States are not ambitious enough. The integration of charging networks into electricity systems is possible in the long term through the modernisation of the electricity grid and the introduction of bi-directional charging solutions, which will require R&D&I resources. In addition, the introduction of a uniform pricing system and the prioritisation of the installation of fast and rapid charging points should be emphasised.

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Keywords: EV charging networks, EV charging infrastructure, 2014/94/EU directive, TEN-T, EV charger deployment

Cross-Border Water Conflicts in Thrace Region within the frame of Turkish Water Law

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Maritza River, also known as Meriç or Evros, is a transboundary river that serves as a natural border for Bulgaria, Greece, and Turkey. Considering the hydro political importance of the Maritza River, it is inevitable that the riparian states face many conflicts.[1] At this point, regulations had a critical role to ensure safety, security, and stability. EU water regulations have been specified in the Water Framework Directive that aims to be corresponded by the members in particular Greece and Bulgaria. However, the water regulations in Turkey have not been codified and accumulated under one act yet. Therefore, starting with the constitution, the conditions of international waters had been regulated within the frame of various acts. This work intends to analyze the cross-border water conflicts between Greece, Bulgaria, and Turkey with a special focus on the Maritza River, briefly explaining the structure of Turkish Water Law, and evaluating the applicable regulations. For that reason, the doctrinal legal research methodology was applied to examine the cross-border water conflicts in Thrace Region. This work consists of a descriptive and detailed analysis of legal regulations found in primary sources and a critical evaluation of secondary sources within the frame of Turkish Water Law.

Results: Maritza River is one of the most significant irrigation resources in the Thrace region. All riparian states are benefiting from the river at the agricultural and industrial levels. Moreover, the position of the river allows Bulgaria to generate hydropower as well. However, water quality in the Maritza River Basin is decreasing day by day because of urban and industrial unfiltered water waste blending into the water uncontrollably.

Conclusions: As a result of the pollution, beneficiaries had to collaborate to preserve their common interests. Over six decades, Turkey, Bulgaria, and Greece attempt to establish cooperation to solve the conflicts. Even though a certain level of coordination has been achieved on flood protection within the beneficiaries, there are still uncertainties on water allocation and water quality standards. Therefore, an action through a trilateral project is vitally needed to prevent water pollution in the Thrace region.

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Keywords: cross-border water, conflict, Thrace, Turkey, Bulgaria, Greece

Rights and Conditions of residence of a foreign national in relation to Germany and Turkey

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Introduction: My research is based on the fact that in 1961 Germany (Federal Republic of Germany) and Republic of Turkey signed a labour agreement that opened the FRG labour market to Turkish migrant workers, which over time created a multi-million Turkish diaspora in Germany, which eventually affected German-Turkish domestic and foreign policy. However, this "Turkish community" had to face the fact that both German and Turkish law had until recently banned dual citizenship, so the status of their stay in that country raised questions and a solution had to be answered.

Objective: As an objective of my dissertation, I examine the residence and settlement status and citizenship of a Turkish citizen in Germany and a German citizen in Turkey today. It is not my aim to approach the subject of my research from the perspective of asylum policy and asylum rules.

Methods: The method of my research is conceptual and textual analysis of both German and Turkish national rules, and comparative analysis. I draw my research from the procedural regulations of the relevant regulations and competent authorities of the examined states. I propose to collect data by comparison method which includes written and electronic sources as well as documents such as reports, official papers from countries, government workings, published books, and academic articles. The research will be done from a contemporary perspective and will be based on literature, analyses, and official documents. Former studies in this area will be a very precious source of my research.

Results: As a result of my research, I present and compare the conditions for obtaining a residence permit, the conditions of establishment and the possibility of acquiring citizenship in the studied countries (for example, studying or working, etc.). I will look at how the lifting of the exclusion of dual citizenship has changed in both Germany and Turkey.

Conclusions: In conclusion, I believe that both Germany and Turkey place the right to reside on their territory on essentially the same pillars, namely freedom, security and justice, which can promote social and economic development as a means of combating illegal migration and illegal employment.

Keywords: citizenship, dual citizenship, rights of residence, foreign national, Turkey, Germany

Impact of EU Framework for National Roma Integration Strategies up to 2020 in Hungary

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In my presentation I would provide a comprehensive picture about the effect and impact of the Hungarian National Integration Strategy 2011-2020 (Strategy) through the eyes of different human rights bodies.

The *European Union Framework for National Roma Integration Strategies up to 2020* (EU Roma Strategy) was adopted during the Hungarian Presidency of the European Council in 2011. This policy paper was warmly welcomed by civil society and human right organizations, because it has been the most complex EU level policy arrangement for Roma, which was subjected to democratic policy-making processes, aimed to tackle inequalities with complex approach which covered the areas of education, employment, health, and housing. The Hungarian government implemented the policy in the Hungarian National Social Inclusion Strategy (hereinafter Strategy) 2011. The main priority objectives followed the EU Roma Strategy

Results: The review would cover the relevant reports and recommendation of human right bodies from the last 5 year and examine: is there any human rights impact of the Impact of EU Framework for National Roma Integration Strategies up to 2020 in Hungary. EU Roma Strategy has been considered as ‘complementary to EU legislation and existing policies in the areas of non-discrimination, fundamental rights, freedom of movement and children’s rights. I would evaluate of the Hungarian implementation from human right perspective, and in this I consider credible measure tool the human rights monitoring processes of the United Nations (UN) and the Council of Europe (CoE) relevant human rights monitoring mechanisms and its outcomes (reports, concluding observations etc.)

Conclusions: Legal harmonization between the Strategy and mainstream policies would be an asset for further intensifying the impact of strategic actions for Roma inclusion. Also, could be a problematic point that Hungarian Strategy explicitly but not exclusively targets Roma, and this approach may pose challenges to successful and effective policymaking and implementation. During this period was initiated infringement procedure against Hungary by European Commission due educational segregation.

Keywords: human right impact, EU Framework for National Roma Integration Strategies up to 2020, Situation of Roma and disadvantaged children and women, human right mechanisms

The Privatization of State Electricity Company: A Case of Indonesia

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Indonesia has 109 State-Owned Enterprises engaged in various strategic business sectors such as mining, agriculture, transportation, construction, services and finance. One of the largest SOEs is the State Electricity Company, which controls people's livelihoods in the electricity sector. In 2020, Indonesia issued Law Number 11 of 2020 on Job Creation and Government Regulation Number 25 of 2021 on Implementation of the Energy and Mineral Resources Sector. The two regulations provide an opportunity for the private sector to be involved in electricity business activities which have so far been fully controlled by the state with the scheme of establishing a holding company for electricity and an Initial Public Offering. This study aims to analyze the privatization policy of the electricity sector based on legal doctrine and legislation using the IRAC (Issue, Rule, Analysis, and Conclusion) method. This study finds that the privatization of the electricity sector is contrary to Article 33 paragraphs 2 and 3 of the 1945 Constitution of the Republic of Indonesia which stipulates that the state is obliged to control strategic production branches related to people's livelihoods. Moreover, the Constitutional Court has issued two decisions in 2003 and 2015 stating that electricity is one of the most important needs for the people that must be controlled by the state. However, the government is obliged to cancel the plan to privatize the electricity sector because it is contrary to the law and the constitution and is not in accordance with the goals of prosperity and welfare of the state and people.

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Keywords: privatization, state electricity company, Indonesian law

Fizika



Physics

Real-time renormalization

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Traditionally, the renormalization group method is given in Euclidean spacetime [1]. This approach is mathematically simpler and resembles the renormalization used in statistical physics. However, we have to use the original renormalization defined in real time, since the quantum field theory is originally formulated in Minkowski spacetime. Because of this, the renormalization group method in real time (Minkowski spacetime) can give us the correct results.

Results: We carry out the real-time renormalization of the conformally reduced quantum Einstein gravity model [2]. We introduce different wave-function renormalizations of the time and the spatial derivatives. The evolution of these couplings gives us information about the breaking of Lorentz symmetry. We found the newly introduced couplings to be relevant.

Conclusions: The significance of this investigation is that the renormalization group method becomes suitable for showing the spacetime that forms in the quantum Einstein gravity on high and low energies by taking a closer look at the behaviour of the couplings.

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Keywords: *renormalization group method, quantum gravity*

Energy-resolved few-cycle nanoplasmonic photoemission dynamics

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Full spatiotemporal resolution of the evolution of plasmonic fields is a major goal in plasmonics in order to investigate the buildup and decay of collective electron phenomena. Here, we demonstrate few-femtosecond probing of plasmon transients uniquely combined with nm-scale sensitivity.

Photoelectrons were shown to be sensitive tools for ultrahigh-sensitivity near-field probing [1-3]. We have shown that using this technique, plasmonic field enhancement can be experimentally measured with unprecedented surface sensitivity with the help of photoemitted and rescattering electrons [2]. It was demonstrated that the cutoff region of these photoelectron spectra is made up of electrons emitted from plasmonic hot spots of the nanoparticles [1]. If we use femtosecond pulses made up of ~ 1.5 eV photons for this measurement, the photoelectron generation is highly nonlinear and it can serve as a basis for time-resolved probing of near-fields in a spatially highly selective manner. In contrast to a previous experiment [3], by filtering for a certain kinetic energy range of photoemitted electrons, we can limit the measurement for rescattering electrons resulting in a sub-nm surface sensitivity [2] and selectivity for plasmonic hot spots.

To realize this concept, we built an ultra-broadband interferometric autocorrelator which was illuminated by a Ti:sapphire oscillator. Its 5.5-fs pulses were characterized by interferometric FROG. The output of the autocorrelator was focused onto plasmonic nanoparticles and photoelectron spectra were recorded for a set of delays of the interferometer arms.

Results: The recorded autocorrelation traces demonstrate that for nanostructures with the appropriate resonant properties, even the plasmon oscillation decay following the ultrafast excitation is in the sub-10-fs range. Our measurements show that this decay time can be tuned by changing the nanostructure properties (e.g. size). Furthermore the kinetic energy dependence of the traces reveals their narrowing with higher kinetic energies. By establishing this time-resolved characterization technique, plasmonic nanoparticles can be tailored for ultrafast optics applications [4] such as near-field-enhanced high harmonic generation.

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Keywords: light-matter interactions, plasmonics, ultrafast phenomena

Femtosecond LIPSS on indium-tin-oxide thin films at IR wavelengths

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Introduction: The formation mechanisms of LIPSS (Laser-Induced Periodic Surface Structures) generated by ultrafast laser pulses with different wavelengths and pulse durations has been extensively examined in recent years. It is generally accepted, that the perpendicular LSFL (Low Spatia Frequency LIPSS) generation is caused by the interaction of the incident laser field and the electromagnetic wave on the surface scattered by the initially rough surface [1,2]. On the other hand, explaining the emergence of HSFL (High Spatial Frequency LIPSS) patterns and their periodicities is more challenging.

Aim: We investigated laser-induced periodic surface structures (LIPSS) generated on indiumtin-oxide (ITO) thin films with femtosecond laser pulses in the infrared region between 1.6 and 2.4 μm central wavelength.

Methods: For our experiments, we used infrared, 70-fs pulses with wavelengths between 1.6 and 2.4 μm at 10 kHz repetition rate and with pulse energies between 9 and 15 μJ from an optical parametric amplifier. The 120 nm thick conductive indium-tin-oxide (ITO) thin film was deposited onto a 1 mm thick silica glass plate. The laser-treated areas and the formed LIPSSs were inspected with a scanning electron microscope. We performed element analysis of the periodic structures using energy dispersive x-ray spectroscopy. For supporting simulations we calculated the distribution of the electric field inside the ITO with Lumerical FDTD Solutions software.

Results: We observed primary HSFLs with periodicity between 150 and 300 nm with an orientation perpendicular to the laser polarization. These periodicities follow the previously reported $\lambda/10$ dependence at unprecedented IR wavelengths. SEM images confirmed that similar periodic structures appeared on the the glass substrate under the ITO layer. Secondary LSFL formations with 2 μm periodicity appeared with orientation parallel to laser polarisation. FDTD simulations showed similar periodic absorbed energy patterns that correspond to the experimental results.

Conclusions: We concluded that the initial surface roughness of the ITO layer, and the field localization in the pits lead to a periodic absorption of the laser pulse energy that creates the periodic structures and even periodic material ablation from the substrate.

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Keywords: femtosecond, optics, LIPSS, light-matter, ablation

Laser-induced ultrafast currents in dielectrics enhanced by iridium nanoparticles

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Nowadays the conventional electronics is reaching its limit in speed of about 1 THz. A new grade of optoelectronic devices which would operate thousands or million times faster, in the PHz regime, might come. These devices are all based on the ability to control currents on few-femtosecond time-scales [1, 2, 3]. Using few-cycle carrier-envelope phase (CEP) stabilized laser pulses it is possible to create current pulses by exciting charge carriers in the metal-dielectric-metal (metal-semiconductor-metal) interface. This effect is known as ultrafast current generation in dielectrics and it can be induced by pulses as weak as 300 pJ [3]. Generally little gain from simple dielectric targets is hindering progress towards applications of this current control effect. Therefore, new generation of targets needs to be examined. In this work we are investigating potential boost of this effect exploiting intensity enhancement on nanoparticles. Iridium nanoparticles are built in a matrix of dielectric using atomic layer deposition technique. On these substrates gold electrodes were patterned, which had a small slit between the two electrodes which we illuminated with few-cycle laser pulses up to 2.5 nJ (corresponding to the field strength of 0.33 V/Å on target) at 80 MHz repetition rate. CEP dependent current is detected in the connected electrical circuit using lock-in amplification.

Conclusions: Performing ultrafast current generation in iridium-nanoparticle-doped dielectrics and detecting the CEP dependent currents using the oscillator laser pulses we demonstrate order of magnitude enhancement of the current yield by regulating the concentration of the iridium nanoparticles in Al₂O₃ composite systems. This opens the door towards investigating future ultrafast PHz-bandwidth devices.

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Keywords: current control, ultrafast phenomena, dielectrics

Gamma radiation and radon concentration in Hungarian dwellings

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Introduction: The radioactivity is a natural characteristic of our environment. Everything, including our body, is radioactive at a certain level. Some materials are more radioactive than others. Normally, people spend the largest fraction of their time within buildings. Therefore it has significance that the level of indoor radiations is typically higher comparing to the outdoor level. This indoor radiation originates from the radioactivity of building materials and the direct contact between the soil and the underneath part of the building.

Objective: Reference level exists only for the radioactivity of building materials and average annual indoor radon concentration. Hence it was needed to derive a reference level for indoor gamma radiation and to describe an assessment method. There was also no guidance on short term radon measurement but the interest and necessity grows rapidly on it.

Methods: We have data regarding the indoor gamma radiation level of 807 buildings. Detailed gamma radiation survey was done in 436 buildings. The total number of recorded gamma dose rate measurements is about 14,000. These were done mainly by active dose rate meters and in some cases by passive detectors. We made a survey for outdoor gamma radiation as well. Short term radon measurements were also made by active instruments in 271 buildings, which results were compared to 486 long term radon measurements data. Detailed statistical analysis was made from our results.

Results: We obtained that the indoor gamma radiation level is about 1.5 times higher comparing to the outdoor level. There is a difference in radiation levels depending on the presence of slag in the building structure. This ratio is only 1.2 in case of building, where slag was not built in and 1.8 where slag was built in. The highest values were measured when the floor space was filled with slag and only parquet was laid over it. The results of short term radon measurement were comparable to long term data. Our analysis showed that the radon level changing tendency follows typical phenomena, which can be used to assess the radon risk potential. Using our results, we determined some minimal criteria for short term measurement. We also developed a formula for the determination of the indoor radon potential.

Conclusions: The source of elevated indoor gamma radiation level is almost only the presence of slag with higher radioactivity built-in into the building structure. But the level of increment remains mostly within on acceptable level. According to our experience, the duration of the short term radon measurement should be at least 3 days long, even by closed conditions. The radon level growth speed can be a good indicator for indoor radon risk but not enough. We obtained better results when we also used the average and maximal radon level to characterize the indoor radon potential.

Keywords: gamma radiation, indoor radon concentration, radiation exposure, building materials

Determination of Tuning Efficiency of Diode Lasers via Photoacoustic and Direct Absorption Measurement

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Introduction: Photoacoustic Spectroscopy is one of the most reliable methods for measuring gas or aerosol concentration nowadays. The fundamental of the signal generation is the modulation of the absorbed light energy in the sample. The gas flows through the photoacoustic cell which is basically an acoustic amplifier of the sound generated in the sample, a noise filter and an isolator from the outside world. Laser light is propagating through the resonator part, and because of the modulation of the laser, a pressure and a temperature wave are generated in the sample. The pressure fluctuation (i.e. the intensity of the sound) is proportional to the concentration and can be detected with a microphone. After the Fourier-transformation of the microphone signal the photoacoustic signal is the Fourier component's amplitude which frequency is equal to the laser modulation frequency [1].

In photoacoustic instruments fiber-coupled DFB diode lasers are very convenient light sources and therefore widespread because of the easy handling, the relatively high power, proper beam properties and the small size. The wavelength of a DFB diode laser is determined by the diode temperature and by the driving current as well. Furthermore, the wavelength response varies with the modulation frequency in current driving mode counter to power response. The modulation frequency dependency of wavelength tuning is described by the Tuning efficiency [2]. This feature plays an important role in photoacoustic modelling.

Methodology: The tuning efficiency could be determined by combined photoacoustic measurement and photoacoustic modelling based on absorption measurement. The calculations are made with an iterative method which stops when reaching a good overlap between the measured and the calculated spectra.

Results: At lower modulation amplitudes the tuning efficiency determinations works well, and the results are in good agreement with the Fabry-Perrot interferometer measurements.

Conclusions: The method works for lower modulation amplitudes. In case of higher modulation amplitudes the algorithm must be improved and the tuning efficiency's modulation amplitude dependency requires further investigations.

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Keywords: *Photoacoustics, Photoacoustic Spectroscopy, cell constant, tuning efficiency*

Szikragenerátor áramlási terének hatása nanorészecskék méreteloszlására

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Bevezetés: A nanorészecskék (NR-ék) gázfázisú előállítására használt szikrakisüléses generátor (Spark Discharge Generator, SDG) egy olyan berendezés, amelynek működése két elektród felszínének nagyfeszültségű és nagyáramú kisülések hatására, áramló gázban történő ablációján alapul [1]. Az eljárással előállított NR-ék mérete jellemzően lognormális eloszlást követ, amelyet a betáplált energia, a szikra ismétlési frekvenciája és a vivógáz térfogatárama határoz meg [2]. Ugyanakkor a térfogatáram nem határozza meg egyértelműen az SDG-ben kialakult áramlási teret.

A szakirodalom szerint számos SDG kialakítás létezik, amelyekben a vivógáz áramlási viszonyai eltérők. Ugyanakkor az áramlási viszonyoknak a NR-ék keletkezésére és méreteloszlására gyakorolt hatása nem ismert. Munkánk során ezüst NR-éket állítottunk elő SDG-ben, és szisztematikusan vizsgáltuk a különböző gázáramlási geometriák, valamint az ezeket jellemző áramlási paraméterek hatását a keletkező NR-ék méreteloszlására.

Módszer: Kísérleteink során a vivógáz hatását állandó körülmények mellett, három eltérő geometriában vizsgáltuk, – az elektródok helyzete és gázbemenet viszonya alapján kereszt-, koaxiális- és vegyes áramlási geometriában – változtatva a bejövő gáz és az aeroszol kivezetés szikraközkhöz viszonyított pozícióját és távolságát, valamint a befúvás és kivezetés irányát, 1 és 10 slm közötti térfogatáram tartományban. A keletkező NR-ék méreteloszlását SMPS (Scanning Mobility Particle Sizer, TSI 3082) segítségével, az áramlási tér 3D-s szimulációját pedig COMSOL Multiphysics® környezetben végeztük el.

Eredmények: A legnagyobb átlagos NR méretet és koncentrációt a koaxiális, míg legkisebb NR-éket a keresztirányú áramlási geometriában mértük. A vivógáz szikraközthől mért ki- és bevezetési távolságának méreteloszlásra gyakorolt hatásának vizsgálatával igazoltuk, hogy a szikrázáshoz közeli gázutak eredményezik a legkisebb részecskéket. A gázutak elektródaközthől való távolításával a NR-ék átlagos mérete 10 nm-rel nőtt, a további távolítás viszont nem eredményezett szignifikáns változást. A tendenciát a részecskékre jellemző tartózkodási idő segítségével kvalitatíve magyaráztuk. Az áramlási irány megfordításával a méreteloszlás anizotropikus jellegére derült fény, amelynek lehetséges okát tárgyaltuk.

Következtetések: Adott SDG-ben három, markánsan különböző áramlási geometriát vizsgálva megmutattuk, hogy a kamrát elhagyó NR-ék méreteloszlása függ az áramlási tértől, amelyet a vivógáz térfogatárama nem határoz meg egyértelműen. Eredményeink szerint a vizsgált tartományon a szikraközben kialakuló áramlási sebességnek kis szerepe van a részecskék méretének fejlődésében, a kapott méreteloszlás a tartózkodási idő bevezetésével együtt értelmezhető.

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Kulcsszavak: szikragenerátor, nanorészecskék, aeroszol, áramlás, CFD szimuláció

MéRNÖKI anyagok és technológiák I.



Engineering Materials and Technologies I.

Digital Innovation and Design Science Research: The State-of-the-art Review and Integrated Innovation Strategies Framework

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Digital Innovation (DI) is the use of digital technologies during the process of innovation or as the result of innovation. DI is a dominant research topic in the fields of information systems (IS). As digital innovation has a vital importance for organizations, there is a need for engineering of it and identifying the research areas and contributions to fully understand its concept and applicability. Design Science in IS has seen a great attention as a research methodology and we see a proper correlation between Design Science Research (DSR) and DI and claim that applying DSR concepts will allow the method for engineering of digital innovation to have practical relevance and rigor. Thereby, in this paper, we perform a systematic literature review on papers with a special focus on DSR published in the well-known journals and IS conferences from DI research streams over the last decade from 2010 till 2020. We analyse papers regarding three research questions which allow to get the overview of the current research focus on DI.

Results: The result shows that the authors not only concentrating on researching the capabilities and practices of DI, but also they propose tools and frameworks needed to support DI in organizations. Based on the study, our contribution is that we come up with an integrated innovation strategies framework to encompass innovation categories in order to understand creation, transfer, and generalization of digital innovation ideas.

Conclusions: While we see the huge amount of interest on DI research from IS scholars, there is still scarcity in terms of using DSR for the engineering of DI. We shed light on the existing research works considering DI and DSR synergy. The proposed new framework as a result of this study integrates innovation [1] and design [2] strategies and it allows to understand creation, transfer, and generalization of DI ideas.

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Acknowledgements: This paper was prepared thanks to Industry-Academia Innovation Institute at ELTE.

Keywords: *Digital Innovation, Innovation Engineering, Innovation Management, Design Science Research, Information Systems*

Parametric sensitivity analysis of Venturi roofs' ventilation performance with 2D CFD simulations

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Natural ventilation (NV) can play an important role of energy consumption reducing in industrial buildings. Current researches provided that heating, ventilating and air conditioning (HVAC) can use up to 60% of a building's energy demand. With this significant proportion, the development of an optimal passive air conduction system (PACS) is crucial for better natural ventilation, hence for more energy and cost effective maintenance. The presented research conducted a parametric investigation about the sensitivity of a Venturi roof's geometrical dimensions. The Venturi roof concept uses the so called 'Venturi effect' to create a low pressure zone above the outlet openings, and extracts the exhausted air from the interiors. This work focused on the dimensions of this low pressure zone with 2D CFD simulations. Three geometrical aspects were taken into account (height, width, steepness) with three values of each, therefore, 27 model variations were generated parametrically for a sensitivity analysis.

Results: The results showed that the lowest and highest ventilation performance was 1.94 h^{-1} and 6.64 h^{-1} air change rate, respectively. This means, that almost 350% improvement could be obtained with the proper optimizations process. The best version has middle values of the height and the width of the pressure zones, but the steepness was more effective with the lowest value on the Venturi roof.

Conclusions: The research points out that there is an optimal case in a Venturi roof design, and the width and the height dimensions need to be selected as an optimized solution for the base geometry. The steepness of the Venturi roof regulated the amount of the pressurized air, which will create the low pressure zone. If the Venturi roof conducts too much air volume through the compression zone, the air will not be able to serve its purpose, and it will recirculate because of the ram effect. Therefore, the steepness should be a lower value (15° in the investigated situation) for proper ventilation work. In general, the research proposed a parametric method for geometrical optimization of PACS' sub-parts, and proved, that CFD simulations can support the architectural or engineering design phase effectively for natural ventilations. In the future, the 2D results should be investigated in 3D simulations also, to identify the limitations of the selected natural ventilation system.

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Keywords: CFD, natural ventilation, Venturi roof, PACS, parametric design

The importance of personal protective equipment for work on the electricity grid

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Nowadays, live-line maintenance is one of the most common methods to repair and maintain energized conductors in the power grid. However, there are cases, when one system of the double-circuit transmission line should be switched off and grounded. Due to the capacitive and inductive coupling of the live parts, voltage and current may also be generated in the passive side, which can be dangerous. Due to similar effects, electricity may also appear in the switched-off medium-voltage grid, so special attention must be paid for personal protective equipment during any maintenance work.

In this research, I introduce the different coupling types. Using the equations, I have built a computer model to calculate the magnitude of the induced voltages and currents in the passive side of high voltage transmission lines that occur in several cases. To measure the electrical parameters as a reference, I present two different laboratory arrangements and the experimental results. Using COMSOL MultiPhysics software, I have determined the voltage that occurs on a pole-mounted switch in the medium voltage network under different settings while repairing a damaged earthing conductor.

To conclude this research, I assess the risks from the results of measurements and modeling. I describe the options of required personal protective equipment and its applicability on both high voltage transmission lines and medium voltage networks, as experience has shown that in case of inattention or fault, serious accidents can be avoided by taking proper preventive actions.

Keywords: induced voltage and current, COMSOL, protective methods, laboratory measurements

A Design Science Research Approach to Enable Knowledge Discovery in Processes that Rely on Machine Learning

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The field of Artificial Intelligence (AI) has become a crucial part of Industry 4.0, covering many aspects from process improvement to product improvement. One reason that enables AI to shape the industry so rapidly is its wide applicability. Nonetheless, most of the applications of AI are still developed in the form of tools. This is now changing, as the industry is increasingly understanding the capability of AI, and applying it more as an intelligent agent, in the constitution of complex automation systems. Knowledge Discovery is one of the main strengths of AI, and Machine Learning (ML) in particular, and can help the humans-in-the-loop to discover phenomena and relations which otherwise would remain unexplored, due to the complexity of processes and the presence of unstructured or high dimensionality data sources. This process of knowledge discovery can be some times very tricky and daunting, as the field of data science is still maturing. Given the rapid and dissimilar application of AI over different fields, a generalized approach would be helpful in many research areas.

Results: Design Science Research (DSR) can play a fundamental role by helping to find structured ways of obtaining generalized knowledge. DSR provides different methodologies to tackle issues that may arise in different design aspects [1], from problem awareness to method creation to evaluation and conclusion. Finally, through the set of methods and guidelines, the obtained knowledge can be helpful for creating a framework which can be further generalized for knowledge discovery and re-usability. In this paper we present an application of ML for early fault detection and prediction in the production of Micro-electromechanical systems (MEMS) sensors. MEMS manufacturing system is a highly complicated process during which huge amount of process data is generated that further contributes to a large database. Due to the high dimensionality and non-linearity of the data, it rather becomes a complicated and cumbersome task which is why applying ML makes sense. As this is still a fairly new field, an efficient way to apply ML is desired. Moreover, the information and the awareness gained from application of ML is not always well communicated and/or re-used. This is why we propose to use DSR method to generate prescriptive or descriptive knowledge which can guide fellow researchers.

Conclusions: We use a Design Science approach to investigate the problem and identify what the fundamental properties of our concrete artifact (product) should be. Further, we show how the gained insight helped to improve the production process. In the end we propose an improved method structure for early fault detection.

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Keywords: Design Science Research, Artificial Intelligence, Machine Learning, Knowledge Discovery, Micro-electromechanical systems

Use of API Technology to Promote the Chatbot Knowledge Base and Integration within MOOC platform

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In the past year's chatbot technologies have proven to be effective modern Information Communication Technology applications that perform many different virtual tasks [1]. By applying Natural Language Processing chatbots can communicate and assist the user to perform some tasks in a specific domain [2]. This research aims to develop a chatbot by using the currently available technologies that promise convenient accessibility means for the user such as the Facebook Messenger platform and integrate the chatbot with a course on the Canvas MOOC platform to examine the potential of utilizing the chatbot in answering the participants' queries about the course. The selected course content was themes of Informatics. Another objective is to investigate the possibility and reliability of using API technologies to connect developed chatbots to the course content on the Canvas MOOC platform and use the API communication approach to expand the Chatbot knowledge base by retrieving the appropriate data from third-party knowledge centers such as Wikipedia.

Results: Most of the participants of the course engaged with the chatbot through the Facebook Messenger platform by using their handy devices. Indicating that accommodating the chatbot in a widely used messaging platform such a Facebook Messenger is considered a highly convenient and compatible way of accessibility. API Technology showed to be an effective way of communications and data transferring between apps.

By using an API technology an efficient connection was established between chatbot and Course content on the Canvas MOOC Platform and Wikipedia data center. This was due to the variety, richness, manipulation capability, and format of the data that an API can transfer. Also, Wikipedia API appeared to provide a vast root of information for expanding the chatbot knowledge base. Not all the inquiries directed to the chatbot were in the scope of the course content. Some participants were questioning the personality of the chatbot and were curious about the persona of the conversational agent. This is an implication that a chatbot that has been endowed with some personality traits is stimulating and more likely to be accepted by the learners.

Conclusions: The availability of sophisticated methods for accessing the chatbot is significant for having constant and convenient use of the chatbot technology, in this study, we used the Facebook Messenger platform which has shown to be a well-accepted and user-friendly platform for interacting and messaging the chatbot. API technology produced a robust connection and data exchange between the third-party applications (Canvas MOOC platform and Wikipedia knowledge center) and the chatbot. Despite asking questions about the course the participants were asking inquiries concerning the personality of the chatbot, implying that the future design of the chatbot should consider the personality aspects of these intelligent conversational agents.

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Keywords: Chatbot, Conversational Agents, Pedagogical Agents, Intelligent Agents, API, Canvas, MOOC

Impact study of distribution network flexibility

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Background: During the implementation of the Clean Energy Package, new services and market frameworks will be built to achieve climate protection goals, including particularly the increase of the share of renewable energy sources. One of the most important elements is the emergence of flexibility services and the flexibility market. Another important element of the problem is the development of the cooperation model between the transmission system operator and the distribution system operator. I analyzed the sources of flexibility (producers, prosumers, storages, active network elements) connected to the distribution network, and interpreted the functions of the potential management platform.

Keywords: flexibility, distribution network, renewable energy sources, prosumers, active network elements

Klinikai orvostudományok II.



Clinical Sciences II.

Effect of Desethylamiodarone on Triple Negative Breast Cancer

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Triple-negative breast cancer is considered to have a poorer prognosis than other types of breast cancer, mainly because there are fewer targeted medicines that treat triple-negative breast cancer. Previously, we showed that desethylamiodarone (DEA), a major metabolite of the widely used antiarrhythmic drug amiodarone has anti-neoplastic, anti-metastasizing and direct mitochondrial effects in B16F10 melanoma cells.

In the present study, we suggest that DEA may have cytostatic potential even on triple negative breast cancer. For our experiments we used a Triple Negative (TN; 4T1) and a hormone receptor positive (HR+; MCF7) breast cancer cell lines. As expected DEA was more effective on MCF-7, HR+ cells, than it was on the TN, 4T1 cell line. However, it significantly reduced viability, colony formation and invasive growth at physiologically achievable concentrations in both cell lines. Apoptosis, induced by DEA, was detected by annexin V labeling, the shifting of Bax/Bcl-2 ratio, PARP-1 cleavage and caspase-3 activation. DEA did decrease the mitochondrial transmembrane potential, as assessed by JC-1 dye and fluorescence microscopy. It also induced mitochondrial fragmentation, as visualized by confocal fluorescence microscopy. Novel compounds significantly interfering with the mitochondrial energy production may have therapeutic value in triple negative breast cancer. DEA decreased maximal respiration, ATP production, coupling efficiency, glycolysis, and non-mitochondrial oxygen consumption not only in MCF-7 cell line, it had significant effect on these values in 4T1-TNBC cell line, too, measured by a Seahorse cellular energy metabolism analyzer.

All these data indicate that DEA may have potentiality in the therapy of TNBC, however the therapeutic dose has to be determined in animal models since the cell culture models translate poorly to the human clinical practice.

Keywords: TNBC, cancer therapy, amiodarone; apoptosis, Bax/Bcl-2, colony formation, invasive growth, $\Delta\Psi_m$, mitochondrial energy production

Perinatal high-fat diet results in premature aging of body weight regulation in offspring

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Introduction: Human and animal studies indicate that the obesity epidemic could be in part explained by early life exposure to maternal obesity, that affects 20% of all pregnancies. Maternal obesity shortens offspring's life and health span, accelerates progeny aging. The perinatal period is known to be critically important in the development of the regulatory centers of the food intake and the metabolism leading to changes in later life. The trend of middle-age obesity followed by a loss of body weight and muscle mass (sarcopenia) is similar in all mammals suggesting a role of regulatory factors. Both of them present global health burden and could worsen the morbidity and mortality. We assume that not only middle-aged obesity but also aging anorexia/sarcopenia develop earlier in perinatally overfed offspring.

Aim: In our animal models, we aimed to clarify whether the perinatal maternal high-fat diet could accelerate the aging of the central regulation of energy metabolisms in the offspring resulting in earlier onset of obesity and aging anorexia/sarcopenia. We also aimed to analyze the potential contribution of the important peripheral satiety-inducing hormone, cholecystokinin (CCK) to these changes of body composition.

Methods: We investigated the long-term changes of offspring's body weight, food intake (by automated Feed-Scale system) and resting metabolic rate (by OxyletPro indirect calorimetry) in four nutritional models of male Wistar rats. We applied normal or high-fat post-weaning diet in offspring of standard chow or high-fat diet-fed dams. The maternal diet was carried out through gestation and lactation. We also tested the anorexigenic effect of intraperitoneal injection of CCK in our four groups at the age of 7-8 months (early middle-aged rats).

Results: We observed faster and increased body weight gain in offspring of high-fat diet-fed dams especially in case of postnatal high-fat diet. We also found that these offspring of obese dams had lower metabolic rate and increased food intake that could account for their weight gain. In the background of the programmed hyperphagia we demonstrated the lack of CCK-induced food intake suppression in offspring of obese dams. The aging anorexia and sarcopenia also developed earlier in these offspring.

Conclusions: Maternal high-fat diet predisposes to decreased energy metabolisms and hyperphagia due to weaker effect of CCK, that promote early development of obesity in the offspring, especially in case of postnatal high-fat diet. The obesity could facilitate the involution phase with aging anorexia/sarcopenia.

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Keywords: perinatal programming, obesity, sarcopenia, aging

Covid-19 pandemic in the Southern Transdanubia region depicted using a dynamic interactive map

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Introduction: Covid-19 burdens humankind with an evolving challenge on a global scale regarding infection prevention. From January 2020, 236,721,173 positive cases occurred up through today, with a corresponding 4,834,102 deaths [1]. In our region (Southern Transdanubia of Hungary), diagnostic PCR testing was first initiated on 17 March 2020. Currently, 76,466 positive cases have been confirmed throughout our region [2], of which, the second wave of the pandemic (which involves the time spanning from 19 August 2020 up through 31 December 2021) ushered in the first real challenge impacting our healthcare and surveillance system.

Aim: Our aim was to construct a digitalized dynamic map, which reflects crude and population density stratified data regarding the test sum, highlighting positive case ratios. Viral copy numbers and age distribution regarding the tested cases were also depicted on the map.

Methods: We generated a database and listed 73,567 tested cases between 19 August and 31 December 2020. In addition to PCR test results for SARS-CoV-2 positivity, we collected epidemiological, demographic, clinical, and outcome data, including age, presence of symptoms, and absolute quantification analysis results of the SARS-CoV-2 PCR targets detected during the epidemic period. All PCR tested cases were marked on a geographic map representing the Southern Transdanubia region according to the residence of recognized subjects. Color coding was used to visualize proportionate to the number of cases found in the settlement. Two vector layers (originally from geofabrik.de and openstreetmap.hu) were merged to create our map with the aid of mapshaper.org. Data were reshaped and processed in JSON, the timeline and graphical results are based on AmCharts.

Results: In the use of registration and digitalization regarding demographic and healthcare data of tested individuals in our region, we were able to demonstrate a dynamic, well-detailed analysis of the epidemic transmission. Age was statistically significant and related to development of symptoms and viral load. Reproduction rate of SARS-CoV-2 was 1.7 at the onset of our study period and showed an increase with the appearance of the viral variants. Comparative graphical analysis exhibited differences of the viral load of infection, the viral variant type, the presence of clinical symptoms and age distribution among the positive tested cases dependent upon the immunized status.

Conclusions: Detailed and precious visualization and data analysis can uncover and drive the attention towards key factors which maintain disease transmission dynamics. Aggregated data reflects the phase of the epidemic curve and prove helpful in suggesting the quarantine period and effective primary preventive measurements. The immunization status of the population fundamentally determines the characteristics of the epidemic outbreak.

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Keywords: COVID-19, dynamic map, RT-PCR, SARS-CoV-2

Risk-based screening for diabetes mellitus and complications

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Introduction: Obesity is the main cause of insulin resistance and type 2 diabetes mellitus (DM). This condition and its cardiovascular complications present global public health burden, therefore early diagnosis is of utmost importance. Since half of all adults with DM are estimated to remain undiagnosed, it is essential to develop reliable and cost-effective screening methods. As a member of the local team of the Hungarian Medical Students' Association I organize free regular screening programs in the population of Pécs.

Aim and Methods: I aimed to improve the effectiveness of a validated risk-based questionnaire, the Finnish Diabetes Risk Score (FINDRISC) completed with simple tools for screening the risk of DM and cardiovascular complications. The new screening package contains measurement of blood pressure, capillary random blood glucose (CRBG), waist-to-hip ratio, visceral fat percentage (using bioimpedance device) and estimation of arteriosclerosis status (with a pulse oximeter device). Upon ethical approval, we started the investigation of adult volunteers (age >18 years) in Pécs from September 2019.

Results: Until now, 36 from 117 (45% men) participants had a FINDRISC score of ≥ 12 points. Four of them have been newly diagnosed with DM based on CRBG higher than 11.1 mmol/l. The remaining 32 participants were invited to undergo an oral glucose tolerance test. In the group of subjects with a FINDRISC score of <12 points 22 people had CRBG higher than 6.1 mmol/l, therefore they all were recommended to undergo fasting blood glucose testing. Among subjects who had <12 points 18 volunteers showed high visceral fat percentage based on bioimpedance measurement and 38 participants had high waist-to-hip ratio, 13 people showed visceral obesity based on both methods. Since they all had at least one additional risk factor (e.g. hypertension, age >45 years, positive family anamnesis), a fasting blood glucose test was recommended for these obese persons. I found 24 untreated hypertension patients. In addition, pulse oximeter indicated vascular dysfunction in 12 people without hypertension and risk for diabetes. My new screening package identified high cardiometabolic risk in 47 people from the group of subjects with a FINDRISC score of <12 points.

Conclusions: The FINDRISC questionnaire completed with the screening tools is able to identify high risk patients more effectively.

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Keywords: FINDRISC, screening, diabetes mellitus, obesity, cardiovascular risk

New estrogen-like compounds with neuroprotective potential in an $A\beta_{1-42}$ -induced neurotoxicity model of Alzheimer's disorder

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Introduction: Our previous studies demonstrated that 17β -estradiol (E2) has a neuroprotective effect against $A\beta$ -induced neurotoxicity on basal forebrain cholinergic neurons (BFC) in an animal model of Alzheimer's disorder (AD) [1]. This was due to its non-genomic actions, therefore we identified several estrogenic compounds, the so called "Activator of Non-Genomic Estrogen Like Signaling" (ANGELS), which might reproduce ameliorative estrogen actions through the non-classical pathway without estrogenic side effects (risk of stroke and breast, uterine cancer) [2].

Aims: To find at least one ANGELS compound without estrogen-like side effects and with a neuroprotective potential in a neurotoxic animal model of AD.

Methods: An assortment of the steroid molecules was achieved previously by *in silico* screening [3]. Eight molecules were tested for classical effects *in vitro*, investigating their estrogen responsive element (ERE) activating potential on ERE-luciferase transfected MCF-7 cells. The most effective candidates were tested for uterotrophic effects by measuring the uterus weight on ovariectomized mice. Finally, the neuroprotective effects of ANGELS compounds were examined *in vivo* after $A\beta_{1-42}$ microinjection to the BFC. The $A\beta_{1-42}$ -induced cholinergic fiber loss in the somatosensory cortex (SC) and cholinergic cell loss in the BFC were determined with quantitative- and immunohistochemistry.

Results: We observed faster and increased body weight gain in offspring of high-fat diet-fed dams especially in case of postnatal high-fat diet. We also found that these offspring of obese dams had lower metabolic rate and increased food intake that could account for their weight gain. In the background of the programmed hyperphagia we demonstrated the lack of CCK-induced food intake suppression in offspring of obese dams. The aging anorexia and sarcopenia also developed earlier in these offspring.

Results: From the tested ANGELS we found three molecules without any classical ERE mediated actions and uterotrophic side effects. These compounds significantly restored the $A\beta_{1-42}$ induced cholinergic fiber loss in SC and they did not affect the number of cholinergic cell bodies in BFC.

Conclusions: The tested ANGELS molecules proved to be neuroprotective against $A\beta_{1-42}$ -induced neurotoxicity, at the same time lacking estrogenic side effects *in vitro* and *in vivo*. We believe that these compounds will provide a novel approach in AD therapy.

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Keywords: estradiol, ANGELS, neuroprotection, Alzheimer's disorder

A közeli kortársoktatás hatékonyságának vizsgálata alapvető sebészeti készségek oktatásakor

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Bevezetés: A kortársoktatás egyre nagyobb népszerűsége tesz szert az orvoscépzésben. Az irodalom egyetért a módszer előnyösségéről, de a hatékonyságát objektív módszerekkel vizsgáló tanulmányt nem találtunk. Kutatásunk céljából tűztük ki a közeli kortársoktatást hatékonyságának vizsgálatát alapvető sebészeti készségek oktatásakor.

Módszerek: A vizsgálatunkba 60 önkéntes hallgatót vontunk be, akik részt vettek egy alapvető sebészeti készségeket oktató 24 órás kurzuson [1]. A tanfolyam előtti felmérés eredményei alapján 6 db 10 fős tanulócsoporthoz osztottuk őket véletlenszerűen úgy, hogy az átlagos kiindulási pontszám azonos legyen. Minden csoport azonos kurrikulumot teljesített, 3 csoport esetében kortársoktató segítette a munkát. A kurzust követően a korábbival azonos vizsgát kellett teljesíteniük. A felméréseket anonimizált videókon rögzítettük, azokat vakon értékelte 3 független oktató standardizált, strukturált pontrendszer alapján. A statisztikai analízist Mann-Whitney és Wilcoxon teszttel végeztük.

Eredmények: Összességében javultak a hallgatói eredmények a kurzus elvégzésével (119,86 pontról 153,55 pontra $p < 0,01$). Azoknál a csoportoknál, ahol kortársoktató segítette a munkát, szignifikánsan nagyobb javulást értünk el (37,20 vs. 30,18 pont, $p = 0,036$). A különbség a sebészi csomózással kapcsolatos feladatoknál volt kiemelkedő (14,73 vs. 9,30 pont javulás, $p < 0,01$), a varrással (15,90 vs 15,46 pont) és laparoszkópiával (7,00 vs. 4,98 pont) kapcsolatos feladatoknál nem befolyásolta a fejlődést.

Következtetések: A kortársoktató jelenléte összességében pozitívan befolyásolta a hallgatók fejlődését. Kiemelkedő különbség a csomózási technikák kapcsán figyelhető meg, melyek oktatása nagyfokú személyre szabott figyelmet igényel, ami a kortársoktató jelenlétével jobban megvalósulhat.

Irodalomjegyzék:

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Kulcsszavak: NPT, sebészeti oktatás, RCT, szimulációs oktatás

Szinkrón és diakrón nyelvészet



Synchronic and diachronic linguistics

Corporate Social Responsibility Communication in Universities: A Case Study of Altinbas University

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Corporate Social Responsibility (hereinafter CSR) refers to voluntary practices that organizations implement to contribute to the society they are in function. Universities and research institutions can be mentioned as one of these organizations. CSR projects play a significant role for the institutions from the perspective of organizational image. The aim of this study is to examine how a university puts corporate social responsibility projects into practice and what the communication methods they use. Organizational communication of the institutions come into the scene at this stage because CSR projects are a part of the organizations' strategic communication and have a significant effect on organizational communication process. In this study, the literature review of corporate social responsibility and organizational communication will take place based on prominent thinkers of the field, including Carroll (1979), Weber (1947). To be able understand the communication activities of institutions, the method of this research has been chosen as a case study. The selected university for the case study is Altinbas University, a private university based in Istanbul, Turkey, and its corporate social responsibility project named "Children's University".

Results: Possible results and conclusion of this research defined as a part of the organizational communication process, corporate social responsibility increases universities and research institutions' organizational image and recognition in the society. Furthermore, it supports the trustworthiness and stability of the institutions on the part of shareholders.

Keywords: corporate social responsibility, organizational communication, organizational image

Code-switching in English as a lingua franca in ASEAN context

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English is the official language of the Association of Southeast Asian Nations (ASEAN) to be used among ASEAN countries as well as to communicate with people from non-ASEAN countries. Coming from diverse language background, and having different levels of English proficiency, English speakers from ASEAN countries use a variety of strategies to keep their conversation flowing, and not to involve a communication breakdown while communicating in English. In some previous studies on English as a lingua franca (ELF), code-switching was found as one type of strategies to make communication successful in ELF talks. ELF speakers use other languages in their talk for various reasons such as to appeal for assistance, and to signal culture. This study focuses on code-switching of English speakers from ASEAN countries while communicating in English with each other. Participants were seven dyads, and each dyad had English speakers from two different ASEAN countries. The data was from the video recordings of each dyad talking about food or cooking together, and retrospective interviews with each participant while watching the recorded video together with the researcher. Close and in-depth analysis was carried out on instances of code-switching by the participants in the data collected.

Results: It was found that participants code-switched not only to their language, but to their interlocutors' language as well as to additional languages. Reasons for code-switching were also different such as signalling culture and appealing for assistance. It was also found that code-switching of a participant did not hinder the interlocutor's understanding, and in some cases, code-switching even enhanced understanding.

Conclusions: The study shows that ELF speakers from ASEAN countries code-switch to different languages, but their code-switching does not hinder understanding and even enhances understanding between the speakers.

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Keywords: ASEAN, ELF, code-switching

Discourse markers over time – The word *hát* 'well/so' in literary works

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In the 1980s, there were only scattered studies on Hungarian discourse markers. Since then, numerous papers have been published on the grammaticalization and the extensive recent use of them.

The multifunctional discourse marker *hát* 'well/so' is considered to be the most frequent one in casual conversations [1], but to date it has not been examined in literary works [2]. A new research [3] used a system of ten functions of *hát*, partly based on a read-aloud experiment pilot study. In my presentation, I would like to investigate a short story by Hungary's national poet Sándor Petőfi and a play by contemporary playwright János Háty to examine these functions. The corpus was annotated by five independent annotators.

Results: The analyses identify notable differences in the frequency of functions between the two authors. The most salient of them is that the *confirming final* (hf) emerged in the latter text, where annotators also found more *straightforward* and *uneasy* (h3) *hát*.

Conclusions: The results need to be interpreted in the context of the grammaticalization of the discourse marker. I will also provide suggestions for further research.

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Keywords: *discourse markers, hát 'well/so', literary works, ReALIS.*

Linguistic analysis of *I don't know* in guided interviews conducted with individuals with schizophrenia

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Introduction: Individuals with schizophrenia reportedly exhibit severe speech and mentalizing difficulties. The study of schizophrenic speech is a multifaceted research field, recently requiring a functional linguistic approach as well. In order to understand the nature of patients' linguistic dysfunction, the primary task is to identify the occurrence of linguistic disturbances during mentalizing processes. As speech can be considered the reflection of thoughts, the analysis of schizophrenic speech can also provide useful insight into patients' mentalizing skills. The study being part of an interdisciplinary research is based on guided interviews related to Hemingway's short story entitled *The End of Something* [1].

Aim: The primary purpose of the research is to describe the language use of patients with schizophrenia and classify typical recurring mental state terms associated with their mentalizing capacities. The present case study particularly focuses on the varied functions and use of the mental state term *I don't know*.

Material and Methods: The corpus includes 20 guided patient interviews, which were digitally recorded and transcribed. The qualitative analysis was performed with the help of Sketch Engine corpus analysis tool, which assisted in the identification and classification of collocations associated with the interviewees' mental processes.

Results: The results show that *I don't know* has multiple communicative functions ranging from the expression of uncertainty to a strategy of avoidance in the schizophrenic language use [2].

Conclusions: Hopefully, the findings can offer some possible indications for psychotherapists how to detect linguistic impairments in schizophrenic speech and correctly interpret mental state terms, particularly *I don't know*, in order to improve mentalizing capacities in this patient group, thereby contributing significantly to therapeutic success.

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Keywords: schizophrenic speech, discourse analysis, conversation analysis, mentalization, mental state language

Növény-metaforák az udmurt népdalokban

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Az utóbbi évtizedekben a metaforákat a nyelv, a gondolkodás és az észlelés kategorizálásának kulcseleméként tekintik, azaz a metafora nyelvi és mentális struktúrákat köt össze, összekapcsolja a valóságot, valamint a tudatot és a kultúrát.

Előadásom célja az udmurt népdalok kulturális metaforáinak feltárása és elemzése. Az előadásomban bemutatásra kerülő korpuszalapú vizsgálat elméleti kerete a kulturális nyelvészeti megközelítés [1]. Vizsgálatom korpusza folklór gyűjteményekben ([2], [3], [4], [5] és monográfiában [6] szereplő népdalok, valamint az általam terepmunkán gyűjtött dalok szövege. A korpusz kiválasztását az indokolja, hogy a népdalokban általában a közösség kollektív tapasztalatai tükröződnek, s nyelvi megfogalmazásuk gazdag metaforikus kifejezésekben. Előadásomban a növények reprezentációjában megmutatkozó kulturális metaforákat mutatom be néhány népdal szövegén keresztül.

Eredmények: A vizsgált népdalokban az almafa különböző céltartományokhoz kapcsolódhat, leggyakrabban a ROKONSÁGI VISZONYOK, A CSALÁD / HÁZ fogalmához kötődik, ezen kívül a vizsgált korpuszban AZ ALMA ELÉRÉSE MINT SZEXUÁLIS ÉRÉS kulturális metafora is megfigyelhető. A VIRÁG fogalom az udmurt népdalokban elsősorban az ÉLET és IFJÚSÁG asszociációs fogalmakkal jár együtt, s a virágok reprezentációja az alábbi főbb metaforákat mutatja: A VIRÁG MINT ÉLET, A VIRÁGZÁS MINT IFJÚSÁG, valamint A VIRÁG HERVADÁSA MINT A FIATALSÁG ELMŰLÉSE. A felhasznált korpusz alapján az is megállapítható, hogy a kulturális metaforák gyakran kapcsolódnak kognitív metaforákhoz, pl. JÓ - FELFELÉ IRÁNYULTSÁG, ROSSZ - LEFELÉ IRÁNYULTSÁG, HOSSZÚGÁS - [JÓ] - FELFELÉ IRÁNYULTSÁG, A KESKENYSÉG - [ROSSZ] - LEFELÉ IRÁNYULTSÁG kognitív alapú orientációs metaforákra utalnak [7].

Következtetések: A kulturális metaforák vizsgálata az udmurt nép gondolkodása módjának megértéséhez vezethet, s a tanulmány elméleti kerete további lehetőséget ad kultúrák közti komparatív elemzésre is.

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Kulcsszavak: kulturális nyelvészet, kognitív nyelvészet, kulturális metafora, konceptualizáció, udmurt népdal

Politikatudomány I.



Political Science I.

Institutionalist, Historical-Situation and Social Cleavage Theories of Joke Political Parties

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Introduction: Joke political parties are organic part of the western party systems, even though they constitute a marginal segment of science and in party researches.

Aim: The presentation would highlight and explain the emergence of the so-called joke political parties in different theories. The main focus is on the neo-institutionalist, the historical-situation and the social cleavage theories. The main goal of the presentation is to find the way how to fit the joke political parties in these theories.

Methods: The neo-institutional theory concentrates on the relationship between the political system, the electoral system and their effects on the emergence of the parties. The historical situation theories focus on the historical crises or tasks that systems have encountered at the moment in time when parties developed. The social cleavage theory relates parties to the broader processes of modernization. It is focusing on the deep conflict in the societies from the perspective of the national and industrial revolutions.

Results: If we observe the joke political parties carefully we can see that they're marginal, but common in majoritarian systems, quasi non-existent in proportional systems and existent (although not as common as in the majoritarian systems) in mixed systems, in which in some cases they can be real alternatives. Furthermore, we can say that the joke political parties are protest parties, thus crisis always affects them in positive way. It can be economic crisis, political crisis or crisis of the party system, joke political parties always gain voters. There are three periods in history when the number of joke political parties have been higher than in other periods. The energy crisis and the neoliberal turn, the regime changes in Eastern-Europe and the global financial crisis in 2008. From view of the social cleavage theory we can say the most relevant cleavages is the postmaterialist and the conflict between the winners and losers of globalization.

Conclusions: Joke political parties are related to economic, political even cultural crisis of the western societies. The three main theories affect the joke political parties simultaneously.

Acknowledgements: László János Doctoral Scholarship

Keywords: *joke political parties, neo-institutionalist, historical-situation, social cleavage*

Young democracy in Hungary - Was the Antall-administration determined to fall?

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There are several narratives on the Hungarian political transition around 1989/90. Some say that there was no wide supporter base for the change, and the whole procedure was based on US-Soviet background deals (Sarotte 2010). Others say that it was a nonviolent, but heroic revolution by the people (Fricz,2006). Was the society prepared for a democratic election? Did they desire a new political system? The study objects to finally seal up a gap and aims to help to end a debate; Whether the Antall-administration was determined to fall or not? Regarding that, there are two main questions. Was there a wide supporter base for the change in this period (Hungaricus, 2007)? How did Hungarian society evaluate political performance; did they prefer democratic values or decide based on their actual wellbeing (Vígvári, 1991)? Two approaches were used by answering the research questions. As a first step, a descriptive historical-economic method was introduced. A historical summary is crucial on the international and national processes around 1988-1994. An economic overview is a critical element, it must be shown how the situation changed in the period. The second method is a voter's behaviour analysis. The analysis draws the focus on the previously introduced questions. The citizen's mindset will be examined through a database, taken by the UofSG (1991-1993). The outcome was built on correlation analysis and logistic regression.

Results: The main findings are the following: there was no widespread social base for the change, most of the citizens were satisfied with their situation. The economic and political change was predestined due to the background deals of the superpowers. The Hungarian political transition was elite-driven. The citizens did not expect such a bad economic performance that happened during the Antall-administration. Most of the Hungarians evaluated political performance based on their wellbeing, abstract values, such as democracy, rule of constitutionalism etc. was not in their focus. The Antall government was predestined to fall.

Conclusions: As a conclusion, it can be pronounced that due to the elite-driven transition and the lack of widespread and organic civil movements the young democracy was sentenced to fail. Future studies can show how it affected later the upcoming Hungarian society.

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Keywords: political transition, behavioural analysis, political evaluation, Central-Europe, Cold War

The impact of the radical right on civil society in Sweden

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Sweden is one of the EU countries with the highest levels of community participation, volunteering and civil society organisations density. Today, around 80% of the Swedish population is a member of one or more organisations, but membership rates have started to decline over the last 20 years. Participation in associative activities results in the civic virtue of general reciprocity and the development of trust that underpins participation in modern democracy. The Scandinavian civil society is currently facing challenges that could lead to a decline in membership. The public institutions of the welfare state and the labour market are under pressure from economic problems, which also affect the civil society. Migration is also a challenge, as is the rise of the radical right parties and populism across Europe. With the growing success of populist parties, negative concepts have begun to be associated with the civil sector, particularly on migration. In Sweden today, the radical right is proving to be a major factor through the Sweden Democrats, who would cut off state and local support for anti-democratic, pro-violence, anti-Western and segregated religious communities and associations. The research aims to assess the impact of the local power of the Sweden Democrats on the number of civil society organizations. In this research, I examine the changes in the number of civil society organisations in Swedish municipalities between 2014 and 2018 (proportional to population). I explain the change by including demographic and political factors. To describe the relationships, I construct OLS models and a geographically weighted regression.

Results: Preliminary results show that in places where the Sweden Democrats are stronger, the number of civil society organisations has increased to a lesser extent compared to other municipalities. This factor is particularly strong in Southern Sweden. Indeed, when browsing the association databases of these municipalities, it is noticeable that there are only a few immigrant associations. A more rapid growth of civil society organisations can be observed in Northern Sweden, in which the presence of local parties partly plays a role.

Conclusions: The growing power of radical right parties can undermine the role of civil society organisations, which can be a major obstacle to the integration of immigrants and the formation of social cohesion.

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Keywords: Sweden Democrats, civil society, radical right, associations, migration

Új szereplők – politikai szocializáció a Momentum Mozgalom generációi körében

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Az 1990-es évek óta számos magyar fiatalok (15–29 évesek) politikai részvételével foglalkozó kutatás jelent meg, melyek hasonló konklúzióra jutottak; a korosztály tagjait nem érdekli a politika, kevésbé hajlandóak szavazni, csupán korlátozottan és kis számban jelennek meg a politikai életben, a szervezeti kötődés esetleges (Sebestyén 2019), a párttagság elenyésző a mindenkori fiatal korosztály körében (Bauer et. al 2016, Szabó A. 2015). A politikai identitások kialakításáért, tanításáért felelős legfontosabb színterek a (család, iskola) az államszocializmus óta hátrítják a politikai szocializációs szerepüket (Csákó 2004), a demokratikus politikai szocializáció diszfunkcionális működése, fragmentált, „mixed” jellege (Szabó I. 2006, Bognár–Szabó A. 2017) következtében az állampolgári és a politikai neveltetés részleges, melynek súlyos következményei lehetnek a politikai nevelésben. Ebben a deszocializált közegben időnként mégis megjelennek olyan – a politika iránt érdeklődő – fiatalok, akik esetében az elzárkózás helyett a politikai involválódást és az érdekérvényesítésben való részvételt választják. Az előadásban egy ilyen, országos szervezeti hálóval bíró, a Momentum ifjúsági szervezetével, a TizenX-el foglalkozom.

A szervezet tagjainak jelenlegi politikai aktivitásának megértésére egy retrospektív online kérdőíves kutatást készítettem 2021. kora tavaszán. Az online kérdőívből kapott minta (103 fő) kor, nemi megoszlás tekintetében megbízhatóan reprezentálja a TizenX 152 főt számláló tagságát. A kutatás célja, hogy megtalálja és beazonosítsa azon politikai szocializációért felelős szereplőket, melyek a politikai érdeklődést generálhatták és a későbbi részvételre is serkentően hathattak. Előadásomban azokkal a formális és informális politikai szocializációs színterekkel) és annak szereplőivel foglalkozom tehát, melyek érdemben járultak hozzá a korai politikai érdeklődéshez és amelyek a jelenlegi tagság politikai kultúráját, nyelvezetét, nézetrendszerét befolyásolták. A kutatás eredményeiből következtetéseket vonok le arra, hogy milyen fő jellemzői vannak azoknak a plurális-zárt politikai szocializációs utaknak (Szabó A.–Oross 2019), melyben az Y és a Z-generációkhoz tartozó magyar fiatalok politikai nevelése zajlik a 2000-es évektől kezdve napjainkig. Továbbá röviden kitérek arra, hogy a TizenX-ben aktív tagok politikai szocializációs mintázatai mennyiben egyeznek és térnek el a Momentum Mozgalom idősebb tagjai körében talált eredményekkel.

Nemzetközi tanulmányok



International Studies

Rise of authoritarian sharp power

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The upcoming discussion is a segment of a lengthy research which discusses the dichotomy between the concepts of soft and sharp power. While the original study analyzes how the authoritarian governments adopted a new, malign form of non-military influence, this particular piece concentrates on Russia and China and illustrates the core differences between the already established notion of soft power and newly emerged term of sharp power. This analysis will update academics on why the traditional understanding of soft power became either obsolete or does not adequately cover the methods of coercion used by authoritarian governments. I will argue that both Russia and China have developed a specific political conduct domestically, which includes censorship and disinformation. When they apply these methods to international affairs, their foreign policy efforts no longer fall into the category of soft power. It is rather a sharp power influence which exploits the openness of democratic systems. Using various case studies that cover not only young democracies but also seasoned ones, this discourse will highlight how Russia and China use deception, manipulation and censorship in order to distract the societies and institutions of democratic countries.

Keywords: soft power, sharp power, russia, china, disinformation

Insurgents, Rebel Governance and State-Building in Sub-Saharan Africa

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Introduction: The nature of global conflicts that we see nowadays, particularly intrastate conflict, has cast a spotlight on the growing importance of including [armed] non-state actors in post-conflict peace and state-building. State-building is one of the most important issues for the world community because weak or failed states are the source of many of the world's serious problems [1]. The discourse around the engagement of non-state actors with regards to state-building is usually from a positive perspective in that it's seen as necessary to involve certain types of actors. However, this hasn't usually been the case with armed groups and the role of armed non-state actors in the development process is one which has been largely overlooked [2]. Particularly during periods of civil strife, armed groups can provide much needed governance in areas of limited statehood. Understanding this governance better, and the form that it takes, needs to be incorporated into post-conflict political settlements [3].

Aim: This research aims to delve deeper into this type of governance, referred to in the literature as rebel governance; its structures and fitness for state governance, to better understand its implications for state-building. The main question is whether insurgent governance structures can fit into long term state-building after conflict and the basic argument is that it depends on the type and nature of the insurgent groups and their agenda.

Methods: This research will use a combination of process tracing and a structured case analysis. The case study of interest is Mozambique looking at the history and transition of former rebel group Renamo to state actor. The research will also look at other cases to identify most different and most similar cases to the one identified in order to judge the validity of the argument.

Conclusions: Evidence of commitment to wartime governance and institution building, and adherence to a clear political agenda, offers the strongest indicator of a groups potential to provide stability for state-building.

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Keywords: Conflict, Insurgents, Rebel Governance, State-Building, Mozambique

European Union role in the Pacific after the AUKUS agreement

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My research topic is about the relationship of Great Powers with Pacific and their rivalry with the rising power of China. The situation is getting more serious especially after the Middle East crisis, Afghanistan, USA put more effort and opened his eyes more on the Pacific. The AUKUS agreement has just formed and in my paper I would like to examine the relationship of AUKUS and the Quad axis, furthermore the case of EU, especially France who still intends to defend its position from the Asia-Pacific until the Indo-Pacific. However for France this issue is more complicated that as this AUKUS agreement broke their huge business with Australia. AUKUS agreement consists of Australia, United States and United Kingdom. Furthermore I would like to analyse deeper in my paper how the AUKUS agreements make effect on the rivalry with China either on Pacific and South Pacific. In the methodology part I would like to examine more specifically the rivalry for the trade routes like Malacca Strait as a case study because it is one of the biggest choke point in the maritime security either, so I would like to focus on the international maritime law and the submarine case between USA, EU and Australia. The other method is the analyses of some military Doctrines. My research question is that how far can the Western Powers go within the rivalry of the Chinese Dragon that they can still avoid a more serious conflict in the region? One of my implication of my studies to prove that Europe has still a huge role in the Pacific eventhough they lost a huge business with Australia, and mainly USA would like to be the leader in the region. However one of my key finding is that regarding the geostrategical steps of the Powers either the Western or Eastern, EU would take a strategical step to save its prestige in the region, eventhough the Anglo-Saxon world would like to accelerate the competition against the Eastern Dragon. What are the answers of the Western World for the BRI, Belt Road Initiative of China that they intends to extend their power even on the Kingdom of Tonga and nearby the French Exclusive Economic Zone. From theoretical point of view my paper and this study is based on mainly the theory of power and balance and some interdependence between nations. As a consequence I assume that these business conflicts between the Francophon and Anglo-Saxon world could be arranged and they can cooperate each other because of the rivalry with China.

Keywords: rivalry, rising power of China, AUKUS, EU-France, Malacca Strait

The Protection of Migrant's Rights and The Rule of Law Violations

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Introduction: It is noted that many migrants are being exposed to human rights violations, the increasing lack of implementation of laws that protects human rights and the rights of migrants, leads to many migrant's rights violations and repeated attacks, especially at the international borders of the countries they migrate to. These violations may include failure to follow appropriate legal procedures and denial of political and civil rights.[1]

Aim and Methodology: This research aims to study the gap between the promises of law and reality when many violations of migrants' rights occur on some countries despite the recognition of human rights treaties, especially those related to the rights of migrants. The methodology to be used is the qualitative research method, where the study aims to study the behavior of countries where violations of the rights of migrants have occurred, and the focus will be on the case of Hungary.

Results: The migration crisis in 2015 greatly affected the countries of the European Union, and the reactions of some countries were directly related to the difficulties they experienced during this crisis, as Hungary built a fence between it and Serbia to prevent the arrival of refugees. Also, xenophobia is a major factor that plays a role in the high number of human rights violations against migrants. I will provide a descriptive summary of the Hungarian situation in regard with migrants primarily based on secondary sources.

Conclusions: In conclusion, all member states must cooperate and assist each other in achieving all the tasks imposed by the treaties. They must ensure the fulfillment of all obligations and not fail in them and take all appropriate immediate measures to ensure their realization. Member states should refrain from any action that may harm the objectives of the union and the tasks of the agreements.[2]

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Keywords: Human Rights, Violations, Migration

The Efficiency of National Preventive Mechanisms in Fighting Human Trafficking: Tunisia as a Case Study

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Introduction: Human trafficking is said to be the fastest growing organized crime in the world and the third biggest criminal activity, after drugs and arms trafficking¹. Human trafficking is not new; on the contrary, it has been an integral part of nearly every empire since pre-ancient times. But from then to now, the phenomenon has evolved, and so has the international law to fight it. The most reputable convention in this matter is *The United Nations Convention against Transnational Organized Crime* and its related protocol to prevent, suppress and punish trafficking in persons, especially women and children, which set the ground to 168 countries adopting domestic legislation and developing National Preventive Mechanisms criminalizing human trafficking according to its framework².

Through this study, we evaluate the extent to which these National Preventive Mechanisms of human trafficking are efficient in preventing and fighting the crime, as well as protecting the victims. Using unique data collected after a 3-month internship in The Tunisian National Commission to combat human trafficking, an in-depth case study of the Tunisian Legislation related to human trafficking and its NPM are revised to harbor this study. It departs from the theoretical explanation of the National Anti-trafficking law of 2016, a cross fertilization of The Palermo Protocol, to the evaluation of its implementation in practice by the National Commission against Trafficking in Persons (INLTP).

The results show that the Tunisian government deserves credit for its serious efforts to address human trafficking through its 4P strategy of Prevention, Protection, Punishment, and Partnerships. Yet, much work remains. This paper concludes that the study offers a non-exhaustive list of recommendations including but not limited to providing an adequate budget, allocating sufficient human resources, Ratifying relevant international and regional agreements and covenants, implementing the national victim referral mechanism, etc. to better combat human trafficking, whether it be initiatives, measures, laws, or cooperation with the international community.

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Keywords: Human trafficking, National Preventive Mechanism, Palermo Protocol.

Correlates of COVID-19 Preventive Health Behaviors in Turkey: The Role of Conspiracy Beliefs

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Introduction: The ongoing COVID-19 pandemic is one of the biggest and most contagious health crises of our time. Although public willingness to comply with the protective health measures proposed by authorities is critical for controlling the outcomes of an infectious disease outbreak, these measures are not followed by all individuals. Belief in conspiracy theories is one of the individual differences that might affect compliance behaviors. Conspiracy theories (CT) are unwarranted beliefs that certain events are planned and carried out by secret, malevolent, and powerful organizations [1]. The existential threat model of CT [2] articulates that distressing societal events activate epistemic processes to make sense of the event and the negative emotions associated with it. That is, CT belief tends to gain strength in times of crisis when people are seeking to make sense of a chaotic world [2]. With its worldwide chaotic nature, COVID-19 pandemic crisis provide the most suitable ground for conspiracy theories to bloom. Apart from leading to distrust in scientific and political institutions, CT belief can also lead to resistance to important preventive measures [3]. The present study investigated psychological and psychosocial variables that could predict COVID-19 conspiracy beliefs and compliance with preventive health behaviors; and whether such beliefs related to compliance with preventive health behaviors.

Method: An online survey administered to the participants ($N=255$) from an underrepresented non-WEIRD (i.e., Western, Educated, Industrialized, Rich, Democratic) society.

Results: Higher levels of dangerous world belief, generic conspiracy beliefs whereas lower levels of trust in health authorities and government were associated with a higher level of belief in COVID-19 conspiracy theories. On the other hand, perceived efficacy was positively whereas trust in health authorities negatively correlated with adopting preventive measures. There was no association between COVID-19 conspiracy beliefs and preventive measures.

Conclusions: Overall, these findings might be helpful for fostering effective information campaigns on preventive health measures against COVID-19 and directing further research on behavioral compliance.

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Keywords: COVID-19, conspiracy theory, compliance, perceived efficacy, trust in authority

Matematika



Mathematics

Generalization of a method constructing arbitrary even depth

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The notion of ordinary depth was originally defined for Von-Neumann algebras and Hopf algebras. Later it was defined for group algebras, see [1]. A group inclusion $H \leq G$ denoted by $d(H, G)$ is defined as the minimal depth of the group algebra inclusion $CH \leq CG$. It was proved in the paper [1] that the ordinary depth $d(S_n, S_{n+1})$ of the symmetric group S_n in S_{n+1} is $2n-1$, so arbitrarily large odd number can occur as subgroup depth. Lars Kadison in 2011 posed the problem if subgroups of even ordinary depth bigger than six can occur.

The aim of this talk is to study questions related to this problem.

Methods: Recently in the paper [2] with T. Breuer and E. Horváth we constructed a series (G_n, H_n) of groups and subgroups where the depth $d(H_n, G_n)$ was $2n$. Here we generalize the method of that paper. In the construction we always have $G_1 := G$, $H_1 := H$, where $H \leq G$, furthermore $H_n := H \times G^{n-1}$ and $G_n := G \wr C_n$. For calculation examples we used the GAP system.

Results: We describe all depth series $d(H_n, G_n)$ with this generalized construction where $d(H_1, G_1) = 1, 2$ or 3 . It may also happen that $d(H_1, G_1) = 3$ and for some n , $d(H_n, G_n)$ is even. We also show an example when $d(H_1, G_1) = 4$ and for some n , $d(H_n, G_n)$ is odd. We prove that if $H_1 = S_k$ and $G_1 = S_{k+1}$ then $d(H_n, G_n) = 2nk-1$, in particular these groups will always give odd depth series with this generalized construction.

Conclusions: There are infinitely many series (G_n, H_n) , where the depth $d(H_n, G_n) = 2n$. In fact this always holds if $d(H_1, G_1) = 2$.

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Keywords: ordinary depth of a subgroup, distance of characters, wreath product

The structure of simply truncated Coxeter orthoscheme tilings with parallel faces and their optimal ball and horoball packing configurations

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The purpose of this research is to investigate the structure of the ball and horoball packing arrangements in hyperbolic 3-space H^3 for a type of Coxeter tilings, as well as their optimum packing densities. The Schläfli symbol of the considered Coxeter tilings is $\{\infty, q, r, \infty\}$, where $1/q + 1/r \geq 1/2$, [1]. We use the Beltrami-Cayley-Klein projective model for visualizations. These truncated orthoschemes will be the fundamental domains of the considered tilings, from which the corresponding ball and horoball packing configurations can be derived. We apply computational methods described in [2, 3] for determining the packing densities.

Results: We investigated the structure of the truncated orthoschemes above that are indicated by their Schläfli symbols. They have two pairs of parallel faces that meet each other at tangent lines of the model sphere, and their common point lies at the infinity. The inball has been successfully constructed based on these truncated orthoschemes, using construction in [4]. Moreover, we consider the corresponding horoball packing configurations. The centres of horoballs are required to lie at vertices of the fundamental domains constituting the tiling. In cases $\{\infty, 3, 6, \infty\}$, $\{\infty, 4, 4, \infty\}$, $\{\infty, 6, 3, \infty\}$, there are two ideal vertices, in fact, we can arrange two horoballs together so that they touch on the edge connecting the two ideal vertices. We proved [5] the following theorems:

Theorem 1. *In hyperbolic space H^3 , between congruent ball packings of classical balls, generated by simply truncated Coxeter orthoschemes with parallel faces, the $B(3,3)$ ball configuration provides the densest packing with density ≈ 0.2623649 .*

Theorem 2. *In hyperbolic space H^3 , between the congruent ball and horoball packings of at most two horoball types, generated by simply truncated Coxeter orthoschemes with parallel faces, the $B(3,6)$ and $B(6,3)$ ball configuration provides the densest packing with density ≈ 0.8413392 .*

Theorem 3. *In hyperbolic space H^3 between the congruent horoball packings of one horoball, generated by simply truncated Coxeter orthoschemes with parallel faces, the $B(3,3)$ horoball configuration provides the densest packing with density ≈ 0.8188080 .*

Conclusions: Our results show that the above horoball packings provide large densities that are close to the upper bound packing density in H^3 . The similar structures and their packing configurations in higher dimensions would be challenging to be investigated, and similar tiling arrangements may yield high-density packings.

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Keywords: Coxeter group, horoball, hyperbolic geometry, packing, tiling

Greedy approaches to detect nestedness in complex networks

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In this presentation we introduce various graph colouring-based algorithms to detect and compare nestedness [1], a characteristic observed in real-life networks in a variety of fields including ecology and business. We introduce the definition of H -avoiding colouring [2], focusing on the special case of $H=2K_2$, which allows us to break the graph's structure down to nested colour classes. We describe three $2K_2$ -avoiding colouring and clustering algorithms, and compare their resulting colour classes, stability and run times on real-world examples. The first algorithm is based entirely on greedy graph colouring with $2K_2$ -avoidance built in, the second one uses a hierarchical clustering-based bottom-up approach, while the third uses a technique that evaluates the classical greedy graph colouring and then breaks the results further down to $2K_2$ -free clusters.

Results: We introduced and evaluated three different greedy algorithms that detect fully-nested subgraphs in a network. Our experiments, performed on real-world networks, show that all three algorithms perform similarly regarding the amount of classes found. We also observed that while $2K_2$ -avoidance in real-world networks generally results in tiny, and thus a larger amount of clusters, when compared to Louvain clustering [3]; the smaller classes of the $2K_2$ -avoiding colouring can, in many cases, be merged to recreate those of Louvain clustering.

Conclusions: Our results lead to the conclusion that most real-world networks usually do not feature large fully-nested subgraphs. We believe that relaxing the original criterion of full nestedness can result in larger and more meaningful clusters, while the current results may be used to warm-start other clustering algorithms in the future.

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Keywords: *graph theory, network science, operations research, graph colouring, nestedness*

Influence Maximization with maximal seed distance

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Introduction: Influence maximization is a popular problem in social sciences. It seeks a given number of seed points (vertices) in a network to maximize the number of influenced vertices starting from the seeds. Influencing may occur through the edges, which indicate the connection between people (vertices). There are different ways to define influence but finding the seeds from which maximal influence can be reached is a difficult task in general. Covering models belong to facility location problems, where facilities are to be located such that the covered demand points (vertices in a graph within a given distance) are maximized. These problems are solvable for large graphs, and our long-term aim is to use the most appropriate and/or adjusted covering models for solving influence maximization problems.

Aim: These problems are solvable for large graphs, and our long-term aim is to use the most appropriate and/or adjusted covering models for solving influence maximization problems.

Methods: In our current work, we are aiming to find seed points such that they will influence different parts of the network. For this, we will use a required “minimum distance” which for instance can be twice the coverage distance. With this extra condition we are trying to ensure that every seed point influences different groups in the network.

Results: We have compared influence maximization and coverage models and analysed their differences. We have found that the mathematical models can be made equivalent. [1] For the Independent Cascade model, we defined the edge lengths from the probabilities of the influence and showed experimentally that the solution of the maximal covering model gives a very good approximation for the maximal influencers. The computational results also showed that even solving exactly the covering model is much faster than the widely used greedy method. We also added to the covering model to seek seed points that are further away from each other to make sure that they influence different parts of the network in our original influence maximization problem.

Conclusions: We have shown that the mathematical models can be made equivalent. We made an algorithm that is more efficient than the greedy algorithm and extended the existing model with a minimum distance between the seed points for maximum influence.

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Keywords: influence maximization, facility location, optimization

On a probabilistic problem on finite semigroups

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There are many papers in the mathematical literature which use probabilistic methods to study special algebraic structures. Some of them deal with special cases of the following problem. For a given finite algebraic structure A and a given binary relation σ on A , find the probability $P_\sigma(A)$, that $(a,b) \in \sigma$ is satisfied for two elements a and b of A which are selected at random with replacement.

For example, in [1], [2] and [3] the probability is examined in the cases when A is a finite non-commutative semigroup, a non-commutative group and a non-commutative ring, respectively. In all three cases σ is defined by $(x,y) \in \sigma$ for $x,y \in A$ if and only if $xy=yx$. In [4], the probability $P_\sigma(A)$ is investigated in the case when A is a finite simple group and σ is defined by $(x,y) \in \sigma$ for $x,y \in A$ if and only if $\omega(x,y)=e$, where ω is a given non-trivial element of the free group F_2 and e is the identity element of the group A .

Together with my supervisor, we examined in [5] the probability $P_\theta(S)$ in the case when S is a finite semigroup and θ is the kernel of the right regular representation of S . We note that $(a,b) \in \theta$ for elements $a,b \in S$ if and only if a and b have the same right matrix.

Results: We show that, for an arbitrary rational number $0 \leq p \leq 1$, there exists a finite semigroup S with $P_\theta(S) = p$ if and only if there exists a non-empty finite set A , and an equivalence relation σ on A , such that $P_\sigma(A) = p$. From this, we can conclude that $P_\theta(S)$ is at least $1/m$, where m is the index of θ . The main object of our investigation is to get information on the structure of a finite semigroup S , if $P_\theta(S)$ is given.

We only examine the situation, where $P_\theta(S) = 1/m$. We give a solution for arbitrary semigroups in the case of $m=1$. For $m=2$, we answer the question in the class of all commutative semigroups.

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Keywords: congruence, equivalence relation, probability, semigroup.

Monohedral tilings of a Regular Polygon

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Aim: A tiling of a topological disc by topological discs is called monohedral if all tiles are congruent. Maltby [1] characterized the monohedral tilings of a square by three topological discs. Kurusa, Lángi and Gh [2] characterized the monohedral tilings of a circular disc by three topological discs. In this presentation we connect these two results by characterizing the monohedral tilings of any regular n -gon with at most three tiles for any $n \geq 5$.

Methods: First, we characterized the topological structure of a decomposition of a topological disc into 2 or 3 topological disks. In the second part, we used geometric, combinatorial and topological arguments to find those configurations in the aforesaid characterization that can be realised with congruent tiles.

Results: Let P be a regular n -gon with $n \geq 5$, and let F be a monohedral tiling of P by k topological discs, where $2 \leq k \leq 3$. Then either $k = 2$, n is odd and F contains the two halves of P dissected by a line of symmetry of P , or n is divisible by k and F is rotationally generated, i.e. it is invariant under the rotation around the center of P and with angle $\frac{2\pi}{k}$.

Conclusions: We have classified the decompositions of a regular polygon into 2 or 3 congruent topological discs. Our result shows that the monohedral tilings of a regular polygon with 2 or 3 tiles are not different from those of a square or a circular disc. It may be worthwhile to find the largest family of plane convex bodies which satisfy this property.

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Keywords: dissection, monohedral tiling, topological disc, Jordan region

A survey on piecewise linear iterated function systems

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In the 1970's, Mandelbrot realized that nature is full of complex, self-repeating patterns he called fractals. Inspired by his ideas, mathematicians started to investigate the geometry of fractal sets. One way to generate a fractal is by iteration using a system of contracting functions. One of the simplest cases is the family of self-similar fractals, where each function used in the iteration is a similarity. However, for fractals of overlapping structure we only have partial results, even in the case of self-similar systems.

The family of iterated function systems we investigated uses more complex functions. Each might change its slope over the domain. Thus the attractor of the system, the fractals we generate this way, has a more rich structure. For instance, our systems might include non-injective functions. For such a system an overlapping structure is unavoidable.

In this paper we summarize our results on continuous piecewise linear iterated function systems. We show why these systems are interesting, showcasing the difference between them and other widely studied families of iterated function systems. We also give results on the dimension of the generated attractors, and investigate their typical behaviour.

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Keywords: *fractals, dimension theory, iterated function systems*

MéRNÖKI anyagok és technológiák II.



Engineering Materials and Technologies II.

The potential processes to recover metals from spent pickling liquor: a short review

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Several wastes are produced along with the hot-dip galvanizing processes, one of them is spent pickling liquor (SPL). This liquid waste contains a wide range of metals dissolved in the relatively low concentrated hydrochloride acid (HCl). A pickling bath containing fresh HCl is used to clean the surface of the metal from impurities and oxides. At a level of 15 – 30% of the original acid concentration, the solution is categorized as spent, i.e. no longer serviceable, while the metal content, primarily Zn (II) and Fe (II) are increased to 150-250 g/dm³[1][2]. Their complex and hazardous nature are issues to be solved to meet the environmental standard which tightens the regulation regarding acid and chemical discharge[3]. Furthermore, the possibility of metals recovery should be analysed, thus the liquid waste is recycled into secondary raw materials[4]. This article is a review of the SPL stream from the galvanizing industry. Some potential methods of metals recovery are being discussed. Various technologies such as precipitation, membrane separation, ion exchange, electrowinning, pyro-hydrolysis, liquid-liquid extraction, diffusion dialysis, hydrolysis, solvent extraction and oxidation are being reviewed. The focus of this review is the recovery of zinc metals to produced high purity metals.

Results: A comparison and critical review of various technologies to recover metals from the liquid waste stream from the hot-dip galvanizing industry, especially spent pickling liquor are being discussed.

Conclusions: Eliminating metal from the waste solution, Zn chloride solutions, in this case, is possible by cathodic deposition. Electrochemical separation of various metals in the solution can be done due to relative potential differences. Through electrochemical processes, metal ions in HCl solutions are electrodeposited to the cathode. While before this process hydrometallurgical purification procedure might be needed as the metals, iron and zinc in this case, can be separated.

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Keywords: SPL, Zn recovery, pickling waste

Context-aware point cloud upsampling

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The performance of an autonomous vehicle's perception heavily relies on the selected sensorial setup. Each available sensor has a special kind of characteristic and comes with its strengths and limitations. Multiple sensors can be used with fusion techniques to bypass the weaknesses and amplify the required attributes. A potent choice is to combine the contextual richness of the camera images with the highly accurate distance measurement coming from the Lidar in the earliest fusion phase not to lose any valuable information.

The main drawback to cameras is the planar projection; it is causing depth information loss. Although stereo vision depth maps are available, their precision is nowhere near the laser measurements. The rotating Lidar sensor provides 360° coverage as a distance-accurate point cloud. It observes any chosen subspace sparse, compared to an array-like sensor structure, so their characteristics may complete each other. Working with single cameras, the handling of the variable lighting conditions can create artifacts or distortions. Instead of resolving this directly, stereo cameras can be used: the pixel-wise match of the stereo image pair is called disparity map, a reinforced context representation with less exposure to the environmental conditions.

For these reasons, a straightforward way to enrich the Lidar point cloud is to use an edge-aware upsampling method guided by the disparity map. The resulting upsampled accurate point cloud can be treated as an additional depth layer (RGBD) and may be fed into image handling NN models with minor modifications.

Results: Our bilateral grid-based upsampling method combines calibrated and synchronized LIDAR - stereo camera inputs to generate a dense depth image. We have selected and modified AVOD to handle the RGBD representation as input.

Conclusions: Tests show that the application of this early fusion technique can increase the detection accuracy without any significant NN architecture change.

Keywords: bilateral grid, upsampling

Machine learning based optimization of tool replacement strategy in machine tools

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Manufacturing costs and tool management are two key factors for a production company. In the production, especially in the large volume serial production, the tool changes and tool breakages occurs frequently. These events have significant impact on the cost per product and the product quality. To prevent quality problems one common practice is to maximize the tool life: tools have to be changed when they reach the allowed number of produced parts. Frequent tool replacements increase manufacturing costs, however, breaking overused tools can cause damage to the machine, so costs can be orders of magnitude higher and production quality can be also compromised.

Aim: The aim of the study is optimize the tool replacement strategy based on machine learning analysis of process data. With the determination of the tool life based on the internal process parameters and signals of the numerical control unit, early replacement of the tools can be prevented, thus tool costs can be reduced, and with the identification of overused tool, breakage also can be prevented.

Methods: We read out the internal process values with an standard S7-300 function block [1] from an Siemens 840D SL numerical control unit [2] during the manufacturing process. During the machining we record the speed setpoint values of the main spindle, the position values of the tool axis and electric current values of the corresponding axes and spindles. At the start of the workpiece replacement we record the tool life of the corresponding tools too. The recorded data transferred to a PC on TCP/IP protocol. Based on the recorded values we clustered the process signals to find correlation between changes in the process values and the tool life, and we created a regression model also, to determine the tool life based only on the measurements. To analyze the data and to create the models we used Python [3] programming language and TensorFlow [4].

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Keywords: manufacturing, tool machine, tool life, machine learning, neural networks, industry 4.0

Residual stress analysis of 3D printed metal parts

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Additive manufacturing, more commonly known as 3D printing, is one of the fastest growing industries of our time. This includes rapid prototyping, part making and repairing processes. It was introduced in the '80s as a rapid prototyping method and just as rapidly as the name states outgrew itself into so much more. Today the additive manufacturing of metal parts is just as natural as any other conventional process and there is still a lot more untapped potential which is yet to be discovered [1].

However, this manufacturing method no matter how powerful is, it is not omnipotent. The process requires precision, else it can easily lead to disaster. Every part made by additive methods carries residual stresses, which phenomena can be led back to the main characteristic of 3D printing. For metal printing processes, the manufacturing machine requires a great amount of focused thermal energy to process the raw material. This energy however will affect the previously affected layers as well. This unique thermal cycle will influence the occurrence of residual stresses as follows [2][3]:

- rapid heating will lead to high energy density, which causes a steep thermal gradient
- rapid cooling of the target volume, as a function of tiny melt pools
- heating and cooling of previously deposited layers

During our experiments, we used SLM technology, as melting-based processes can carry more residual stresses than usual and the machine which made our measurements possible was an Orlas – Creator 3D printer. The base material was a 17-4ph stainless steel.

Results: Due to the nature of the 3D printed residual stress test specimen, it goes without saying that the process yielded valuable experience. Our workflow consisted of creating a test specimen, measure it with a non-destructive method, analyse the data, then make a horizontal cut which removed the support structures allowing the volume to warp, then make another measurement on the warped part. The non-destructive method we used was an X-ray diffractometer (XRD). Later we performed the same method with different part parameters to compare the results.

Conclusions: Residual stresses are common in every structure, however in additive manufacturing it has a greater emphasis, due to the nature of the 3D printing process. Every process parameter matters, and it is important to know which geometrical parameters are more susceptible to build-up high amount of stresses and design the manufactured parts according to that. Understanding the nature of stresses and the parameters involved is crucial to make parts which, in the future, can be serialized in production.

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Experimental analysis of the reliability of measuring systems in an Industry 4.0 manufacturing environment

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Introduction: The aim of the research is to create an affiliate system that would reduce the activity and workload of human resources involved in manufacturing processes, in order to enhance the high-added value potential. My first goal is to create an IoT / Industry 4.0 compatible data processing system, together with its communicating algorithm, which is suitable for processing data, obtained from CMM measurements with regard to a CNC milling machine. By applying the proposed control system and performing intermediate calculations, it is achievable to control and validate processes in real time and to optimize production together with maintenance (Data-driven optimization) [1]. The probe of the measuring system, in case of our milling machine, has constant error. However, the positioning accuracy of the machine is constantly changing due to its drive and its use. It must be mentioned that accuracy is also influenced by the material and geometry of the work piece. The results of control measurements on a coordinate measuring machine, when used properly, can correct errors in the accuracy of a milling machine within a given range [2]. Therefore, my first objective is to determine the necessary correction parameters for the intelligent manufacturing system.

Results: The measurements were performed on a COORD3 coordinate measuring machine and with the built-in Renishaw measuring probe of the Akira SEIKI milling machine available at the Savaria Institute of the Faculty of Informatics of ELTE. The accuracy of the measurement cycles was checked on gauge blocks.

Conclusions: Geometric measurements were performed at the same temperature, according to the standard +/- 2 °C temperature difference and the ISO 230. Based on the obtained results, we can conclude that significantly better accuracy can be provided, with regard to the machine tool, than the value specified by the factory for both repetition and positioning if the control measurements of the CMM measuring machine is taken into account.

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Keywords: I4.0, measurement technology

Időjárás előrejelzés bizonytalanságának hatása az átviteli kapacitás előrejelzése során

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A villamosenergia-rendszer üzemeltetése kapcsán manapság egyre nagyobb igény mutatkozik az átviteli kapacitások teljes mértékű kihasználásra. Az egyre növekvő energiaigény, az energiaipar fejlődése, valamint a megújuló energiaforrások térnyerése és a rendszerbe való integrálása miatt az átviteli hálózat egyes részei túlterhelődhetnek. A probléma megoldása többféleképpen is kivitelezhető, például új távvezetékek építésével, sodronyok cseréjével stb. Ezek helyett azonban a dinamikus távvezeték terhelhetőség (továbbiakban: DLR) egy gazdaságosabb megoldást kínál az átviteli kapacitás növelésére. A DLR technológián alapuló rendszer lényege, hogy a környezeti paraméterek folyamatos monitorozásával valós idejű terhelhetőség állapítható meg, ami jelentősen meghaladhatja a jelenleg általánosan alkalmazott statikus terhelhetőséget. Emellett a mérlegköri menetrend tervezés során is kiemelt fontosságú a távvezetékek terhelhetőségének figyelembevétele, így a terhelhetőség előrejelzése nagyban elősegíti a villamosenergia piaci kereskedelem tervezhetőségét is. Ahhoz azonban, hogy ez megvalósulhasson elengedhetetlen különböző időjárás előrejelzési modellek alkalmazása, amik segítségével előrejelezhető a terhelhetőséget befolyásoló környezeti paraméterek.

Kutatásom során a témával kapcsolatos hazai és nemzetközi szakirodalom áttekintése után a különböző időjárás előrejelzéseket a távvezetékeken elhelyezett szenzorok által mért időjárási paraméterekkel összehasonlítva meghatároztam az előrejelzés bizonytalanságának hatását a terhelhetőség-számításra. Ezt a bizonytalanságot figyelembevéve, matematikai modellezés segítségével meghatároztam egy biztonsági tényezőt, hogy az előrejelzésekkel együtt számítva megadható legyen egy megbízható, ám a statikusnál jelentősen hatékonyabb terhelhetőség, amely megbízhatóságában a valós mérési adatok alapján számított átviteli kapacitással egyenértékű. Munkám során több európai TSO távvezetékein mért valós adatokat felhasználva meghatároztam ezen távvezetékek terhelhetőségeire vonatkoztatott előrejelzés bizonytalanságát. A kapott eredmények validálása után megoldási javaslatokat dolgoztam ki a kockázati tényező csökkentésére.

**Egészségügyi menedzsment és
egészség-gazdaságtan**

**Health Management and Health
Economics**

Incidence of metabolic syndrome in patients with acute coronary syndrome. Do they have anything to fear?

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Background: The aim is to ascertain the prevalence of metabolic syndrome (MetS) in patients from Hungary and Iraq, suffering from acute coronary syndrome (ACS) and investigate the effects of MetS on hospital outcomes, in particular mortality and differences in patients' baseline characteristics.

Methods: A prospective cohort study was conducted in two cardiac centers between 2018.05-2019.05. It included 164 consecutive ACS patients; 64 patients from the Heart Institute, Medical School, University of Pécs, Hungary, and 100 patients from Al Nassiryah Heart Center Iraq. Baseline characteristics, clinical management and in-hospital and 30 days post discharge outcomes were recorded.

Results: Prevalence of metabolic syndrome among ACS patients was not significantly higher in Hungary than in Iraq (25.0% vs 34.1%; $P=0.306$). There were no significant differences in age between those with and without MetS (64.2 vs 63.3 years; $P = 0.394$). MetS was associated with a higher median BMI (28.0 vs 23.7 kg/m²; $P < 0.001$), hyperlipidemia (37.8% vs 12.8%; $P < 0.001$), hypertension (48.8% vs 27.4%; $P = 0.024$), high cholesterol (5.4 vs 4.1 mmol/L; $P < 0.001$), high LDL-C (3.5 vs 2.6 mmol/L; $P < 0.001$), and high triglycerides (1.4 vs 1.1 mmol/L; $P < 0.001$). There were no significant differences between patients with or without metabolic syndrome regarding in-hospital outcomes. However, patients with MetS had a higher rate of in-hospital mortality (3.0% vs 1.2%; $P=0.499$).

Conclusions: Significant majority of the participants had at least one component of MetS, so it is important to draw further attention to metabolic syndrome not only among ACS patients but also, in the primary prevention. Patients with MetS were significantly more likely to be associated with MACE ($P=0.027$) and re-infarction (12.8% vs 3.7%; $P=0.031$).

Keywords: metabolic syndrome, outcomes, acute coronary syndrome, prevalence, major adverse cardiovascular events

Changes in number of practising physiotherapists in European healthcare systems

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Background: Ensuring the supply of healthcare professionals is an important health policy issue nowadays.

Aim: Our aim was to examine the numbers of practising physiotherapists in European OECD countries.

Methods: Indicators analysed regarding numbers of practising physiotherapists and total hospital beds were derived from the 'OECD Health Statistics 2021' online database, for the period 2000-2018. 24 European OECD countries were selected into our study. They were grouped according to type of healthcare system (Bismarckian-type, solidarity-based health insurance system or Beveridge-type national health system) and geographical location. Data were subsequently compared by parametric and nonparametric tests, focusing especially, on years 2000, 2010 and 2018.

Results: The average number of practising physiotherapists per 100,000 population increased from 76.4 to 110.5 (+ 45%) in Bismarck-type countries and from 82.9 to 111.8 (+ 35%) in Beveridge-type countries between 2000 and 2018. During the same period, the average number of practising physiotherapists per 100,000 population increased from 91.3 to 128.9 (+ 41%) in Western European countries and from 46.6 to 69.5 (+ 49%) in Eastern European countries. Also, the average number of practising physiotherapists per 100 hospital beds increased from 12.1 to 20.5 (+ 69%) in Bismarck-type countries and from 17.5 to 38.2 (+ 119%) in Beveridge-type countries. In geographical context, between 2000 and 2018, the average number of practising physiotherapists increased from 17.0 to 35.5 (+ 109%) in Western European countries and from 6.8 to 11.9 (+ 76%) in Eastern European countries. Per 100,000 population, we found significant difference in the cross-sectional year 2010 ($p=0.003$) when comparing Western and Eastern European countries. Per 100 hospital beds, we obtained significant differences in all examined cross-sectional years ($p=0.014$, $p<0.001$, $p=0.002$) in geographical aspect.

Conclusions: We found that the average number of practising physiotherapists per 100,000 population increased from 78.9 to 111.1 (+ 41%) and from 14.5 to 28.5 (+ 97%) per 100 hospital beds in the European OECD countries examined.

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Keywords: *physiotherapists, healthcare professionals, Bismarck, Beveridge, Eastern Europe, Western Europe*

Differences of indication for hip replacement surgery of osteoarthritis patients in the private and state health care sector

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Aim: In our study, we investigated the differences of indication for hip replacement surgery of osteoarthritis patients in the private and state health care sector.

Methods: Patients with hip prosthesis surgery were selected by simple convenience sampling technique at the Department of Orthopedics, Clinical Centre of the University of Pécs and at the Da Vinci Private Clinic in Pécs. Patients completed a self-administered questionnaire, which included sociodemographic data and surgical data (including indication for surgery). Data were analysed using Microsoft Excel 2016 and SPSS 24 statistical software. The significance level was $p < 0.05$.

Results: 212 patients were assessed, of whom 164 (77.36%) were included in our study: 75 from the state health care sector and 89 from the private health care sector. Examining the indications for surgery, patients in both sectors were operated on mainly for a diagnosis of hip osteoarthritis (primary coxarthrosis) (81.27%). While the indication for operation in the state care sector was hip osteoarthritis in 78.67%, compared to 84.27% in the private care sector. Avascular necrosis of the femoral head was an indication in 9.3% of the state sector and 6.7% of the private sector. Dysplastic hip was found as indication in 5.3% in the state health sector and 9.0% in the private care sector. Revisions were only an indication for surgery in the state sector with a 6.7% incidence, and not an indication in the private sector. There was no significant difference in surgical indications between the two sectors ($p = 0.066$).

Conclusions: Hip osteoarthritis has been identified in high rates in both the state and private sectors as an indication for hip replacement surgery. However, there was no significant difference in the proportion of surgical indications between the two sectors. The global increase in prevalence is mainly due to an ageing population, obesity and increased physical workload.

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Keywords: osteoarthritis, surgical indication, hip replacement surgery, care sector

A descriptive analysis of randomized controlled trials of cardiovascular disease research published in 2017

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Introduction: The scientific experiment that includes human prospectively is called clinical trials in whom therapeutic is started to evaluate the treatment efficacy or intervention. The main idea of RCT is to assign each patient to a specific intervention by a randomized probability [1], in another terms, the randomized controlled trial is a study in which people are allocated randomly to receive one of several clinical interventions. [2] The scientific experiment that includes human prospectively is called clinical trials in whom therapeutic is started to evaluate the treatment efficacy or intervention. The main idea of RCT is to assign each patient to a specific intervention by a randomized probability [1], in another terms, the randomized controlled trial is a study in which people are allocated randomly to receive one of several clinical interventions. [2]

Aims: To examine: 1) methodological quality of published cardiovascular trials using ROB tool; 2) specific trial characteristics which increase the likelihood of unclear/high risk of bias.

Methods: Cochrane Central Register of controlled trials was used to search using adult filter (>18 y/o) and randomly selected 250 RCTs which were published in 2017, extraction technique was conducted based on trial characteristics; results; methodology; methods or reporting; trials registry identifier; and the protocol used in each study.

Results: Primary outcomes were specified in 157 (62.8%), 170 (68.0%) reported in adverse events. Statistically significant result was reported at least on one measure in 215 (86.0%), of them primary outcome was statistically significant in 173 (69.2%). 209 (83.6%) of trials were declared trial registry; clinical trilas.gov was the most used registry 162 (64.8%). Funding source was explicit in 229 (91.6%). Risk of bias (ROB) was high in 78 (31.2%), unclear in 99 (39.6%) and low in 73 (29.2%). Industrial funding trials were more likely to have lower ROB than non-industrial funding trials (P=0.058). Allocation concealment bias was significantly lower in industrial funding trials than non-industrial, (P=0.0014), participant and personnel blinding were also lower in industrial than non-industrial (P=0.0001). registered trials had lower ROB than non-registered, (P=0.0015).

Conclusions: Almost two-thirds of RCT published in 2017 were at high or unclear RoB. Several limitations have been present in the RCT's conduction. Funding source was found to affect significantly the allocation concealment and participant/personnel blinding.

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Keywords: RCT, CVD, Cochrane library

Evaluating the Effect of the COVID 19 Pandemic Year on Cost-Related Prescription Nonredemption (CRPNR) in Hungary: A Nationally Representative Cross-Sectional Study

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Background: Failure to seeking for basic or primary health care (PHC) services have negative repercussions on the health outcomes among patients. Besides, the SARS-CoV-2 CoronaVirus Disease-2019 (COVID-19) pandemic exposed individuals to lower healthcare utilization. But the impact of the pandemic lockdown has limited discoveries.

Objective: To investigate the COVID-19 pandemic related lockdown effect on the general practitioner (GP) visit, specialist care, hospitalization and cost-related prescription nonredemption (CRPNR) among adults in Hungary, and to identify the social strata with special susceptibility to the pandemic on these outcome parameters increasing impact.in Hungary.

Methods: This study was a community-based cross-sectional study. Nationally representative data of 6,611 (Npre-pandemic=5,603 and Npandemic=1,008) subjects aged 18 years and above, obtained from the European Health Interview Survey (EHIS) and International Social Survey Program (ISSP) for pre-pandemic and pandemic, respectively. Multivariable logistic regression was applied to determine the risk factors for outcome variables. The impact of the pandemic was described by the adjusted odds ratio (AOR) along with the corresponding 95% confidence interval (CI) controlled for sociodemographic and clinical factors. To identify the susceptible strata the interaction of the explanatory variables with the time of data collection was also tested in terms of the year and other confounding factors accompanied by a 95% CI to evaluate the statistical significance.

Results: The magnitude of GP visit, specialist care and hospitalization rate waswere remarkably reduced by -22.2%, -26.4% and -6.7%, respectively, attributed to the pandemic in Hungary. Being COPD, diabetes IHD, hypertensive and malignancy patient, Central-Transdanubia residence, all categories of education level, and the aged patient had a positive significant relationship with GP visits. Similarly, subjects with all types of chronic illnesses and education levels had a positive significant relationship with specialists visits. But being a male, living in Northern Hungary, Southern Great Plain, Southern Transdanubia, the single and widowed patient had a negative significant relationship. Also, subjects with all types of chronic illnesses and the aged patient had a positive significant relationship with hospital admission but the reverse for less-educated (high school AOR=0.73; 95% CI 0.58-0.93). Being Roma had a negative relationship with CRPNR. The pandemic lockdown negatively aggravated the role of less-educated (AOR high school =0.43; 95% CI 0.24-0.78, AOR=0.60; 95% CI 0.36-0.98 and AOR=0.24; 95% CI 0.08-0.74) on GP visits, specialist visits, and CRPNR, respectively. The lockdown aggravation adversely affected the higher academic attendees on specialists visits. Nonetheless, being widowed was found to play a protective role on GP and specialist visits attributable to the pandemic (AOR widowed =2,28; 95% CI 1.04-5.00 and AOR=1.91; 95% CI 1.16-3.17, respectively).

Conclusions: Our findings established that the COVID-19 pandemic negatively influenced the extent and the risk factor pattern of PHC services in Hungary. Different segments of education levels had severely affected by the pandemic with different levels for GP visits, specialist care and CRPNR. These groups need strong and close support to mitigate the extra negative consequences of the pandemic. But the protective role of widowed on GP and specialist visits due the pandemic lockdown calls for further research.

Keywords: CRPNR, COVID-19 pandemic, hospital admission, GP visit, Hungary, interaction effect, Roma, specialist care

An Assessment of Adolescent/Youth Friendly Sexual and Reproductive Health Services in the Volta Region of Ghana

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Introduction: Adolescents in Ghana constitute about a quarter of the country's total population. Decisions regarding reproductive health are based heavily on their knowledge, the availability, accessibility, and affordability of such services. These reproductive health decisions arrived at either impact their lives for the good or bad. Over the past decade, the framework of adolescent-friendly health care has been used to better orient health services to the needs of young people. In sustaining this worthy cause, the state of adolescent-focused care and performance, based on client perceptions must be regularly assessed [1]. This study therefore explored adolescents' reproductive health knowledge, utilization and satisfaction of services provided.

Aim: This study sought to explore youth friendly sexual and reproductive health services rendered to young people in the Ho, Hohoe and Kpando Municipalities in Volta region, Ghana.

Method: This is a descriptive, exploratory study analysing qualitative data collected from 21 female adolescents aged 15-24 years, 9 service providers and 12 parents from Kpando, Ho and Hohoe communities. In-depth interviews (24) and focus group discussions (3), were conducted among adolescents, service providers and parents. Similarly, indicators of community acceptance were developed that measured whether parents supported the provision of reproductive health services to the youth. These data were processed and thematic content analysis carried out using NViVO version 7.

Conclusions: Although there appeared to be a general satisfaction expressed by adolescent clients about the services they received, there were challenges with funding, infrastructure, poor youth involvement, breached privacy and confidentiality, poor staff training and parental antagonism to some of these services. The findings suggest that improvements in health services for the youth may have a larger impact on the health-seeking behaviours of adolescents.

Acknowledgements: Sincere appreciation to Dr. Margaret Atuahene for her supervisory role.

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Keywords: Adolescents, Youth, Young people, Sexual, Reproductive, Health, Ghana

Challenge of Return to Work Program During Covid-19 Outbreak : A Case management for workers with disability due to occupational accident or disease in Indonesia

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Indonesia, the world's fourth most populous country [1], has an employment social security framework that ensures workers through a workplace accident insurance program administered by BPJS Ketenagakerjaan [2]. One of the benefit that have been developed of this program is the Return To Work (RTW) program, which has been in implementation since 2015 in which kind of case management of occupational injuries or occupational diseases. Nevertheless, numerous barriers have arisen since the COVID-19 outbreak in performing the Return To Work Program.

Results: The key findings noteworthy to the internal improvement of the RTW process, such as key abilities, personal life skills of case managers, corporate culture, are essential to determine the outcome of the RTW program, in particular in the endeavor to achieve the labour pool and companies' commitments to the RTW plan during the pandemic of COVID-19. Moreover, in-depth interviews reveal that the involvement of Case Managers as facilitators increases or reduces chances of success. Furthermore, telemedicine can be used to improve the efficiency and efficacy of trauma treatment delivery. In addition, telemedicine is used in the treatment of trauma patients. A bittersweet fact today, 59 workers have been successfully managed in RTW through telemedicine. However, this number is a continuity impact during pandemic as the number of cases tremendously decline after 2020 by near to 30% as the result of refusing in-person treatment.

Conclusions: The research concluded that endeavors to strengthen the RTW program might start by ensuring that the case manager made every effort to meet the worker's and employer's commitments to the RTW program goals.

Acknowledgements: The authors would like to extend high appreciation to management of BPJS Ketenagakerjaan Indonesia for outstanding collaboration with in development of this research. This work was supported by EFOP-3.6.3-VEKOP-16-2017-00009 ("Development of scientific workshops of medical, health sciences and pharmaceutical educations").

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Keywords: RTW, occupational injury, case management

Nyelvoktatás és nyelvi kompetenciafejlesztés

**Language teaching and education,
linguistic competence development**

Involvement in Learner English writing: the Case from Asian Learners

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Introduction, Aim & Method: Involvement in language refers to the engagement of the speaker or hearer in discourse. As the most typical feature of spoken language, it has been regarded as one of the major features of novice L2 writing due to writers' lack of register knowledge. However, a closer look at a number of related studies reveals that the investigated language data are not well selected and that Asian learners of English are less targeted, which might make their research findings less convincing. By employing the 'Involved versus informational production' dimension from Biber's (1988) multidimensional analysis (MDA) model and the Multidimensional Analysis Tagger (MAT) developed by Nini (2019), this study sets out to verify the previous findings regarding involvement based on a well-balanced Asian learner English corpus - International Corpus Network of Asian Learners of English (ICNALE).

Results and Conclusion: The results reveal that learner English writings are not necessarily more involved than English writings by native English speakers because English learners from Asian ESL settings, including Hong Kong, Singapore and Pakistan, show a lower involved tendency than native English speakers. Moreover, Asian learners' L1s and language proficiency do affect the involvement degree in learners' English writings, but meanwhile they can be overridden by other factors. Lastly, faced with the same writing topics, native English speakers, as confirmed in the previous research, are proved to be gendered in terms of involvement, while for Asian learners, except for learners from Indonesia, no statistically significant differences are found between the two genders.

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Keywords: Involvement, Learner English Writing, Asian learners of English, Multi-Dimensional analysis

A longitudinal study on the interaction between secondary-school students' language learning and musical aptitude and English skills development

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There is a general assumption that a good ear for music equals to good ear for languages. In this longitudinal case study, I examined 10 students' language and music aptitudes and also their language skills at two points of measurements. I examined the relationship between participants' music aptitude, language aptitude, and their level of English language proficiency over the years. My other focus was on how students' scores changed over years on the components of the language and music aptitude and language proficiency tests. In order to have valid results I applied validated batteries: the Hungarian Language Aptitude Test (Ottó, 2002), the Hungarian Music Aptitude Test (Turmezeyné Heller, 2007) and EFL proficiency tests (Hungarian Educational Authority). I used the descriptive and the inferential statistics tools of SPSS program to compare results and indicate meaningful relationships among the tests' components.

Results: Inferential statistics showed that the relationship between phonetic coding in 2017 and 2021, pitch discrimination in 2017 and 2021 and listening skill at the two points of measurement are significant at the .01, .05 and .05 level (2-tailed), respectively, and range between very strong $r=.827$, .896 and moderate .690, respectively. From this perspective we can see that all students' auditory skills improved during the period examined. However, when I compared the three English language skills and the Hungarian Music Aptitude Tests' four subtests at two points of measurement, SPSS found only significant correlation between reading skill and grammar sensitivity in 2021. There were no significant correlations between language skills and Music Aptitude's three subtests. SPSS indicated meaningful and significant relationship between the Language Aptitude Test's rote learning and Music Aptitude Test's meter discrimination.

Conclusions: To my knowledge this is the first Hungarian longitudinal study examining the relationships between language aptitude and music aptitude and language skills. Results are promising, but as this is a case study, this paper can only be a basis for further large-scale studies.

Keywords: language, aptitude, music, skills, interaction

A jelentés vagy a forma felől? - A magyarnyelv(tan)-oktatás új, funkcionális stratégiája alsó tagozaton

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Bevezető: Az iskolai tárgyak közül a magyar nyelvtan már régóta az egyik legkevésbé kedvelt. [1] Ennek lehetséges okai közül az egyik legmeghatározóbb az, hogy nagy a „szakadék” a tanuló nyelvváltozata és a tankönyvek által használt nyelvleírás között. Kutatásomban annak járok utána, hogy a magyar mint idegennyelv-könyvek (MID) módszertana, a kommunikatív nyelvoktatás, a funkcionális nyelvészet eredményei milyen formában és struktúrában ültethetők át az alsó tagozatos nyelvtanítás gyakorlatába.

Célkitűzés: A dolgozat fő kérdése az, hogy milyen nyelvleíró struktúrákat, hasonlóságokat, különbségeket hoz létre a funkcionális, kommunikatív, illetve a rendszerközpontú, leíró nyelvi szemlélet az alsó tagozatos anyanyelvi tankönyvekben és a MID-könyvekben. Meghatározható-e a különbségek eredete? Milyen nyelvi minták és modellek következnek mindebből a pedagógiai térben? Elemzésem középpontja egyrészt a legújabb fejlesztésű alsó tagozatra szánt nyelvtan-könyvek [2], másrészt egy külföldi gyerekeknek készült magyar nyelvkönyv két kötete. [3]

Módszer: Az összehasonlítás szempontsorának kialakításakor azzal az előfeltevéssel élünk, hogy a funkcionális megközelítés tetten érhető, ha összefüggés tárható fel a párbeszédre épülő feladatok, a kooperatív munkaformák és a nyílt végű kérdések mennyiségében és minőségében, illetve abban, hogy mindez – vagyis az adott nyelvi jelenség bemutatására szolgáló lecke – egy a kontextust felállító indukciós anyagra, eseményképre vagy szövegre (referenciára) épül. Tartalomelemző eljárással keresztmetszeti (összehasonlító) elemzést végzek Weinbrenner-féle „komplex” tankönyvkutatási modell segítségével. Hármass rendszeréből a produktumorientált tankönyvkutatás típusát alkalmazom. Kiemelten kívánunk foglalkozni a szaktudományi és a szakdidaktikai dimenzióval. [4]

Eredmények: A vizsgált könyvekben közös vonás, hogy a leckék felépítése induktív szemléletű, tartalmukat *ráhangelő feladatok, fogalmak és szabályok leírása, kommunikációs feladatok, dramatizálás, szólások és közmondások, versek* építik fel. Szintén azonosság, hogy a leckékben a nyelvtani ismeret, nyelvi jelenség, vagy helyesírási szabályszerűség felfedeztetését követően az információkat az összefoglalók, a magyarázatok a leíró nyelvtan fogalmi készletével tudatosítják.

Következtetések: A kutatás várható eredményei segíthetik az anyanyelvi nevelés és az idegennyelvtanítás összefüggéseinek megértését, illetve új nyelvpedagógiai fogalmak kialakítását. A használt kvantitatív tartalomelemzés révén a vizsgálat hozzájárulhat az alsó tagozatos anyanyelvi módszertan, nyelvtanítás fejlesztéséhez.

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Támogatás: KRE PK

Kulcsszavak: anyanyelvi nevelés, nyelvtanítás, funkcionális nyelv szemlélet, tankönyvelemzés, nyelvpedagógia

Politikatudomány II.



Political Science II.

Winston Churchill: A Conservative, but to what extent was he conservative?

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When we read the definition of a political party, it claims that it is common for members of a party to hold similar ideas and that they may promote specific ideological goals. On the one hand, it means that a Liberal Party (in general) will pursue mostly liberal policies. On the other hand, if we focus on the word common, it can also mean that not all of those members are strictly liberals in their political thought. Winston Churchill, Prime Minister of the United Kingdom between 1940-45 and 1951-55 was a member of the Conservative Party during this period. Thus, he was definitely a Conservative with a big C, but was he ever conservative with a small c? His father, Lord Randolph was a Conservative, consequently it was obvious for Churchill to join the party in 1900 – however, four years later he decided to defect to the Liberals, staying there for the next two decades, only re-joining the Conservatives in 1924. In my presentation I am going to speak about the political thought of Winston Churchill, trying to answer the question whether he was a conservative, and if yes, to what extent. In order to do that, I explain what the difference is between Conservative with a big C and conservative with a small c, and address what it means to be ideologically conservative. For my research I am using the speeches and writings of Winston Churchill, as well as his biographies so that I can understand his ideas and thoughts and match them to the attributes of the conservative ideology. I expect that the result of my research will show that Churchill was rather an opportunist than a conservative or a liberal, still that did not stop him from being one of the most important leaders of the Conservative Party in the 20th century.

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Keywords: *Winston Churchill, conservatism, Conservative Party, ideology, political thought*

International Political Discourse Analysis on the State of LGBTQ+ Rights in Poland and Hungary

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Introduction: The question of the rights of minority and marginalized groups – whether it be sexual, religious, ethnic etc. – has generated heated debates in the recent years. Among these topics LGBTQ+ rights gained significant importance, especially in the European Union as the conservative governments of Hungary and Poland recently made strict decisions and policies concerning the limitation of the rights of LGBTQ+ people. In addition to generating domestic tensions, these rulings have received strong criticism from Western leaders and political parties, as well as they have drawn great media attention.

Methods: In our ongoing research we are focusing on political discourse analysis regarding LGBTQ+ rights in Poland and Hungary. We examine the issue by comparing the topic's representation in Polish and Hungarian governmental communication with its interpretation in Western countries. LGBTQ+-related public statements, political declarations of parties, media coverages, expression of views by NGOs and lobby groups are providing the basis of our analysis. We are exploring how the main elements of the topic are defined and explained to their target audience by these groups and parties.

Results: We expect to find significant difference in the examined statements regarding these groups' approach and their role.

Conclusions: Our research is expected to help us understand the dynamics of LGBTQ+ discourse and the international echoes of these political purposes by identifying related notions and trends between Poland, Hungary, and Western countries.

Keywords: political discourse analysis, LGBTQ+, Hungary, Poland, European Union and Western countries

Strategic sexism: Fallacies against women in political argumentation

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Sexism in politics is a quite frequent thing and it is judged harshly by the public opinion. However, politicians still use problematic statements here and there, even though it is seemingly not so beneficial for them. In my research, I am taking a more pragmatic approach, and with the help of pragmadialectics, I analyze the arguments against women (the so called ad feminam [1]) within the Hungarian political communication, in order to see, what is the real reason behind them.

The purpose of this paper is to prove that ad feminam is not just an exclusionary and pejorative statement against women but it can be used strategically [2] by political actors in order to manipulate the public discourse [3] and with that, they can secure their own position and sustain the status quo. In order to fully understand political deliberation within argumentative context [4], I am using the literature from both the fields of political science [5] and pragma-dialectics. To demonstrate my thesis about the intentional use of the ad feminam, or „strategic sexism”, I am going to analyze a speech event as a case study, which took place between László Kövér from the Fidesz party, and Tímea Szabó from Párbeszéd.

I hope my research proves to be useful not only to locate harmful speeches or problematic statements within political communication, but also to understand the carefully planned strategic movements behind them.

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Trust matters, but in different ways. Quantitative research for understanding the generational differences between the relationship of trust and voting in Hungary

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Since trust plays a vital role in our lives, it has been the subject of numerous research for decades. Scholars of political science also joined the discussion and it soon became clear, that trust has a crucial role not only in political and institutional performance, but also in democratic procedures. Empirical research have provided convincing evidence that trust or lack thereof has a strong influence on different forms of voting behavior (see for example Grönlund & Setälä, 2007). On the other hand, Knutsen (2011) found that the party preference of Hungarians is largely determined by age, furthermore, Kmetty, Koltai, and Tardos (2017) discovered huge generational gaps in terms of sociocultural differences across society as a whole. Generational differences were later enhanced by the research of Enyedi and Tardos (2018), shedding light to the generational restructuring of the party system. Even though trust is a well-researched concept, literature is lack of studies focusing on the direct impact of trust on political participation and voting on the individual level. Taking the generational differences in Hungarian voters' behavior into account, the study aims to explore not only that how different levels of trust can be associated with voter turnout and incumbent voting, but also the generational differences of the association.

Results: The postsocialist generation has the highest level of trust, but significantly different mechanisms can be identified between trust and voting in other generations. While higher trust can be associated with greater turnout and incumbent voting as for the socialist and presocialist generations, the younger voters' level of trust is significantly higher among those who abstain from voting and those who vote for an opposition party.

Conclusions: What led to the fact that the recently established democracy has already begun to erode? Can we ever leave the detrimental effects of socialism on our social attitudes behind? Will the changing of generations be able to heal the wounds in our culture and social relations? The result of the research very well may be an indicator of a fundamental legitimacy crisis of the contemporary Hungarian political system, but it gives cause for confidence in the latter questions.

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Keywords: social trust, voting behavior, electoral participation, party choice, generations

Behavioral design supporting the transition to a circular economy

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My prior research is in the intersection of law, social theory, and behavioral sciences. This interdisciplinary field is mainly marked by behavioral law and economics¹, and the specific question narrowly speaking connected to nudge research². Nudge is a psychological behavior altering method, that is low-cost and choice-preserving, uses tools like framing and information simplification; social norms and values; changing the default; manipulating and redesigning trivial physical environment. The topic is filled with deep, legal-moral philosophical questions, for example: when we make explicitly emotional decisions, we may feel free, but our emotions may be manipulated by professionally created influences – in such situation is the decision still free? Is it correct to assume, that the majority of people aims to avoid disadvantageous behavior and climate catastrophe? If so, consumer capitalism preventing freedom by messages reaching our brains that induce unconscious processes that make us much more likely to buy unhealthy and unsustainable consumer goods? Once a certain a technology is invented, it cannot be un-invented – this is a well-known danger of rapid scientific development. As behavioral science getting more and more sophisticated, with the large-scale use of informational technologies and data science, psychological behavior altering technics will be used increasingly – which may be used for productive ways assisting sustainable development, as well as to counter-productively assisting in self-destructive activities. Can we change human anthropologies, and what are the limits to engineering society? Should we have a fundamental right to free preference? To this end, I would like to provide a comprehensive analysis of the scientific basis of the issue and possible legal solutions.

Results: My synthesis of the literature shows that there is both a scientific curiosity for psychological behavior management and a need for behavior-based policy design at the level of “empirical governance”. The fight against COVID 19 has used the tools of behavioral science everywhere. In addition, behavior and attitude change is at the heart of green policy, thus behavioral law and economics can strongly support circular economy transition.

Conclusions: States and markets using more and more psychological behavior altering techniques in quantity³. As Information and Communication Technologies (ICT) become more advanced, psychological behavior management will also become more effective, as (1) nudges can be personalized to the specific consumer (2) the person provides real-time data continuously so that behavior can be immediately evaluated and the behavioral design corrected, if needed, (3) individuals are connected and can see each other, compare and share their behavior, which can further facilitate the effectiveness of certain elements. Transition to a circular economy and environmental public policies should use behavioral scientific insight to succeed⁴. For this, we need to build a democratic, ethically acceptable legal framework for application and then conduct and analyze a real-world implementation of behavioral policies.

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Erdélyi magyarok online és offline politikai részvétele

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A fejlett nyugati demokráciákban megfigyelhető, hogy az utóbbi évtizedekben az állampolgárok a hagyományos politikai részvételi formáktól elfordulva, hajlamosak a direkt demokratikus, tiltakozó aktivitást helyezni előtérbe, ezzel együtt saját kezükbe véve az irányítást [1]. Az online világ mára újabb lehetőségeket biztosít az internetezők számára, akik így a képernyő előtt ülve is bekapcsolódhatnak a politikai folyamatokba. Ezen részvételi formák kapcsán a szakirodalomban három nézőpont körvonalazódik: (1) létezik egy kritikai álláspont, amely szerint, bár az online részvételi formák jelentős részének van offline megfelelője, az előbbi egyszerűsége és alacsony költsége miatt jelentéktelen marad, (2) mások új lehetőségként tekintenek a virtuális világra, amely olyan embereket von be a folyamatokba, akik ellenkező esetben távol maradnának, (3) a harmadik nézőpont szerint pedig az online részvételi formák a különböző offline típusok virtuális megfelelői, amelyek ugyanannak a jelenségnek a részei, és egyfajta kiegészítésnek tekinthetők [2].

Tanulmányomban igyekszem feltérképezni, hogy milyen politikai részvételi típusok különülnek el az erdélyi magyarok esetében. Emellett arra keresem a választ, hogy az online és offline részvétel mentén az állampolgárok milyen kategóriái jelennek meg, hogyan jellemezhetők ezek a kategóriák, illetve létezik-e egy csoport, amely kizárólag az új, online lehetőségek iránt mutat érdeklődést, tehát kijelenthető-e, hogy az internetnek köszönhetően teljesen passzív állampolgárok aktívvá válnak.

Módszer: A tanulmány alapjául szolgáló kérdőíves kutatás reprezentatívnak tekinthető az erdélyi magyarságra. Az adatfelvételre a kolozsvári Bálványos Intézet keretében került sor, és 1839 erdélyi magyar válaszolt a kérdésekre.

Eredmények, következtetések: Megfigyelhető, hogy az egyes tevékenységek online és offline megfelelői együtt járnak, és azok, akik a virtuális térben végeznek egy tevékenységet, nagy valószínűséggel ezt megteszik offline is – ez azonban fordított esetben nem mondható el. Amennyiben az állampolgároknak négy csoportját vesszük górcső alá ((1) teljesen passzívak, (2) kizárólag offline aktívak, (3) kizárólag online aktívak, (4) részvételt halmozók), az eredmények arról árulkodnak, hogy nagyon vékony az a réteg, amely kizárólag az online politikai aktivitás iránt mutat érdeklődést, tehát az internet inkább „kiegészítő” lehetőségnek tekinthető, amely nem vonz be jelentős számú „új” embert a politikába és civil életbe.

Támogatás: A szerző a 2021/2022-es tanévben a Collegium Talentum tehetséggondozó program ösztöndíjasa.

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Kulcsszavak: demokrácia, politikai részvétel, online világ

Infokommunikációs jog, büntetőjog



Infocommunication and Criminal Law

Victimization in online social platforms

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The use of public spaces is thus an integral part of the everyday life of the information society, facilitating the rapid and easy flow of information. At the same time, it is important to draw attention to the fact that this unrestricted communication of information can cause a number of dangerous and threatening situations, since the individual, without any special consideration, voluntarily communicates information about himself and his environment that can easily result in violent crimes.

Thanks to the development of information and technical tools, criminal behavior is increasingly being transferred to virtual space. Nevertheless, the scale and weight of cyberspace crimes are increasing every day.

The main goal of suicide promotion groups is to call on players to reach as many people as possible - challenging or news of the game. This expands the pool of participating players as well as game distributors, and even without a unit of intent, anyone can easily become an instigator or accomplice, and victimization can happen very quickly. And because of the anonymity of the Internet, detecting the perpetrator can cause a number of problems.

Keywords: community spaces, suicide promotion groups, reconnaissance, internet, anonymity, incitement

Uncertain future of Transatlantic data flows: Will the United States ever achieve the "adequate level" of data protection?

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The digital commerce network has grown and evolved over the previous few decades, owing primarily to a rise in cross-border data flows. Countries who have adapted to this new type of trade network have been concerned about the protection of the personal data of citizens and residents and have taken steps to protect it by developing privacy regulations. We have seen how, in the European Union (EU), data protection has been attempted to be strengthened by Article 45 of the General Data Protection Regulation (GDPR), and data transfer to third countries is only allowed when an adequate level is provided.

Japan's Data Protection Law received the first adequacy decision; however, it has some gaps compared to the GDPR. After Brexit, the United Kingdom (UK) likewise had to get an adequacy decision, and there are still some concerns about its adequacy. By comparing the examples of Japan and the UK, we would like to reveal if the United States (US) has a potential to be compliant despite its different approach on data protection.

The study is mainly based on reviews of the literature and legal documents on data transferring from the EU, and on an analysis of the role of the European Commission in this field under the GDPR and in practice. These reviews are conducted using a comparative method based on practices in Japan, the UK, and the US.

Results: The Personal Information Protection Commission (PPC) of Japan has released a set of Supplementary Rules that apply solely to personal data transferred from the European Union. Although the Japanese Data Protection Law (PPIA) has significant gaps, the Supplementary Rules, which provide a higher degree of protection, have made it adequate. Furthermore, despite the Immigration Exemption, which is in violation of the GDPR, the UK was considered adequate. In light of these findings, we can envisage a new framework that provides a better level of protection for EU citizens' personal data than the previous Privacy Shield, making the US one of the adequate countries.

Conclusions: We can conclude from Japan's and the UK's adequacy decisions that the concept of "essentially equivalent" does not imply that the data protection law of a third country must provide an essential level of protection for their own nationals or non-European nationals. The EU prefers this essential level of protection for its own citizens and residents. Unlike the former Privacy Shield, a new agreement between the EU and the US that exempts only EU personal data from surveillance by the National Intelligence Agency and provides additional remedies in the event of a personal data breach might ensure that US is deemed adequate.

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Keywords: Personal data transfer, Transatlantic, Adequacy decision, UK GDPR, PPIA

Some aspects of data protection in criminal justice

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The large - scale technological development, also known as the Fourth Industrial Revolution, which is characterized by the fusion of technologies is affecting many areas of life, including law, thus also criminal justice.

Due to the exponential technical development brought by the digital revolution rates of cyber-crime increased significantly, which poses a risk to a wide range of potential victims, including entities affected by the resulting damages.

The aim of the study is to analyze the main data protection issues related to criminal justice, in particular the substantive legal norms related to cybercrime and the details of the application of the regulation on the processing of criminal personal data.

Keywords: data protection, cybercrime, criminal justice

Personal data protection of the deceased – International regulation

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The main field of the research is the protection of the personal data of the deceased people, including data recorded during their lives, or in the context of their deaths, and the regulation of the prevention of the misuse of the personal data

Results: The study international and European Union law regulations, scientific literature, and focuses to provide expedient conclusion for the legislature, and also for anyone processing personal data, thus improving the usage and future legislation of data protection law. On the international level there are numerous solutions on the data protection of the deceased. Also, there is a professional discussion about the alteration of the current regulation.

Conclusions: There is a professional discussion on international level about the topic, although in the domestic field there is no debate similar to the above mentioned. According to some experts it would be desirable to strengthen the protection of the data of the deceased and establish a more property right-like approach in the usage.

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Keywords: *personal data protection, deceased people, international regulation*

Invariance in Principles of Machine and Legal Automation

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In this paper the term automation is understood making hardware or software that is capable of doing things automatically without human intervention. Automation in machines reached high level during the Third Industrial Revolution and is expected to be improved in future according to the Strategy 4. However, automation in law is just at the starting point and intensive progress is necessary. The legal automation involves the use of software to streamline, progress and manage tasks and activities that are common to the legal function, such as document creation, document review, communication, triage and work allocation, project management and so on. The aim of the paper is to improve the legal automation using the principles developed for machine automation. These principles are: the reliable, directing, robust, accountable and competent principle, principles of visibility, observation and understandability, proactive control and skill degradation. Application of principles is believed to improve the legal automation.

Keywords: machine automation, legal automation, principles of automation, invariance of systems

Reintegrációs őrizet lehetséges gyakorlati kérdései a büntetés-végrehajtási pártfogó felügyelői tevékenység tükrében

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Magyarországon 2015. április 1. napja óta van lehetőség a reintegrációs őrizet alkalmazására. Az új jogintézmény bevezetéséről a büntetések, az intézkedések, egyes kényszerintézkedések és a szabálysértési elzárás végrehajtásáról szóló 2013. évi CCXL. törvényt és ehhez kapcsolódóan más törvények módosításáról szóló 2014. évi LXXII. törvényt rendelkezett. Az újjonnan bevezetett jogintézmény nem egy alternatív büntetési forma, hanem a büntetés-végrehajtásának egyik lehetséges eszköze, amely egyrészt az elítéltek társadalmi reintegrációjának elősegítését, másrészt a börtönpopuláció létszámának csökkentését szolgálja. A jogintézmény alkalmazása esetén az elítélt egyfajta „előszabadulásként” szabadságvesztésének meghatározott részét családjá, barátai, befogadó környezete körében töltheti, így jelentős mértékben csökkenthetők azok a prizonizációs hatások, amelyek a börtönben töltött évek alatt stigmaként állandósulhattak. A reintegrációs őrizet jogintézménye kapcsán a büntetés-végrehajtási pártfogó felügyelőknek is számos feladatot határoz meg a hatályos szabályozás, a pártfogó felügyelői tevékenység Janus arcú jellege e tevékenység keretében is markánsan megfigyelhető.

Előadásom célja a magyarországi reintegrációs őrizet feltételeinek bemutatásán túl, a jogintézmény gyakorlati alkalmazása kapcsán felmerülő anomáliák, kérdések bemutatása.

Kulcsszavak: büntetés-végrehajtás, társadalmi reintegráció, reintegrációs őrizet, pártfogó felügyelet

Biológia



Biology

Grassland type, but also management and landscape complexity shape butterfly functional diversity

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Introduction: The alteration of land use by agricultural production has led to a widespread loss of biodiversity in human-dominated landscapes. The degradation and gradual disappearance of natural and semi-natural habitats has now become a global conservation issue. Together, intensive agriculture and the abandonment of extensively farmed areas endanger the wildlife of European landscapes.

Aim: Our study aims to explore the complex processes that affect butterfly functional diversity and functional community composition in agricultural landscape. We examined the functional characteristics of butterfly communities with three contrasting design variables: habitat type (calcareous grassland vs. orchard meadow), management presence (managed vs. abandoned), and landscape context (forested vs. agricultural landscape).

Methods: We surveyed butterflies on 20 calcareous grasslands and on 20 orchard meadows in Central Germany. Both habitats are characterized by high structural diversity and extensive cultivation. To test our hypotheses, we selected six life-history traits (overwintering, voltinism, wing length, diet, flight period, territoriality) for each butterfly species and we assigned values to them from literature. For our statistical analyses we used single trait and multi-trait approaches.

Results: Our results showed that, of the three design variables, habitat type has the strongest filtering effect on butterfly functional traits. In orchard meadows butterflies overwinter in a later life-stage, feed on more plant species and there are more likely to maintain a territory. Functional diversity indices as functional richness and divergence values were higher at calcareous grasslands. The RLQ analyses highlighted that managed orchard meadows in agricultural landscapes contains species which overwinter in adult stadium, have more generations and are larger in size. These areas also enclose species with wider diet breadth, have longer flight period and maintain territory.

Conclusions: Managed agricultural landscapes are also able to maintain valuable species, which with their functional characteristics can contribute to a healthy functioning ecosystem.

Keywords: calcareous grassland, lepidoptera, traits, orchard meadow

Timing of nutrition and body composition of regularly training men

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Introduction: According to the anabolic window theory, nutrients intake post-exercise might be the most beneficial for athletes, but only for a limited time, even more important than the daily macro nutrient intake [1].

Aim: The purpose of our study was to show an alternative model testing this theory.

Methods: 21 male subjects (22.54±2.24 year) participated in this study doing resistance training as leisure activity. The intensity and volume of training sessions were increasing continuously. Subjects blindly were divided into two groups, the only difference between them was the timing of nutrition intake after workouts (carbohydrate and protein complex). The EU group consumed the complex right after the training session, while the EU3 group consumed it 3 hours post workout. Differences between them were measured in a 5 weeks period. For detecting changes of the participants body composition-, skin fold thickness-, leg strength measurements were conducted at the beginning and at the end of the program.

Results: According to our data, timing of the nutrition intake correlated with body composition changes. According to bioimpedance data in EU group a bigger muscle hypertrophy was measured and they had a higher cumulated InBody score (first measurement average 76.64±8.79, second measurement 80.27±10.77). The average InBody score of EU3 at the first measurement was 84.1±8.68, at the second 86.1±6.64. In both groups muscle mass has grown substantially (EU 3.5%, EU3 increased 2.1%), showing that the training program and the macro nutrient intake was optimal for the changes. Body fat percentages decreased in both groups, but in EU3 the change was bigger (first measurement 14.9±6.75%, second measurement 14.04±6.29%). Changes measured in body composition were reinforced with skin fold thickness decreases as well. Leg strength measured with a dynamometer increased 5.15% in EU, in EU3 it increased 6.35% during 5 weeks, differences between groups were not significant.

Conclusions: Based on our results, timing of nutrition intake after training is very important if body composition changes and muscle hypertrophy are the main goals of exercise.

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Keywords: anabolic window, strength training, body composition

Evaluation on soil microbiome composition of Central-Hungarian forest stands

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Introduction: In order to reveal the microbial composition and its' relationship to metabolizable organic carbon content and different soil parameters, we carried out a metagenome and biochemical investigation of forest soil samples. Three diverse forest stands - a 20-year-old black locust, a newly reforested two years old and an 80-year-old sessile oak forest - were the subject of investigation in 2018. The soil samples were collected from two depths [0-10 cm (horizon A) and 10-40 cm (horizon B)] in three repetitions and five times between April and October. A new generation sequencing method (16S rRNA gene amplicon sequencing) was applied for the soil microbial composition detection and the MicroResp™ technique to reveal the microbiome catabolic capacity. Furthermore, general soil physical and chemical parameters were also analysed through the investigation.

Results: The 16S rRNA sequence analysis revealed a high abundance of the following taxa in the soil samples: Acidobacteria (22.8%), Actinobacteria (18.6%), Proteobacteria (18.5%) and Verrucomicrobia (10.9%). Tukey-test was carried out during the variance analysis on the abundance datasets of bacterial taxa, which showed significant differences between stand-horizon combinations regarding more bacterial taxa, including the highly abundant phyla Proteobacteria and Verrucomicrobia. The contribution of taxa to the total variance was also investigated using SIMPER test. Its results proved a remarkably (60.41%) contribution of the four most abundant phyla to the total variance; next to Acidobacteria (18.99%), Actinobacteria (18.51%), Verrucomicrobia (11.73%) and Proteobacteria (11.18%), the taxa Bacteroidetes (9.51%), Gemmatimonadetes (6.33%), Chloroflexi (4.29%), Nitrospirae (3.25%) represented a relatively high contribution to the total variance. In order to reveal the relation between the abundance of each bacterial taxa and metabolizable organic carbon sources and soil parameters we, performed multiple regression analyses. MRA showed significant differences in regression were exposed in the case of the following parameters: pH_{H2O} (Acidobacteria, -1,46; Patescibacteria, 1,3), amino acid content (Verrucomicrobia, -1,72), TOC content (Verrucomicrobia, 2,38), NO₃-N content (Verrucomicrobia, -1,18), TIC content (Firmicutes, 2,09) and Al-Mg content (Firmicutes, -2,45). The determination of the distance of the three forest stands based on their soil microbial composition using a nonmetric multidimensional scaling analysis formed the target of our investigation as well. This investigation revealed a higher distance between the two oak stands than between the middle-aged oak and the black locust stands.

Conclusions: In the light of our results, it is presumable that from the elements of forest structure, the rate of canopy closure has a more significant effect on the soil bacterial community composition indirectly than the dominant tree species of the forest.

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Keywords: forest structure, soil metagenome analysis, bacterial community, pedunculate oak, black locust

Wastewater monitoring of certain viruses as a decision-support tool

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Introduction: Nowadays, viral diseases are receiving more and more attention. The communal wastewater contains enterally excreted viruses, apart from other viruses, that could be detected by the wastewater-based epidemiology approach (WBE). WBE is utilized all around the world to track the spread of certain viruses, illicit drugs, pharmaceuticals etc. Advantages are community level information, spatial and temporal distribution, relative cost- and labour effectiveness among others [1]. Disadvantages: sewage is a complex matrix, it contains several inhibitors that could degrade the viruses genetic material; environmental factors as temperature or rainfall could also effect the monitoring. In May 2020, we started a COVID-19 pandemic-related surveillance, while in the future we would like to focus on other human viruses too. The most important groups of enteric viruses in communal wastewater are *Adenoviridae*, *Astroviridae*, *Caliciviridae*, *Hepeviridae*, *Picornaviridae*, *Polyomaviridae* and *Reoviridae*.

Methods: 1 liter, duplicated grab samples were employed (transported at 4°C) for the indirect surveillance. The virus concentration was based on adsorption and salting-out, the next step was nucleic acid extraction [2]. The presence of SARS-CoV-2 RNA was detected by virus-specific reverse-transcriptase quantitative polymerase chain reaction (RT-qPCR) targeting E and RdRp genes.

Results: Many types of sewage samples were processed, like settlements varying in size (733-789699 people), hospitals, motorway service area for transit traffic, schools, critical infrastructure facilities, and sub-populations within a settlement (by geographical information system modelling).

Conclusions: Sewage surveillance is a suitable approach to monitor the coronavirus spread indirectly, as an example, within various populations and in some cases to make short term predictions for decision-support.

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Keywords: wastewater-based epidemiology, near-source tracking, SARS-CoV-2, enteric viruses

I-Block: A simple assay for studying sequence-specific DNA-protein interactions in *E.coli*

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Sequence-specific DNA-protein interactions are central to many biological processes. For characterization of DNA binding proteins it is important to test whether the protein can bind to a particular DNA sequence, and to determine how alterations in the protein and/or in the DNA affect the binding strength and/or specificity. The published methods need purified proteins or require construction of protein fusions. The I-Block assay is a simple and cheap alternative to the published methods for testing sequence-specific binding of proteins to DNA in *E.coli*.

Results: The assay is based on the regulatory mechanism of the *E.coli* lac operon and works by detecting competition between the tested protein and RNA polymerase for binding to overlapping target sites in the promoter of the Lac repressor gene (*lacI*). The assay utilizes a LacI repressor deficient *E.coli* host strain and two plasmids. One of the plasmids (pLacI) carries the gene of the Lac repressor with the assumed recognition sequence of the tested protein inserted at the 3'-border of the *lacI* promoter. The tested protein is expressed from a compatible plasmid (pDBP). Constitutive β -galactosidase synthesis characterizing the *E.coli* $\Delta lacI$ host is repressed upon introduction of the pLacI plasmid. If the protein expressed from pDBP binds to the target site at the *lacI* promoter, it will block *lacI* transcription leading to induction of β -galactosidase synthesis. The method was validated with two zinc finger proteins, with the λ phage cI857 repressor, and with CRISPR-dCas9. The assay was shown to work with samples of liquid cultures, and with colonies grown on the surface of X-gal indicator plates [1].

We observed that certain sequences inserted next to the *lacI* promoter interfered with *lacI* transcription, which would limit general application of the assay. Experiments with pLacI variants, in which the *lacI* promoter was replaced with the RNA polymerase σ^{32} subunit-dependent *groE* promoter suggest that transcription blocking by such sequences was due to preventing promoter escape at the σ^{70} -dependent *lacI* promoter. We try to circumvent this problem by constructing a host bacterium producing mutant version of σ^{70} , which is known not to block promoter escape. We work on developing the I-Block assay into a high throughput technique, which can be used to find the best binding protein variant for a particular DNA sequence, or to identify the best binding DNA sequence for a protein.

Conclusions: The I-Block assay worked well with proteins representing three different classes of DNA-binding proteins, which suggests its general applicability. We wish to develop a high-throughput version of the assay.

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Keywords: DNA-protein interactions, DNA-binding protein, *E. coli* lac operon

Air Quality Improvement Measures and their Effectiveness in Pécs, Hungary

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The city of Pécs and its region regularly and persistently exceeded the relevant daily limit values for particulate matter (PM₁₀) for a period 2011-2017, with the exception of one year (2014), therefore the Court of Justice of the European Union found that the city of Pécs (and as well Hungary) has failed to fulfil its obligations again in 2021 [1]. As a result of the previous procedure 10 years earlier, the Government of Hungary has already launched the PM₁₀ concentration reduction programme set out in Government Decision 1330/2011 (X.12.). In parallel, since 2011, the local government of Pécs has been contributing to the reduction of particulate matter concentrations in the city by adopting local regulations to improve air quality and by introducing medium and long term innovative solutions.

Objectives: While the local government controls emissions at source level through soft measures and local regulations, the city started a LIFE project with long-term objectives aiming PM₁₀ pollution reduction from traffic and domestic heating, in addition to improve deeper identification of hotspots and problems, sensitise decision-makers and raise public awareness. The Institute for Regional Studies of the Centre for Economic and Regional Studies in cooperation with the city of Pécs establish a PM₁₀ monitoring network in the city area in 2021, which will provide data to allow a more detailed assessment of pollution disparities due to spatial differences. At the same time, parallel measurements will be carried out to establish a ventilation protocol based on real-time data, by continuously measuring indoor and outdoor air quality in the selected public schools and educational institutions. The collected data will also allow the development of a set of data-driven, long-term solutions for diverse urban areas with different air quality.

Methods: The measuring units consist of commercially available sensors for particulate matter, temperature, pressure and relative humidity, a Raspberry Pi microcontroller and a lamellar housing developed and manufactured by the Hungarian Institute of Energy and Quality at the Faculty of Materials Engineering, University of Miskolc. In order to reduce the uncertainty of the measurement data, the data processing is supported by a calibration function fed into the measuring unit and a compensation function stored on the server side [2]. A total of 10 measurement points were assigned in the study area (city of Pécs). The measurements are expected to last for at least 2 years.

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Keywords: particulate matter (PM10) measurement, urban air quality, building air quality, Failure of a Member State to fulfil obligations

The use of low-cost sensors to determine air quality during the heating season in Budapest

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Air pollution continues to be a global problem with high concentrations of particulate matter (PM) greatly contributing to poor air quality. Budapest is susceptible to high PM concentrations in winter due to its high population in Central/Eastern Europe and heating demand. Poor air quality poses a great threat to the environment and human health [1]. The use of low-cost sensors promotes citizen science and educating communities. The aims of this study were to determine the quality of air in schools within Budapest, and the relationship between the measurements of the low-cost sensors and official air quality monitoring stations. The components of the low-cost sensors (School Air Quality Meters, SAQMs) were assembled by an expert technician. After which, they were mounted at selected schools in district XIII, Budapest. The SAQMs measured PM₁, PM_{2.5} and temperature and uploaded the data to a Ubidots online server in five-minute time stamps. The results were compared with data from the official monitoring stations of Hungary wherein Erzsébet tér and Honvéd sport court monitoring stations were identified as reference points closest to the schools.

Results: PM₁ and PM_{2.5} concentrations were the highest in January as a result of low temperatures resulting in more excessive use of heaters and electricity. Meteorological factors such as wind, air pressure and temperature have a significant impact on PM concentrations. Both PM₁ and PM_{2.5} decrease with an increase in wind, temperature and precipitation. Furthermore, PM concentrations increase in anticyclonic conditions with high air pressure.

Conclusions: PM concentrations reach critical levels during the heating period of winter. There is a strong significant correlation between PM concentrations measured by the SAQMs and that measured by nearby official monitoring stations; this suggests that low-cost sensors can provide reliable information and can therefore be used for citizen science and clean air programmes.

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Keywords: School air quality meters, low-cost sensors, winter air pollution, particulate matter, citizen science

Társadalomtudományi kutatások



Sociological Studies

Convergence or heterogeneity? Assessing pathways and elucidating crises within the broadening economic liberalization in the European Union and its common market

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Introduction: The perpetual shifting amidst mutual European sense and national disengagement have not slowed down in the recent years. It seems, that Hobsbawm's Western rich infrastructural system developed with a strong European sense have found its fragility once again. From the perspective of a necessary and continuous enhancement on European Union economy, various solutions have emerged from a wide array of scientific fields over the years.

For instance, European economic assets may attract larger awareness if they can be connected to a cultural heritage from the perspective of the nation states inside the European Union but of course the variety of such ideas is much broader. In this study, our aim to locate and discern the aspects and crises of economic liberalization within the European Union to assess that the current extent of heterogeneity can still be challenged with the same convergence that made European achievements unified and has set them in the same direction in the past.

When we are contemplating the European Union's economic status, we see a dense and competitive modern market system that has strengthened since the founding of ECSC and EEC. Contemporary measures in liberal democracies in Europe are one aspect; antecedent risk calculation within the same market economies is another. While democratic measures are definitely considerable help to 'boost' the economy, they are also more vulnerable to certain crises than their non-democratic market counterparts.

Results: The 2008 crisis showed that the EU common market is highly sensitive to external output and it is also vulnerable towards economic insufficiencies. Convoluted administrative systems and veto can block swift implementation of satisfactory market fixes as in many cases they got stuck at the legislative branches of the EU. The timing and manner of crisis management is imperative on how we handle them. Studies also keen to associate economic crises with similar factors such as mismanagement on a macroeconomic level (Gavin and Hausmann, Eichengreen & Rose), financial liberalization (Ranciére, Tornell & Wastermann), lack of proper crisis response (Primarily Rosas, Keefer), regulatory policy problems (Copelovich & Singer), and international spill-over in the financial and banking system originated in the International Monetary Fund (Lipsy).

Conclusions: In the study, observing of various economic crisis types within the European Union have been made priority thus we can gain deeper understanding into the process of the EU's continuously broadening economic liberalization and its policies.

Keywords: European Union, economic liberalization, crisis, fiscal boundaries, crisis response, regulatory policy, polity, contemporary measures

A new model of minority subsidies based on their functions and funding

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Using Niklas Luhmann's model of social theory [1], we start from the premise that minority policy is a special case of social policy. The main task of traditional social policy is redistribution, which deals with inequalities induced by the functioning of the economy. However, politics itself creates inequalities that create real and measurable disadvantages for non-dominant social groups in different areas of life. Some of these are related to the asymmetric division of labour, and it is not uncommon to amplify and ethnicise the differences arising from the logic of capitalism. However, further inequalities arise in the softer spheres of deviation from the majority, in regions of social self-reproduction, which is independent from the economy. These are the issues of identity politics: how tolerant is the majority society in terms of the social visibility and appearance of minorities: whether it supports, tolerates or outright prohibits their manifestations other than the majority - its celebrations, events and institutionalized gatherings. To address these problems, minority policy solutions and related subsidy systems have been developed for various purposes and forms [2]. We examine the sources and purposes of the subsidies by building up a new model. We start from the suggestion that the redistribution policy of minority policy, which aims to alleviate/eliminate economic disadvantages, should be solved with the financial contribution of the majority society, as they resulted from the operation of the economic environment created/regulated/influenced by the state. However, a significant part of the specific elements of identity policy may come from the budget of the 'fatherland' or from targeted grants from third parties, international organizations [3]. Redistribution spending can also be covered from these two 'external' sources, but it can induce tensions in terms of social justice, and therefore the majority society sometimes tries to make the use of these resources impossible by administrative means. In our presentation, we describe our new model – which may also be suitable for the classification of minority regimes – by using the example of the Hungarian community in Vojvodina.

Results: Our data reveal that the above social and identity policy subsidies are asymmetric in favour of the participation of foreign 'fatherland' actors.

Conclusions: It is more appropriate for external 'fatherland' subsidies to support identity policy, as the data show, but in the current context it is also essential for social policy. The new, economic aid coming from the "fatherland" has opened up a new perspective that benefits all.

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Keywords: identity policy, inequalities, minority policy, social policy, subsidies

Objectives and directions – sections and changes of the Hungarian housing system from socialism to after the change of regime

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In my presentation, I intend to present and evaluate Hungarian housing policy from the socialist system to the present day. The analysis is based on my own data collection that deals with the housing policy, housing distribution, construction, renovation, and other housing policy aspects of the entire socialist and post-regime change period examining the legislative measures. The methodological framework of the presentation is a data collection in which I examine measures and legislation that address the above-mentioned aspects of housing policy.

The socialist housing system was characterized by a dual market [1]. The so-called free market structure where the construction and sale of dwellings took place largely without credit, and the state-controlled sector where credit and subsidies played an important role. The weight and role of the state-controlled sphere and the quasi-market sphere have been constantly changing. Private housing construction was relying on private asset throughout the socialism; however, the range of beneficiaries and the modalities of action have changed and broadened. Private housing expanded even more in the years before the change of regime, due to the state's withdrawal from the housing market while individual subsidies continued to exist. The socialist party tried to define housing construction as an explicit goal. As an implicit goal, it tried to reduce the housing shortage, to reduce emigration caused by economic mechanisms.

Following the change of regime, the previous model of the housing sector collapsed. The period between 1990 and 2000 is typically the period in which the previous structures have ceased to exist, but unified concepts and comprehensive programs have not yet been born. As a result, housing policy objectives after the change of regime were strongly characterized by “superficial” treatment of problems. Despite of the privatization of housing and the significant increase in ownership, downward mobility and the affordability index of housing deteriorated [2].

With the database, as well as with an extensive analysis of the literature, in the presentation the evaluation and in-process evaluation of measures can also be displayed.

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Keywords: housing policy, socialist era, housing market

E-psychonauts: an analysis of the drugs-forum.com text database using NLP and text-mining methods

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With the spread of the internet, almost every topic has at least one online group where stakeholders can exchange information and experiences. This is no different among those involved in illegal activities, and several drug forums have been set up, where, in addition to user experiences, there is a wealth of cessation, substitution and prevention material. However, the focus is primarily on achieving the best possible user experience and discussing the effects of using different drugs together. The anonymity of the participants allows for a more honest and authentic discussion. Despite (or perhaps because of) the anonymity, people who have been through similar life journeys have much more trust in each other than in traditional institutional settings. The sources of information and opinion leaders - the so-called e-psychonauts - who are (considered to be) authoritative in information sharing are also more trusted when it comes to informing forum participants on this very sensitive (and illegal) subject. In this paper, I would like to show that drug forums are a new medium that has never existed before and are intended to fill a blind spot in institutional care systems. Before the internet, there was little-to-no possibility of objectively communicating best practices and knowhows on drug use and co-existence with drug use. Nor could they have been created in face-to-face meetings of drug users before, for other reasons. The empirical basis of this paper is a machine learning supported software text analysis.

Results: The evaluation of the research is still in its early stages, but early data suggest that a lot of information has become available on drug forums that did not even exist before. Examples of such information include drug consumption practices and conditions that make tripping more pleasant. The role of e-psychonauts in the community is also interesting.

Conclusions: It is still too early to draw conclusions, but it seems that drug forums are filling the information gaps left by the institutional care system and small drug-using communities.

Keywords: trust, drug forum, machine learning, natural language processing, text mining, online community

Cultivating Contested Narratives: A Perspective on Diasporans

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“Memory is the faculty that enables us to form an awareness of selfhood (identity), both on the personal and on the collective level,” argues Jan Assman [1] while exploring how collective memory affects the interpretation of the past. The analysis of the collective memory of a diaspora sheds light on the identity of the diasporic community, and also on their activities. This presentation seeks to answer how former experience of Communism affected Hungarian diasporans’ perception of and reaction to the political crises of the 1970s in Chile.

Method: The presentation is based on an empirical research that was carried out in Santiago de Chile, during which oral history interviews were conducted with individuals of the Hungarian diaspora, recording their life stories and memories. The life story interviews were analysed from the perspective of individual and collective memory in order to explore the effect of former conflicting experience on diasporans’ perceptions of past events. Apart from the oral history research, extensive archival research was carried out in the archives of Santiago and of Budapest, where valuable primary sources of the Chilean Hungarian community were analysed. The presentation, hence, introduces new sources to the discussion of the interrelations of migration memory and diasporic activities.

Results: The analysis of oral history interviews reveal that diasporans’ former conflicting experience of Communism formed an understanding of the Allende government and of the Pinochet regime that differs from the collective memory of the recipient society. As the perceived threat of Communism appeared in the late 1960s and the early 1970s in Chile, it evoked the memories of former conflicting experience from diasporans and triggered the collective memory of the diasporic community which organized the experience of the present according to the memory of the past.

Conclusions: The findings of the research indicate that analysing the motives and the background of one’s migration is important from the point of view of individual and collective memory, since memories carried by migrants can largely influence their perception of the recipient society and migrants’ reaction to the crisis situations of the recipient country, hence, it affects the diasporic activities.

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Keywords: diaspora, diasporic activities, migration memory

The Critical Discourse Analysis of People's Daily and New York Times around pandemic reports in the first 10 days of 2021 September

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In this presentation 20 articles will be analyzed on the pandemic selected from two leading daily papers, the Chinese People's Daily and American New York Times with the aim of uncovering the ideological standpoints of them. The theoretical background is Critical Discourse Analysis (Fairclough 2008, Chilton 2004). The corpus was compiled within the same time period regarding the two papers, from September 1 to September 10. The frequency of words was measured in four categories that have been selected for the current research (Lian Shaoying 2021). These are the following (1) notional words, (2) key words, (3) the sentiment of words (Lingjia Deng & Janyce Wiebe, 2015), furthermore the (4) implicature (Grice, 1961; Horn & Ward, 2004).

Results: The results of the analysis show that in reports of People's Daily, 1694 notional words were identified out of the total 2803, the top 5 single-key words and top 5 multi-key items were BRICS, ciftis, china-africa, handicraft, xinhua and trade cooperation, win-win cooperation, digital trade, nepali handicraft, post-pandemic era. The sentiment of the top 10 frequently notional words were: 6 neutral, 2 positive and 2 negative, which illustrated a seemingly neutral perspective from People's Daily. As for New York Times, 2135 notional words were identified out of the total 2,638. The top 5 single-key words and top 5 multi-key items were unvaccinated, vaccinate, covid-related, Raethel, Laoly and central synagogue, death certificate, liquid oxygen, foot traffic, holiday weekend. The sentiment of the top 10 frequently notional words were: 5 neutral, 5 negative and no positive, which illustrated an obviously negative perspective from New York Times.

Conclusions: In sum, the analysis showed that these two newspapers expressed different attitudes towards the topic of pandemic, but both mention China in their reports frequently.

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Keywords: CDA, People's Daily, New York Daily, pandemic

Ímmerzív technológiák lehetséges vizsgálati módszerei a kiállítási kommunikációban

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A digitális átalakulás hatására a múzeumokban számos különféle kiterjesztett és virtuális valóság technológiára épülő alkalmazás jelent meg. Ugyan több kutatás is foglalkozik ezek látogatói élményre gyakorolt hatásának tanulmányozásával, de jelenleg még kevés az olyan kutatás, amelyek a kiállítási kommunikáció szempontjából elemeznék és értékelnék ezen eszközök múzeumi használatát és annak eredményességét.

Eredmények: Előadásomban egy általam létrehozott és a kipróbált, a vizuális keretezés módszertanára épülő vizsgálati és értékelési módszert mutatok be, amely alkalmas lehet kortárs multimédia technológiák kiállítási kommunikáció szempontból történő vizsgálatának lefolytatására.

Következtetések: A kiállítási kommunikáció vizsgálata során a kiállítás, vagy az adott műtárgy üzenetéből kell kiindulni. Azt kell vizsgálni, hogy az adott kommunikációs eszköz milyen mértékben szolgálja a közös kulturális meggyőződések kialakítását.

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Kulcsszavak: kiállítási kommunikáció, vizuális keretezés, virtuális valóság, kiterjesztett valóság, múzeum

Családalapítási gyakorlatok az erdélyi magyar fiatalok körében

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Az előadásban leíró szociodemográfiai elemzésekre támaszkodva mutatjuk be, hogy az elmúlt két évtizedben az erdélyi magyar fiatalok, házassági és gyermekvállalási kedvében tapasztalható csökkenés a családalapítási gyakorlatok átalakulásának tágabb kontextusában értelmezhető. A MOZAIK 2000, továbbá a nagymintás Magyar Ifjúságkutatás utóbbi két hullámának adatain keresztül vizsgáljuk egyrészt a halasztó magatartás trendjeit, másrészt bemutatjuk azokat a szociodemográfiai tényezőket, amelyek a fiatalkori családalapítási magatartás alakulásában szerepet játszanak.

Eredmények: A demográfiai magatartás változás eredményeként, melyet nevezhetünk modernizációnak, vagy a szakirodalomból ismert második demográfiai átmenetnek, az erdélyi magyar fiatalok körében az utóbbi évtizedekben jelentős változások történtek a családalapítás terén. 30 éves kor előtt rendre kevesebb házasságot kötnek és kevesebb gyereket vállalnak a fiatalok. Az elmezett időszakban ugyan nőttek a házasságon kívüli együttélések, a Nyugat-európai, vagy akár a magyarországi trendekhez képest, ezek nem váltak a gyermekvállalás elterjedt közegévé. Az értékrendszerben kevésbé látványos változások mutathatók ki, a fiatalok deklaratíve kiemelkedő házasságpártiságról és családközpontúságról tesznek tanúságot, ugyanakkor vélekedéseikben nem tükröződik a családdal kapcsolatos válság narratívája.

Következtetések: Az elmúlt évtizedek trendjeit figyelembe véve megállapíthatjuk, hogy a családalapítási gyakorlatok jelentős mértékben kötődnek az ún. “kemény” szociológiai jellemzőkhöz, mint a kor, az iskolai végzettség, vagy a társadalmi háttér, miközben a demográfiai átmenethez köthető értékrendi változások kevésbé érhetőek tetten a vizsgált népesség körében.

Kulcsszavak: párkapcsolatok, gyermekvállalás, családalapítás, demográfiai átmenet

Behálózva? Digitális egyenlőtlenség az erdélyi magyar fiatalok körében

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A digitalizáció az egyén mindennapi életének számos területén és dimenziójában jelen van. Az internethasználati szokások, illetve azokhoz kapcsolódó veszélyek és kihívások egyre szélesebb körben elterjedt, jelentős, interdiszciplináris kutatási területnek számítanak. Az erdélyi magyar fiatalokat megcélzó nagymintás kérdőíves kutatásom, illetve a bemutató célja a digitalizáció különféle dimenzióinak és folyamatainak, valamint az internethasználati szokások komplex módszerekkel történő vizsgálata és azok szemléltetése.(1)

Eredmények: A kétváltozós elemzések és a többváltozós lineáris regressziós modellek alapján elmondható, hogy viszonylag összetett képet alkottunk az erdélyi magyar, 14–19 éves fiatalok digitalizációs trendjeit meghatározó tényezőkről. A fiatalok több mint 95 százaléka használ valamilyen formában internetet, a technikai felszereltség szempontjából is inkább a felsőbb kategóriákban vannak felülreprezentálva. Az elemzés során a digitális szakadékot és egyenlőtlenséget kétféle paradigmából is megvizsgáltuk. Egyrészt egy komplexebb digitális egyenlőtlenség mutatóval, másrészt pedig a közösségi médián való jelenlét mutatóival. Az internethasználatot is vizsgáltuk, viszont itt szignifikáns különbségek csupán a gyakoriság szempontjából voltak, hiszen az erdélyi magyar fiatalok több mint 90 százaléka internethasználónak számított. Az eredmények szignifikáns különbségeket mutattak a nem, helyenként a településtípus, valamint az értékrend szempontjából. Ezek a különbségek arra is utalhatnak, hogy bár az erdélyi magyar fiatalok körében az internethasználat tekintetében ezen rétegtképző változók hatást gyakorolnak, mégsem erőteljesen, direkt módon fejtik ki hatásukat, hanem ezeknek a hatása részlegesen, indirekt módon mutatkozik meg.

Következtetések: A digitális egyenlőtlenségre számos rétegtképző változó és mögöttes társadalmi folyamat szolgál magyarázatul. A fiatalok értékrendjét és a habitusait is meghatározzák az online térben végzett tevékenységeik, ezért a digitális egyenlőtlenséget a társadalmi egyenlőtlenség egyik jelentős mutatójaként és lenyomataként is értelmezzük.(2)

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Kulcsszavak: digitális egyenlőtlenség, behuzalozottság, értékrend, digitális habitus, ifjúság

Általános lélektan

General Psychology

Exploring the role of cognitive factors in the usage of digital technology

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Using information and communications technology (ICT) devices (computers, smartphones, or tablets) are an increasing part of our daily life. Using digital technologies comes with numerous benefits. The most commonly perceived advantages are related to work, education, and communication; further ICT devices ensure easy access to many information resources. The usage of ICT-technology may also improve perceived wellbeing and could serve as a protective factor against loneliness, especially for the elderly. Those, who cannot adapt successfully to the developing digital environment will miss out these opportunities. Despite the growing scientific interest in the benefits of digital technology, we still know very little about the cognitive factors (e.g.: cognitive flexibility, executive functions) that may affect the usage of ICT-devices. To reflect to this gap in the literature, our aim was to examine whether these cognitive factors are linked to a more positive attitude toward digital technology and the development of digital competences. In our study, we asked participants (n=107, m=32.6 years, 90 female) to fill out a survey and complete two measurements of executive functions.

Results: Our results suggest that cognitive flexibility has the greatest importance in forming the attitude toward digital devices and developing digital competences, especially in computer skills. High level of cognitive flexibility seems to be related to a more positive attitude toward ICT-devices and better digital competencies regarding computers. However, it had no effect on proficiency with touchscreen devices.

Conclusions: Our results propose that adapting to computers might seem to be more challenging, than adapting to smartphones or tablets. Maybe it is easier to navigate on the touchscreen compared to a computer/laptop and its peripheral devices (e.g.: using a printer). The current study could provide guidance in the promotion of digital technology and can help individuals to gain more benefits from using it. In our further research we would like to examine specifically the digital needs and attitudes of the elderly to support them to take most of the advantages from the usage of digital devices.

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Keywords: information and communication technology (ICT), cognitive flexibility, digital competences, executive functions

Cyberbullying from the viewpoint of social-cognitive competencies

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Background and Aims: In the past few years, cyberbullying became a serious problem among adolescents, as it has various negative effects on adolescents' mental and physical health. However, the phenomenon had been gaining growing interest among researchers - scholars mainly focusing on the bully and the victim -, there are still less explored areas, for example the role of bystanders and the distinct effects of socio-emotional skills on cyberbullying engagement. Thus, the purpose of this present research was to investigate the role of such socio-emotional skills like empathy, prosocial moral reasoning and moral disengagement in the behavior of cyberbullying participants: bullies, victims and bystanders.

Methods: Five hundred and seven high-school students (boys=182, mean age=15.55, SD=1,46) participated in our study. To assess adolescents' bystander behaviour and their level of prosocial moral reasoning, moral dilemma situations were used. Additionally, standardized questionnaires were administered to determine the students' socio-emotional skills and involvement in cyberbullying.

Results: According to our results, cyberbullies and victims were similarly using moral disengagement strategies and they also showed similar difficulties in empathic skill. In addition, the involvement in these roles increased with age. Furthermore, the results showed that prosocial cyber bystander behavior was associated with higher levels of prosocial moral reasoning. Passive and antisocial cyber bystanders showed difficulties in socio-emotional skills: they were likely to use hedonistic (self-centered) moral reasoning and ignored the needs of the victim. Additionally, antisocial cyber bystander behavior was also associated with the use of moral disengagement strategies.

Conclusions: Our study showed the importance of socio-emotional and moral skills in cyberbullying engagement and cyber bystander behaviour. Thus, improving adolescents' socio-emotional skills could help to prevent not only traditional bullying, but also cyberbullying. However, it is important to take into consideration the effect of age and other situational factors (e.g. school climate, peer norms, etc.) to understand cyberbullying.

Keywords: cyberbullying, prosocial moral reasoning, moral disengagement, empathy

The role of medical fear, disgust and relevant experience in the assessment of threatening stimuli associated with BII phobia

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Introduction: Nowadays, not only because of the current epidemic situation, medical interventions (e.g. vaccines) or screening tests (e.g. cancer screening) are becoming increasingly important to preserve our health. Blood-injection-injury phobia (BII phobia) is a specific anxiety disorder in which the fearful stimuli include blood, injections, medical instruments, surgery, injuries, medical procedures, or even the thought of them. People who suffer from BII phobia often avoid medical screening, which can lead to a reduction in their quality of life and life expectancy. In BII phobia, fear and disgust play a significant role in the emotional response. In studies of other phobias, it has been shown that if an individual repeatedly encounters a threatening stimulus, habituation or fear extinction may occur. The subjective emotional content of the threatening stimulus may then be reduced or even neutralised.

Objective: In our study, we investigated the role of fear of medical interventions and the degree of disgust sensitivity in the evaluation of blood-injection phobia-related content and whether previous relevant experience may provide protection against the development of phobia.

Methods: Data was collected through an online questionnaire. Fear of medical interventions was measured by the Medical Fear Survey (MFS), disgust sensitivity by the Disgust Scale (DS-R), and prior experience by questions related to medical knowledge and proficiency in tests. Images were selected from IAPS, NAPS, GAPED image collections. Participants were asked to rate the selected images according to how they made them feel along the dimensions of valence (pleasant-unpleasant), arousal (weak-strong), disgust and threat.

Results: The study involved 168 participants (34 men, 133 women) aged 18-59 years, with an average age of 27.1 years. A generalized linear model and redundancy analysis were used to explore the relationships between the measured variables. The models showed that the subscales of MFS and DS-R predicted the dimensions of arousal, threat and disgust. While the valence values are positively correlated with previous relevant experience and negatively correlated with the Injections subscale of the MFS questionnaire.

Conclusions: The results suggest that high aversiveness and fear of medical interventions may be a risk factor for avoiding screening. Previous relevant medical experience may reduce the detection valence in individuals.

Keywords: phobia, blood-injury-injection, medical fear, disgust, experience

Academic Burnout at university: what it means

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The feeling of less motivated, inspired and creative linked with more exhausted and irritable can indicate an academic burnout. The academic burnout's definition includes a negative emotional, physical and mental reactions to prolonged stress while studying. Considering the academic environment as a competitive environment, with a great demand for deadlines and best results, and other varied obligations to be performed by the students, who remain under constant evaluation, there is a need to investigate the burnout syndrome among university students, especially because this syndrome can influence the academic performance and also the relationship between students universities^{1,2}. This study aimed to identify the factors that trigger academic burnout in university students. This is an integrative literature review performed on the main health databases.

Results: Among the main triggering factors, the students report high levels of daily hassles, stress from social and professional pressures all over their university years, such as the financing of their studies; the fact that they will have to go through the often arduous process of entering the job market after graduating, which is very often thinking if whether or not in be successful; the accumulation of new responsibilities, such as living alone or with others and away from the family; the excess of extra class activities and deadlines³⁻⁵.

Conclusions: All of those demands that the student is target and also self-imposed in terms of academic achievement and performance, influence the teaching-learning processes and the well-being inside the study environment. Moreover, without a critical assessment especially from the university, these students become predisposed to develop the academic burnout.

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Keywords: Burnout syndrome, stress, higher education, university students

A mentális egészség, a pszichológiai alapszükségletek és a párkapcsolati elégedettség összefüggéseinek vizsgálata a COVID-19 járványhelyzet alatt

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A járvány kezdete óta jelentősen megszaporodott a szorongásos- és hangulatzavarok, a stresszhez vagy traumához köthető pszichés zavarok száma, ezért kulcsfontosságúak azok a kutatások, amelyek a mentális egészség védőfaktorainak vizsgálatát tűzik ki célul. Kutatásom célja az volt, hogy a mentális egészség, a pszichológiai alapszükségletek, valamint a párkapcsolati elégedettség összefüggéseit vizsgáljam a COVID-19 járványhelyzet alatt. A kérdés megvizsgálására online kérdőíves eljárást alkalmaztam. A résztvevőket kényelmi mintavételi eljárással toboroztam közösségi oldalakról. A kutatás egy longitudinális felmérés első adatait dolgozza fel. A járványhelyzettel kapcsolatos aggodalom felmérésére a BIPQ 7 Rövid Betegségészlelés Kérdőívet [1], a pszichológiai alapszükségletek kielégítettségének mérésére a Pszichológiai Alapszükségletek a Mindennapokban kérdőívet [2], a párkapcsolati elégedettség vizsgálatára a Perceived Relationship Quality Components Inventory [3] kérdőívet alkalmaztam.

Eredmények: Az eredmények alapján elmondható, hogy a pszichológiai alapszükségletek magasabb mértékű kielégítettsége, vagyis az autonómia, a kompetencia és a kapcsolódás szükségletének megélése jobb mentális egészség pontszámmal járnak együtt, tehát védőfaktort jelentenek a krízishelyzettel való megküzdésben. Az aggodalom mértékétől függően egyéni eltérések vannak abban, hogy a társas erőforrások, mint a kapcsolódás élményének megtapasztalása, vagy a párkapcsolati élet minősége, milyen mértékben támogatják a mentális egészséget a jelenlegi krízishelyzetben.

Következtetések: A kutatás új információkkal szolgálhat a COVID-19 járvánnyal való megküzdés tényezőiről, valamint a potenciális védőfaktorokról. További kutatásokra van szükség annak feltárására, hogy a mentális egészségnek milyen egyéb háttértényezői vannak, valamint érdemes longitudinális kutatások segítségével is felmérni, hogy a megfigyelt hatások mennyire hosszú távúak.

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Kulcsszavak: mentális egészség, pszichológiai alapszükségletek, párkapcsolati elégedettség, COVID-19

„Narcissus hálójában” – A narcizmus és a hozzá kapcsolódó kognitív komponensek hálózati elemzése

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Elméleti háttér: A mai világban a narcizmus az egyik legelterjedtebb modernkori „betegségként” van számon tartva. Ebből kifolyólag a különböző fajtáit (a grandiózus és a vulnerábilis narcizmust) már több különböző szempontból közelítették meg. A jelen kutatás megpróbálja görcsö alá venni a két narcizmustípus közötti különbségeket és a kapcsolódási pontokat a különböző kognitív komponensekkel, torzításokkal, amik ezt a személyiségvonást övezik.

Célkitűzés: A kutatás elsődleges célja megvizsgálni a narcizmussal kapcsolatba hozható maladaptív sémákat (feljogosítottság, vulnerabilitás, érzelmi depriváció), kognitív kiértékelő rendszereket (önértékelés, étellel való elégedettség), és a különböző torzításokat (diszfunkcionális attitűdök, mint pl.: perfekcionizmus, omnipotencia, stb.)

Eredmények: A hálózatelemzés eredményei alapján elmondható, hogy a vulnerábilis narcizmuson és az önértékelésen keresztül fut át a legtöbb vizsgált konstruktum, valamint a e kettő mellett az érzelmi depriváció van még a legnagyobb hatással a többi személyiségvonásra. Ezek alapján elmondható, hogy a vulnerábilis narcizmus és az önértékelés képezik a modell két középpontját, mind a férfiak, mind pedig a nők esetében.

Következtetések: A hálózatelemzés és további eredmények alapján arra a következtetésre juthatunk, hogy a vulnerábilis narcizmus megléte jelentősen erőteljesebb negatív hatást tud gyakorolni a személy kognitív kiértékelő rendszerének a torzulására, s ezen keresztül a mindennapi életére egyaránt, mint a grandiózus narcizmusnak a jelenléte.

Támogatás: A kutatást a Nemzeti Kutatási, Fejlesztési és Innovációs Hivatal (Grant No. NKFI-138040), valamint az Átfogó fejlesztések a Pécsi Tudományegyetemen az intelligens szakosodás megvalósítása érdekében (EFOP-3.6.1-16-2016-00004) támogatta. Vida Dorian köszöni Magyarország Collegium Talentum programjának támogatását.

Kulcsszavak: narcizmus, hálózatelemzés, sémák, kognitív torzítás

A tehetséges gyermek igazi drámája: Alice Miller hasított valósága

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Alice Miller pszichoanalitikus szerző munkássága a közelmúltban vitatottá vált. A szerző a gyermeki jogokat és gyermeki szükségleteket középpontba állító műveiben – különösen A tehetséges gyermek drámájában – határozottan kiállt a gyermekbántalmazást bújtatottan érvényesítő „fekete pedagógia” ellen, valamint elemzi a narcisztikus szülői magatartás következményeit, bevezetve a „nem elég jó anya” fogalmát. De vajon milyen anya volt maga a szerző? Fia, Martin Miller 2013-ban leleplező könyvet jelentetett meg, amelyben megosztotta az édesanyjától elszenvedett érzelmi bántalmazottságát, valamint az édesapjától elszenvedett szexuális visszaélést.

Az Alice Miller-Martin Miller konfliktus ismeretében előadásomban hangsúlyt kap az Alice Miller által is felvetett kérdés, hogy traumatizált, narcisztikusan sérült szülők, jellemzően anyák miként adják tovább saját traumatizáltságukat gyermekük felé saját lelki hiányaik, vagy szükségleteik túlhangsúlyozása által. A trauma lélektanának egyes vonatkozásait elemzem Alice Miller életútját tárgyalva, az életét meghatározó terhelő eseményeket és pszichés védekező mechanizmusait elemezve. Pszichobiográfiai vizsgálatom egyik fő kérdéseként merül fel, hogy miként magyarázható a szinte érthetetlennek tűnő ellentmondások sorozata Alice Miller élettörténetében, valamint a nyilvánosság felé prezentált eszméi és családi működése között. Elemzésem Alice Miller életútjának tényleges és valószínűsíthető eseményeire koncentrálok s ezek dokumentálható, kikövetkeztethető következményeit helyezi előtérbe a trauma lélektanának fogalomkörében.

Elemzésem az egyéni, családi és társadalmi traumák következtében létrejövő hasított és disszociált működések, a tagadás és a hallgatás, az agresszor iránti dezorganizált kötődés, a bántalmazó családdinamika és a transzgenerációs traumaátadás kérdéskörét járja végig pszichodinamikus, rendszerszemléletű és sématerápiás nézőpontból. Előadásom keretében törekszem választ adni arra a kérdésre, hogy miként magyarázható az Alice Miller személyiségét jellemző kettősség, és hogyan határozható meg, „melyik lehet” a szerző „igazi énje”.

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Kulcsszavak: trauma, gyerekjogok, hasítás, disszociáció, dezorganizált kötődés, transzgenerációs traumaátadás, pszichodinamika, sématerápiás nézőpontok, rendszerszemlélet

Elfogulatlanul az elfogultságról – metodikai újítások a bírói döntést befolyásoló tényezők (implicit attitűdök, érzelmek és kognitív reflexió) mérésére

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Sokáig tartotta magát az az elképzelés, hogy a független és pártatlan ítélkezés biztosítható magasan képzett, a pártatlan ítélkezés iránt elkötelezett bírák kiválasztásával, és bizonyos intézményi keretek megteremtésével. Az utóbbi évtizedekben azonban mind a nemzeti, mind a nemzetközi bírói fórumok keretében felmerült az igény az elfogultság különféle eseteinek (faji, nemi diszkrimináció, heurisztikák és kognitív torzítások stb.) fokozott vizsgálatára. Az Egyesült Államokban végzett vizsgálatok arra engednek következtetni, hogy bizonyos esetekben az implicit attitűdök (elsősorban az implicit faji előítéletek lásd *Levinson, 2016, Rachlinski, 2009*) hatással lehetnek az egyes ügyek elbírálására. Az implicit attitűdökön túl a kognitív reflexió és az érzelmek is befolyásolhatják a bírói döntéseket.

A jelen vizsgálat célja annak felmérése, hogy hogyan tehetőek mérhetővé (egy komplex tesztanyag alkalmazásával) azon implicit attitűdök, melyek hatással lehetnek a bírói döntésekre. A résztvevők a végzettségükre és peres tapasztalataikra vonatkozó kérdőív után kitöltenek egy Kognitív Reflexió Tesztet (CRT), egy Ésszerűség-megérzés Kérdőívet (REI), egy Kognitív Érzelem-Reguláció Kérdőívet (CERQ), valamint egy a szerző kidolgozott Implicit Asszociációs Tesztet (IAT), melynek két kategóriája a felperes/alperes (a továbbiakban: IAT-peres).

Eredmények: A 2021 tavaszán lefolytatott pilot study alapján - melyben a teszteket egy nemzetközi jogi jogesetmegoldó verseny résztvevői töltötték ki a versenyfeladattal kapcsolatos kérdőívvel kiegészítve - a tesztanyag frissítése megtörtént.

Következtetések: Figyelemmel arra, hogy a IAT általános tendenciákat, attitűdöket mér (melyek sokszor hosszú évek alatt alakulnak ki), további vizsgálatra van szükség annak megállapítására, hogy a teszten elért eredmény milyen összefüggésben áll a kitöltő személyes és szakmai tapasztalataival, és alkalmas lehet-e hogy egyes ügyekben előrejelezze az esetleges (implicit) preferenciákat. A fentiek tesztelésére a szerző első lépésként nagyobb számú jogász és nem jogász hallgató bevonását tartja célszerűnek, melynek előkészületei jelenleg zajlanak.

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Kulcsszavak: implicit asszociáció, érzelmek, heurisztikák, elfogultság, bíróság

Irodalomtudomány, komparatiztika



Critics and Comparative Literature Studies

On the border of the modern and the postmodern: Frigyes Karinthy's existentialist concept of the "responsible man"

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In my dissertation, I would like to explore Frigyes Karinthy's philosophy hidden in his literary work, and to prove that he created a specific independent bourgeois, existentialist philosophy, which is rarely seen in the history of Hungarian philosophic thought. In my research, I use an interdisciplinary method (using philosophy, religious philosophy and literary history), aimed at exploring his cosmogonic conception spanning his entire oeuvre, the ensuing ontological conception of the "dream-life" and "third state of existence", and his completely new moral system which overwrites the Gospels and at the same time contravenes Nietzsche's amoral philosophy.

Results: Karinthy sensed well the loneliness of the secularized and, consequently, existentially anxious man with his "thrownness" (*Geworfenheit*), and the weight of existential responsibility lying on the individual. In his novels, short stories and essays there appears the "responsible man" manifesting himself in his messianic figures. In the present paper, I try to place Karinthy's "responsible man" alongside the universal philosophical thinking; between Descartes' modern, thinking, responsible man, and the responsible man of the humanist existentialist philosophy of Sartre and Camus. The early twentieth century was basically influenced by two great intellectual currents: Nietzschean philosophy and Freudian psychology. Both currents anticipated the postmodern sense of life and way of thinking; the social, psychological and ethical consequences of which have been elaborated upon within Hungarian literature mainly by the "Nyugatosok" (Westerners), as by Karinthy too. That is why I examine how his concept of a "responsible man" was born on the border between the modern and the postmodern.

Conclusions: Karinthy's idea of a "responsible man" was first formulated in the preface to his play *Tomorrow morning* ("Holnap reggel"), written in the eighth month of World War I, in an apocalyptic age. This became completed in the messianistic figure of Titusz Telma in his 1916 short novel, *The thousand-faced soul* ("Az ezerarcú lélek"). Actually, Karinthy's *Proclamation of Titus Telma* ("Telma Titusz kiáltványa") belongs closely to this short novel. The *Proclamation* was published separately by Oszkár Ascher in 1938 as part of *Frigyes Karinthy's unpublished diary and letters* ("Karinthy Frigyes Kiadatlan naplója és levelei"), but until our 2011 edition these two closely related works never appeared together (see "Az ezerarcú lélek – Telma Titusz kiáltványa"/The thousand-faced soul – Proclamation of Titus Telma). Karinthy's cosmogonic and moral-philosophical message are unfolded in the "points" of the proclamation. The proclamation is a possible, life-affirming, practical response to both the unfeasible, superhuman moral expectations of Jesus, and the position above morality of Nietzsche's Zarathustra, which overcomes *evil* with the courage of the strong *good* and can bring salvation to the modern and postmodern man who lives in existential fear.

Keywords: responsible man, modern-postmodern, existentialism, moral-philosophy, redemption

A Quest for Women's Emancipation in Palestinian Literature in light of Sahar Khalifeh's Novels: *Sunflower* (1980) as a case study

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The Orient female living under colonization regimes according to Edward Said is presented as someone who never speaks of herself; she is incapable of representing her emotions, presence or history. Thus, women's representation in Arab literature is always dyed with images of patriarchal control that represent women as: objects, mothers or symbols that stand for the motherland, fertility and generosity. Accordingly, this paper investigates some attempts of subverting this oppression imposed on Arab women. More specifically, this paper investigates the Palestinian female writers' response to this burden of misrepresentation put on women's shoulders within the Palestinian community.

In this sense, this paper investigates the literary work of the well-known Palestinian feminist writer Sahar Khalifeh, in particular, Khalifeh's novel *Sunflower* (1980). In this regard, I will claim that Khalifeh represents a successful attempt of subverting the typical images associated with Palestinian women in literature.

Accordingly, the presentation will elaborate and provide answers to following questions: What are the restrictions imposed on women living within the Palestinian community that are manifested in Khalifeh's characters? What are the institutions that Khalifeh tries to present as places for women's confinements and how do these institutions are employed as weapons against women's emancipation? What are the images that Khalifeh tries to subvert regarding the Orientalist Woman, in particular, the Arabic Palestinian woman? What are the solutions Khalifeh provides to help women react/respond towards this multi-levelled patriarchal system/oppression?

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"Living in the passageway of epochs" - perspectives of history and the possibilities of redemption in Géza Bereményi's Vadnai Bébi

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In my presentation I examine Géza Bereményi's novel, Vadnai Bébi¹, with regards to the perspectives of history and the possibilities of redemption. Throughout Bereményi's oeuvre as a writer, there has always been a strong focus on the formation and transformation of identities, the act of writing itself, and on history as prose-poetical organising principle. The combination of these three elements usually offers an idea of redemption, even if it only demonstrates its own peculiar, ambivalent and sometimes forever delayed nature. In my interpretation outline the temporal poetics of Vadnai Bébi, as well as the role that the historic past plays in it, relying primarily on Walter Benjamin's theses on the concept of history, and in context of Bereményi's other works in prose. In Vadnai Bébi, the protagonist lives "in the passageway of epochs": his main interest is historic past, "Yesterday" as he calls it, and his daily life, personal relationships and worldview are determined by this fact. Benjamin considers the concept of historical progress as inseparable from that of "homogenous, empty time" as never-ending, cause-effect-continuum of events and processes. Opposed to this, according to Benjamin, is the concept of "messianic time": a qualitative state of exception that tears the fabric of linear time. Throughout Bereményi's oeuvre, the emphasis on history usually leads to these exceptional instances, or at least the idea or foreknowledge of them, implying an eschatologic narrative of sorts.

Conclusions: In Vadnai Bébi, the character named Doxa, who seemingly embodies the spirit of the time in which the plot takes place (the 1970s in socialist Hungary) could attain redemption by gaining knowledge of his own origins. This, however, is finally unsuccessful: when the chance is finally there, he himself declines to hear the "true" story from the protagonist. Thus, the latter's mission, motivated on a personal level by their friendship, ultimately fails, but the origin story transcends itself, and attains the status of a collective, generational narrative, finally told in the novel itself. This is significant especially because the protagonist's equally emphasized process of identification takes place at the same time, culminating in the cathartic acceptance of the writer's role. Thus, the act of writing and the account on history's messianic instances both become instruments of a real or supposed redemption.

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Keywords: Bereményi, literature, identity, history, redemption

The literary representation of abuse – Dacia Maraini's *L'amore rubato* as contemporary women's trauma literature

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In my presentation I examine Dacia Maraini's volume *L'amore rubato* from the perspective of trauma literature. Through the analysis of a few short stories, I display the text's universe that operates with apparently bleak, sometimes raw, or hyper-realistic descriptions that, however, mediate otherwise unfathomable traumatizing events with this exact stripped-down prose. Furthermore, I attempt to place these texts narrating trauma experiences that are only seemingly simplistic and intentionally deprived of metaphors, on the borderline of fine and documentary literature, a segment of categories that is more and more popular in contemporary Italian prose.

Results: During closer analysis of the texts, I primarily examine the linguistic dimensions of the depicted romantic, domestic abuse and what forms the base of and maintains both: the phenomenon of societal-level abuse, highlighting the state of being deprived of language in particular. Meanwhile, I explore the impossibility of the reconstruction of the female subject that had been stripped of all her past and future, desire, and activity, which is the result of the experienced trauma and her fixed position in society.

Conclusions: Along these perspectives I am trying to answer questions such as: what literary value such texts hold and what purpose they can serve; how the reception of such a delicate topic is possible; and how the reading of texts depicting abuse of women can be assisted.

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Keywords: Maraini, trauma literature, abuse, female subject, contemporary

The story of an enchanted object– The symbolical meaning of a bracelet in Elena Ferrante’s *The Lying Life of Adults*

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The meaning of “smarginatura” (reconfiguring the margins) is receiving considerable attention with the interpretation of the works of Elena Ferrante. The margins of the personality of the psychologically disorientated protagonist of Ferrante’s novels, by reason of a traumatic and forgotten event in their lives, become decomposed. By realizing the incident, that has caused the trauma, and by hoping for recovery, they start the reconstruction of their new personality. Therefore, there is a determined scheme that describes the process of “smarginatura-marginatura” of Ferrante’s female characters in five steps: *crisis, de-construction, trauma, recognition and re-construction*.

Results: Besides the interpersonal system, that determines the “smarginatura-marginatura”, there is also a net of symbolical objects. The relation between the protagonist and the object reflects the psychological processing that is essential for the character in the recognition of her past trauma. In fact, the objects create subtle interferences between the characters of the novel and precondition the recognition of the trauma suffered in the past.

Conclusions: The research concentrates on the “enchanted” object, the bracelet in *The Lying Life of Adults* [1]. Due to the evolving relation between Giovanna and the jewel, within the story of the girl, the independent story of the object becomes distinct, by which the “smarginatura” of the protagonist can be described. Furthermore, the bond between Giovanna and the bracelet is proved by the fact that the vanishment of the object determines the *re-construction* of the protagonist’s personality.

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Keywords: Elena Ferrante, bracelet, symbolism, feminism

A versmondó benső világa

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Előadásomban a versek egyedi nyelvi megvalósulását vizsgálom a versmondás tükrében. „[A] vers előadója éppúgy színpadi, jelen idejű, tapintható jelenség, mint a színész, de ő nem alakot formál, hanem »a vers benső világát, szellemiségét formálja meg, az adott versnek azt a szellemi, spirituális világszerűségét tárja fel, amelyet a nyelvi elrendezettség potenciálisan rejt magában.« Ezt azonban úgy teszi, hogy [. . .] személyes üzenetként tolmácsolja a verset” – írja Böhm Edit Bécsy Tamást idézve [1]. A lírai költemény „teljes egészében a művész benső világában alakul ki” [2], az ott létező életjenségeket teszi objektummá. Az intuíciókat, érzelmeket, hangulatokat, sejtelmeket, a benső világ szubjektív élményeit nyelvi formába önti, így a líra története ezeknek a jelenségeknek művészi létezővé formálásáért a nyelvvel mint anyaggal folytatott küzdelem. Ezt a küzdelmet állítja színpadra a versmondó is. A lírai műnem jellegzetes kifejezőeszköze a megszólaló személyének és az őt körbevevő közeg jellemzőinek dezorientációja (Simon Gábor) [3]. A lírai mű születésének közege illékony, homályos, vagyis a versírás performatív kontextusának időbeli, térbeli és kulturális távolsága az előadóművész közegétől olyan űrt jelent, melynek kitöltetlensége a mű színpadi, előadó-néző szituációban történő megvalósulása során problematikus. A hiányosságok pótlásában az előadóművész munkáját a filológiai kutatás segíti, a filológia ugyanis kísérletet tehet a szöveg eredeti pragmatikai kontextusának rekonstrukciójára. Megfigyelhető azonban az a tendencia, hogy a szerző szándékának megfelelően a mű keletkezési körülményeinek ismerete nem segít abban, hogy az előadóművész megalkossa performatív kontextusát. Az ilyen versek esetében beszélhetünk akut dezorientációról (Simon Gábor), melyre neves versmondók is különböző módon reagálnak előadóművészi munkájuk során. A versmondó a nyelvi szimbólumok jelentéséből kiindulva, először mint befogadó, a receptív-emocionális aktus részeként, átéli a költeményt, ezzel visszavezeti a mű objektumát a saját társadalmi létének és belső világának életjelenségeire, majd a versmondás alkotó aktusa során a költőhöz hasonló objektivációs műveletet végezve, a saját benső világában létrejött interpretációt verbális és nonverbális eszközökkel teszi a közönség számára befogadhatóvá.

Eredmények: Mindezt egy több ízben, középiskolásoknak vezetett versmondáskurzus gyakorlati tapasztalatainak tükrében járom körbe, Weöres Sándor műveit hívva segítségül.

Következtetések: Mindez hasznos lehet az előadóművészek számára, de közelebb hozhatja a vers mint a befogadóban élő, organikusan változó művészi alkotás élményszerűségét a műkedvelő számára is. Ez kiváltképp a fiatal korosztály költészet iránti érdeklődésének felkeltésében játszhat szerepet, alternatívát teremtve a filológiai elemzés pedagógiai gyakorlata mellett.

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Kulcsszavak: előadóművészet, versmondás, interpretáció, líra, poétika

A Magyar titkok mellékszereplőiről

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Nagy Ignác Magyar titkok című regényét 12 füzetben jelenteti meg 1844-45 között. A mű egyik első detektívregénye a magyar irodalomnak, melyben a műfaj által indukált is megjelenő tipikus mellékszereplők vannak jelen, úgy, mint Bende (a főhős) segítője, Bertók, epizodikus segítője Marci, a „főgonosz” Sobri Jóska és még sokan mások. Ezen szereplők regényben betöltött funkciójának feltárására vállalkozik jelen kutatásom. Megvizsgálom, milyen a korabeli olvasó viszonyulása az egyes karakterekhez (pl. a gonoszhoz, vagy a zsidó szereplőhöz); milyen karakterfejlődés mutatható ki, ha van benne, milyen hatással vannak a főhős nyomozására az egyes szereplők (akadályozzák-e, segítik-e); s nem utolsó sorban pedig az, hogy a felsoroltak milyen hatással vannak a regény cselekményére, formájára. Vajon a biedermeier regény felől közelíthető-e meg vagy a detektívregény fogásai mutathatók-e inkább ki a Magyar titokban?

Kulcsszavak: Nagy Ignác, biedermeier, regény, Magyar titkok, detektívregény, karakterek, reformkor

Cavalry virtue and the Italian national identity. The representation of the characters in *Ettore Fieramosca* by Massimo d'Azeglio

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The *Ettore Fieramosca ossia la disfida di Barletta* (1833) [1] was the first literary work with which Massimo d'Azeglio wanted to spur the aspirations of the Italian *Risorgimento*. The following intervention aims to examine the representation of the characters so that we can identify the virtues that d'Azeglio considered fundamental for the national identity during the formation in Italy.

Results: The various ways in which the author represents the characters serve to make certain distinctions between them: while the invading French soldiers are described as vile men and without morals, the Spanish and the Italians - who fight to defend Southern Italy - are portrayed as people with courage and honesty. The Italian aristocracy is divided between two powers: the Piedmontese Graiano, in the hope of acquiring more power, supports the French invasion. The protagonist Ettore, on the other hand, is the best soldier of the Italian army who, according to our author, is highly cultured and a "*cuor gentile*", becomes a possible model for the new Italian nation.

Conclusions: With this historical novel, d'Azeglio made his debut not only as a writer but also as a political thinker. In fact, his anti-French ideas will remain a main point throughout his future political career.

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Keywords: Massimo d'Azeglio, *Ettore Fieramosca*, *Risorgimento*, patriotic literature, character representation

Regionális fejlesztés és politika



Regional Development and Policy

National system of entrepreneurship in Ecuador: an empirical study based on the Global Entrepreneurship Index (GEI)

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Fostering productive entrepreneurship for promoting national economic development has attracted increasing attention from researchers and policymakers. However, measuring entrepreneurship in practice remains a challenge because entrepreneurship is a multidimensional phenomenon that results from the linked interplay of individuals and the local and global socio-economic context. In this complex scenario, the entrepreneurial ecosystems concept provides a comprehensive theoretical perspective and an operative tool for studying entrepreneurship at the national level.

Method: This study employs Global Entrepreneurship Index (GEI) data from 2008-2017 to examine the features of Ecuadorian entrepreneurship.

Results: The findings show that the Ecuadorian entrepreneurial system is still unfavourable for supporting productive entrepreneurship. Moreover, the system's overall performance is lagging by far from other well-performing ecosystems of the region. The most severe bottlenecks for the Ecuadorian entrepreneurship system are internationalization and risk acceptance while the system strengths are start-up skills and networking.

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Keywords: entrepreneurship, Ecuador, entrepreneurship system

Doing Business in Africa: The Problems of Infrastructure Development

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Introduction: The attractiveness of the African market for doing business is lagging compared with the rest of the world. Several factors pose challenges for the foreign investor's willingness to invest within the continent. The lack of political stability, weak fiscal and monetary policy, poor infrastructure development, and unfriendly environment for investment will push away investors. Thus, putting effective measures in place to address the challenges of doing business is paramount.

Aim and Method: The purpose of the study is to investigate the challenges of doing business in Africa with an emphasis on infrastructure development. The idea is to measure the effects of different components of infrastructure on African infrastructure development. Since there has been less effort undertaken. To achieve the aim of the study, multiple regression analysis is going to be employed. I extracted the data used in the study from the African Development Bank database 2018 to find answers to stipulated research questions.

Results: The findings showed that elements of infrastructure affect African infrastructure development. Transport infrastructure contributed more to the African infrastructure development. The study identified poor infrastructure among the factors that lead to an unfavorable environment for doing business. The study also found out that infrastructure development plays a fundamental role in global trade and investment.

Conclusions: Infrastructure development is vital for attracting foreign investors to enter the targeted markets. Thus, high-level quality of infrastructures such as information and communication technology, water and sanitation, transports, and electricity are beneficial for business. Infrastructure development may reduce operational costs and simplify the entrance to the new markets. Therefore, infrastructure development can be a determinant of the competitive advantage in the foreign markets because the firm sometimes they are compelled to provide economic and social infrastructure to the host nation. This increases the cost of production. Also, the lack of quality infrastructure undermines access to both domestic and international markets, which blocks foreign capital.

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Keywords: African market, infrastructure development, Foreign investors, business challenges

Export competitiveness of Latin America and the Caribbean: the agricultural sector analysis

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Although export competitiveness is an essential in investigating international trade flows, empirical studies of agricultural products are frequently understudied. In this study, we aim to analyse the export competitiveness of Latin America and the Caribbean (LAC) region, through the use of the Revealed Comparative Advantage (RCA) index for the period of 1995 to 2019. LAC countries have shown positive trends in the development of the agricultural sector, which has occurred particularly in the growth of agricultural trade. The region has an abundance of land and water, accounting for 14% of global production and 23% of the world's exports of agricultural and fisheries commodities, emphasising to the region the positive impact of trade openness at the global level [1].

Results: Latin America and the Caribbean region accounted for 14.85 % of all agricultural products traded in the world from 1995 to 2019. In this period, Brazil, Argentina, Mexico, Chile, Ecuador and Colombia were the biggest exporter countries that accounted for 82% of LAC total exports, showing that the sector is highly concentrated in the region. Considering competitiveness, LAC region has a Revealed Comparative Advantage for all years and all agricultural product groups exported, when we consider agri-food as a group.

Conclusions: The agri-food export remains vibrant and developing in the global market contributing significantly to LAC's commercial and international trade sectors. There are also significant opportunities for the region to improve its agricultural production, which, if associated with the rising world demand, contribute to economic growth, and result in higher agri-food export rates.

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Keywords: agriculture trade, competitiveness, revealed comparative advantage, Latin America and the Caribbean

The comparison of organic food consuming behaviors in Hungary and China

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Under the global macroenvironment that the population is getting higher and higher, the globalization is developing rapidly and people's income is growing generally, more and more people pay attention to the healthy and nutritional, and environmentally friendly food style. Especially after COVID-19 pandemic time, people start to change their food style to healthier diet[1]. Organic food, as a healthy and sustainable purchase action[2] started from Europe and the its market is developed best in Europe[3]. While the status of organic food market in China is much slower than Europe, Hungary, but it is developing very fast now[4]. It is valuable to compare the similarities and differences of organic food market in Hungary and China. Based on the secondary literature[5], official surveys and online simpling technique, primary survey was used to interview 581 resopondents from Hungary and. The descriptive statistic was used to analyze the samplings.

Results: was used to analyze the samplings. Results: Both Hungarian and Chinese respondents buy organic food mainly because of food safety and healthy and environmentally friendly, while Hungarian consumers aslo get influence from the advice form family and relatives. The biggest barrier to buy organic food for both is high price. Besides, Chinese ones are worried about the income more while Hungarian ones are lack of the buying channel. Both of them like organic fruits and vegetables best. Hungarian consumers like organic coffee, but Chinese consumers do not. Hungarian consumers prefer to spend more and buy more often the organic food than Chinese ones. But the percentage of Chinese consumers like to buy organic food is relatively high.

Conclusions: percentage of Chinese consumers like to buy organic food is relatively high. Conclusions: Both Hungarian and Chinese consumers are aware of organic food, while Hungarian consumers have stronger purchase intention to buy organic food relatively. The potential organic food market is keeping grow in both Hungary and China, which development speed is faster in Hungary while bigger in China as the huge potential of population.

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Keywords: comparison, organic food, consuming behavior, Hungary, China

Forecasting GDP Growth Across European Countries to Test Convergence Between Western and Eastern Europe

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Economic prosperity matters. According to a famous study from Proto and Rustichini, (2014), there is a positive correlation between an increase in Gross Domestic Product (GDP) and an increase in happiness. This relationship is valid until to \$36,000 dollars a year at power purchase parity per person, yet it is the reason why we measure economic prosperity in terms of GDP despite the numerous limitations of the concept. We similarly know that an increase in GDP equals to an increase in social capital, which is also positively correlated to happiness (Bartolini and Sarracino 2014; Easterlin 1974).

For these reasons it is important to look at GDP per capita in Central and Eastern Europe and its convergence with the rest of Europe. In Central and Eastern Europe (here defined as Albania, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Latvia and Lithuania) the average adjusted net capital income per capita of this region is only \$15,690 (World Bank Open Data n.d.). Even if there is an immense variety of situations across this country, none of these economies reaches the \$36000 standard.

In this work we focus on convergence measured as a change of income countries. It is easy to measure with available historical data, and we can use it with a forecasting technique. We use a technique based on synthetic control to predict the GDP trend of all European countries and see their potential trajectories. We use 2010-2019 World Bank Open Access data. We start from 2010 as it helps us exclude the exogenous effect of the 2008 financial crisis and we stop at 2019 as it is the latest available here for this kind of data. The overall object of the paper is to compare the different forecasting techniques and to see the different trends for Central and Eastern Europe based on the available data.

Results: We find a consistent lack of convergence between Central and Eastern Europe and the rest of Europe, regardless of the methodology used.

Conclusions: We conclude by connecting the lack of convergence to the divergence in political climate across different parts of Europe.

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Keywords: Central Europe, convergence, economic growth

Civil Society in Tunisia: From Small-Scale Entities to a Plethora of Vigorous Organizations

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The non-governmental sector (NGO) is one of the most efficient actors in the economy of a nation. Since we have witnessed an increase in the number of non-profits in the last decades, we can ensure its importance and relevance for local, regional, and national development. When projecting these facts on a newly democratized region such as Tunisia, the NGO sector had dramatically expanded after the Arab Spring in 2011. There was an exponential rise in the number of associations in Tunisia between 2011 and 2020. The growth rate is equal to 236% according to IFEDA. Associations are a predominant element in the Tunisian economy since they are more oriented towards local governance, specific regional issues and are directly involved in local communities. Nevertheless, the non-profit sector in Tunisia, as all non-profit sectors across the globe, is facing various challenges.

The objective of this research is to explore the challenges faced by Tunisian associations. The research methodology used was qualitative. We conducted semi-structured interviews. We targeted associations based in different regions and working on various development areas.

Results: Through this research, the respondents defined three types of challenges. Internal challenges include motivation, sustainability, and organization. Motivation or its lack, in this case, was seen as a threat to the association's well-being. There were also organizational challenges related to the structure and processes of the associations. Furthermore, associations find it hard to fund their daily operations and ensure their financial sustainability.

External challenges enfold fundraising, environmental challenges, collaboration, and governance. The financial dependency suggests the existence of an influence relationship between donors and associations. Environmental challenges comprise political, economic, cultural, and social issues. Collaboration challenges also include dealing with external stakeholders. A need for governance and the establishment of trust with the different stakeholders is primordial.

Other challenges were both internal and external such as communication and transparency.

Conclusions: This research focuses on the challenges encountered by non-profits in Tunisia. The main internal challenge is the motivation of members while the main external challenge is fundraising.

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Keywords: Civil society, regional development, challenges, non-profit sector, associations, Tunisia

How should Hungary fulfill the Maastricht criteria after the whole world has changed?

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Hungary should adopt the euro that is national economic interest. In the one hand Maastricht criteria were ignored aspects of real economy (labour mobility, productivity), in the other hand the capital flow considerations (current accounts, saving rates). Therefore, moving of nominal interests and divergence (at inflation rate), together caused by there has been lower level of real interests for countries which are not part of the Euro zone which may also result in emergence of financial crisis. Additional criteria are required because the COVID-19 crisis has changed fundamentally the conditions of development, the labour market situation, the synchronisation of business and financial cycles, the competitiveness and the impacts of business policies.

Results: The research was based on own literature processing and database. My train of thought are following the remarks and results of Hungarian National Bank [1], but it exists more useable criteria wherewith Hungary is able to adopt the euro. I create a brand- new - within part of old one- system for the criteria.

Conclusions: Conclusions: It is worth to rethinking the Maastricht criteria, because when Hungary is going to lose its own independent monetary policy and significant lose the majority of the budget that help to entry into currency area. The author firmly believes that it has a Hungarian route for Maastricht criteria and joins to the Euro zone.

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Keywords: Hungary, Maastricht criteria, convergences, adopt, euro etc.

Resilience and reimagination – the growing interest in redesigning the global supply chain system policies as a consequence of the turbulence caused by the COVID-19 epidemic

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As a consequence of the turbulence caused by the COVID-19 epidemic, arguments in favor of shortening supply chains are increasingly emerging in economic, social and political discourse. Studies, industrial or national strategies regarding this issue and the analysis of policies, can help to improve the competitiveness and adaptability of the domestic economy by integrating them into the economic policy framework. The causes and consequences of the vulnerabilities of the global supply chains have already been analyzed in the literature and other researchers have examined the benefits of shortening or optimizing them. But most recently, the economic, social and political discourse that has begun with the COVID-19 epidemic is beginning to receive more attention at the policy level to increase the security of supply and, in this context, the resilience of supply chains.

My presentation aims to provide an overview of the related literature, studies, strategic documents as well as international data and trends, to describe the conditions which have contributed to the development of typically long supply chain system, including aspects of production and operations management, geo-economic and economic considerations in the global economy and their theoretical and historical background.

Results: As a consequence of the pandemic, on one hand, there is a growing need in the professional discourse to diversify supply chains and increase their resilience by shortening or regionalizing them and repatriating certain strategic industries. On the other hand, the epidemic has given a major boost to the rise of digitalization, automation, online commerce and the IT sector, as well as the appreciation of sustainability.

Conclusions: The Hungarian economy, which is located close to the European core area, with favorable spatial and logistical conditions, as well as favorable manufacturing prices, but at the same time known for its skilled and disciplined labor force, can greatly benefit if the international supply chains are reorganized and shortened as a result of the changing attitudes. Part of the domestic economic policy strategy is to maintain and increase domestic production capacities and to reduce external vulnerability. The turbulence caused by the epidemic may revive professional research analyzing the benefits of shorter supply chains and the interest of domestic and EU economic policy.

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Keywords: COVID-19, supply chains, global economy, resilience, innovation

**Történelemtudományi szekció I. - Az
ókortól az újkorig**



**History I. - From Antiquity to Modern
Times**

Letters of English diplomats in the Holy Roman Empire between 1541 and 1547 and their reports about Hungary

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The 1540's was an exciting decade: the Italian War of 1542-1546, the preparations of the council of Trent, and the inner oppositions of the Holy Roman Empire which ended in the Schmalcaldic war all had a great impact on European history. This was the last decade of Henry VIII who took part in continental politics both by forging alliances and waging wars. For these, he needed information about his fellow rulers and their countries; therefore he relied heavily on his agents abroad. By examining the work of these agents, who often operated in the background, we can get a better understanding of the diplomacy and information gathering of the time. [1]

For my research I used the calendars in the collection of Letters and Papers, Henry VIII provided by British History Online. [2] In my research I studied approx. 1600 letters from the 1540's of about fifty English agents and ambassadors, who operated in the Holy Roman Empire using historical network analysis to draw up a map of information transfer and a graph of their social network. [3] I examined the actors of this network, and the connections between them, to determine the key figures, their routes and sources of information.

By analysing the diplomatic network, we can identify how news and rumours about Hungary reached the English court. Concerning the content of the letters, I examined it in connection to Hungary. There were several correspondents who collected information about the divided Kingdom of Hungary and its struggles against the Turks, and they reported it frequently to the English monarch.

Results and Conclusions: After the fall of Thomas Cromwell in June 1540, first Thomas Wriothesley and Ralph Sadler, then William Paget and William Petre became Secretaries of State. The latter two (especially Paget, who was the most influential person from 1543[4]) became key figures in this letter network. There were other centres of correspondence, such as the English merchant Stephen Vaughan, and the ambassador in the Netherlands, Nicholas Wotton. The most important informants about the Turks and Hungary were Thomas Seymour, who was an English commissioner at the siege of Buda in 1542, Christopher Mont and Walter Bucler, agents in the Imperial Diets, Georg von Heideck, a German employed by the English king, and Edmund Harvell, the resident ambassador in Venice.

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Keywords: history, English, network, diplomacy, letters

Roman villa baths at the Middle Danube provinces

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This study examines the villa baths in the provinces of Noricum, Pannonia, Moesia Superior and Moesia Inferior. In the territory of the Roman Empire the baths were built for public, military and private purposes. The villa baths are private baths. This study will discuss and compare villa baths from the Middle Danube provinces, including Noricum (today Austria), Pannonia (today Hungary), Moesia Superior (today Serbia) and Moesia Inferior (today Bulgaria). Hungary is rich in thermal water and thermal waters were used in the Roman Age.

The Roman people went to baths every day, bathing was a social activity. Roman baths had an apodyterium (changing room), a frigidarium (cold water room), a tepidarium (heating room) and a caldarium (a room with a hot plunge bath). Writing about the Roman baths, the ancient architect Vitruvius recommended that the caldarium should be built on the south or southwestern side. Roman baths had typology describing the arrangements of rooms. The private baths were row-and block type and they were often rebuilt. The private baths were inside or outside at the villa. I will discuss first of the sizes of the buildings. The smaller baths were 90-160m² big and the bigger villa baths were 200-500m² big or more than 500m². The dates of the baths are as follows: the villa baths were built the 1st-to the 4th centuries.

From the baths presented here it can be determined that the Middle Danube provinces were significant to Roman bathing culture. Usually simple in design, the baths were similar in size to those of other provinces. My opinion is, that the villa baths in the Middle Danube provinces are very important for researching Roman baths. They provide information about the architecture and social culture. The simpler type was more common. The sizes of the baths were similar to the baths of other provinces. The baths covered several architectural periods. The baths have a great importance to tourism; with their conservation these historical relics can be demonstrated and examined. With more research can we have more information about these buildings.

Keywords: Roman Age, bathing culture, private baths, villa baths, Roman villas

The Development of Ecclesiastical Architecture in Egypt during the Late Antique and Medieval Periods

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The ecclesiastical architecture of Egypt during both the Late Antique and Medieval periods has been studied by several scholars, from various aspects. However, it is still in need for more analytical overlooking, especially when it comes to recognition the manifestations of its development through centuries, and when the questions of influences and identity are present. The significance of these questions actually comes from the importance of the Coptic Church and the story of its isolation from the universal Christian world after the Council of Chalcedon 451. As well as the considerable changes that happened to Egypt after the Arab conquest 641.

Results: During the Roman period, mostly, the walls were made from crude brick, and the roofs were made of palm tree trunks covered with a layer of mud brick. After the Arab Conquest, stones were being significantly used for the ecclesiastical edifices because of the lack of wood, marble and even the old temples' remains. Architecturally, the earliest churches followed the Roman basilica type with central nave wider than the side aisles, and the nave was raised higher than the aisles to be able to make clerestory above the colonnades. The tri-conch and the tetra-conch "cruciform" churches were very few. The 7th century witnessed the creation of the choir "khurus". Originally, the narthex is a Roman architectural element, but it continued actually during the medieval era at least until the 11th century. Defensive arrangements were very significant in the Coptic ecclesiastical architecture during both periods Roman and Medieval.

Conclusions: Generally, Egypt was in a very good position in the universal Christian map until 641. Then, Egypt went through a very long and deep isolation from the Christian world. Unfortunately, Egypt lost its own architectural identity after the Pharaonic era and was always forced to be influenced by the regimes which controlled it. However, that gave special kind of richness to its architectural works, but at the same time resulted in the absence of a pure Egyptian architectural identity.

Keywords: ecclesiastical architecture, Christian archaeology, Copt, antique, medieval, Chalcedon, Arab conquest, Egypt

Ottoman pottery in al-Marqab Castle

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The study will discuss a typology of an unpublished collection of Ottoman potteries that were discovered in al-Marqab Castle during systematic archaeological excavations of the Syro-Hungarian Archaeological Mission (SHAM). al-Marqab is one of the most significant fortifications on the Syrian coast. For nearly a millennium, the site was continuously inhabited from its foundation at the end of the eleventh century until 1958.

The Syro-Hungarian Archaeological Mission (SHAM) carried out excavations in the northern part of the inner suburbia of Qal'at al-Marqab. Where it found an Ottoman complex of buildings, built in medieval origins, and a Late Ottoman house with a garden and several rooms. The systematic archaeological researches at the al-Marqab castle have also led to the discovery of a large collection of ottoman pottery, glass fragments, iron fragments, coins, and animal bones. Among these archaeological materials discovered were complete or fragmentarily preserved smoking pipes.

Results: The aim of this research is to highlight the importance of the economic development of this site during the Ottoman period through the study the pottery. The study also makes it possible to draw a preliminary picture of the distribution and function of the various pottery types, in addition, Select a chronology. Finally, a collection of the Ottoman Pottery in al-Marqab castle and presented in one catalog.

Conclusions: The Ottoman Pottery in al-Marqab castle is one of the important topics that have not been fully studied, despite the availability of pottery pieces, but they have never been subjected to serious study. One of the ideas that can be inferred during this research is to identify the features of the pottery industry, its decoration, its quality, and its method of formation in the Ottoman period. In addition, it helps to gain a full understanding of the economic situation in the region, and study the pottery in the history of the earth's layers and study the site from a historical point of view. The study of pottery may also allow us to deduce the daily life of culture, religion, and relations with neighboring countries such as import and export.

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Keywords: Ottoman, al-Marqab, pottery

Damascene architecture in the Ottoman period

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When the Ottomans entered Damascus, they found an ancient city with several layers of civilization. Hence, Damascus is one of the oldest inhabited cities of the world which has been evolved through different historical levels. While the final shape of Damascus is a result of continuous development through the historical phases, the gaining of the Ottoman city shape was affected by the previous levels starting with the Hellenistic period until the Mamluk period.

The main aim of this study is to identify the main characteristics of the Ottoman architecture in Damascus, including the religious and civil buildings. Furthermore, its purpose is to shed light on the similarities and differences between the Ottoman architecture in Damascus and the Ottoman architecture in Turkey. In the view of this study, it provides us to give an obvious picture of whether the original Ottoman imperial architecture appeared in Damascus, or it was just limited changes added to the previous architectural styles.

As a result of the study, the Damascene architecture in the Ottoman period shows a mixture between the imported imperial style from Istanbul, and the local Damascene style, which was mainly influenced by the previous mamluk style.

Keywords: Damascus, Ottomanization, local mamluk influences

The medieval closing systems of the 12th and 13th centuries

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When Crusaders took the Levant, they constructed huge strongholds to make sure they stayed. The elements of their structures, from the smallest to the greatest, ensured a secure shelter in the new conquered lands. One of the most significant elements are the openings that must be protected. The need to build defensive fortresses and buildings resulted in the effective employment of security measures [1]. Therefore, shutters, which were simple protective movable barriers in the past, became major architectural features to transform a building into a shelter in the Near East. In addition to playing a tangible role, doorways had a symbolic weight in ecclesiastical architecture and reflected power and prestige which led to the ornamentation and the use of specific details in the design of door leaves. This research aims to underline the main characteristics of medieval doors and windows of the 12th and 13th centuries and the security measures employed in them in order to try to visualize the original design of the door of the Crusader cathedral of Saint John Mark in Jubayl as a prestige symbol and once-imposing defensive barrier. The investigation of the cathedral door is done through an architectural survey of the remains of past closing systems still existing in the doorway, attempting to date the door, gathering information on how shutters were made and installed in the medieval period, studying the European parallels of the cathedral, and using a 3D design software for the reconstruction.

Results: The survey and the understanding of medieval construction techniques and elements of the 12th and 13th centuries resulted in a more realistic approach to rebuilding the door of Saint John Mark cathedral in Jubayl.

Conclusions: This study underlines the significant role of closing systems in the protection of people from weather and unwanted intruders during the Crusader period. As this subject is often gone unnoticed or disregarded, closing is often done in a bad or impractical way in the Levant. The result can be a guide for the renovation of medieval monuments in the Near East as well as in any other European country.

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Keywords: Doors, Windows, Medieval architecture, Crusader architecture, Closing systems

The Roman mosaics of *triclinia* in Antioch

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The Roman *triclinia* mosaics of Antioch are among the most interesting discoveries due to their premium Roman designs. These mosaics show significant Hellenistic artistic heritage in the representation of the classical and mythological topics. The main aim in this study was to classify the *triclinia* mosaics in Antioch according to their designs and to record them in a complex database including their topics, date, dimensions, exposures in order to determine possible connections between design elements and building types. There are three known designs for the *triclinium* mosaics, generally, and these designs mentioned by Doro Levi in his book of 1947 “Antioch mosaic pavements” for the Antiochian mosaics (T, U and Horseshoe shapes).

However, the author managed to identify a new design unnoticed by Levi, which he named H-shape design. This is composed of two large, separated panels along the room, one with geometric motifs, and the second with figural representation.

Therefore, the process of studying *triclinium* mosaics in Antioch during the master’s study period, gave me a major base to complete this research in my doctoral thesis, and expand it to include all *triclinium* mosaics within the borders of the Syrian-Roman state, and the research of this study is still in progress.

Neveléstudomány



Pedagogy

Brazilian's African-Based Music Education: The application of the Cabila Rhythm as an Instrument for the Music Education's Decolonization Process

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In the last decades the music field has been going through significant changes due to the discussions related to colonialism, ownership and representativeness. By questioning traditional music-related values and incorporating debates from diverse social and human sciences, researchers with different backgrounds have become attentive to the responsibility of music education in promoting social justice. Focusing on the Cabila, an Afro-Brazilian rhythm, this article discusses the applications and implications of approaches to music education that embrace critical and decolonial objectives. Highly oriented by the critical paradigm's perspective, this investigation presents four specific aims: 1) to examine the intentions and effects of traditional Eurocentric approaches to music education; 2) to present the main religious, social and musical characteristics of Cabila rhythm; 3) to present and examine the available literature related to the application of Cabila in music development processes; and 4) to explore the possible educational, political, social and musical effects of a decolonizing approach to music education based on the Cabila rhythm. Sustained by the aforementioned goals, this research of qualitative approach and bibliographic orientation intends to contribute to the ongoing scientific debate by discussing the application of an educational approach's strand that is supported by African-based music and Afro-Brazilian traditions. The presented feasibility of the Cabila's application in the development of materials directed to develop different music competences indicates that, despite its current underappreciation, Brazilian's and general's African-based music have an unexplored potential to contribute to diverse areas of music technical development at the same time that it support the decolonization processes of the broader society.

Keywords: Postcolonialism, African-Based Music, Afro-Brazilian Music, Cabila, Music Education.

The Results of a Study on Private English Language Tuition

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Introduction: As the institutionalised language teaching has not yet gone through a change in terms of pedagogical attitudes [1], in recent years there has been a growing demand for a more personalised way of English language tuition [3,4] that complements language learning in formal education.

Aim: The present study aims at examining the type of private education EFL students tend to take part in, the reason for students' participation, and the efficiency of private language education. Data is also gained on what percentage of students taking part in private tutoring are in possession of a language examination and in what aspects private tutoring influences students' career aspirations.

Methods: In the form of a quantitative study (N=135) research questions are analyzed regarding the nature of private lessons students take part in and correlation analysis is carried out to examine the interrelationship between the scales of self-efficacy, differentiation and language learning goals in private language tuition.

Results: Based on our results, it seems there is a correlation between participation in shadow education and language learning motivation, confident language use, and social mobility. Contrary to the assumption about the rate of language examinations in shadow education, we found that there is no significant difference between students' success rate compared to those who do not take part in private tutoring.

Conclusions: Our findings emphasise the need for differentiated instruction as well as taking students' personality into consideration in order for efficient language teaching to take place through raising students' self-efficacy [2] in the EFL classroom.

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Keywords: shadow education, private tuition, differentiation, language examination, self-efficacy, personalised education

Az empowerment és a kritikai pedagógia

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Bevezetés - Célkitűzés: Az empowerment széles körben használt terminussá vált az 1990-es években angol nyelvterületen, és idővel beszivárgott a magyar szóhasználatba is. A terminust használják a neveléstudomány mellett a szociális munka, a közösségfejlesztés, a pszichológia, az egészségügy és a business szektorokban. A téma aktualitását mutatja, hogy az empowerment megjelenik az ötödik ENSZ Fenntartható Fejlődési Célban, és összekapcsolódik a negyedik, az oktatásra vonatkozó célkitűzésekkel, úgy mint a mindenki számára elérhető minőségi, inkluzív, méltányos oktatás, valamint az élethosszig tartó tanulás. Emellett az EAEA, az Európai Szövetség a Felnőttképzésért tavasszal online, a nemzetközi szakértőket felvonultató workshopsorozatot tartott a változásorientált nevelés témakörében, melynek kulcsmozzanata az empowerment. Doktori kutatásom a dramatikus és színházi nevelés által megvalósuló felnőttkori empowermentre fókuszál, jelen előadás is ennek részét képezi. Az előadás és a készülő tanulmány célja az empowerment neveléstudományi vonatkozásainak áttekintése, különös figyelmet szentelve a kritikai pedagógiának és a felnőttképzésnek.

Módszer: A módszerem másodlagos kutatás, a releváns szakirodalom feldolgozása.

Eredmények: Az empowerment jelen van a demokratikus, az inkluzív, az interkulturális nevelési megközelítésekben, és gyakran tárgyalt fogalom a felnőttnevelés, a nem-formális tanulás, és az élethosszig tartó tanulás területein is. Az előadásban először röviden összefoglalom az empowerment elméletét és szemléletét, ezután áttekintem a neveléstudományi vonatkozásaira, majd áttekintem beágyazottságát a kritikai pedagógia paradigmájába többek között Freire [1,2], Giroux [3], Lima [4], illetve Lakatos [5], Mészáros [6], és Kovács [7] munkái alapján.

Következtetések: Az empowerment kiemelt jelentőségű a felnőttképzésben, a 21. században a kritikai pedagógiai szemléletű nem formális tanulási folyamatok egyik alapvető célja.

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Kulcsszavak: empowerment, képesség tétel, kritikai pedagógia, felnőttképzés

Analysis of Academic Motivation and Self-regulation among students in higher education

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In line with the growing importance of students' motivation and self-regulation for successful students' performance, an increasing number of educators pay attention to the necessity to help students become motivated and self-regulated learners (Pintrich, 2000; Schunk, 2005; Boekaerts & Niemivirta, 2000). The present study aims to investigate the relationship between academic motivation and self-regulation among students in higher education. Academic motivation refers to the cause of behaviors in some way related to academic functioning where self-regulation of psychic activity assures goal setting and achievement of results corresponding to these goals for successful students' performance (Eggen & Kauchak, 1994). The main components of self-regulation system are goals planning, modeling of significant conditions, programming of actions to achieve the goals, and estimation of results. And stylistic features that characterize the function of all components of self-regulation system are at the same time personal traits - independence and flexibility (Morosanova, 2010).

To fulfill the aim of the study two questionnaires were administered to 200 bachelor students with an age range from 18 to 25 years at Chelyabinsk State University, Russia. Data were gathered using the "academic motivation scale" developed by Rean & Yakunin and modified by Badmaeva (2004), and the "Self-Regulation Profile Questionnaire – SRQM" developed by Morosanova (2004).

Results: The study shows a significant relationship between academic motivation and self-regulation. Self-regulation is connected with academic motivation such as motivation to get a certificate of higher education, knowledge, teachers' and parents' respect, and intellectual satisfaction. Motivation to get a certificate of higher education is connected with goals planning and skipped other important components of self-regulation.

Conclusions: Students' academic motivation can effect successful goal settings and achievement through self-regulation and its different components and stylistic features. The study offers insights into working with academic motivation to enhance students' self-regulation for successful students' performance.

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The Learning Experience of Students Living With Disability in Higher Education

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The research topic of the ongoing doctoral research is interdisciplinary. It aims to examine the learning experience of students living with disability in the Hungarian Higher Education (HE) context, which brings the disciplines special education and higher education pedagogy together. The student population is becoming more heterogeneous, students living with disability enter HE with varied previous experiences and learning needs. Also, there is great diversity among students living with disabilities, people with the same diagnosis still have different demands and seek for individualised support [1]. HE institutions are increasingly moving towards the inclusive approach, which goes beyond the provision of support services. Inclusive HE approach takes into account individual needs so that all students can participate in all areas of HE without barriers [2].

A pilot research was conducted as part of the doctoral research. Students living with ADD, and students living with ADHD were invited to the pilot research which aims to examine their special HE experience. Semi-structured interviews were used with the support of the journey plot visual method based on McAlpine (2016) [3]. Altogether 13 interviews (n=13) were taken, 7 participants were from the Bachelor level, 4 of them from the Master level and 2 of them from PhD training. The participants received their diagnosis in their adulthood mainly (10 out of 13). The collected data present that students living with ADD or ADHD face challenges regarding their HE studies e.g. keeping deadlines, procrastination, and have the experience that they cannot reveal their diagnosis or they will be labeled. Despite their challenges in HE, the participants recognised advantages of ADD or ADHD which help them to overcome their academic challenges and see themselves as unique members of their HE community. Finally, the pilot research shows that disability specific and individualised support from the HEI's side is essential to make the academic experience of the student living with ADD or ADHD less challenging.

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Keywords: Students living with disability, inclusive higher education, diversity

The challenges and issues for the curriculum development and implementation in Mongolia

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Abstract: Academic achievement of students is highly dependent on the quality of curriculum. The current Mongolian national curriculum is embedded and implemented competency-based approach since 2014. This major change provided an opportunity to move forward with the aim of training a globally competitive, skilled labour force. However, it is still a question if the quality of curriculum is good enough to achieve the aim. There are a few dated documents including report, policy review and nationwide research provided important information on the current national curriculum by disclosing some obstacles during the curriculum development and implementation. On the basis of these recent documents, this paper aims to unravel main challenges addressed in the development and implementation of the present curriculum. Moreover, it aims to explore potential perspective that would contribute to mitigate the issues on the basis of examples in other countries. Pursuing these aims, this paper applies a document analysis method with qualitative approach.

Results: The researcher identified major issues involving a lack of evidence-based policy formulation, rapid changes of the curriculum, limited financial support, inadequate time for the curriculum development and implementation, human resource availability and human resource management. Moreover, the analyses revealed that school teachers and students confront some demanding challenges in the implementation of the curriculum.

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Keywords: National curriculum of Mongolia, competency-based curriculum in Mongolia, challenges and issues of curriculum in Mongolia

Dilemmák a köznevelés vezetőinek felkészítési és fejlesztési folyamatában

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Bevezetés: A megfelelő vezetőképzés jelentős mértékben hozzájárul a vezető és ezáltal a szervezet eredményességének, versenyképességének növeléséhez. A köznevelésben a vezetőképzés elvégzése a vonatkozó rendelet alapján az intézményvezetői megbízás feltétele.

Célkitűzés: Az előadás bemutatja, milyen vezetőképzés, vezetőfejlesztés folyik a köznevelésben, hol helyezkedik el a képzés a pedagógus továbbképzés rendszerében, valamint a közszféra egyéb ágainak vezetőképzései sorában, illetve a képzésben részt vevő hallgatók körében lebonyolított kérdőíves kutatás alapján kiderül belőle az is, tartalmában és módszertanában adekvát-e napjaink intézményvezetése számára.

Módszer: Az előadás szakirodalmi háttérét a vonatkozó jogszabályok, valamint a témában eddig megjelent, releváns publikációk adják, többi részében a kérdőíves felmérés kvantitatív módszerrel feltárt eredményeinek feldolgozása, fejlesztési célú elemzése történik.

Eredmények: A 2011. évi köznevelési törvény bevezetése és az állami fenntartói szerepvállalás miatt módosult az intézményvezetői szerepkör, ezért nincs mindenben szinkronitás a képzés által közvetített tudástartalom és az alkalmazható tudás között. Az intézményvezetők fejlesztése a vezetőképzés(felkészítés) elvégzését követően lezárul és nincs folytatása a vezetői életpálya során.

Következtetések: A köznevelés korszerű, rugalmas, alkalmazható tudást adó, a munkakörnek való megfelelés mérésével is összehangolt, új komplex vezetőfejlesztési modelljének kialakítása szükséges.

Támogatás: Az áttekintésre az ad alapot, hogy a közoktatási vezetőképzésben több éve oktatóként veszek részt, valamint az intézményvezetők felett az egyéb munkáltatói jogkört gyakorló fenntartói szervezetet vezetek. Egyrészt ismerem tehát az intézményvezetői feladatkör tartalmát, összetételét, másrészt aktívan részese vagyok annak a rendszernek, mely a köznevelési vezetők képzését, pályára való felkészítését hivatott szolgálni.

Kulcsszavak: pedagógus továbbképzés, vezetőképzés, -fejlesztés, intézményvezetői feladatkör, tudás, módszertan

Az ösztöndíj pályázásához kapcsolódó célok, motivációk, kommunikációs szokások vizsgálata a fiatal felnőttek körében

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Bevezetés: A napjainkra egyre gyorsuló generációváltások hatására, a generáció kutatások is kiemelt figyelmet fordítanak a viselkedés és gondolkodásbeli eltérések feltárására. E tanulmány a mindennapokat meghatározó információs technológia által behálózott életmód kontextusában vizsgálja az Y és Z generáció céljait, motivációit és kommunikációs szokásait. Az elemzések a felsőoktatási ösztöndíj pályázatok aspektusából mutatjuk be. [1] A kutatás során fiatal felnőtteknek tekintendők a Z és Y generációkhoz tartozó 18-35 éves személyek. A tanulmány szerzője az alábbi kérdésekre keresi a választ: mi segítheti elő a pályázatokon való indulás hajlandóságának növelését a Z generáció tagjai körében? Az Y generáció tagjai a sikeres pályázást követően milyen hatást véltek felfedezni szakmai pályájuk alakulásában? A később elvégzendő empirikus kutatások alapjául szolgáló szakirodalmi elemzések keretében vizsgáljuk e két generáció gondolkodásának kognitív világának sajátosságait.

Eredmények: Napjaink oktatáspolitikája nagy hangsúlyt kíván fektetni a tehetséges hallgatók, kutatók, oktatók és művészek támogatásra. Ennek egyik lehetséges formáját az ösztöndíj pályázatok jelentik. A szerző e tehetségtámogatási formát kívánja pályázói aspektusból bemutatni. A kutatás során végzett felmérés eredményei alapján összehasonlítjuk e két generáció (Z és Y generáció) pályázói szokásait. Egy ilyen felmérés a szerző feltevése szerint segítséget nyújthat az oktatáspolitiká számára is, hogy még célzottabban tudja támogatni és segíteni az eltérő tudományterületek fiatal tehetségeit.

Következtetések: Számos tehetséggondozó ösztöndíj program felhívásában megtalálható, hogy a pályázat célja a tehetséges fiatalok a kutatói, művészeti szférába vonzása, továbbá a már pályán lévők kibontakozásának támogatása, kutatásaik és művészeti előadásaik, produktumaik nemzetközi színvonalú elkészítésének segítése. [2] A tanulmány egyik hipotézise, hogy az ösztöndíj pályázatok pozitív befolyást gyakorolhatnak a hallgatók szakmai életpályájának alakulására. Jelen tanulmány e gondolatokra kíván reflektálni, és szakirodalmi megalapozást nyújtani további empirikus kutatásokhoz.

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Kulcsszavak: generációk, motiváció, ösztöndíj pályázat, tehetséggondozás, kommunikáció

Érzékenyítő foglalkozások jelentősége az épek között a fogyatékossgal élő személyekkel szembeni attitűdformálásban

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A felgyorsult gazdasági, társadalmi fejlődés egyik eredménye, hogy a piacgazdaság térhódítása miatt megváltozott a munkaerőpiac, továbbá napjainkat jellemző viharos változások hatást gyakorolnak az attitűdünkre. Az Európai Bizottság szerint a 15-64 éves korcsoportban minden hetedik ember fogyatékossgal él [1]. Európai Unió tagállamai közül hazánkban a legnagyobb a különbség a dolgozó korosztály (61%) és a fogyatékossgal élő dolgozók (24%) száma között [1]. Hazánkban a KSH 2011. évi adatai alapján a magyar lakosság közel 5%-a (490 578 fő) fogyatékossgal él, továbbá az OECD adatai alapján a fogyatékossgal élő személyek a második legnagyobb kisebbségnek tekintendők [2]. Egy nemzetközi vizsgálat alapján hazánkban a legnegatívabb a hallgatók attitűdje a fogyatékossgal élő társaikkal szemben [3]. Az attitűdünket a nemünk, az életkor, az előzetes tudás, a fogyatékossgal élő társakkal kapcsolódás, az önértékelés, az életminőség és a kulturális faktorok is befolyásolják. Az attitűdünk meghatározza a helyzetekre való reagálásunkat [3]. Munkánkban saját felmérésünk adataira építve szeretnénk igazolni - a szakirodalom által meghatározott érzékenyítő feltételeket is tartalmazó - foglalkozássorozat hatékonyságát és szükségességét. Az adatgyűjtéséhez validált attitűd kérdőív (MAS, ATDP-O) alkalmaztunk saját kérdésekkel kibővítve, amelyet 111 fő töltött ki. Az adatok feldolgozása SPSS 24.0 statisztikai programmal készült.

Eredmények: MAS kérdőív eredményei alapján mind a három dimenzióban igen negatív képet kaptunk a válaszadók attitűdjéről. A megismerési dimenzió értéke a legmagasabb (M=37,78, SD=7,76), tehát a válaszadók a fogyatékos személyekkel kapcsolatban negatív nézeteket vallanak.

Következtetések: A többségi társadalom fogyatékos személyekkel szembeni attitűdje negatív, az attitűdformálás, tehát a szociális kompetencia-fejlesztésére és az érzékenyítő foglalkozásokra szükség van, mivel ezt a tanult viselkedést a szociális kompetenciák fejlesztésével valósíthatjuk meg.

Irodalomjegyzék:

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Kulcsszavak: attitűd, érzékenyítés, foglalkozássorozat, fogyatékossg, attitűdformálás

Intézményfejlesztés a korai iskolaelhagyók számának csökkentésére a Baranya Megyei SZC Garai Miklós Technikum és Szakképző Iskolában

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A korai iskolaelhagyás és az abból következő alacsony iskolai végzettség miatti ifjúsági munkanélküliség a 2008-as válságot követően jelentős szerepet kap a nemzetközi elemzésekben és szakpolitikai tanulmányokban. Kiindulópontja az Európai Unió Európa 2020, Az intelligens, fenntartható és inkluzív növekedés stratégiája című programja, amelynek egyik célja az oktatás területére nézve, hogy a lemorzsolódók arányát 10%-ra csökkenti [1]. Hazai tanulmányokból kiderül, hogy Magyarországon a szakképzéssel foglalkozó iskolákban különösen magas a lemorzsolódók aránya [2].

Ezekre a problémakörökre reagál a GINOP 6.2.3-17 „A szakképzési intézményrendszer átfogó fejlesztése” elnevezésű projekt, amely 2018-2021 között került megvalósításra többek között a Baranya Megyei Szakképzési Centrum Garai Miklós Technikum és Szakképző Iskolában. A projekt fő célkitűzése a szakképzésben tanulók végzettség nélküli iskolaelhagyásának csökkentése és az alapkészségek fejlesztésének támogatása.

A projekt keretein belül első lépésként elkészült az intézmény szöveges helyzetelemzése, amely egyrészt számszerű adatokra, másrészt egy SWOT-analízisre támaszkodott. Az adatgyűjtés fókuszában a tanulói adatok, a pedagógusok, az iskolai szolgáltatások, valamint az együttműködések a lemorzsolódás csökkentése érdekében álltak. A SWOT-elemzést a teljes nevelőtestület bevonásával készült, amely garantálta, hogy a helyzetelemzés alapján elkészült intézkedési terv valóban intézményspecifikus legyen.

Az intézményben elért eredmények közé sorolható egy az általános iskolából a középiskolába való átmenetet segítő szocializációs program kidolgozása, a beérkező 9. évfolyamos diákok felmérésének bevezetése, valamint egy intézményi korai jelzőrendszert kidolgozása. Azonban a legfontosabb mégis az a tény, hogy mind az iskolavezetés, mind nevelőtestület számára egyértelművé vált a kérdéskör fontossága. [3]

Az egyértelművé vált, hogy a korai iskolaelhagyás ellen csakis egységesen, helyi szinten fellépve, a diákot a fókuszba állítva lehet eredményesen fellépni. További cél lehet a kooperatív tanulásszervezési módszerek szisztematikus bevezetése intézményi szinten, illetve a produktív tanulás módszereinek megismerése és alkalmazása a mindennapi oktatás során.

Irodalomjegyzék:

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- [2] Fehérvári Anikó: Lemorzsolódás és a korai iskolaelhagyás trendjei in *Neveléstudomány. Oktatás - Kutatás - Innováció* 2015;3:31-47
- [3] Stölkler Melinda: A korai iskolaelhagyást megelőző tevékenységek a GINOP 6.2.3-17 projekt keretein belül a Pécsi SZC Garai Miklós Szakgimnáziumában és Szakközépiskolájában. 2021. Pécs

Kulcsszavak: korai iskolaelhagyás, lemorzsolódás, szakképzés, intézményfejlesztés

Közigazgatási jog, alkotmányjog



Administrative and Constitutional Law

The role of Public Administration in Sustainable Development - how the innovation of public administration can help accelerate the implementation of the Sustainable Development Goals in the V4 and in Hungary?

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Understanding and analysing the structure through which the Sustainable Development Goals are implemented – from the national level, through intergovernmental and regional cooperation to the national levels – is essential. In my research, I build my scientific exploration based on the “reversed-pyramid” model, consisting of:

- International level (UN)
- Intergovernmental level (EU)
- Regional level (V4)
- National level (HU)

Expanding the lowest level of the pyramid – that of “member states” – we can further distinguish two categories:

- a) The central state administration
- b) The territorial state administration

While the first one is mainly concerned with the management of macro-problems and certain macropolitical development, the latter one – constituting the level being closest to the citizens – could use the concept of sustainability in the strategic planning of local affairs. In my research and my presentation, my aim is to point out the weak spots as well as the synergies that can help accelerate the implementation of the SDGs in great lengths, especially when it comes to the V4 region and Hungary.

Keywords: sustainability, governance, municipality, system-thinking, public administration

Defining judicial activism: the nature of constitutional adjudication

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The presentation examines the constitutional courts' political and legal nature, which naturally stems from the function of the constitutional courts: the constitution is a value-creating document enacted by the political community. The constitution is adopted as a result of political decisions. At the same time, the constitution is the document that created the legal system and thus must be enforced. A judicial body examines the enforcement of this political and legal document in Hungary. Since the Fundamental Law entrusts the examination of enforcement to a judicial body, dilemmas automatically follow: how far can the Constitutional Court reach, and how long can it narrow the legislature's scope? The simple theoretical answer to this question is: as long as the unconditional enforcement of the Basic Law requires it. The duality of constitutional courts' political and legal nature makes it challenging to examine them and determine the range of elements accounted for and measured in the judicial decision. Although the definition is complex, the research is still essential, as this is how we can examine what the Constitutional Court thinks about its own role, its position in the division of powers, and its function in the constitutional system.

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Keywords: constitutional adjudication, nature of constitutional courts, judicial power, activism

Analysis of Religious Freedom and The Protection of Human Rights in the Inter-American System

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In recent years, the Religious Freedom has been the subject of numerous doctrinal studies; many of them are dedicated to the analysis of fundamental rights and their guarantees. However, this high interest aroused by concrete religious liberties contrasts with the scant attention paid to the study of a general theory of human rights. The aim of this paper is to analyze the normative and jurisprudential advances that religious freedom has had in the Inter-American System for the Protection of Human Rights. It will examine on the one hand, how religious freedom has been incorporated into the Inter-American System of Protection of Human Rights, highlighting its content and scope; and, on the other hand, how the protection of that freedom has been in the American regional system. The study includes a specific analysis of the case law of the Inter-American System, reviewing the regulations of the region and its standards of protection in matters of religious freedom.

In this regard, it is highlighted that the authors who have dealt with this issue are few, perhaps, as they² mention, because the Inter-American System has focused on addressing and resolving cases in which the rights to life, personal integrity, judicial guarantees, and political rights are violated. However, reflection on the incorporation and protection of religious freedom in this regional system is useful, although as the normative framework of religious freedom of the Inter-American System, is not developed, is broad and, on some occasions, it complements and reinforces the protection and guarantee of religious freedom in the American States.

The paper concludes that despite the scant treatment of religious freedom in the Inter-American System, this initial assessment does not mean that the violations of that freedom are not numerous, or they are not serious. Simply, it must be borne in mind that not all cases of human rights violations in the region come at the request of the organs of the Inter-American System. Now, on paper, by virtue of the American Declaration and / or the American Convention, the States of the region are obliged to respect and guarantee religious freedom, at least in the terms established by those regional instruments.

References:

- [1] *From Panama, B.A. Law and Political Sciences (USMA), M. Sc. International Politics (CCNU Wuhan, China), Second Year student of Ph.D. International Relations and Security Studies program, Corvinus University Of Budapest*
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Keywords: religious freedom, human rights, regulations.

Churches and their status within national borders in Central Europe

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In terms of the relationship between the state and the church, we can come across quite different models in terms of their system of European relations in each country, among which we can discover the state church a model of cooperation and separation, radical separation or the system of the related model. However, categorization is not exclusive.

The European Union states in Protocol No 11 annexed to the Treaty of Amsterdam that the relationship between the churches and the state is and will remain an internal affair of that country, part of regulation and policy at national level (Consolidated version of the Treaty on the Functioning of the European Union, Part One – Principles, Title II – Provisions Having General Application, Article 17) At the same time, the decision-makers of the individual countries of the Union, while respecting the equality of religious organizations, differentiate on the basis of their social weight and their public benefit activities.

The aim of my dissertation is to examine these issues, how the relationship between churches and the given EU member states develops, the legal status of churches, their legal organization in Hungary, Poland, and Austria and Romania.

Among the applied methods, I use concept and text analysis, legal history and comparative analysis.

The basic source of my research is the electronically accessible databases of European Union legal sources, in particular the case law of the Court of Justice of the European Union and the communications of the institutions, as well as the national regulations of the countries studied. A direct source is the mapping of the literature in libraries with the possibility of accessing the electronic databases of libraries.

Results: As a result of my research, analyzing the regulations and historical changes in the ecclesiastical recognition of specific states, I present the conditions, legal status and catalog of state-recognized churches for the recognition of the current ecclesiastical status of each state and compare them for the studied states.

Conclusions: As a result of my dissertation, I conclude that in the correlation between the studied states and the churches they recognize, state recognition is fundamentally based on political foundations. Among ecclesiastical organizations, the status of a church under public law recognized by a separate law, by being based on the legislation of the Parliament, is essentially the result of a political decision by the Parliament. This is an expression of a social consensus in the legislation of the democratically based EU Member States. It has also been confirmed that the status of churches differs in the EU Member States examined. With regard to EU policies, it is indeed appropriate for them to involve the churches in European integration, for which, however, a dialogue has recently begun.

Keywords: state, church, recognition, system of conditions, legal status, Hungary, Poland, Austria, Romania

A fair eljárás mint a hatékony jogvédelem eszköze a közigazgatási perekben

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Előadásom fókuszában a tisztességes eljáráshoz való jog közigazgatási bírósági gyakorlata áll a 2017. évi I. törvény, a közigazgatási perrendtartás hatálybalépését követően. A Kp. 2. § (1) bekezdése a hatékony jogvédelem elvét helyezi középpontba, ugyanakkor a Kp. 2. § (2) bekezdése kifejezetten és külön is tartalmazza a tisztességes eljárás követelményét. Az Alkotmánybíróság kialakult gyakorlata a hatékony jogvédelem elvét a tisztességes eljáráshoz való joggal hozta összefüggésbe és egészítette ki további részelemekkel. A hatékony jogvédelem is olyan gyűjtőfogalom, mint a tisztességes eljáráshoz való jog: számos eljárásjogi rendelkezés összessége adja ki a tartalmát, melyek többsége a tisztességes eljáráshoz való joghoz is sorolható. A Kp. azonban nem csupán az alapelvek között biztosítja a tisztességes eljáráshoz való jogot, hanem konkrét, normatív rendelkezéseken keresztül is, mindez azonban a bíróságok jogértelmező munkája nélkül nem tudná betölteni garanciális szerepét.

Célkitűzés – módszer: A kutatás célja, hogy bemutassa, a közigazgatási bírósági joggyakorlat hogyan értelmezi és alkalmazza a Kp. tisztességes eljárást biztosító egyes szabályait, illetve a tisztességes eljárás alapelve mentén hogyan alakítja a bírói gyakorlatot. Ennek érdekében elsősorban a Kúria azon határozatait elemzem és dolgozom fel, melyeknek központi eleme a tisztességes eljáráshoz való jog és ennek részlemeinek alkalmazása.

Eredmények: A vizsgált határozatokat három nagy csoportba osztottam: az első csoportot a bírósághoz fordulás jogához kapcsolódó határozatok, a másodikat az ügyféli részvételi jogok, a fegyveregyenlőség elve, a harmadikat pedig a bíróságon belüli jogorvoslatok képezik. Előadásomban ezen határozatok elvi tartalmát mutatom be, összekapcsolva a Kp. érintett rendelkezéseivel.

Következtetések: A bírósági eljárás során fontos, hogy az alapelveket pontos jogszabályi rendelkezések „váltsák aprópénzre”, a tisztességes eljáráshoz való absztrakt jogot tükrözzék az egyes eljárásjogi szabályok. Ugyanakkor a bírói gyakorlatnak legalább ennyire fontos szerepe van, ugyanis ahhoz, hogy a közigazgatási bírósági eljárás megfeleljen az eljárási igazságosság mércéjének, elengedhetetlen, hogy a Kp. egyes konkrét rendelkezéseit alkalmazásuk és értelmezésük során az Alaptörvény XXVIII. cikk (1) bekezdésének szem előtt tartásával vizsgálják az értelmezési keretek határáig.

Kulcsszavak: közigazgatási jog, közigazgatási perrendtartás, tisztességes eljárás, esetjog, alapjogi bíráskodás

Helyi önkormányzati autonómia – alkotmányos értékek, szabályozási dilemmák

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Az Alaptörvény új irányt szabott az önkormányzatokra vonatkozó szabályozásnak. A korábbi alapjogias megközelítéssel szakítva, az erősebb védelmi szintet az önkormányzatokat az állam-szervezet részének tekintő, célhoz kötött autonómiaként definiáló szabályozás váltotta fel. Ettől függetlenül az önkormányzatok szerepköre, és az abból adódó autonómiájuk mögöttes tartalma, alkotmányjogi értéke nem változott. A dolgozat elsődlegesen a jogtudomány módszereivel az önkormányzati autonómia szervezeti és szabályozási vetületeire koncentrálna. A szervezeti autonómia egyfajta formális megközelítés az autonómia vizsgálatakor, ezen felül érdemes azt is számításba venni, hogy a vizsgált funkcióban milyen önkormányzati feladat jelenik meg. A szabályozási autonómia az önkormányzati működés egyik alapköve, amelyet az központi és helyi jogalkotás közötti súrlódások könnyen kikezdehetnek.

A dolgozat annak bemutatására törekszik, hogy a helyi autonómia védelme érdekében egy, az önkormányzati feladatellátást érintő új szabályozás bevezetésekor jogalkotónak milyen, az autonómia biztosításához kapcsolódó szervezeti és szabályozási megfontolásokat kell figyelembe vennie, ha arra törekszik, hogy a helyi önkormányzati autonómiát ne üresítse ki, garantálja mind az önkormányzat további szervezeti függetlenségét, mind az érintett feladat autonóm ellátását. Ehhez kapcsolódóan a kutatás arra is fókuszál, hogy a jogalkotás szabályai hogyan járulnak hozzá az autonómia elégséges minimumának megőrzéséhez. A dolgozat esettanulmányokon keresztül igyekszik bemutatni az időszerű szabályozási dilemmákat a helyi önkormányzati autonómia kapcsán.

Kulcsszavak: önkormányzat, autonómia, szervezetelakítás, jogalkotás

Molekuláris orvostudományok



Molecular Medicine

Glaucoma model in rat

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Introduction: The glaucoma is a heterogeneous group of optic disorders, which first causes the peripheral visual field loss, then finally leads to irreversible blindness. This progressive condition will develop slowly by degeneration of retinal ganglion cells (RGC) and later the axons that comprise the optic nerve reduction. It is difficult to investigate the exact pathomechanism of these glaucomatous optic neuropathies in human patients. For better understanding and further investigations, effective animal models are needed to mimic human glaucoma establishment. Several risk factors serve as the cause of the glaucoma, such as age, corneal thickness, and ethnical origin. However, ocular hypertension remains the only modifiable risk factor that is a predominant feature of most glaucomatous animal models.

Aim: In our present study we wanted to develop an optimized, standardized glaucoma model.

Methods: IOP (intraocular pressure) elevation was occurred after optimization of volume and diameter of the microbeads injection. We injected the anterior chamber of the right eyes with (10µl, 10µm) polystyrene microbeads while the left eyes were injected with the same volume of PBS. We expected the microbeads occlude the aqueous outflow, that lead to IOP elevation. The changes were monitored during the development of disease with tonometer and OCT (optical coherence tomography). After 14 and 28 weeks we processed the retinas for histological and immunohistochemical analysis.

Results: A single injection of microbeads resulted significant IOP elevation, caused significant RGC degeneration and functional loss.

Conclusions: These results support a flexible and reliable model of ocular hypertension with RGC loss. In our further plans we will treat glaucomatous animals with different possible retinoprotective agents to reduce the degree of retinal degeneration.

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Keywords: Glaucoma, rodent model, retina, neuroscience

Comparative in-silico Structural Analysis of FH2 Domain of Formins DAAM (*Drosophila*), DAAM1 and mDia1

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Small molecular inhibitor of formin homology domain 2 (SMIFH2) was developed as a cyto-static anticancer agent, which inhibits actin activity of FH2 domains of several proteins, known as formins, including DAAM (*Drosophila*), DAAM1 and mDia1. FH2 domains of these formins exist as oligomers. For instance, two monomers or chains of FH2 domain form a tethered dimer. Chain dimerization by ring structure formation serves as a structural basis for actin polymerization function of FH2 domain. Moreover, the mutual orientation of dimeric rings can differ for various formins due to their high flexibility in actin-free state. Finally, proper single chain configuration and specific interactions between its amino acid residues are necessary for an individual chain to form a dimer functional in actin nucleation and elongation.

To investigate structural features of FH2 domain dimerization, we conducted in-silico docking study of binding of SMIFH2 to chain A of FH2 domain of proteins DAAM (*Drosophila*), DAAM1 and mDia1, using protein-protein and protein-ligand docking methods of computational biophysics and molecular modelling.

Our in-silico docking analysis revealed highly site-specific binding of SMIFH2 to chain A of FH2 domain for all selected formins. We found that SMIFH2 can potentially form different interactions with some of highly conserved amino acid residues with various energies of binding. In particular, in DAAM1, SMIFH2 can associate with Trp615 through Pi-Pi interaction and Lys617 by hydrogen bond and with Tyr823 and Tyr859 by Pi-sulfur and Pi-Pi T-shaped interactions. Such potential binding of SMIFH2 can disrupt hydrophobic and hydrogen bonds between two chains and prevent FH2 dimerization. The results of our docking study on mDia1 demonstrate that SMIFH2 can directly form H-bonds with Leu916 and Arg917, which, in turn, interact with Arg919. SMIFH2 can also directly bind to amino acids of the salt bridge, which form the shell of hydrophobic pocket around Arg919 and Asp1067 and, thus, interrupt the formation of hydrophobic pocket and the salt bridge formation inside it.

The analysis of docking results of SMIFH2 to I-TASSER model1 of FH2 domain of DAAM (*Drosophila*) shows that SMIFH2 tends to bind to similar regions of FH2 domain of DAAM (*Drosophila*) as of mDia1 and DAAM1, which are important for FH2 domain dimerization and the salt bridge formation.

In conclusion, although direct binding of SMIFH2 to amino acids, which form the salt bridge, was not detected, comparative sequence alignment of docking results of SMIFH2 to chain A of FH2 domain of mDia1, DAAM1 and DAAM (*Drosophila*) revealed highly specific binding of this pharmacological agent to regions of FH2 domain of all investigated formins, which are functional in intra- and interchain interactions, including highly conserved tryptophan residues of lasso region, highly conserved GNYMN sequence of post region and amino acids of the shell of hydrophobic pocket of the salt bridge.

Keywords: SMIFH2, formin homology-2 domain, actin, protein conformation, dimerization, autodocking, molecular modelling and computational structural biophysics

The rare mutations of *GBA1* gene and their effect in a Hungarian Parkinson's Disease cohort

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Introduction: Parkinson's Disease (PD) is a neurodegenerative disorder associated with genetic alteration in cc. 7-15% of the cases. Mutations of the *GBA1* gene are considered as one of the major genetic risk factors for PD. The frequency of its rare variants in distinct ethnic populations and the penetrance of these variants in individuals can be different. Therefore, the genetic burden of *GBA1* variants and the exact genotype-phenotype correlation is still a hot topic today.

Aim: Our aim was to measure the frequency of the rare variants of the GBA gene in the Hungarian PD population, as well as to analyse the role of identified genotypic variants in the clinical phenotype.

Methods: Patients from the institute's biobank (NEPSYBANK) were selected for the study (N=133). The enrollment criteria included i) the diagnosis of PD, ii) early onset and/or positive family history for PD, iii) negative findings for other PD related genes. The occurrence of *GBA1* variants were identified by either Sanger or Next Generation Sequencing. The pathogenicity of the variants were determined according to the ACMG guidelines.

Results: *GBA1* rare variants were detected in 22 PD patients. The most frequent mutations were the T408M (n=13) and E365K (n=6). We identified 4 further rare variants (n=1-2), 3 patients had the coexistence of 2 heterozygous variants. Most of the patients with T408M had cognitive decline and tremor dominant PD. Patients with E365K had mostly depression besides the typical PD signs. One patient had atypical PD with pyramidal signs. Mild cognitive deficit was present in 29% of the *GBA1* positive cases.

Conclusions: The *GBA1* rare variants were present in 16,5% of our PD cohort. The early identification of these patients is important, since they may be eligible for targeted causative treatment by using the substrate reduction treatment or lysosomal exocytosis stimulation.

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PACAP1-38 szemcsepp kezelés hatásának vizsgálata glaukóma patkány modellben

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Bevezetés: A glaukóma több millió embert érintő betegség, amely a látásvesztés egyik legfőbb kiváltója. Egyik jellemző rizikófaktora a megnövekedett belső szemnyomás, amely a csarnokvíz akkumulálódásából következik. A retina ganglionsejtei és axonjai fokozatosan pusztulva a látóideg romlásához vezet. A hipofízis adenilát cikláz aktiváló polipeptid (PACAP) egy fehérje, melynek anti-apoptotikus és neuroprotektív szerepe már igazolt számos neurodegeneratív kísérleti modellben. Kutatócsoportunk igazolta azt, hogy a PACAP1-38 szemcseppként adva képes átjutni az okuláris barrieréken, így kifejtve jótékony hatását. A glaukóma kezelés egyik kulcsfontosságú eleme egy olyan hatóanyag feltárása, amely nem csupán a tüneteket csökkenti, hanem képes neuroprotektív hatásával megelőzni a ganglionsejtek elhalását.

Módszer: Kísérletünkben 20 db hím Srague-Dawley patkányt, 4 kísérleti csoportba osztottunk. Glaukómás csoportokban a szemnyomás növekedését szemcsarnokba injektált mikrogyönggyel (10 μ l, 10 μ m) indukáltuk. Kontroll csoportok esetén azonos mennyiségű PBS-t juttattunk az elülső csarnokba. Ezt követően az glaukómás és PBS injektált szemek egy része PACAP1-38 másik része vivőanyaggal 4 hétig, naponta háromszor szemcseppkezelésben részesült. Minden állat szemnyomását hetente egyszer tonométer segítségével mértük. Nyolc hét elteltével az állatokat rutin szövettani vizsgálatra dolgoztuk fel.

Eredmények: A PACAP1-38 szemcseppkezelés szignifikáns IOP csökkenést (13,46 \pm 0,42 mmHG) indukált a mikrogyöngy injektált Systane kezelt (16,52 \pm 0,68 mmHG) csoporthoz képest. Szövettani eredményeink arra engednek következtetni, hogy a megnövekedett IOP jelentős károsodást okozott a retina teljes vastagságában (91,8125 \pm 2,127 μ m) illetve a ganglionsejtek számában (2,9873 \pm 0,18).

Következtetések: Ezek az eredmények együttesen arra engednek következtetni, hogy a PACAP1-38 szemcseppként alkalmazva potenciális terápiás lehetőséget nyújthat a glaukóma kezelésében.

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Kulcsszavak: glaukóma, patkány, szemcsepp, PACAP1-38, neuroprotekción

Immune regulation in GALT by immune checkpoint pathways in wild-type and PACAP-deficient mice

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Introduction: PACAP (pituitary adenylate cyclase-activating polypeptide) is a neuropeptide expressed in many organs that has been shown to have general cytoprotective, anti-inflammatory, and antiapoptotic effects. [1] However, the role of PACAP in the immun system is still not fully discovered. On the other hand, we have limited data about the examinations of the Gut-associated lymphoid tissue (GALT) in PACAP wild-type (WT) and PACAP deficient (PACAP KO) mice. The aim of the present experiment was to reveal qualitative and quantitative changes between the two mice groups found in the Peyer's patches to find out that how can PACAP influence the GALT's function, macroscopic and microscopic appearance. [2]

Methods: Samples were taken from aging (12-15 months old) WT (n=10) and PACAP KO (n=10) mice. We investigated the percentage of numerous immune cell populations in the GALT of WT and PACAP KO mice. We performed detailed immunophenotyping of GALT immune cells and investigated the expression of TIM-3 and PD-1 immune checkpoint molecules together with the detection of galectin-9 and PD-L1. In addition, we monitored the activation (CD69) and cytotoxicity (perforin) as well.

Results: We demonstrated a significant decrease in the frequency of GALT CD3+ T cells obtained from PACAP KO mice compared with wild-type mice. Monitoring the T cell subpopulations in CD3+ T cells we found significant increase in CD4+ T cells and significant decrease in CD8+ T-cells. Investigating immune-checkpoint receptors, TIM-3 showed a significantly decreased expression in all T cell subpopulations, while PD-1 expression significantly decreased only in CD8+ T cells in PACAP KO mice compared to wild-type mice.

Conclusions: We hypothesize that these local changes might have a role of the impaired anti-inflammatory responses in PACAP KO mice, however, determining the exact function requires further investigations. Further examinations will be performed from young aged mice to have a comparison between the two aged mice groups.

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Keywords: PACAP, GALT, Peyer's patches, immunophenotyping

Galanin és az alarin táplálékfelvételre gyakorolt hatása intranazálisan történő alkalmazás során patkányokban

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Bevezetés: Az elhízás és következményei világszerte népegészségügyi problémát jelentenek. Gyógyszeres terápiája jelenleg nem megoldott, ezért folyamatos igény van újabb és újabb farmakológiai támadáspontok kutatására. Ilyen támadáspontok lehetnek a táplálékfelvétel szempontjából kiemelt jelentőségű hipotalamusz által termelt szabályozó neuropeptidok. Kutatásom során egy viszonylag újonnan felfedezett peptidcsalád, a galanin család táplálékfelvételi hatásait vizsgáltam. A korábbi állatkísérletes vizsgálataink alapján felmerült a galanin 2-es receptorának (GAL2R) és a család legújabban felfedezett tagjának, az alarin táplálékfelvételt csökkentő hatása. A centrálisan ható étvágycsökkentő (anorexigén) peptidok egyik legjobb klinikai adásmódja az elhízás kezelésére az intranazális adásmód, amellyel hatékony mennyiség juttatható az agyba a vér-agy gát megkerülésével.

Célkitűzés: Állatkísérletes modellben a GAL2R szerepének tisztázása az étvágycsökkentő hatás közvetítésében intranazálisan adott specifikus agonista és antagonistá segítségével, valamint az intranazálisan adott alarin táplálékfelvételre gyakorolt hatásának vizsgálata antagonistá segítségével.

Módszer: A kísérletekhez hím Wistar patkányokat használtunk. Rövid altatásban pipettával 5 µl-es cseppeként felváltva mindkét orrnyílásba juttatuk az adott oldat összesen 60 µl-ét. Vívóanyagként alfa-, illetve béta-ciklodextrin oldatot használtunk, amely elősegítette az orrnyálkahártyán keresztüli felszívódást, valamint a megfelelő agyi magokba történő transzportot. A GAL2R természetes nem szelektív (galanin) és mesterséges szelektív agonistáját (M89b) önmagában adva és GAL2R-specifikus antagonistával (M871) kombinálva is teszteltük. Bár az alarin receptora még nem ismert, de leírták az első 5 aminosav lehasításával nyert peptid (6-25Cys-alarin) antagonizáló hatását. Ezzel együtt adva teszteltük az intranazálisan adott alarin hatását. A patkányok éjszaka aktívak, ezért az éjszakai periódus kezdetén, 18 órakor adott peptidok táplálékfelvételi hatását mértük automatizált FeedScale-rendszerben.

Eredmények: Mind az intranazálisan adott galanin, mind a GAL2R-agonista anorexigén hatása hasonló, specifikus GAL2R-antagonistával kivédhető volt. Tehát a galanin anorexigén hatását a GAL2R-on fejtheti ki. Az intranazálisan adott alarin lassan kifejlődő anorexigén hatását 6-25Cys-alarinnal antagonizálni tudtuk.

Következtetések: Az intranazálisan adott galanin a korábban általunk leírt táplálékfelvételt csökkentő hatását a GAL2 receptoron keresztül fejti ki, ami tehát intranazálisan adott étvágycsökkentők terápiás célpontja lehet. Az intranazálisan adott alarin is célpontot jelenthet, anorexigén hatását is a 6-25Cys-alarin antagonizálja.

Támogatás: PTE ÁOK Kutatási Alap (KA-2019-44)

Kulcsszavak: elhízás, galanin, alarin, étvágycsökkentés

Színház, film, performansz



Theatre, Film, Performance

The Discourse of Posthumanism and Material Agency in *No Country for Old Men*

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The discourse of *No Country for Old Men*, written in 2005 by Cormac McCarthy, is shaped by the Christian conceptual framework, just as by the postmodern notions of ecological materialism, seeking answers to both moral and ethical questions and metaphysical concerns about determinism, fate, chance, cause and effect, and the connection of mental qualities to material entities. The communicative design of the novel includes the exploration of human values, morals, good and evil forces in terms of the Christian worldview contrasting material obsession and possession. Moreover, explicit manifestations of the posthuman philosophy are revealed throughout the narrative, and verbally abusive gender relations, as a result of posthuman alienation, are also discussed in the study.

Trauma Politics, Trauma Narratives in the Fashion Show: A Case Study of Alexander McQueen's Highland Rape

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Alexander McQueen's iconic Highland Rape fashion performance in 1995 had a substantial impact on the world of fashion. The event definitively affected his rank and reception as a radical fashion designer. He transformed the traditional fashion show into complex but fragmented theatrical performances, telling stories through the garments. The title of the show, Highland Rape, refers to both its back story and artistic aim. The Highland is the Northern part of Scotland, which has a troubled traumatic national past; parallel to his own highly personal trauma, a rape reference is presented. McQueen's Highland Rape was a sadomasochistic mini-drama with strong traumatic symbolism built into its fashion performance narrative. The show had several complex layers, and it operated more like a performance, a performative act, than a regular fashion show; it presented a story mixed into his presentation of garments. On one level, the models played different roles or characters. A few models "[staggered] uneasily and [looked] dazed, for all intents and purposes as if they had been attacked" (Watt, 2014 p. 83); others acted immodestly by insulting others. The models were dressed in radically different styles. Some wore typical, socially-acceptable dresses without any particularly symbolic message, while others had wholly or partly carnival-like costumes with strong references. Some models were dressed in garments with aggressive, sadomasochistic references, or presented half-naked. Naked breasts, and garments torn around the models' genitalia were a major part of this catwalk performance, operating as an eye-opening message in the fashion world that was constantly objectifying women. Some critics were offended by Alexander McQueen's performance and clothes; they described them as misogynistic. McQueen defended himself by saying that the performance was instead connected to the "rape of the Scottish culture" than the rape of women. Nevertheless, the rape motif was a dominant presence in both in the models' appearance and in the atmosphere of this iconic fashion performance. In it, we can observe complex traumatic scenes; everyday garments were replaced with dominatrices' dog collar latex costumes, or braless styles with stiletto heels. All of them seem to be interesting from the perspective of a unique, personal objectifying process called traumatic elevated to a cultural (even national) discourse. My paper explores the Highland Rape fashion performance from the perspective of the psychoanalytic theory of Freud, Laplanche, and Cathy Caruth, amongst others. I also interpret it through the more general understanding of performativity, a post-theater quality of fashion performance. I argue that McQueen's Highland Rape fashion performance was constructed as a narrative in which the designer brought together traumatic events and traumatic symbols to question the contemporary context in which it was presented, aggressively using and objectifying women's bodies.

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Keywords: *trauma, performativity, fashion performance, McQueen, fetish, fantasy*

Ifjúkori modern önarcképek – a Bildung narratíva megjelenése a magyar újhullám filmjeiben

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Bevezetés: A magyar modernista Bildung-filmek megjelenése a fiatal rendező-generáció színrelépéséhez köthető. Szabó István, Gaál István, Sára Sándor és Kósa Ferenc Így-jöttem filmekben személyes történeteiken keresztül fiatal szereplők változásának dinamikáját rajzolják meg kamera-töltőtolluk segítségével.

Célkitűzés: Előadásomban azt mutatom be, hogy a Bildung narratíva milyen tematikus metszetben jelenik meg, hogyan kapcsolódik össze a modernista formához kapcsolódó stílusjegyekkel, és mindezek együtt milyen generációs értékekkel együtt jelennek meg.

Módszer: Kutatásom során kvalitatív módszerrel dolgozom és induktív jellegű munkát végzek. A felnőtté válásnak mint változásnak a modellezésére bevezettem a nevelődési marker fogalmát, melynek segítségével rendszerezem, hogy egyes szereplők milyen változásokon mennek keresztül a történet során.

Eredmények: A nevelődési marker egyik legmeghatározóbb fajtája a halál vagy annak valamilyen formája. Ennek természetében érezhető egy lineáris változás: idővel ugyanis a halál egzisztenciálisból (Oldás és kötés, Sodrásban, Álmodozás kora, Apa – egy hit naplója) politikai színezetűvé (Tízezer nap, Feldobott kő) válik. Ez a politika konszolidációjával arányosan változik. Feltűnő, hogy a múlt, a történelem a legtöbb alkotásban közvetett módon jelenik meg. Ez együtt jár a reflexió elterjedésével is. A Sodrásban kivételével a filmek nevelési célzatú iránymutatással zárulnak.

Következtetések: Ezek a filmek nemcsak a fiatal szereplők felnőtté válásáról szólnak, hanem áttételesen egy filmrendező generáció élményeiről is tanúskodnak, és arról, hogyan vált a filmművészetünk ezekkel az alkotásokkal éretté, nagykorúvá, azaz modernné. A Bildung narratíva modern formai megoldások segítségével reprezentálódik, ezáltal a magyar újhullám egyik meghatározó elemévé válik.

Kulcsszavak: modernizmus, Bildung, fiatalok, generáció

Gyógyszertudományok



Pharmaceutical Sciences

Development of *n*-propyl gallate encapsulated solid lipid nanoparticles loaded onto hydrogel for intranasal delivery

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The objective of the present study was to develop PG-SLNs (*n*-propyl gallate-loaded solid lipid nanoparticles) in a hydrogel (HG) formulation with Transcutol-P (TC-P) as a permeation enhancer. The Quality by Design approach and central composite design was used to generate optimized PG-SLNs using a modified solvent injection technique [1]. Under simulated nasal conditions, the *in vitro* mucoadhesion, scavenging activity, drug release, and permeation studies of PG from PG-SLNs-loaded HG were investigated.

Results: The drug release from the PG-SLNs loaded HG had a smaller burst effect and a more sustained release profile as compared to the *in vitro* release behaviour of PG from SLNs. The cumulative permeation of PG from PG-SLNs-loaded HG with TC-P was 600 $\mu\text{g}/\text{cm}^2$ within 60 mins, which is 3–60 fold higher than PG-SLNs and pure PG, respectively. Raman mapping showed that the distribution of PG-SLNs was more concentrated in HG having lower concentrations of hyaluronic acid. The scavenging assay demonstrated increased antioxidant activity at higher concentrations of HG. Due to enhanced stability and mucoadhesive properties, the developed HG-based SLNs can improve nasal absorption by increasing residence time on nasal mucosa. This study provides *in vitro* proof of the potential of combining the advantages of SLNs and HG for the intranasal delivery of antioxidants.

Conclusions: The cumulative permeation of PG from PG-SLNs-loaded HG with TC-P was 600 $\mu\text{g}/\text{cm}^2$, which is 3–60 times higher than PG-SLNs in comparison to pure PG. Raman mapping revealed that the distribution of PG-SLNs was more concentrated in HG with lower hyaluronic acid contents. At greater concentrations of HG, the scavenging assay revealed improved antioxidant activity. This novel HG-based PG-SLNs formulation can improve nasal absorption by increasing residence time on nasal mucosa due to increased stability and muco-adhesive characteristics.

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Keywords: hydrogel, SLNs, nose-to-brain delivery, mucoadhesion, quality by design, anti-oxidant activity

Cytokine and growth factor levels positively correlate with endometriosis-related pain parameters of severe endometriosis patients

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Introduction: Endometriosis is a complex oestrogen-dependent inflammatory disorder, affecting the 10-12 % of reproductive young women, causing chronic pain, inflammation, infertility and the significant deterioration in quality of life [1], [2]. Complex sensory-vascular-and immune reactions are involved in the development and progression of the disease, but the underlying mechanisms remain enigmatic; therefore, the therapy of this disease is still an unmet medical need. Our aims were to investigate the levels of cytokines, chemokines and growth factors in serum and tissue samples of endometriosis patients with different severity, in order to determine their potential role in the pathophysiology of the disease.

Serum samples of minimal/mild (n=9) and severe (n=56) endometriosis patients (luteal and secretory phases) and rectal lesions (n=8) of severe endometriosis patients were examined. The concentrations of epidermal growth factor (EGF), vascular-endothelial growth factor (VEGF), macrophage migration inhibitory factor (MIF), tumour necrosis factor- α (TNF- α), interleukin-1 β (IL-1 β), IL-6, IL-8 were determined by immunoassays. Severity of endometriosis-related pain parameters (dysmenorrhoea, dyspareunia, dyschezia, dysuria, chronic pelvic pain: CPP) were determined by visual analogue scale (VAS). Correlations between the pain parameters and the *in vitro* results were assessed by complex statistical approach.

Results: EGF levels significantly increased in severe endometriosis patients' serum in the secretory phase, compared to both age-matched healthy women and the patients in luteal phase. However, serum IL-6 and MIF concentrations were significantly lower in the secretory than in the luteal phase. Although IL-8 did not change in the serum, it was significantly elevated in rectal endometriosis tissues compared to healthy tissue. Other investigated factors did not change either in the serum or in tissue. Serum EGF, IL-8, TNF- α and VEGF levels showed low positive correlations with dysmenorrhoea, EGF and IL-8 with dysuria, and MIF with dyschezia. There were no correlations with dyspareunia or CPP. Additionally, dysmenorrhoea showed low positive correlation with the stage of endometriosis.

Conclusions: EGF, MIF and IL-6 might be associated with the pathogenesis of endometriosis, mainly in the luteal phase. Serum EGF, TNF- α , VEGF, MIF and tissue IL-8 are likely to play a role in the development of several pain parameters, including dysmenorrhoea, dysuria and dyschezia, yet more patients needed to be involved in this study to strengthen our conclusions.

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Keywords: endometriosis, pain parameters, correlations, cytokines, growth factors

Rationally designed foldameric adjuvants enhance antibiotic efficacy via promoting membrane hyperpolarization

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Introduction: Innate negative potential of the bacterial cell membrane plays a vital role in essential cellular processes and also in building up of antibiotic resistance [1]. While impact of membrane depolarization by antimicrobials have been studied extensively, effect of membrane hyperpolarization is less known. PGLa is a promising AMP which permeabilizes the bacterial membrane and affects osmoregulation without forming pores in the membrane [2]. We hypothesized that at subinhibitory concentrations PGLa may simultaneously perturb ion homeostasis and bacterial membrane potential.

Results: Based on the molecular scaffold of PGLa, we designed novel antimicrobial foldamers by molecular dynamic study which could induce sustained membrane hyperpolarization. PGLa analogs were able to substantially reduce the level of antibiotic resistance of multi-drug resistant *Escherichia coli*, *Klebsiella pneumoniae* and *Shigella flexneri* clinical isolates when co-administered as an adjuvant. These foldamers were found to promote Goldman-Hodgkin-Katz potential across the bacterial membrane by selective ion transport which could be the reason for resensitization.

Conclusions: Our results indicate that alteration of the bacterial membrane electrophysiology could be an effective tool to combat antibiotic resistance.

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Keywords: antimicrobial peptides, antibiotic resistance, membrane hyperpolarization

TT-232, as a novel perspective in the treatment of neuropathic pain

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Our group has previously showed somatostatin released from capsaicin-sensitive sensory nerve endings has analgesic and anti-inflammatory effects mediated by the somatostatin 4 receptor (sst4) without influencing endocrine functions. [1, 2] In this study we investigated the effects of TT-232, a sst1/sst4 selective heptapeptide in mouse models of complete Freund-adjuvant (CFA) arthritis and hyperalgesia as well as partial sciatic nerve ligation (PSNL) induced neuropathic pain.

Male C57Bl/6 based wild-type (SST4WT) and SST4KO mice were used. In case of CFA model, the TT-232 treatment was daily repeated (100 µg/kg, i.p.), while in the PSNL model a single treatment was performed (100 or 200 µg/kg, i.p.). The mechanonociceptive thresholds of the animals were measured by dynamic plantar aesthesiometer, in the CFA model we also measured the swelling of the paws with plethysmometer.

After the interventions, the mechanonociceptive thresholds of the animals decreased by 25-30% in the CFA model and 35-45% in the PSNL model. In the SST4WT mice, the repeatedly administered TT-232 showed 20-25% anti-hyperalgesic effect in the CFA model, while in PSNL model it had 15 and 20% anti-hyperalgesic effect after a single administration of 100 or 200 µg/kg dose. In case of SST4KO mice, TT-232 did not influence the mechanonociceptive thresholds. In the CFA model, swelling of the paws was not reduced by TT-232-treatment in both SST4WT and KO mice.

We have proved the sst4 activation mediated anti-hyperalgesic effect of TT-232 in mouse pain models. Based on our results, TT-232 can be a promising drug candidate in the treatment of chronic inflammatory and neuropathic pain.

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Keywords: somatostatin, TT-232, neuropathic pain, neurogenic inflammation, analgesic drugs

Közönséges gyertyán bioaktív vegyületeinek izolálása és szerkezetmeghatározása

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Bevezetés: A nagy szerkezeti változatossággal rendelkező diarilheptanoid vegyületeket fokozott tudományos érdeklődés övezi figyelemre méltó biológiai hatásai miatt (pl. tumorellenes aktivitás). A diarilheptanoidok egyik fontos növényi forrása a Betulaceae család [1], melynek tagja a közönséges gyertyán (*Carpinus betulus* L.).

Célkitűzés: Célul tűztük ki a *C. betulus* kéreg diarilheptanoid- és egyéb fenoloid-profiljának jellemzését, a vegyületek izolálását és antioxidáns hatásuk vizsgálatát.

Módszerek: A kéregből kloroform, etil-acetát, metanol oldószerekkel készítettünk kivonatokat, melyek vizsgálatára nagyhatékonyságú folyadékkromatográfiával kapcsolt tandem tömegspektrometriás (LC-MS/MS) módszert alkalmaztunk. A vegyületek izolálására flash kromatográfiás és szempreparatív HPLC módszereket fejlesztettünk, míg DPPH szabadgyököt semlegesítő hatásukat spektrofotometriás módszerrel vizsgáltuk. A komponensek szerkezetét HR-MS és NMR technikával határoztuk meg.

Eredmények: A kéreg kivonatban detektáltunk gallotannin, ellagitannin, fenolkarbonsav, flavonoid, lignán és diarilheptanoid vegyületeket. A közönséges gyertyán kivonatokból elsőként izoláltunk ciklusos *meta,meta*-ciklofán típusú diarilheptanoidokat, köztük egy eddig még nem leírt vegyületet. Azonosítottunk továbbá egy lineáris diarilheptanoidot, valamint egy lignánt, amelyek előfordulását a *Carpinus* nemzetségben korábban még nem igazolták. A korábban említett vegyületeken túl izoláltunk három ismert flavonol-glikozidot is. Elsőként határoztuk meg a lignán-glikozid avikulin és a ciklusos diarilheptanoid giffonin X antioxidáns aktivitását. Az avikulin és a diarilheptanoidok szabadgyökfogó hatása mérsékelt aktivitást mutatott, míg a flavonol-ramnozid kvercitrin erőteljes antioxidáns kapacitással rendelkezett.

Következtetések: Elsőként írtunk le antioxidáns hatású gyűrűs diarilheptanoidokat a növényben, illetve lineáris diarilheptanoid- és lignán-származékot a nemzetségben. További terveink között szerepel a diarilheptanoidok citotoxikus hatásának vizsgálata.

Irodalomjegyzék:

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Kulcsszavak: diarilheptanoidok, gyertyán, LC-MS, fenoloid

A magyar lakosság biztonságát veszélyeztető, az internetről rendelt hamis gyógyszer vagy gyógyszernek látszó készítmények valós számának meghatározása

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Bevezetés: Gyakran lehet hallani a hamis és illegális gyógyszerek, vagy gyógyszernek látszó készítmények, illetve egészségügyi termékek forgalmazásáról, az abból fakadó gazdasági és jogi problémákról. Az illegális és hamis gyógyszerek elleni küzdelemről sok szó esik napjainkban, azonban a hamis készítmények pontos számáról sem nemzetközi, sem hazai adatok nem állnak rendelkezésre, csupán becslések érhetőek el.

Célkitűzés: Vizsgálatunk célja egy olyan módszertan kidolgozása volt, amelynek segítségével pontosabb adatok nyerhetők a lakosságot elérő és egészségüket veszélyeztető, online illegális forrásból rendelt hamis egészségügyi termékek számáról, annak érdekében, hogy közelebb kerülhessünk a hazánkba postai úton érkező, kétes eredetű gyógyszerküldemények valós mértékéhez és arányához.

Módszertan: Vizsgálatunk során a megfigyelési tanulmányok közé tartozó, keresztmetszeti vizsgálatot alkalmaztunk. A vizsgálatunk helyszíne a Magyar Posta Zrt. Nemzetközi Kicserélő Központjában működő Nemzeti Adó- és Vámhivatal Repülőtéri Igazgatóságának telephelye, ahol kutatásunk a hatóság jelenléte és a vonatkozó vámkezelési jogszabályok betartása mellett, szabályozott módon ment végbe. A levélküldemények formájában beérkező gyógyszer vagy gyógyszernek látszó készítmények organoleptikus, nem destruktív azonosításához, hamis illetve illegális mivoltukról történő meggyőződéshez a WHO és a HENT Gyógyszerhamisítás elleni munkacsoportjának iránymutatását figyelembe véve, 9 kérdésből álló ellenőrzőlistát dolgoztunk ki.

Eredmények: A magyar lakosságot veszélyeztető, illegális és hamis készítmények számáról a keresztmetszeti vizsgálatunkkal egy aktuális helyzetképet kaptunk. Az átvizsgált küldemények 95,1%-a, a kidolgozott ellenőrző lista alapján hamisnak bizonyult. Vizsgálataink hatástani csoportosítása alapján, a leggyakrabban előforduló, úgynevezett főhatóanyagait mennyiségük és előfordulási gyakoriságunk tükrében is elemeztük, méghozzá úgy, hogy hozzájuk kapcsolva azokat a hatóanyagokat is vizsgáltuk, amelyekkel a leggyakrabban együtt rendelték őket a felhasználók. Ahhoz, hogy pontosabb képet kaphassunk a magyar lakosságot elérő és veszélyeztető, hamis vagy illegális gyógyszert vagy gyógyszernek látszó készítményt tartalmazó küldemények számáról, adatigényléssel fordultunk a Nemzeti Adó- és Vámhivatal Repülőtéri Igazgatóságához. Számításaink révén jutottunk, ahhoz az adathoz, hogy 2020-ban az összes beérkező küldemény 0,26%-ának, 1/4-e és 1/3-a közötti intervallumba eső küldemények lehetnek, gyógyszert vagy gyógyszernek látszó készítményt tartalmazó küldemények, ami közelítőleg 19-25 ezer küldeményt jelenthet.

Következtetések: Kutatócsoportunk arra vállalkozott, hogy a felhasználók által, az online rendelt gyógyszer vagy gyógyszernek látszó termékeket tartalmazó küldemények számát felmérje, de legalábbis pontosabban megbecsülje annál, mint a jelenleg rendelkezésre álló adatok. Ez a tanulmány hiánypótló adatokat közöl. Erőssége, hogy egy közelítőbb becslést ad arról, hogy mekkora mértékű lehet a postai úton érkező, kétes eredetű gyógyszert vagy gyógyszernek látszó készítményeket tartalmazó küldemények száma, amelyek számtalan hamis vagy illegális tablettát vagy kapszulát tartalmazhatnak.

Filozófia



Philosophy

Data-Information-Knowledge-Wisdom model as a Theory of Knowledge

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Introduction: In this paper I would like to present first the idea of Data-Information-Knowledge-Wisdom (DIKW) model from its origins until its extended use in Service Sciences in general. Specifically, the Information Technology Infrastructure Library (ITIL4), a library that contains regularly updated best practice suggestions for IT Service providers. The intellectualization of information technology and contrasting the related expertise with conceptual analysis is an ongoing project in different areas of service science and knowledge management. However, it is quite rare that theorists try to reach out and observe the decisive moments of the relevant uses of the DIKW terminology in these areas.

Aim: My hypothesis is that in selecting theoretically sustainable meanings for these terms may be fruitful in a real-life service practice, and knowledge related operation, and, conversely, in opting for the best choice on the menu of theories, we cannot ignore efficacy and effectivity in the practice.

Methods: I will represent the development of the DIKW model against the background of different philosophical theories of knowledge and epistemological research. By the analysis of the terms in linear, pyramid or circuitous designs of DIKW model, I will search for the proper definition of the terms data, information, knowledge, and wisdom from theoretical point of view.

Results: I intend to show that in grounding on these theories we may realize a doubled achievement, namely, on the first hand, in the theoretical domain, which, due to this mapping out, may be faced with a model that was created on purely practical foundations of knowledge management of services, and on the second, in the practical sphere of everyday work of designing, operating, and maintaining information and knowledge systems in IT Services.

Conclusions: Through examples of such uses of the terms in IT Service, I conclude about the most efficacious logical geographies to offer, into which these practices may be mapped out, when compatibility with some viable epistemology is a must.

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Keywords: DIKW, information, knowledge, wisdom, IT

Thoughts on mind and consciousness: philosophy of mind through the Sellarsian tradition into the theories of the 21. century

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Thoughts on mind and consciousness have occupied philosophers since ancient Greek thinkers. Descartes' dualist theories placed questions of the mind-body problem on the table. Since then, philosophers with diversified theories have been trying to explain and circumscribe the mind and its relation to world. Chalmers in *The Conscious Mind* (1996) presents the *hard and easy problems of consciousness*, which can be taken as a warning towards earlier philosophical investigations about mind. His discussions gave a new impetus to the philosophy of mind of the late 20th and early 21st centuries.

The puzzles that have persisted to this day place consciousness at the center of contemporary philosophy of mind. In the present study, starting with the theories of Wilfrid Sellars, who has paved a new path for major analytical philosophers of our time, I contrast the thoughts of Michael Tye and his contemporaries with Kant's Transcendental Philosophy, as well as John McDowell's and David Chalmers' thoughts on mind, consciousness and their relations to the world, to the empirical. My aim is not only to present the non-identical conceptual statuses of "mind" and "consciousness" but – beyond practical (linguistic) use of the two concepts – to offer insight into alternative possibilities developed from the modular mind theory by Jerry Fodor. This study does not support physicalism but instead embraces a minimalist empiricism, as defended by McDowell in *Mind and World*; it places itself above analytical thinking and incorporates a slice of philosophy of mind that deals with consciousness in its historicity.

The thoughts explored in this study, on the unity of consciousness, and about the possibility of the creation of consciousness, may provide brain and artificial intelligence researchers to explore new paths with novel ideas.

Keywords: Kant; Sellars; Chalmers; mind; consciousness; philosophy of mind; modular mind

A társadalmi felelősségtől a felelőség társadalmáig

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A huszadik század második felének egyik legjelentősebb európai gondolkodója, Hans Jonas „A felelőség elvé” című munkájában felhívja a figyelmet arra, hogy új kockázatok jelentek meg az emberiség számára: a technika fejlődése visszafordíthatatlannak tűnő változásokat okozva, közvetve az egész természetet és benne az emberi faj létét is fenyegeti. Jonas megállapítja, hogy erre az új helyzetre és kihívásra az etika nem reflektált – az ember technikai és társadalmi uralmának a kiterjedésével együtt ennek az új hatalomnak az erkölcsi alapjai és háttere szabályozatlan maradt.

Mára a természettudományoknak nem csupán technológiai és módszertani kérdésekkel kell szembenéznük, hanem csaknem minden esetben etikaiakkal is – ez jelentős mértékben felértékeli a humán tudományok egy jól körülhatárolható részét, azonban egyenrangú részesévé tud-e válni az etika bármely alkalmazott vetülete egy transzdiszciplináris szemléletű tudományos együttműködésnek? A morális felelőség kérdése egyazon súllyal tud-e megjelenni egy tudományos fejlesztés során, mint a várható társadalmi vagy gazdasági haszon? - ezekre a kérdésekre keresem a választ az előadásomban.

A konkrét kérdéseim arra irányulnak, hogy milyen elemek révén válhat az etika integráns részévé a fenntarthatóságról szóló diskurzusban egyfelől a szociális gazdaság szereplői számára, másfelől a kutatás és fejlesztés legtágabban vett területeinek, illetve a gazdaság és a politikum szereplői számára miként lehetséges döntéselőkészítési folyamatokban hangsúlyosan megjeleníteni etikai szempontokat.

Kulcsszavak: felelőség, European Green Deal, etika, gazdaságfilozófia, EGD

Gazdaságfilozófiai megfontolások az Európai Zöld Megállapodás megvalósításával kapcsolatban

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Az éghajlatváltozás komoly etikai kérdéseket vet fel, különös tekintettel az etika globális, intergenerációs és ökológiai dimenzióira. A sok esetben igen eltérő elméleti konstrukciók ellenére, a gyakorlati kihívások kapcsán egy konszenzus van kialakulóban a közös fellépés szükségességéről és formáiról, illetve a legfontosabb etikai alapelvekről, mint például a méltányosság vagy a felelősség kérdései.

Az európai politika trend-érzékeny közege nem tudta magát kivonni ezen korszerű kérdések programmá formálásából: megszületett az „Európai zöld megállapodás” (European Green Deal – EGD), a klímasemleges Európa víziójának gyakorlati forгатókönyve.

A döntéshozói fórumokon konszenzus van abban, hogy az EGD gyakorlati implementációjának együtt kell járnia egy szemléletváltással, amelynek fő sarokkövei etikai természetűek. Az előadásom ezen etikai dimenziók feltárására fókuszál: áttekintem a Európai Zöld Megállapodáshoz kapcsolódó fejlesztéspolitikai tervezési és megvalósítási dokumentumok etikai dimenzióit, figyelmet fordítva azon kérdésekre, amelyek alapjait képezhetik egy generációkon átívelő stratégiának.

Kulcsszavak: Európai Zöld Megállapodás, European Green Deal, etika, gazdaságfilozófia, EGD

G. E. Moore Egy Külső Világ Bizonyítása (Proof of an External World) című előadásában Immanuel Kant „bizonyítékának” vizsgálata és benne észlelet fogalomelemzési problémák feltárása

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George Edward Moore a 20. század elejének egyik jelentős filozófusa. Bertrand Russell, Ludwig Wittgenstein és Gottlob Fregevel együtt az analitikus filozófia egyik megalapítójának tekinthető. Moore a metafizika, az ismeretelmélet, az etika és a filozófiai módszertan területén dolgozott. A filozófiai módszertana az analitikus filozofálás egyik alap metodikája lett. A tanulmányomban Moore a *Proof of an External World* című előadásában észlelt problémákat tárom fel, amelyek leginkább fogalomelemzési és fordítási eredetűek. Az értelemzése és érvelései mentén Kant „bizonyítékáról” mond ítéletet, amely analitikus érvelésnek nem a módszertani hiányosságaiból, sem a módszertan jellegéből eredendően, hanem konkrétan a fogalmak értelmezése és azok kontextusainak félreértéseiből ered.

Annak ellenére, hogy hibás az értelmezés és világosan feltárhatók a félreértések, a metodika önmagában egészséges és erős alapokon nyugszik. A metodika kapcsán mondható, hogy a forma és szerkezet kontra az alkalmazás jellege közötti különbségek (és eltérések) egyértelművé teszik azt, hogy a moor-i analitika miért volt oly erős hatással a saját korában alakuló analitikus tradíció számára, miközben annak az alkalmazása az elért eredmények sikerességétől vagy sikertelenségétől teljesen független maradt.

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Kulcsszavak: Moore; Külvilág Bizonyítása; Kant; Tiszta Ész Kritikája; analitikus filozófia; fogalomelemzés

Az emberentúli eszméjének története, avagy gondolatok a Transzhumanizmus története ürügyén

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A természettudományok és a technológia gyors fejlődésével egyidőben felerősödtek azok a jövőről alkotott elképzelések, és gondolatok, melyek 50-100 évvel ezelőtt csupán látnoki, álomszerű, vagy a sci-fi irodalom szintjén voltak elképzelhetők. A biológiai emberiséget meghatározó korlátok: a halál, betegség, és az életminőség mind más megvilágításba kerültek az új technológiák megjelenésével, és azok tovább gondolásával. A modern társadalmak számára az egyéni szenvedés enyhítését egyre kevésbé jelentik a lelki tanok, sokkal inkább egy-egy technológiai eljárás, vagy egyszerűen egy pirula helyettesíti azokat. A halál, mind távolabbivá vált a várható életkor kitolódásával. Az olyan emberi esetlegességeket, mint az éhezés, történelmi-természeti járványok, lakhatás, ivóvíz hiány, stb. története során először látszólag mind jobban az irányítása alatt tartja az emberiség. A hétköznapi tapasztalat mindinkább az, hogy ezek szűkössége, emberi életre gyakorolt káros hatásai, a saját rendszereink rossz skálázása, és erőforrásaink helytelen menedzsmentje miatt történik, és egyre kevésbé egy ismeretlen természeti törvény okán.

A transzhumanista gondolatok ebben a modern korban születtek meg, és jobban hatással van rájuk mind a mai napig a Szilikon-völgy tudományos-technológiai féltése, semmint a poszthumanista filozófia művészi, esztétikai megközelítése. A transzhumanizmus általam megfogalmazott minimalista definíciója alapján, egy olyan emberképet vázol fel, mely az emberi létező folyamatos kiterjesztésében hisz, miközben fő célja a poszthumán cél megvalósítása lesz. A poszthumán lét egy, az Univerzumot meghódító létforma, mely számára nem létezik a halál, tetszőleges az élethossz, a környezeti változókat (hő, betegség, légszennyezés) könnyen viseli, és gondolkodását a modern biotechnológia és fejlődő MI határozza meg, javítja fel. Megszületésétől fogva interdiszciplináris, sok bioetikai kérdést vet fel, antidogmatikus, és érzékenyen reagál a technológiával kapcsolatos eszmékre (AI).

A transzhumanizmus látnoki vállalkozás, mozgalom, közös gondolkodás, filozófia, antropológia kritika, irányított fejlődéstan, bizonyos esetekben vallás, és politikai párt is. Dolgozatomban ennek a gondolatrendszernek a történeti és filozófiai gyökereit szeretném feltárni.

Eredmények: A transzhumanista mozgalom és eszmeiség korai történetének összefoglalása, forrásainak bemutatása. A transzhumanista fogalom meghatározása, elkülönülése más fogalmaktól – pl. poszthumanizmustól, humanizmustól, antihumanizmustól.

Következtetések: A transzhumanista ideák megszületésében egyaránt fontos szerepet játszottak a korai futurista mozgalmak (FM-2030), a technológiai eszközök fejlődése (emberi szövet fagyasztása, tárolása, M.I., internet elterjedése), a modern Szilikon-völgy techno-optimista miliője (szingularitás), valamint nagy filozófiai gondolkodók (Nietzsche, Derrida, Heidegger, stb).

Kulcsszavak: bioetika; cyborg; extrópia; krionika; poszthumanizmus; transzhumanizmus; szingularitás

Nemzetközi migráció



International Migration

Accounts and lived experiences: Sociocultural adaptation of Filipino students in Hungary

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The study examined the accounts, narratives, and lived experiences of Filipino Stipendium Hungaricum scholars in Hungary. It is ethnographic, qualitative research that applied participant-observation, in-depth interviews, and narrative analysis that covered eight months of fieldwork with four Filipino scholars. The main focus of the study was about their social adaptation in Hungary in relation to acculturative stresses that they experienced in a new multicultural environment. The study explored the social networks, coping mechanisms, and strategies applied to adapt in Hungary. Their experiences and practices within the environment-culture-self continuum were recorded, observed, themed, and counter-checked during the whole course of the study. The results of the study revealed the scholars' creatively use of 'agency' and 'social capital' in building 'social networks' to thwart the negative effects of cultural differences, communicative language barriers, academic differences, and psychological feelings of marginalization and alienation, isolation and loneliness, financial stress and the feeling of belongingness for familial and friends' support. They demonstrated resilience in meeting their financial needs by accepting part-time jobs for extra money and at the same time maintaining their academic performance.

Acknowledgements: This research presentation is made possible by EFOP-3.6.3-VEKOP-16-2017-00007, titled "Young researchers from talented students – Fostering scientific careers in higher education".

Keywords: *acculturative stress, culture shock, Filipino students, social networks, Stipendium Hungaricum Scholarship Programme, socio-cultural adaptation*

Commuting to Austria from Vas county

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My study was carried out in connection with a PhD-thesis about the opportunities of small villages in Vas county to develop. Small villages are those with population under 500. The main question of the study is that what the reason of the growing population in some villages is, in particular near the border. On the 1 January 2020 there were 136 villages from the 216 settlements in Vas county whose population was under 500. I analysed the changes of the population from 1990 until 2020, by using census and other data of the Hungarian Central Statistical Office (KSH).

In my study, I present the demographic specificities, the problems and the working characteristics – in particular commuting to Austria and the situation of the villages – of the Körmend-centered parliamentary individual district, based on the representative research of the Závecz Research Institute. The district includes 127 settlements. In this research, people were asked about commuting in the area, border crossing problems during the pandemic situation and motivations of working abroad, in Austria.

The examined district contains mainly villages: from the 127 settlements 122 are villages, and from them 88 are small villages. My research could give a comprehensive picture about the characteristics and different indicators of the smallest settlements.

I focused on the group of villages near the Austrian-Hungarian border. Being located close to the border is an important factor regarding the small villages. Another important point is commuting which is very widespread in the border area. Many graduated people commute to Austria and work for higher salary but at lower level than earlier in Hungary.

In the second part of my study, I analysed the villages which are not further than 10 km from the Austrian-Hungarian border. Beside the population change, I studied the migration balance, the ageing indicator and the number of cars among all 42 villages located in the analysed area. During my comparison I used three categories: bigger villages (12) with more than 500 inhabitants, smaller and growing villages (11) with less than 500 inhabitants and smaller and decreasing villages (19) with less than 500 inhabitants.

Results: I compared those 42 villages, which are located not further than 10 km from the Austrian-Hungarian border. I found that the closeness of the border has a strong effect on the migration rates of the smaller villages. Among the commuters, higher salary was the biggest motivation but language study and flexible working conditions were important, as well.

Conclusions: In Vas county there is one very important factor, which could strengthen the growing of the population: the proximity of the Western border. Generally, younger people with lower education level commute but graduated ones do commute, as well.

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Keywords: villages, Vas county, commuting, border, population

The evolution of the migration narrative from the 2015 migration crisis to the present day, with particular focus on the European Union's approach

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Introduction: The migration crisis of 2015 placed this phenomenon more in the focus of public policy, both at the European and global level than ever before. Already in the first member state and EU responses to the crisis we saw fundamental differences – everybody dealt with migration dissimilarly: several actors stressed sovereignty, border protection, internal security, while others highlighted the labour market benefits of migration as well as human rights aspects. Despite numerous contradictions and internal conflicts, the migration strategy adopted by the European Commission in 2015 was decisive for the European Union's response, which also aimed to provide a “guide” for the Member States, but its content (partly because the crisis itself revealed a number of shortcomings in the Union's policy) was only partially able to provide an adequate response to the problems raised and it was therefore necessary to revisit these issues. Finally, by autumn 2020, the Commission succeeded in preparing a complex set of proposals, which is a new focus compared to the previous one, which may suggest a modified narrative.

Aim: The aim of the research is to map the changes in the migration narrative, separated into three main periods: Focusing first on the time immediately preceding the migration crisis of 2015, secondly on the response to this crisis and, thirdly, on the period after the end of the crisis, which extends to the present day. The research focuses on the narratives championed by the European Union.

Results and conclusions: The research shows why and to what extent migration has changed as a narrative over a relatively short period of time, and to what extent these changes have affected legal and public policy thinking. It is also possible to differentiate between narratives according to what they refer to (legal or irregular migration, asylum, migrant integration). These different approaches and (policy) proposals may or, in some cases, have provided the basis for subsequent legal norms.

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Keywords: migration, narrative of migrations, European Union, European Commission

Victims or Aggressors? Xenophobic Discourse and Strategies of Otherization in Russian Media Towards Migrants

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The topic of migration has been increasingly dominating media and political discourse both in and outside of the EU. One of the latter, and less-scrutinized countries is Russia, where migrants arriving from the Commonwealth of Independent States (CIS) are considered as one of the causes for the rise in xenophobia [1]. There have been scant studies focusing on migrant perceptions by local citizens, migrant policies, and shifting public discourse [2][3], but there is still a lack of research on how xenophobic discourse is constructed in the Russian media. The present research aims to fill this gap by identifying the discursive elements that portray migrants as a threat and the factors of “otherization”, such as ethnicity, religion, level of education, social and legal status. It was hypothesized that i) the negative representation of migrants was based on their ethnicity; ii) migrants were associated with a crime when they were opposed to the local citizens; iii) migrants were less associated with a crime when they were opposed to the authorities. The corpus of the study was based on approximately five thousand news articles published between March 2017 and April 2018 in the ten most cited daily Russian newspapers; a mixed method of critical discourse analysis and content analysis was used.

Results: Generalization, dehumanization, and reification were the main elements of constructing xenophobia in the Russian media. The migrant was excluded from the public discourse as an active actor. In most cases, migrants were presented as criminals or as a threat to both local citizens and the government. The study also revealed a correlation between the ethnicity or the country of origin of the migrant and the narrative; migrants from Central Asia (Kyrgyzstan, Tajikistan, and Uzbekistan) were depicted as aggressors, potential terrorists, and uneducated people, meanwhile, migrants from Ukraine, Belarus, and Moldova were mostly portrayed as victims or qualified workers who needed help.

Conclusions: The results of the research are filling existing gaps in discursive studies by providing both qualitative and quantitative data applicable not only within academia but also for practitioners in media industry.

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Keywords: Russian media, migration, migrant representations, critical discourse analysis, xenophobia

Modernkori Történelem Szekció



History II. - Modern History

Cases of Transylvanian refugee students - from the perspective of archival documents

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My aim is to explore and interpret the fate of Transylvanian refugee students during the First World War (1916-1918), from the point of view of social history. The first and most important aspect is that I want to perform the changes in the schools of the Hungarian hinterland due to the arrival of refugees. This goal is related to the exploration of the question of what the state's goal was with the social policy measures taken for the benefit of the refugees, and to what extent these goals were achieved compared to the original ideas.

Results: Based on archival documents and contemporary press material, I built my research by processing the related decrees, as well as the recollections and diaries that arose during the war. After a general understanding of the plight of Transylvanian refugees, I placed the main emphasis in my results on presenting the situation of schoolchildren from a socio-historical point of view. Among other things, I sought answers to the questions of the aspects and consequences of the placement of school-age pupils in the schools of the Hungarian hinterland, the effects or consequences of their temporary placement.

Conclusions: In my research, I established in which Hungarian counties the Transylvanian refugee students were placed during their temporary resettlement. In addition, in my previous research, I also found that the influx of Transylvanian refugee students played a role in the deterioration of school diligence in the 1916-1917' school year.

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Keywords: *refugee, refugee students, Transylvania, First World War*

Preparations of an excursion to Pécs on the 4th World Scout Jamboree (1933). An analysis based on the resources of the Janus Pannonius Museum of Pécs

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Approximately 25,000 scouts attended the 1933 World Scout Jamboree in Gödöllő. The high number of participants shows that this jamboree was of great importance for the international scout community, but they were not the only one who benefited from it. The event also encouraged the construction of diplomatic relations between Hungary and the participants' home countries. Although the camp took place at Gödöllő, the foreign scouts visited various sites in the countryside as well. Thus, a delegation of 500 people stayed in Pécs between 7 and 8 August 1933. A local organising committee was set up to enable the visitors - including English, French, Polish and American scouts mainly - to get to know the sights of the city in as much detail as possible. A group of documents relating to the organisational work, the preparations and the detailed programme can be found in the archives of the Janus Pannonius Museum in Pécs. Drawing on these resources, the study explores the different aspects of the Hungarian jamboree related to Pécs and gives a detailed description of the excursion's preparations.

Results: The research revealed that the Hungarian Scout Association had appointed a person to coordinate the organisation of the rural trips. Under his influence, a committee was also set up in Pécs, whose members were drawn from the local middle classes. Part of the organisation and costs - in the midst of the global economic crisis - were borne by local people, so the committee received financial and other support from a number of civic groups. The research also revealed the exact itinerary of the scout delegation and the list of local attractions they visited, as well as the fact that around 500 foreign visitors came to the city as part of the jamboree excursion.

Conclusions: The impact of the 1933 jamboree on the rural areas of Hungary, including the question of the travels of foreign scout delegations, is a little known and unexplored area in the history literature. By interpreting the documents and records held in the museum, it is possible to understand in detail the organisational process of the event. The research based on the collection of the Janus Pannonius Museum contributes to the exploration of the rural aspects of the 4th World Scout Jamboree.

Keywords: jamboree, scouting, tourism, Pécs

A Contradictory Transition: Revisiting Economic Policy during Stalinism and the “New Course” in Hungary 1948–1955

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The communist leadership introduced Stalinist economic policy in Hungary from 1948, which was made possible by political takeover and changes in Soviet foreign policy. From that point a not less controversial era began and partially continued, a “transitional phase” from capitalism to socialism. The transition was meant to be a gradual transformation at least in propaganda and in official speeches, while in the reality rapid economic and political Stalinization took place. However, the conditions in the countries of the Eastern Bloc were not the same as in the Soviet Union. The analysis focuses on economic policy and to related views and discussions in the literature. Was the Soviet New Economic Policy (NEP) suddenly put in the foreground in 1953 and in 1954 during the “new course” or was there an official standpoint or dispute on its application during the “transition” in people’s democracies before Stalin’s death? The topic can be elaborated from a transnational and interdisciplinary perspective.

Results: Up until accelerated De-Stalinization, Stalin was praised for defending and continuing Lenin’s NEP, and also for introducing forced industrialization and collectivization in the late 1920s. Economists tried to give a historical evaluation of the NEP while the ideological framework of the people’s democracies was still unclear. The starting point of this study was a research on the shift of agrarian policy from 1952/1953 and the path to the changes in economic policy in mid-1953. It could be assumed that there was no way to raise the question of the NEP in the Stalinist period, but the analysis points out that the NEP was mentioned and studied mainly linked to agriculture from Bulgaria to the German Democratic Republic between 1950 and 1953 from a contemporary viewpoint. Economic difficulties contributed to reassess some parts of the “transition” which mixed elements of the NEP and the Stalinist Soviet system.

Conclusions: There was no balance in the short or in the long run, and the Hungarian Stalinists obviously preferred radical way of transformation without delays and without more NEP measures. The deepening economic crisis forced the Soviets to order the communist leaders in Central Europe to ease policies. The NEP controversy in Hungary in 1954 shows undoubtedly how important this matter was during the “new course” even if it did not cause “ideological earthquake”. However, the discussion had an unexplored “prelude” in the years before 1954 and it had impact on economic thinking in the following years. The party apparatus could not dissolve the contradictions regarding NEP and Stalinist economic policy so easily and it did result ideological confusion and hesitancy.

Keywords: industrialization, nationalization, collectivization, NEP, De-Stalinization

Jogtörténet, jogelmélet



Legal Theory and Legal History

The Development of Child Support in the Family Law Act of 1952 and the Court Practice of Zala County between 1952 and 1987

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In my presentation I will elaborate the development of child support in Hungary in the 1952 Family Law Act. The Family Law Act was the first legal act that disposed of the institution of maintenance as a whole, before that, only customary law provisions and some paragraphs of secular Acts covered parts of the institution. The regulations in the Family Law Act were short-spoken, the basic principles were laid out, but the detailed rules were not. That is why the practicing jurists, the courts had to interpret and, in some cases, supplement these rules.

There were two big modifications of the Family Law Act, one in 1974 and another 1986. Both modifications incorporated the previous court practice and the decisions of the Hungarian Supreme Court. Thus, the regulations became more and more detailed and were adjusted to the social and economic changes.

Since the court practice hugely influenced the regulations of the institution, I examined the documents of the National Archives of Hungary Zala County Archives, and I did research on the child maintenance court cases in the District Court of Zalaegerszeg of the years when the Act and its modifications came into effect.

In order to get a full picture of the development of the institution it is essential to present the legal regulations and the practice altogether. To conclude, it can be stated, that the court practice strongly influenced the development of the institution of child support and the latter codification.

Keywords: child support, Hungarian private law, court practice, Family Law Act

Certain events in the history of epidemiological measures

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The current epidemiological situation has highlighted the significance of a rapid and effective response to an epidemic. However, from my point of view, it is essential to clarify that this is not a novelty that has emerged in recent years, as epidemics and diseases have existed since time immemorial. Of course, in antiquity and the Middle Ages, the response was not as effective as nowadays, but it still existed. In my research, I would like to present some measures of the most significant epidemics in the history of Hungary and Europe from the side of states and their authorities. Based on these, I intend to compare the actions of Hungary and other European countries.

Results: Major epidemics had always claimed large numbers of casualties, but over time, thanks to advances in health care and administration, that number has declined. Based on previous observations and records, countries had been able to respond effectively to the epidemic situation, although this was initially realized at the level of local communities rather than at the state level.

Conclusions: With the development of information dissemination, it was possible to respond more effectively to epidemics. As a result, states had also been able to learn from each other in relation to epidemiological measures.

Keywords: epidemic, disaster, epidemiological measures

Reforms of the educational system between 1935-1941 and the practice of its implementation in Baranya County

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In 1935 the Hungarian education changed in many aspects. The administration of education was reorganized based on the Act VI of 1935, and the school system regarding the language of teaching has also changed, but the latter has been implemented by a decree.

The 11.000/1935 prime ministerial decree introduced the so-called unified education system, and at the same time abolished the former type of A, B, C schools, which were established in 1923 to endorse the interests of the nationalities. After this decree, compulsory school children belonging to a minority were educated in the unified system. The aim was to give more emphasis on native language education than before. Although the decree made it clear that the reorganization of schools into a unified system should be completed at the latest before the start of the 1938/1939 school year, the process was not easy in most of the places. There were problems with the implementation of the system even in 1939. At the request of the Ministry of Religion and Public Education, the exploration of the deficiencies began, which were documented in the archives.

In 1941 the full native language education was introduced after the unsuccessful unified system and the growing pressure from the – especially German – minorities. The framework for the introduction of native language education was specified in the 700/1941. prime ministerial decree. According to that, in schools – which previously followed the unified education system – subjects that had been taught in Hungarian earlier had to be taught in the native language of children belonging to a minority after that. However, it was also possible to maintain teaching under the previous unified system if it was requested by the parents; the Minister of Religion and Public Education was entitled to decide on this in agreement with the Prime Minister, considering local conditions.

To understand the process, revealing the practice and monitoring the implementation are required. Thus, the research method is based on the disclosing of the practice after the analysis of the relevant legislation and is primarily based on archival documents. In the presentation I will elaborate the protocols of school visits, summary reports, letters and guidelines of competent authorities.

Keywords: minority education, language of the education, regulation of the school system, Hungarian educational policy

Personalized paternalism - present-day analysis of an age-old idea

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By the end of the previous decade, shortly after the publication of Richard Thaler and Cass Sunstein's influential book '*Nudge: Improving Decisions About Health, Wealth, and Happiness*', a new wave of academic discourse started to formulate around well-established paternalistic ideas. Heavily influenced by the findings of modern behavioral sciences, Thaler and Sunstein moved away from the neoclassical 'textbook' view of the rational agent and introduced their new, empirically grounded, behaviorally informed policymaking approach: libertarian paternalism. The authors claim that even though various biases, mental shortcomings, and cognitive limitations influence human decision-making, the very process of reaching a decision can still be predictable. By utilizing cognitive flaws, it is possible – without limiting one's freedom – to consciously design choice environments that are able to steer people's decisions into certain desired directions. The book concludes that the tools of libertarian paternalism (nudges, e.g., default rules, automatic enrollment policies, smart disclosures) could become effective, freedom-preserving, cost-saving alternatives to old conventional policymaking strategies primarily relying on bans, commands, and coercion.

After 15 years of the introduction of libertarian paternalism, the notion is still popular among economists, political theorists, and academics. Since then, however, new possibilities have emerged for the implementation of such paternalistic measures; the rapid technological advances in data collection and information processing, the further development of AI and neurotechnology have created unique opportunities to design behaviorally informed regulations. As more human action, relation, and conduct are converted into digital data, people gradually become quantifiable, measurable units. This vast amount of available personal information makes it possible to tailor new behaviorally informed policies: ones that are personalized to an unprecedented degree.

Conclusions: Big data-related technologies combined with modern behavioral insights have created a new evolutionary road to paternalism. In this paper, I explore how contemporary paternalistic measures are becoming more and more personalized and attempt to highlight some of the most significant advantages/disadvantages and possible future challenges relating to them.

Keywords: personalized paternalism, behavioral sciences, big data, algorithmic prediction, public policies

A kerítés, a csábítás és a nőkereskedés szabályozása a Csemegi-kódex időszakában

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A nők jogi helyzete rengeteg változást ért meg a történelem során, ebből kifolyólag egy rendkívül érdekes és széleskörű kutatásra alkalmas téma, melynek vizsgálatát az első magyar büntető törvénykönyv, a Csemegi-kódex hatályba lépésétől érdemes elkezdni. Ebben az időszakban még különös védelemben részesült a házasság szentsége és a női tisztesség, hiszen e bűncselekmények jogi tárgya elsősorban a nőnek azon jogvédelmet igénylő érdeke, hogy nemi életével szabadon rendelkezhesen.

Korábbi kutatásaim alkalmával már vizsgáltam a nők sérelmére elkövetett nemi erkölcs elleni bűncselekményeket a magyar büntetőjogi kodifikáció egyes szakaszait áttekintve, viszont jelen kutatásaim alapvető célja, hogy az egyes bűncselekmények mélyebb szabályozását bemutassam, illetve feltárjam azokat a kérdésköröket, amelyek olykor nehézséget okoztak a kor jogalkalmazóinak egy-egy tényállási elem kapcsán. Szükségesnek tartom, hogy a jogtudomány, illetve a jogtörténet eszközeivel, a múlt megismerése révén egy objektív tükröt tartsunk.

Ahhoz, hogy e céljaimat megvalósítsam, felhasználok az adott korszak vonatkozó szakirodalmi műveit, a tételesjogi szabályozás (elsősorban a Csemegi-kódex) vonatkozó részeit, tervezem a korszak büntető ügyeit magában foglaló döntvénytárainak széleskörű áttekintését, valamint igyekszem levéltári kutatásokat is folytatni. Kutatási módszerem hármas rendszerű: a szabályok leíró ismertetése mellett a jogintézmények dogmatikai elemzés általi megvilágítása és elhatárolása egymástól, továbbá a gyakorlat bemutatása, ami egy kriminológiai vizsgálathoz elvezethet, hiszen a mai modern világban is gyakran hallunk e bűncselekmények elkövetéséről, melyeknek sértettjei a legtöbb esetben nők. A fent említett bűncselekmények kapcsán a nők kihasználása, illetve kiszolgáltatottabb helyzetükkel való visszaélés, illetve az erőszak okozta pszichés trauma rendkívül súlyos és hosszantartó következményekkel járhat. A felnőtt áldozatoknál a trauma a már kifejlődött személyiségstruktúrákat rombolja, melynek egyik leggyakoribb következménye a poszttraumás stressz rendellenességnek (PTSD) nevezett szorongásos zavar. Gyermek áldozatok esetében az erőszak nélkül megvalósuló szexuális kapcsolat szintén súlyos, gyakran életen át tartó következményekkel jár, hiszen ebben az esetben a trauma nem a kialakult személyiségre van hatással, hanem maga a trauma alakítja, illetve torzítja a fejlődő személyiséget.[1] Témám hasznosságát abban találom, hogy segít megismerni a magyar büntetőjog olyan előzményeit, amelyek hozzájárultak a mai jogintézmények értelmezéséhez, eredetének megismeréséhez, valamint ezáltal elősegítheti egy élénk társadalmi érdeklődést kiváltó témában (a nők áldozattá válása) objektív kép kialakulását.

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Művészetek



Arts

Events in the life of György Cziffra in light of the sources

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George Cziffra (1921-1994) is one of the outstanding figures of Hungarian and international performing arts in the 20th century. His adventurous life, career, fate, virtuosity of his technical skills and international fame have created a cult of his own, especially in recent years. However, his professional career and general biography have not yet been studied, and little to no literature has been written (also) in the two and a half decades since his death. Thus, the reader/researcher can rely almost exclusively on his autobiography (*Canons and Flowers*) and on personal reminiscences, anecdotes, which, as my research has shown, resemble a very limited extent of reality. Therefore, doing the source-based research of Cziffra's life is an increasingly urgent and incomplete task made timely by the centenary of his birth (5 November 1921).

Based on my research in archives, libraries, in Budapest and in the countryside, as well as on a review of the entire digitised press of the period (1921-1956), it is possible to get an accurate picture of the first thirty-five years of György Cziffra's life based on sources and facts. In view of the countless conversations, interviews, statements, academic/semi-academic videos, writings and lectures on Cziffra that have been produced during the commemorative year, I would like to clarify some information and events that have been considered to be facts but are still incorrect. The aim of my lecture is to gain a better understanding of the life of Cziffra, a pianist of undoubted extraordinary importance.

Keywords: Cziffra, pianist, biography, Liszt Academy, source study

GEOMETRIC PLAYFULNESS

Geometric abstraction and combinatorics in contemporary Hungarian fine art-international trends

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Introduction: Combinatorics as a mathematical concept can seem serious and daunting, on the other hand it can be playful and funny in the fields of fine arts, music and literature. The relationship between combinatorics and fine arts is particularly interesting in Hungary, as "Combinatorics is still considered by many in the world to be „Hungarian science”." As a painter, dealing with combinatorics, represents, in my opinion, the balance that has always been present in art, but now we call it interdisciplinarity. As an Art teacher, I consider it important to continue with my students, the approach that artist Ferenc Lantos developed in Vasarely's hometown of Pécs, in Hungary, and which is also connect to combinatorial games.

Results: Since the concept of combinatorics used in mathematics is often different from the term used in fine arts, I am looking for works where the application of the two types of the concept are most similar. The theme of combinatorics connects to structuralism and seriality, which has been frequent in literature, music, film and fine arts since the 1960s and 1970s. In international trends Sol LeWitt, Donald Judd, Vera Molnar use this system. In Hungarian fine art we can find strong examples at András Mendgyán, Dóra Maurer, Ferenc Lantos, or in young generation at Tamás Jovánovis, Barna Benedek, András Wolsky or Zoltán Szegedi- Maszák.

Conclusions: There are areas of mathematics where Hungarian research is at the forefront of the world. This discipline was originally based on playful, puzzle-like problems, but with the advent of the computer, it became clear that combinatorics was one of the foundations of computer science. Briefly reviewing some of the activities of Hungarian artists related to permutations, combinations and variations, it can be said that combinatorics represents an interesting direction in the field of fine arts in Hungary and there are still related opportunities.

Keywords: art, mathematics, combinatorics

**The artistic ensembles of the socialist armed forces in Central–Eastern Europe –
The socialist friendship project**

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During the second half of the 1940s – early 1950s, artistic ensembles were formed throughout Central–Eastern Europe, modelled on the Alexandrov Ensemble. Under the auspices of the newly organised armies, with the aim of representing their own military, their goal was to entertain and ideologically educate the soldiers, as a cultural example opposed to capitalist countries. The cultural background – created by the Soviet influence – determined their programming policy, especially at the time of their establishment. The programmes of friendly artistic ensembles and local artistic trends filled a part in shaping their repertoire as well.

The emphasis on the exclusivity of the Soviet model is also reflected in the contemporary press and in the later historiography of these ensembles. My aim is to provide a critical reading of the initial years of these ensembles in the light of East-Central European musical institutions and local processes.

Focusing on the East German, Polish, Czechoslovak and Hungarian ensembles, I will attempt to explore the circumstances of their formation, based on, the archive documents of the Hungarian ensemble, press materials and the few secondary sources highlighting the local differences that defined and formed the ensembles' artistic profile.

Egészségtudományok



Health Sciences

Analysis of the Fatigue's Effect on Balance and Reaction Time of Non-professional Athletes

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Body balance and reaction time are important physical features of athletes affecting global performance. More proficient athletes are displaying higher balance abilities of competition performance. Previous studies showed significant relationships between balance abilities and several performance parameters. Reaction time and response time are important abilities and potentially affect sports performance. Age, sex, left or right hand, practice, fatigue, fasting, exercise, and intelligence of the subject are some of the factors affecting the average human reaction time.

The aim of this study was (i) to compare balance and reaction time of adult amateur athletes before effort and after exhaustion; and (ii) to study the effect of fatigue on balance and reaction time. 31 amateur athletes of different sports (24 ± 4 years, 76 ± 8 kg, and 175 ± 6 cm) participated in our study and performed Y body balance test trials by FMS Pro Y-Balance Kit before effort and after exhaustion. The test measures the maximum distance of one foot in 3 directions (anterior, posteromedial, and posterolateral) of a subject while maintaining balance on one foot. Subjects performed the complex sensometric examination also to measure their reaction time by reacting the fastest way possible according to the nature of the stimuli generated by the machine (visual or audio, hand or foot). To reach exhaustion, the Bruce test was performed. Subjects were asked to run until reaching their maximal predicted Heart Rate.

Methods: Two-hundred-sixteen first year health care student were involved into our randomized simulation study. Participants were randomized into two groups: surgical mask ($n=108$) and cloth mask ($n=108$). Chest compressions' effectiveness (depth and rate) was measured within a 2-minutes continuous chest-compression-only CPR session. Data were collected by an AMBU CPR Software, a questionnaire and recording vital parameters and using Borg-scale related to fatigue (before and after the simulation). For further analysis the 2-minutes session was segmented into 30-second intervals.

Results: Results showed a significant change between performances of balance and reaction time before and after exhaustion ($p < 0.05$ for both parameters), showing that fatigue has a negative effect on balance and reaction time. To analyze it, Cohen's d for balance was calculated ($d=0.15$) and according to that, the effect is considered small ($d<0.2$). Cohen's d for reaction time ($d=0.49$) showed a moderate effect ($0.2<d<0.5$).

Conclusions: Data suggest that amateur athletes struggle to maintain their balance quality or improve it after long-term physical activity. Their body balance becomes somewhat reduced, showing the importance of high intensity training for the adaptation of the CNS. Fatigue reaction time is higher than resting reaction time, due to the exhaustion effect on muscle reception caused by CNS stimuli, increasing the duration between the first muscular reaction and human movement after a stimulant. Thus, reaction time is a negatively affected parameter of fatigue. Further work should be directed toward exploring new diagnostic systems to analyze the effect of exercise on balance and reaction time and its adaptive changes to training.

Keywords: balance, reaction time, fatigue, physical activity, sport performance

A Survey of Nurses' Awareness of Infection Control Measures in Baranya County, Hungary

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Introduction: Nurses have the highest risks of acquiring occupation-related infections among healthcare workers since they have the most frequent direct interactions with patients while providing care [1]. Implementing infection control (IC) practices reduces the transmission of such infections [2].

Aim: To assess nurses' awareness of IC measures in Baranya County, Hungary.

Methods: A cross-sectional study was conducted among a convenient sample of 121 nurses in Baranya County, Hungary. The study used the infection control standardized questionnaire to assess nurses' awareness in healthcare-associated infections (HAIs), standard precautions (SP), and hand hygiene (HH). Data were collected from two hospitals in February and March 2020. SPSS was used for statistical analysis. The cut-off for an acceptable awareness level of each IC area and the overall awareness was 70%. The non-parametric Mann-Whitney U test and Kruskal-Wallis test were used to compare the difference in awareness mean ranks across demographics.

Results: 93.4% of nurses were females with a mean age (\pm SD) of 39.64 ± 11.32 years. 99.2% attended trainings on IC at their current hospital. The mean scores were 16.55 ± 2.69 for IC overall awareness, 2.07 ± 0.71 for HAIs, 10.10 ± 1.58 for SP, and 4.38 ± 1.47 for HH. Acceptable scores were reached in overall awareness and SP only. The overall and HAIs' scores significantly differed across educational degrees. The difference in SP mean ranks was statistically significant across hospital types.

Conclusions: The present study is the first to assess nurses' awareness of IC in Hungary. The results reveal acceptable awareness scores in overall IC and SP. The low HAIs and HH scores highlight the need to enhance IC training in Hungarian hospitals and improve nurses' knowledge on IC. Further studies are needed to assess IC awareness of nurses at the national level.

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Keywords: awareness, Hungary, infection control, knowledge, nurse

Chemical analysis of southern fruits and commercial juices

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Introduction: Since the last decade, the scientists have been interested in the characterization of southern fruits. The fruit processing industries handles fruit peels as by-products, however they are rich bioactive molecule sources. Moreover during the processing of juices, they undergo procedures, that can cause nutrient loss. [1][2]

The **aim** of this study was to compare the total polyphenol, flavonoid, antioxidant and vitamin C content of southern fruit (orange, lemon, pomegranate, lime and pineapple) peels, freshly squeezed juices and commercial juices (n = 15).

Method: Ultrasound assisted extracts were prepared from fresh fruit peel flours and also the juices were analyzed freshly. [3] The total polyphenol content, the flavonoid content and antioxidant content were determined using UV-VIS spectrophotometer, eventually the ascorbic acid content was measured with HPLC. Descriptive statistics, Mann-Whintey U test, Kruskal-Wallis test, and correlation analysis were performed to analyze the data at level $p \leq 0.05$ significance.

Results: The fresh pomegranate juice ($13\ 843.94 \pm 1789.75$ mg / 100 ml) and peel ($14\ 194.64 \pm 1049.41$ mg / 100 ml) contained polyphenolic compounds in the highest amount. The total flavonoid content of peels (1240.003 ± 124.1 mg/100 ml) were significantly higher than the fresh juices (845.79 ± 60.36 mg/100 ml) and the commercial juices ($387,88 \pm 36$ mg/100 ml) ($p < 0.05$). The fresh orange, pomegranate, lime and pineapple peels contained significantly higher flavonoid content ($p \leq 0.05$). The highest ascorbic acid amount was measured from fresh juices. Total polyphenol ($r = 0.736$) and flavonoid ($r = 0.657$) content showed a positive strong correlation with the antioxidant capacity ($p < 0.05$).

Conclusions: Due to the high flavonoid and polyphenol content, fruit peel flours could be used as raw materials for special foods and fortifications. All in all, pomegranate peel and juice showed the highest bioactive compound values among the samples.

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Acknowledgements: University of Pécs; Faculty of Health Sciences, Institute of Nutritional Science and Dietetics; Kaposvár Campus, Institute of Diagnostics

Keywords: antioxidant capacity, polyphenols, flavonoids, fruit peels

Az anabolikus androgén szteroid használó hobbi testépítők táplálkozási, antropometriai vizsgálata

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Bevezetés: Az anabolikus androgén szteroid (AAS) használata ma már nem csak a versenyző testépítők, hanem a hobbi testépítők körében is jelen van.

Célkitűzés: Célunk volt felmérni az AAS használó vagy valaha használó hobbi testépítők körében az AAS használati trendeket, ebből származó tüneteket, valamint antropometriai jellemzőiket.

Módszer: Keresztmetszeti vizsgálatunkban saját készítésű kérdőívet használtunk. 13 sportolónál a személyes felmérés mellett antropometriai paramétereket is vizsgáltuk (Omron BF511). Az adatok feldolgozása SPSS v.25-ben készült. Statisztikai módszereink Khí-négyzet próba, kétmintás T-próba, ANOVA, One Sample Wilcoxon Rank teszt, Kruskal-Wallis és Mann-Whitney teszt, Pearson korreláció voltak.

Eredmények: A résztvevők (n=100) átlag életkora 29,5±7,1 év, testtömege 95,5±14,9kg volt. A többség megyeszékhelyen él, érettségivel rendelkezik, nem dohányzik. AAS-t 57 fő a kérdőívezés időtartama alatt nem használt, 43 fő használt, 82 fő tervezett még használni. A legtöbben 10 éve vagy régebb óta edzenek, heti 5-6x, 1-1,5 órát. AAS-t leggyakrabban 5 évnyi edzés után, évi 1 ciklusban, 3 hónapig használnak. A testosterone-propionate volt a legtöbbször által használt AAS, míg az egyéb tiltott teljesítményfokozók között a clenbuterol. A leggyakoribb tünet kúra közben a libidónövekedés volt, kúra után az izomvesztés. Kúrát követően a tünetek között ugyan a legkevésbé az erektilis diszfunkció fordult elő, azonban így is a megkérdezettek 44%-át érintette. Szignifikánsan több tünetről számoltak be mind a kúra közben (p<0,001) és után is (p=0,02) azok, akik 5-10 éve vagy régebb óta használtak AAS-t, illetve azok is, akik többféle készítményt használtak valaha (p< 0,001). A jelenleg használóknak szignifikánsan magasabb izomhányada (p= 0,01) és kevesebb testzsírja (p=0,03) volt, mint a jelenleg nem használóknak, azonban visceralis zsír arányban nem tapasztaltunk szignifikáns eltérést (p>0,05).

Következtetések: Az AAS használat a hobbi testépítők körében is megjelenik, amelynek egészségügyi kockázatai szerteágazóak. Hazai kutatások jelenleg nem elérhetőek a témában, azonban ez a felmérés áttekintést adhat a magyarországi tendenciákról. További kutatásokra van azonban szükség.

Kulcsszavak: anabolikus androgén szteroid, testépítés, antropometria

Különböző típusú szájmászok viselésének hatása 13-15 éves fiatalok kardio-respiratórikus rendszerére fizikai aktivitás közben

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Bevezetés: A SARS-CoV-2 pandémia idején kötelezővé tették az iskolákban is a maszk viselését. A világjárvány kezdete óta folyamatosan születnek kutatások, melyek a fizikai aktivitás során való maszkviselés hatásait vizsgálják, fiatalokra fókuszáló vizsgálat azonban még nem született a témában.

Célkitűzés: Választ találni a kérdésre, vajon befolyással van-e, valamint eltérően hat-e a különböző típusú maszkok viselése a 13-15 éves korosztály élettani paramétereire fizikai aktivitás során?

Módszer: Jelen kutatás 10 diák (életkor: $13,9 \pm 0,56$; magasság: $173,5 \pm 7,8$; súly: $60,1 \pm 12$; BMI: $19,885 \pm 2,92$; $n=10$) részvételével valósult meg. A kutatás során 2 körből álló köredzést hajtottak végre 3 különböző alkalommal maszk nélkül (NM), sebészi szájmászokban (SM), illetve többrétegű textil maszkban (TM). Folyamatosan rögzítettük a diákok kardiális (szívfrekvencia, szívfrekvencia variabilitás) és respirációs adatait (szaturáció, FVC, FEV1, FEV1%, PEF), valamint a terhelések után diszkomfortérzetüket.

Eredmények: Eredményeink alapján a maszkviselés nem befolyásolja szignifikánsan a diszkomfort érzetet ($p=0,73$), a szaturációt ($p=0,11$), a szívfrekvenciát ($p=0,8$), a szívfrekvencia variabilitást ($p=0,86$), sem pedig a spirometriai értékeket (FVC $p=0,68$; FEV1 $p=0,96$; FEV1% $p=0,83$; PEF $p=0,97$). Noha a statisztika nem mutat semmiféle negatív korrelációt a maszkviselés és a 13-15 éves korosztály szív-, és légzőrendszeri funkcióiban, a résztvevők 30%-nál 20%-os szaturáció-csökkenés volt megfigyelhető textilmaszkban végzett terhelés során, amely még a megnyugvás 3. percében is fennállt.

Következtetések: A sebészi szájmász viselésével szemben semmiféle kontraindikáció nem áll fent, így nyugodtan ajánlható e szájmász viselése a testnevelés órákon a fertőzésveszély csökkentésének érdekében.

Kulcsszavak: szájmász, terhelés, COVID-19

Hittudomány



Theology

AMONG US

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Despite the works of some respectable theologians like M. Eliade, W. Pannenberg or B. Witherington and the efforts of a number of clergy, protestants still seem to be alienated from the tangible experience of the Holy. Not like the people of Israel, nor other cultures of the ancient Near East. Are they to be followed? My aim is to investigate the issue of the golden calf and compare it with the orthodox representation of JHW, with the ark of the covenant namely. Both are human-constructed objects: what's the difference though? Why JHWH is satisfied with the latter, why He decides to be represented in any way at all? And finally, isn't it risky starting again to have Him physically represented among us?

Results: Scholarly literature tries to find answers to the divine rejection of the golden calf in situating the text firmly in the ancient religious traditions of the surrounding peoples. The most characteristic need of humans is to have the Holy as near as possible – considering as well his lethal nature. JHWH's aniconic intent expressed in the second statement is especially severe. Among others, however, Carol Meyers concludes that the biblical adaptations were so similar in many ways to the other notions and practices of the ancient Near East that the strict prohibition of the material rendering of any divine representation is peculiar. Brueggemann offers a reasonable explanation when he emphasises the otherness of JHWH, the counter-culture he represents/provides versus the anthropomorphic cult statues and structures, which assist the legitimization for monarchic rule.

Conclusions: My answer to my initial question is yes, for I believe the tangible presence of God is essential for our healthy spiritual life: we are flesh and bone creatures as well. It is true that material representation of JHWH has tempted Israel to forget about relationalism with God and neighbours (Brueggemann) and soon led to idolatry in a world of more material culture than ours. Similarly, we are tempted in a virtual world surrounding us. There seems to be no need for the division of the holy and profane today, since with the reformation, the notion of holiness has become a highly personal, individual category. Consequently, the non-tangible religious practices of Protestantism need to be balanced to prevent that the non-visible Immanuel completely disappear from among us.

Keywords: golden calf, ark of the covenant, representation of God, otherness, sacred and profane

An attempt to reconstruct the Church of the Holy Sepulchre built by Constantine the Great, taking into account the liturgical movements described in the Travel Diary of Egeria

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There are more than 30 types of Church of the Holy Sepulchre floor plans in the literature, which I studied and then compared with the results of archaeological excavations to obtain a church model that meets all requirements. I clashed all this with Egeria's itinerary description on the liturgy in Jerusalem in her "Itinerarium peregrinatio" from 385-388. In understanding the interactions between the liturgy and the sacral spaces, I followed in the footsteps of dr. Tamás Guzsik, who created a new school in the history of architecture in Hungary, with his works on the architecture of the Christian liturgies.

Results: Comparing the results of the latest archaeological excavations with description by Egeria, I am considering as most appropriate reconstruction the one of Coüasnon Ch. O.P. published by Gerhard Kroll and I recommend using it in the future. It is progressive how it has solved the spatial relationship between the Anastasis and the "ante Crucem" and "post Crucem" places. A major positive aspect of the proposed floor plan is the two-sided placement of the main entrances to the Anastasis, as described by Arculf. However, in keeping with the description of the liturgy of Egeria, I propose several changes, the most important of which are: 1. the Martyrion had to be walkable around and lockable 2. the location of the relic chapel is, in my opinion, the same as the "post Crucem" chapel.

Conclusions: One of the most characteristic features of the rite of Jerusalem is the spectacular processions between the temples of the Holy Sepulchre, first from Anastasis to Martyrion to the Liturgy of the Word, and then backwards to perform the Eucharistic Sacrifice. Although the architect of the majestic complex was Zenobius of Syria, the theological and liturgical program of space shaping probably originated by Macarios, bishop of Jerusalem.

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Keywords: *Church of the Holy Sepulchre, Egeria's Travel Diary, Itinerarium peregrinatio, Ethere Journal de Voyage, sacred spaces*

Household and Family Religion in Ancient Israel

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The common view about Jewish religion in Antiquity is that its practice was temple-centered and male-dominated. Besides the official-centered religion, focusing on serving God in the Temple (and later on in the synagogues), only men were allowed to provide offerings and serve. Also, as a man-centered society and culture, it was the women's duty to follow their men. However, if we read and study the sources of that period carefully, we may come to other conclusions.

The New Testament says: "And when you pray, you must not be like the hypocrites. For they love to stand and pray in the synagogues and at the street corners, that they may be seen by others. Truly, I say to you, they have received their reward. But when you pray, go into your room and shut the door and pray to your Father who is in secret. And your Father who sees in secret will reward you." (Matthew 6:5-6). This quotation calls attention to the religious practice outside of the Temple. Most probably, religious activity at home among family members was more common than can be found in the written sources, and women were also active participants of it.

This quotation from Psalm 55:17: "In evening, morning and noon, I cry out in distress and he hears my voice" makes me wonder if they had to pray three times a day? Did they have to go to the synagogue each time to fulfill their duties, or did they have another way to do that? These questions lead to other significant cultural questions: What is the meaning of the term family? Does it mean the same as the household? How was the structure of the Jewish families and households? After answering these questions, I will elaborate on the terminology of family- and household religions. These definitions raise new directions: What were the family and household duties to fulfill their prayers? Did those families have a shrine in their houses? What were the special preparations they needed to do? What was the role of women in these preparations? What was the nature of their prayers and rituals that they had to perform? All these and more will be answered in my paper using primary and secondary sources.

To conclude, my paper will shed light upon the structure, practices, prayers, rituals and cultural life of the average people in ancient Israel. These people often remain hidden in the written sources but leave their footprint in the everyday life of the communities, and as a hinterland support and create the conditions to the proper religious way of living of their families. This paper will also signify the family- and household religions and sheds light on the difference between them and the official religion.

Keywords: Family- and household religion, the role of women in religions, ancient Israel, prayers, rituals

A São Pauló-i magyar reformátusok vallásgyakorlásának szinterei

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Számos munka született a brazíliai magyar emigráció életéről, életének egy szeletéről, különböző csoportjairól. A magyar diaszpórán belül is több összefoglalás került nyomtatásba, melyek egy vagy több szervezet, vagy közösség életét dolgozták fel. A református egyház ezen művekben érintőlegesen megjelenhetett, azonban olyan munka nem született eddig magyar nyelven, mely a katolikus többségű Brazíliában a református magyar kisebbséggel hosszabban foglalkozna. Felmerül kérdésként, hogy a református gyülekezet léte, szervezettsége miként volt fenntartható, hogyan, hol tudott működni, illetve a ma megmaradt reformátusok hogyan és hol működnek.

Ennek feltárásához korabeli egyházi levelezéseket, jelentéseket, az egykori São Pauló-i magyarok református templomának iratanyagát, Apostol János egykori lelkész, Kordás Ferenc egykori julián tanító, Ötvös Lajos egykori egyházszervező feljegyzéseit, naplóbejegyzéseit használtam, melyet hat évvel ezelőtt végzett terepmunkám egészít ki.

Eredmények: A feldolgozott források alapján arra jutottam, hogy kezdetben az Anyaország-hoz való kötődés és a vallásgyakorlás iránti igény arra buzdította a híveket, hogy közösséggé szerveződjenek, majd templomot építsenek, lelkészt hívjának. Ugyanakkor a brazíliai magyar református gyülekezet erősen lelkészcentrikussá kezdett válni, Apostol János halálával a virágzó közösségi élet hanyatlásnak indult, illetve a templom épülete is kezdett elenyészni.

Azonban, ha mélyebbre ásunk, megfigyelhető, hogy ez a felbomlási folyamat már a lelkész halála előtt is elindult, a fiatalok kritikával illeték az egyház munkáját, nem tudta a lelkész megszólítani őket, a kínálat már nem volt vonzó számukra. Munkámban azt az utat szeretném bemutatni, amit a református közösség bejárt a lelkes megalapulástól, az intézményesült keretek között működő vallásgyakorlásán át, napjaink alternatív vallásgyakorlásáig, melynek jelentőség a református felekezetűek számára elvitathatatlan.

Következtetések: A gyülekezet élete átalakult, a hívek vallásos szinterei megváltoztak, ugyanakkor vallásos közösségi volta megmaradt. Hiszen mindamelllett, hogy a templomi közösség olyanformában már nem létezik, ahogy fénykorában, egy kisebb csoport próbálja az adott keretek között megélni hitét közösségben.

Támogatás: A szerző 2014 és 2015-ben a Körösi Csoma Program ösztöndíjasa volt São Paulóban.

Egyházszakadást követő csatlakozási folyamat motívumai a Hetednapi Adventista Egyházban

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2015 április 23-án a Keresztény Advent Közösség és a Hetednapi Adventista Egyház hivatalban lévő vezetői aláírták a megbékélési dokumentumot, amely egy folyamat lezárását jelképezte. A megbékélés eredményeként, a negyven éve történt egyházszakadás után, több mint hétszáz fő döntött az adventista egyházhoz való csatlakozás mellett, ami egy ötezer főt számláló hazai kis-egyház életében rendkívüli történésnek számít úgy lelki, szociológiai, mint vezetéstudományi szempontból. A nézeteltérések, konfliktusok, viták és szakadások állandó kísérőjelenségei a keresztény egyház történetének. A szakadások okainak nagy részét különböző kutatások feltárták [1], ugyanakkor kevés irodalma van a keresztény egyházakon belüli megbékélés, egyesülés folyamatának. A pozitív történetek elemzése új vezetői szempontokat adhat az egyházvezetésnek a megbékélés munkálásában. A kutatás arra keres válaszokat, hogy milyen mintázatok figyelhetők meg a csatlakozási folyamatban, illetve, hogy van-e összefüggés a szakadást, illetve a megbékélést kiváltó okok között. A kutatás módszertana a vonatkozó szakirodalom elemzését kombinálja a fókuszcsoporthoz alapozott kvalitatív analízissel, csoportinterjúk alkalmazásával. Hat különböző fókuszcsoporthoz folyt a kutatás: két országos régióban külön a csatlakozó tagság és lelkészek mellett, a fogadók és a csatlakozást elutasítók alkottak csoportokat.

Eredmények: Az adatok elemzéséből a következő, csatlakozást elindító motívumok igazolhatók: csalódás a vezetésben (alapítóknál), helyreállított identitás iránti vágy, a múlt kezelésének hiányosságai, a változás Isteni beavatkozásként való átélése és különböző társadalmi okok hatásának megélése.

Következtetések: A szakadás és a csatlakozási folyamat több ponton hasonló mintázatot mutat.

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Támogatás: Evangélikus Hittudományi Egyetem, Budapest

Kulcsszavak: egyházszakadás, megbékélés, csatlakozás, fókuszcsoport

Hadtudomány



Military Science

The ASWJ, the escalation of jihadism in Mozambique

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As a PhD student, I am researching for the violent jihadist organizations in East-Africa. That means the al-Shabaab in Somalia, the al-Shabaab (or ASWJ) in Mozambique and the ADF in Congo are the focus points. The last two are under the umbrella of Islamic States, in the name of ISCAP. Currently I am dealing with Mozambique more precisely with Cabo Delgado. This region is the most undeveloped one in this country from the aspect of economy, politics, religion and sociology. This is a perfect place to be born a violent jihadist organization. The ASWJ exploits the current situation: the government marginalized the islamic minority and some of the youth wants to create better life conditions. The foreign islamist preachers reached these people, offered them better oppurtunity. That was the islamic radicalization, the jihad. In 2017 was the first attack and this indicated a bid wave paired with the governmental mismanagement. As the insurgency grew stronger, the government's response became increasingly uncertain and unclear. The situation has been exacerbated as the ASWJ has become an affiliate of the Islamic State, while the government has asked and received foreign help to resolve the crisis. It seems it will be a long run conflict. My presentation concentrates on the development dynamics and strategic transformation of ASWJ and the government reaction to this.

Az OSINT szerepe a magánnyomozásban és a nemzetbiztonsági szolgálatoknál

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Bevezető: Napjainkban az információknak nagy szerepe van a nagyvilágban. Mindenkinek szüksége van a mai világban információra ugyanis „az információ az hatalom”. Az információknak nagy szerepe lett több társadalmi szinten, ami azt jelenti, hogy sok esetben a döntéshozóknak a döntéshozatalt segítő elő. Az emberiség, ahogy változott, úgy változott meg egyszerre az információ módszere, tárolása és hozzáférése. A mai világban sokkal könnyebb hozzáférni információhoz az interneten vagy egyéb forrásból, mint például az elektromos eszközzel, írott anyag révén, tudományos forrásból, tv és a rádió által. Jelen tanulmányban a nyíltforrású adatszerezéssel foglalkozom, hogy milyen módszerrel és hogyan gyűjtik az információt

Célkitűzés: Átfogó képet szeretnék kapni a magánnyomozók és a nemzetbiztonsági szolgálatok tekintetében, hogy miként szerzik be ennek a módszernek a segítségével az információt. További célom ezzel a tanulmánnyal, hogy megtudjam, hogy a jogszabályi háttér miként biztosítja a két hivatásnak az információszerzési tevékenységét, illetve a két hivatásnak a törvényi háttereiben miben hasonlók illetve különböznek.

Módszer: Elsődleges módszernek tekintem a szekunder információk felkutatását főképp a törvényi hátterek értelmezése miatt. Továbbá, primer információként kutatást végzek a két hivatás területén dolgozók körében, hogy miként gyűjtik az információt az adott törvényi kereteken belül.

Eredmények: A vizsgált két hivatásnál elmondható az, hogy az információszerzés céljaiban eltérőek: míg az egyik az állami érdeket képviseli, addig a másik a civil szférát képviseli. Ebben a világban az információknak nagyban felértékelődött az értéke. Nagyon figyelni kell arra is, hogy milyen nyomot hagy maga után az ember az interneten, mert a fent említett hivatásokban tevékenykedők könnyen információhoz tudnak jutni ez alapján. A nemzetbiztonsági szolgálatoknak az OSINT módszere törvényileg szabályozva van, ellentétben a magánnyomozókra vonatkozó törvényben ez nem szerepel benne, ezért a fent említett hivatásokból merít ötletet. Az információ származásának forrását mindig vizsgálni kell, hogy nyílt vagy minősített adat, mert a törvényben meghatározott módon kell eljárni ilyen esetekben. Módszerek tekintetében a két hivatás ugyanolyan módon gyűjti az információt.

Következtetések: Meglátásom szerint, ki kellene bővíteni a 2005. évi CXXXIII. törvényt, ami a magánnyomozók munkavégzését szabályozza, hogy miként lehet nyílt forrású adatot gyűjteni, illetve hogyan lehet operatív módon információhoz jutni a 21. században. A beszerzett információk tekintetében is bővíteni kellene a törvényt, hogy milyen információt tárolhat, és mennyi ideig őrizheti meg a magánnyomozó. A jogszabályok tekintetében a nemzetbiztonsági törvény, illetve az ehhez kapcsolódó belső utasítások konkrétan leírják ezeknek az információszerző tevékenységnek a módszerét szemben a magánnyomozói törvénnyel.

Poszter szekció I.

Poster session I.

The indirect effect of gold and silver nanoparticles on macrophage polarization

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Normally, macrophages can be polarized into either classically activated (M1) or alternatively activated (M2) phenotypes, which differ mostly in cell surface markers, secreted cytokines, and biological functions. Macrophages are typically recruited to the tumor site, where - influenced by this complex microenvironment - they get eventually transformed into M2, tumor promoting phenotype [1]. In our work, we examined the possibility of modulating macrophage polarization in the tumor microenvironment with the help of silver (AgNP) or gold metal nanoparticles (AuNP).

Methods: Using 4T1 breast cancer and J774 macrophage murine cell lines, we addressed this issue in two highly simplified systems. 1. We applied the nanoparticle-conditioned medium (CM) of 4T1 tumor cells on macrophages, and the J774 cells were treated with them for 24h; 2. The possible indirect immunomodulating effect of metallic nanoparticles was explored in a tumor cell-macrophage co-culture system. In this case, the tumor cells were treated with AgNP or AuNP, and were kept in co-culture with macrophages for 24 or 48h. After the treatments, the expression of certain M1 and M2 polarization markers was assessed by RT-qPCR.

Results: In case of the CM treatments, the results indicate that the gene expressions of mostly M1 markers were increased significantly compared to the untreated control. The expression level of an M2 marker was also remarkably higher than that of the untreated sample. In case of 4T1-J774 co-culture, both M1 and M2 markers exhibited significantly increased expression levels. However, if 4T1 cells were treated with nanoparticles during the co-culture for 48 hours, only the M1 markers increased drastically compared to the untreated control.

Conclusions: Although our results suggest that nanoparticle treatments could possibly moderate M2 polarization during co-culture, both CMs and co-culturing the cells had a significant impact on the expression levels of M1 and M2 markers. Experiments using primary bone-marrow-derived macrophages are underway to get a more comprehensive picture of the polarization mechanisms.

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Keywords: tumor microenvironment, nanoparticles, macrophage polarization, conditioned medium, co-culture

Effect of using knee valgus brace on pain and activity level over different time intervals among patients with medial knee OA: Systematic Review

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Introduction: The Knee valgus brace is one of the accepted conservative interventions for patients with medial compartment knee osteoarthritis to correct the knee varus and increase functional activity level. Nevertheless, comprehensive overview of the effects of using this brace on self-reported pain activity level over time is not available.

Aim: is to systematically review the effect of using this brace on pain and activity levels in the last 20 years in patients with medial compartment knee osteoarthritis.

Methods: Five databases were searched to find articles from the year 2000 to the end of November 2020: Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, PubMed, Web of Science, and Scopus. Two reviewers independently evaluated the available articles for eligibility and assessed quality. The risk of bias in each study was assessed according to the Strengthening the Reporting of Observational Studies in Epidemiology tool (STROBE) and the Cochrane risk-of-bias tool.

Results: Seven randomized controlled studies and 17 cohort studies (in total 579 participants) were included in the systematic review. Most of these studies found using a knee valgus brace effective in reducing pain and improving activity level over different time intervals. The majority of the included studies (14 studies) evaluated the impact of the brace for a considerably short-term (less than six months).

Conclusions: The knee valgus brace is an effective conservative intervention to improve the quality of life and reduce pain during daily activities for some patients. However, the long term of using this brace is with limited evidences.

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Keywords: *knee, brace, pain, activity, osteoarthritis*

Prevalence of Internet Addiction during the COVID-19 Pandemic

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Introduction: The widespread use of the internet has entirely changed our lives in the last decade. Although the “World Wide Web” has improved many aspects of our lives and it is an unavoidable part of our daily routines, many studies reported problematic internet usage. [1]. As of April 2020, nearly 90% of students were cut off from their schools due to the COVID-2019 Pandemic, and technology has become essential to enable students to access educational materials, to interact with each other and to play. Therefore it is important to understand how the COVID-19 outbreak has influenced the use of technology, and whether there is a change in the prevalence of internet addiction. [2]

Aim: The aim of our research was to determine the prevalence of internet addiction among primary and high school students wearing fixed orthodontic appliances during the COVID-19 outbreak.

Method: A both paper-based and online questionnaire study was conducted between 2020 February and 2021 August. The study was approved by the Ethical Committee of the University of Pécs (8434-PTE 2020). Consent was obtained from the individuals prior to data collection. Statistical analysis tests were performed using IBM SPSS Statistics 26 Software. The categorical data were analyzed using contingency tables and the chi-squared or Fischer’s test, as appropriate. Statistical significance was established as a *p*-value of < 0.05.

Results: Overall, 339 questionnaires were successfully delivered and 327 responses were received (response rate of 96.46%). A total of 147 (43.36%) males and 192 (56.61%) females took part in our study. During the pandemic, adolescents spent 4.048 hours on the internet, while after the restrictions ended, this time was reduced to 3.04 hours. Throughout the examined period more students chose the internet over sleep (22% compared to 11.01%, *p*<0.001) and neglected their household chores (13.6% compared to 3%, *p*<0.001). There was also a significant change in the mental state of the students: more adolescents experienced stress (*p*=0.010) and depression (*p*=0.011) during the pandemic. Even though previous articles suggested that male gender and younger age are risk factors in internet addiction, our study did not detect notable difference.

Conclusions: Based on the present findings, elevated risk of internet addiction have been reported during the COVID-2019 outbreak. Therefore help should be provided for the vulnerable individuals.

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Keywords: Internet addiction, adolescents

Tracing the vibrational motion of diatomics via the spectrum of emitted photofragments

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We present a method for tracing the nuclear vibrational motion of diatomic molecules in the kinetic energy release (KER) spectra of the dissociating photofragments.

To exemplify our procedure, we consider the widely studied sodium iodine (NaI) molecule, which features an ionic-covalent avoided crossing between its ground and first excited electronic states [1]. Applying an IR control pulse, a nuclear wave packet of NaI is created in the ground electronic state as a coherent superposition of the vibrational eigen states. This nuclear motion is then probed by a series of few-femtosecond UV pump pulses that promote the system to the excited electronic state where it dissociates through the nonadiabatic avoided crossing on an ultrafast time scale [2].

The central frequency of the probe pulses is chosen such that the electronic states are coupled resonantly in the whole region of the nuclear motion, so a direct mapping of the nuclear wave packet into the continuum is achieved. The presented procedure works the best for short multi-cycle probe pulses. Upon increasing the probe pulse duration, nuclear wave packet interference effects start to dominate the KER spectra which prevent the procedure to be applied for tracing purposes. The appearance of these interferences is also discussed [3]. The time-propagation of the nuclear wave packets has been carried out with the multi-configuration time-dependent Hartree (MCTDH) method.

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Keywords: pulses, tracing, photofragments, sodium iodine, KER

Adenosine A₁ receptors modulate the exogenous ketone supplements- and uridine-evoked alleviating effects on absence epileptic activity in Wistar Albino Glaxo/Rijswijk rats

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Background: It has been demonstrated previously that exogenous ketogenic supplements (EKSs), such as ketone salt (KS) and ketone ester (KE) can increase the level of both ketone bodies (e.g. R-beta-hydroxybutyrate/R-βHB) and adenosine. Moreover, it was suggested that EKSs, adenosine and uridine may modulate absence epileptic activity likely by means of adenosine A₁ receptors (A₁Rs). Thus, we hypothesized that combined administration of EKSs and uridine enhances antiepileptic effect, compared to uridine or EKS alone through A₁Rs.

Methods: EEG electrodes were implanted into WAG/Rij animals and we tested whether KE (2.5 g/kg/day) and KS mixed with medium chain triglyceride (KS + MCT: KSMCT, 2.5 g/kg/day), applied for 7 days by intragastric gavage, can modulate number of spike wave discharges (SWDs) in genetically absence epileptic Wistar Albino Glaxo/Rijswijk (WAG/Rij) rats. We also applied a non-proepileptic dose of A₁R antagonist DPCPX (1,3-dipropyl-8-cyclopentylxanthine; intraperitoneal/i.p. 0.2 mg/kg) in combination with KSMCT (2.5 g/kg/day, gavage) to decide whether A₁Rs are able to modify EKSs-evoked changes in SWD number. Moreover, i.p. administration of DPCPX (0.2 mg/kg) and a selective adenosine A_{2A} receptor antagonist SCH58261 (i.p. 0.5 mg/kg) were also applied to determine a putative modulatory influence on i.p. 1000 mg/kg uridine-evoked effects on SWD number in WAG/Rij rats. Finally, efficacy of a sub-effective dose of uridine (i.p. 250 mg/kg) combined with KSMCT (2.5 g/kg, gavage) on SWD number was also determined. Influence of EKSs on blood R-βHB and glucose levels, as well as body weight were also measured.

Results: We demonstrated that blood R-βHB levels increased whereas number of SWDs significantly decreased after both KE and KSMCT treatment. DPCPX abolished both the KSMCT-evoked decrease in SWD number and the i.p. 1000 mg/kg uridine-generated alleviating effect on SWD number whereas SCH58261 was ineffective. Moreover, the sub-effective dose of uridine enhanced the beneficial effect of KSMCT on SWD number.

Conclusions: We concluded that (i) EKS administration can decrease absence epileptic activity in WAG/Rij rats; (ii) the adenosinergic system, likely *via* A₁Rs, may modulate the EKSs- and uridine-evoked anti-seizure effects; and (iii) co-administration of uridine and EKSs may be a new therapeutic tool to treat absence epilepsy.

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Keywords: exogenous ketogenic supplements, uridine, adenosine receptors, absence epilepsy, WAG/Rij rats

Antioxidant Capacity of the Humate-Cellulose Composite

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With the spread of biopolymers, increasing attention is being paid to new, antioxidant natural substances in pharmaceutical, food, and packaging developments as well. In the course of the work, a packaging material with antioxidant properties was produced from cellulose, the most widely used polymer in the world. The antioxidant properties of the packaging material are given by the humate added during production. The main uses of humates are in soil improvement and crop production, and even more so in organic farming [1]. In addition to its soil and plant condition improving properties, humate is a good antioxidant. The aim of the research was to determine the amount of dissolved humate and to measure its antioxidant capacity.

Methods: The sample sheets were prepared according to the procedure described in the article by Tóth A *et al.* (2020). Samples of the same size were cut from these sheets [2]. The antioxidant capacity of the discs was measured by the DPPH method. The measurement was based on the research of Yu *et al.* (2013), with modifications [3]. The antioxidant capacity of the sample discs was determined after 24 hours of soaking. The sample sheets contained 0.1, 0.25, 1 and 5 g of humate, respectively. Results were expressed as the degree of inhibition (I%).

Results: Humate was dissolved from each cellulose-based sample sheet by the 24th hour after soaking. As a result of the measurement, it can also be stated that the antioxidant capacity of the sample discs depends on the humate content of the sheets, but the antioxidant capacity of dissolved humate does not change significantly with changing the humate content of the sheets.

Conclusions: According to the measurements made, based on its good water solubility properties, humate could be suitable for use as an antioxidant active ingredient in edible packaging, even in a coating or film layer.

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Keywords: humate, antioxidant capacity, DPPH-method, cellulose, active packaging, humic-acid

Lipopolysaccharide mutant bacterial strains in the service of antibiotic research

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Shigella sonnei strains are Gram-negative intracellular pathogenic bacteria belonging to the family Enterobacteriaceae. Gram-negative bacteria have complex and asymmetric outer membrane containing lipopolysaccharides as major component. Although lipopolysaccharides are highly heterogeneous, there is a conserved minimal structure, most Gram-negative bacteria share: a lipid A part with inner core oligosaccharides. Outer core oligosaccharides and an O antigen region can attach to these molecules. Structure and length of lipopolysaccharides are important virulence determinants, bacteria with short lipopolysaccharides are thermosensitive, more sensitive to detergents (bile salt), antimicrobial peptides and natural defensive mechanisms like antimicrobial chemokines.

Results: This study presents the genomic analysis of two *S. sonnei* lipopolysaccharide mutant strains, *S. sonnei* 4303 and *S. sonnei* 4351. Both strains are part of a mutant line that originated from a phase I *S. sonnei*, isolated in Pécs, 1954. Structural analysis of lipopolysaccharides in these strains is highly detailed, our work provides the description of biosynthetic background to complement the research. *S. sonnei* 4351 is a heptose biosynthetic mutant with short lipopolysaccharides, thermosensitivity and increased susceptibility to Primycin, Erythromycin and Cefalexin. Aberrant cell division was also identified under electron-microscope, short chains from 2-5 cells with septa were formed as a unit.

Conclusions: Changes in bacterial fitness in the observed strain is presumably due to shorter lipopolysaccharides, comparative analysis of lipopolysaccharide biosynthesis in *S. sonnei* 4303 and *S. sonnei* 4351 from both structural and genetic points of view have the potential to identify new targets to develop antibiotic adjuvants and antimicrobial agents.

Acknowledgements: This work was supported by the National Research, Development and Innovation Office K-125275.

Keywords: lipopolysaccharides, shigellosis, *Shigella sonnei*, lipopolysaccharide biosynthesis

Investigating the cognitive effects of medium-intensity exercise training in healthy and hyperlipidemic female and male mice

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Introduction: Physical exercise has a profound effect on musculoskeletal, cardiovascular, and metabolic systems, but it can also induce neurophysiological changes resulting in improved brain health and cognitive function. Based on previous studies, exercise training is a potential therapeutic method to counteract the obesity-related health risks, which have become major problems worldwide placing a heavy burden on today's society. However, the exact molecular mechanisms of the beneficial effects of physical exercise remain poorly understood.

Aim: We aimed to analyze the effects of regular exercise training (ET) on cognitive function paying particular attention to describing sex-dependent differences.

Methods: We used healthy wild-type and dyslipidemic, high-fat-fed (HFD) ApoB-100-over-expressing transgenic male and female mice. The experiments started at the age of 3 months and lasted for 7 months. Exercise groups performed a medium-intensity treadmill running five times a week (45 mins, 0.9 km/h). At the end of the experiment, cognitive abilities of the animals were tested (Open-field, Barnes-maze test), after which gene expressional analysis and immunohistochemistry were performed on hippocampal and cortical samples. Cardiomyocyte cross-sectional areas were measured on hematoxylin-eosin-stained slides.

Results: Our results showed that female animals had greater locomotor activity than males. This can be associated with the significantly better spatial learning and memory performance of the exercise-trained wild-type and ApoB-100 female animals compared to the other female and male groups. The expression level of several genes regulating brain metabolism (leptin, leptin receptor, lactate receptor) showed sex-dependent changes due to ET and HFD, which can also affect cognitive functions. We also found compensatory cardiomyocyte hypertrophy in the exercise-trained female groups, which can result in a better cerebral oxygen supply promoting their improved learning and memory abilities. Regarding the activation of glia cells, ET as well as HFD reduced the extent of the astrocyte-specific marker GFAP in both sexes.

Conclusions: We showed that moderate-intensity training improved the cognitive function of female animals, while no similar effect was observed in males. The sex-dependent differences can be associated with the altered regulation of metabolic, hormonal as well as cardiovascular factors in male and female animals.

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Keywords: cognitive function, exercise training, hyperlipidemia, transgenic mouse

Phenotypic characterization of neutropenic mouse model

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Introduction: Neutrophil granulocytes are part of first defense of innate immunity against extracellular pathogens. They are mainly known by their role in inflammation and pathogen elimination, but neutrophils are also multifaced immune cells. They contribute to resolution of inflammation, they regulate the function of other immune cells and immune responses too. Mcl-1 anti-apoptotic protein is indispensable in the development and survival of neutrophil granulocytes, so its myeloid-specific deletion leads to a severe neutropenia in mice.

Aims: The knock-out animal models make possible to investigate the function and the role of a gene or cell type in different processes. Our aim is to characterize phenotypically Mcl-1 KO mice for the well-founded investigation of the role of neutrophil granulocytes in sterile muscle inflammation and tissue regeneration in further experiments.

Methods: Besides the morphological observation of the mice, immune cells from bone marrow and spleen were isolated and analyzed by flow cytometry.

Results: Mcl-1 KO mice body weight showed reduction compared to wild-type (WT) mice weight. Erythropoiesis was significantly reduced in Mcl-1 KO mice bone marrow. Lower number of immune cells were observed too, but only in the case of neutrophil counts was a significant decrease. The most striking difference between the two mouse strains was the splenomegaly in neutropenic mice. Despite the spleen enlargement there was no difference in myeloid cell numbers. In the spleen of Mcl-1 KO mice, we detected elevated number of nucleated red blood cells (RBC) and increased common myeloid progenitor (CMP) counts. An accumulated population of “defective” neutrophil cells can be observed both in the spleen and in the bone marrow.

Conclusions: The myeloid specific deletion of Mcl-1 gene leads to phenotypic changes in mice. Besides the neutrophil granulopoiesis, erythropoiesis is also affected in Mcl-1 KO mice. Splenomegaly in neutropenic mice may be due to a relocation of erythrocyte development, as evidenced by high CMP counts and the appearance of nucleated RBCs in the spleen. We hypothesize that decreased neutrophil number rises the demand of increased neutrophil production. In parallel the erythroid compartment shrinks in the bone marrow. The spleen compensate the demand for erythrocytes.

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Keywords: neutrophil granulocytes, Mcl-1 protein, neutropenia, phenotypic characterization, splenomegaly

Internet trolls and supportive grannies: The analysis of female politicians' Facebook comment section

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Social media allows its users to stay connected and also gain information about others. Politicians are present in these platforms as well and they aspire to be relatable and likeable in the eyes of the ordinary user by blending in and adjusting their way of communication to the habitual style of the platform. This leads to the odd phenomenon of politicians receiving compliments, which is a social strategy used for strengthening or initiating connections [1], while they also receive insults in the form of comments that are in most cases not related to the topic of the post. Women are the main receivers of online compliments and these compliments mostly focus on appearance [2]. However, in their case a compliment on their appearance is not necessarily an appreciable speech act and can have an inverse effect by leading to the objectification of female politicians. Although compliments on appearance can lead to short-term exhilaration, it can also damage cognitive performance in the long run [2]. The aim of the study is to investigate the Facebook comment section of six Hungarian high profile female MPs from different parties and to examine and categorise them. Furthermore, the goal of the study is to determine the distribution of compliments and insults. The requirement for the chosen politicians was to be active online (post weekly) and have a large following (more than 40 thousand). For the examination a sample period of 1 month has been determined.

Results: The expected results are that most of the comments are related to the content of the posts and civil and uncivil comments will appear in the case of all six politicians. A frequency order of compliment and judgement types could be set up. In both cases comments regarding appearance will be the most common, but in general both compliments and insults can be categorized into similar topics. Furthermore, comments that contain insults will gain a higher number of interactions either in the form of likes or comments.

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Keywords: compliment, insult, online communication, female politicians

Impact of the pandemic on furniture trade

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The current viral situation has fundamentally changed human norms, consumer behaviours, crisis management tools, mind-sets, life situations. I wonder, ordinary people, how do they eliminate problems? How do they adapt? How is the emerging economic crisis transforming consumer behaviour patterns and purchasing decisions?

Overall, people's consumer behaviour is constantly changing, as consumption and shopping conditions and consumer attitudes are also constantly changing. COVID-19 has had a serious impact on the way and what the public has purchased. It can also be perceived that as we talk about different eras of the consumer (e.g. crisis, reasons), it can be seen that this means different types of consumers and patterns of purchasing behaviours. It can be said that there are short-term changes in online purchases, and although the proportion of online purchases has increased for different product categories, such a crisis does not seem to be sufficient to remove the barriers in shoppers, such as uncertainty about online shopping or the purchase of a new product that is not yet known.

During the frenzy that started in the spring of 2020, timber traders were not weighed down by the effects of the pandemic as much as the rest of the economy. Perhaps this is the industry that has benefited from the situation since it is enough to go through a simple thought process: the customer needs new furniture, the carpenter needs wood, and the woodworker needs a carpenter to buy the material from him. This is going to be the part where everything gets expensive. The very nice oak wood that you sell for 250,000 forints is now 300,000. It'll rise in two months, and so on. The carpenter buys it, of course, because the product has to be prepared, and the customer is very happy to pay for it. And why is the merchant working on the lumber yard the most? Because he's not directly connected to a customer who's made of timber he owns, and since there's no demand, they don't even know how much the wood costs.

People's shopping habits are changing because of the current situation. More and more meadows have become more confident and educated. They'll have more time to think about renovations and finish the work around the house that's never been finished. They spend a lot of time at home, between four walls, where they already notice; "that I have time, I'm tired of the equipment, I'm going to have a new style, I'm going to change everything because I want to relax in the comfortable place I dreamed of for myself". Because they have time to read after products, listen to reviews, plan, so people are braver. They dare to change more bravely, embark on a renovation or furniture in return.

Keywords: pandemic, furniture trade, on-line marketing, customer behaviour

Current situation of the eradication program of porcine reproductive and respiratory syndrome in Hungary: the molecular epidemiological perspective

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Introduction: Porcine reproductive and respiratory syndrome (PRRS) is characterized by reproductive disorder in sows, reduced growth performance and respiratory diseases in piglets. In the EU, Hungary was the first country to introduce a national PRRS eradication program. Over the past few years remarkable efforts have been made towards the PRRS-free status.

Objectives: Using literature data, the authors aim at highlighting the current situation of PRRS infection and the genetic variability of PRRS viruses in Hungary.

Results: Due to the constant monitoring of circulating PRRSVs worldwide, extensive knowledge accumulated about the diversity of PRRSV-1 and -2 strains. PRRSV-1 is classified into subtypes (I-III) and analyses of >600 PRRSV-1 ORF5 sequences showed the dominating prevalence of subtype I strains in Central Eastern Europe. Within subtype I, the Hungarian strains clustered into eight clades and three lineages including 1, 1A, 1C, 1E, 1G, 2, 3C, 3D. Of note is that 1/3 of the identified strains was vaccine related and the majority is Porcilis derived variant. The epizootiology of circulating Hungarian PRRSV-1 strains was further supported by network analysis that helped dissecting precise movement of strains among affected pig farms. Hungary is naturally free from PRRSV-2, although RespPRRS modified live vaccine-derived variants (lineage 5) are periodically detected in herds importing piglets from other European countries. Similarly, a few lineage 1 wild type PRRSV-2 strains were identified in herds raising piglets imported from neighboring countries. According to the reports about the eradication process, more than half of the area is completely PRRS-free in Hungary.

Conclusions: Regardless of the applied measures against PRRS, persistent attention is a crucial point to maintain the progress of eradication. Tools of molecular epidemiology are important and effective to achieve the main objectives.

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Keywords: molecular epidemiology, eradication, genetic variability

Making of a victim: The perception of intergroup conflicts in light of past ingroup victimization

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I present results of an experimental study on the impact of the linguistic composition of narratives in transmitting victimhood beliefs. A specific narrative composition of national historical conflicts was found to be associated with the victim's perspective. This composition includes a relative lack of ingroup agency, a more positive evaluation of the ingroup as compared to outgroups, attribution of hostile intentions and cognitions to outgroups, and more frequent presentation of the ingroup's emotions as opposed to outgroups (László, 2014; Csertő, Geiszt, & Pólya, in preparation).

The present study explores the role of these linguistic compositional characteristics in transmitting collective victimhood beliefs. Experimentally manipulated excerpts of history textbooks were used to examine the perception of the victim position of national outgroups, and its intermediary social psychological processes with Hungarian (N = 415) and Finnish (N = 116) participants.

Results: The results reveal that the narrative composition of the victimhood narrative had a significant effect on the perception of the target groups' victimhood position. The evaluation of the groups changed according to which variant of the story was introduced. The results demonstrate that the perception of a perpetrator group can be changed by only the narrative construction and their actions can acquire a "victim tone".

Conclusions: This effect is present in both the Hungarian and the Finnish sample, suggesting that narrating an event of victimhood has certain universal characteristics, although their effect is partially dependent on the national-historical-cultural context.

Keywords: narrative psychology, collective remembering, intergroup conflict, collective victimhood

Application of metaheuristic procedures in different areas of logistics

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The aim of this study is to provide insight into the metaheuristic procedures used in logistics. Many logistics issues are extremely complex optimization problems that fall into the np-hard complexity class. Therefore, industry often employs metaheuristics, whose search strategies are usually inspired by physical or biological processes. The algorithms simulate the behavior of the selected phenomenon in the search area. Numerous algorithms based on different principles can help optimize the processes, for example: evolutionary methods (e.g Genetic Algorithm (GA), Bacterial Evolutionary Algorithm (BEA), Memetic Algorithm (MA), Differential Evolution Algorithm (DE) etc.), swarm intelligence methods (e.g Bacterial Foraging Optimization (BFO), Bat Algorithm (BA), Bees Algorithm (BA), Firefly Algorithm (FA), etc.), population-based algorithms (e.g Cross-Entropy Method (CEM)), behavioral pattern inspired procedures (e.g Cuckoo Search Algorithm (CSA), Harmony Search Algorithm (HSA)) etc. Based on the problems and data of different aspects of logistics, it is possible to select the most efficient algorithm to find the right solution. The short listing below shows, without claiming to be exhaustive, some areas of logistics and procedures already in place:

Needs planning: Ant Colony Optimization Algorithm (ACO) /in MRP/, Genetic Algorithm, Simulated Annealing (SA), Particle Swarm Optimization (PSO) [1]

Supplier selection: Firefly Algorithm, Hybrid algorithm of GA and ACO [2], Guided Genetic Algorithm and Dynamic Nondominated Sorting Genetic Algorithm II, Differential Evolution Algorithm

Product placement: Differential Evolution Algorithm, Genetic Algorithm

Warehousing: Genetic Algorithm [3]

Clearly, due to the complexity of the tasks, metaheuristic procedures are increasingly used in logistics already. The study presents further examples of logistical applications in intelligent procedures.

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Keywords: metaheuristic, logistics, algorithms, intelligent procedures

TRPA1 receptors expressed in the brain influence the sensation of odours and social behaviour of mice

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Background: Transient receptor potential ankyrin 1 (TRPA1), a non-selective cation channel, contributes to several (patho)physiological processes including pain sensation, development of neuropathic pain and neurodegenerative disorders [1]. In addition, it seems to influence the innate-fear responses of mice [2]. Here, we aimed to reveal its role in olfaction and social behaviour.

Methods: The presence of *Trpa1* mRNA was studied along the olfactory tract of mice by real-time polymerase chain reaction and combined RNAscope in situ hybridization and immunohistochemistry. The aversive effects of fox and cat odour were examined parallel with stress hormone levels. In vitro calcium imaging tested if these substances can directly activate the TRPA1 receptors. The role of TRPA1 in social behaviour was investigated by comparing *Trpa1* wild type and knockout mice (KO).

Results: *Trpa1* mRNA was detected in the olfactory bulb and piriform cortex, while its expression was weak in the olfactory epithelium. Fox, but not cat odour activated directly the TRPA1 channels. Accordingly, KO animals showed less aversion against fox, but not cat odour. The social interest of KO mice was reduced during social habituation-dishabituation and social interaction, but not during resident-intruder tests.

Conclusions: TRPA1 may contribute to odour processing at several points of the olfactory tract and may play an important role in the social behaviour of mice. Thus, TRPA1 may serve as a novel drug target in the treatment of behavioural disorders.

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Keywords: TRPA1, innate fear, social behaviour, piriform cortex, olfactory bulb, olfactory epithelium

Mental health impact of adult children's out-migration to elderly parents in Central and Eastern Europe

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Depression in the elderly population is less prevalent in the old-aged, but it causes more severe symptoms. Families in Central and Eastern European countries undergo demographic and structural changes. Since early 2000, both emigration to Western EU countries and internal, urban-rural migration has been increasing, which leads to an increased number of parents left-behind. There are conflicting study results on the mental health impact of adult child migration of elderly parents, requiring further research. To investigate mental health impacts of adult child migration in over 50 years old parents in Central and Eastern European countries, the study used data from the Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 8 (DOI: 10.6103/SHARE.w8.100). The Euro-D measure of depressive symptoms, its two factors (affective suffering and motivation), and child outmigration variables based on location of children were analyzed.

Results: Preliminary results showed that adult child outmigration was associated with higher depressive symptoms of aged parents, suggesting that those having their adult children migrated out had a higher risk for depression, compared to those with no migrant child, or some children staying in the locality. Outcomes also demonstrated diverse patterns across Central and Eastern European countries, which need further exploration in subsequent analyses.

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Keywords: late life depression, child migration, left behind parent, mental health, Central and Eastern Europe

The Fish Model in Melanoma

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Melanoma, as a lethal cutaneous cancer that has increasing incidence and mortality over the past 50 years[1]. But early diagnosis and treatment can effectively control the development of melanoma[2]. Scientists have built a variety of models for it, such as mouse, chicken embryo, swine, horse melanoma model. Compared to these animals, fish has large number progenies, a short generation time, short breeding cycle, simpler feeding, relatively low costs and operational mature biological technology. These characteristics make the fish develop into an important melanoma model.

The most classic fish melanoma model is the zebrafish model. Successful large-scale genetic screening and 70% similar genes to humans has made zebrafish become an important vertebrate model[3]. The emergence of *Casper* allowed zebrafish to have a transparent body. Based on the Casper model, several transgenic melanoma models have been developed, such as *BRAF*, *RAS*, and *p53*[4].

Xiphophorus is the hybrid product of *Xiphophorus maculatus* and *X.helleri*, is the first fish melanoma model and reveals important insights. For instance, *xmrk* gene (tyrosine kinase receptor) is found in the local gene duplication of *Xiphophorus*, which is involved in the induction, migration and invasion of melanoma[5].

Medaka model, similar to the zebrafish model, has many highly inbred strains, unique to identify the allelic variations of melanoma-modifier genes. Furthermore, under the control of *mitfa* promoter, *xmrk* in medaka pigment cells specific and exclusive express, which lead to spontaneously malignant melanoma[5].

The glass fish has a transparent body[6]. It has been used in a variety of studies on melanin. Our research is developing it into a new melanoma model.

This article will introduce the unique features of the above fish model in detail, enabling researchers to have a comprehensive understanding of fish melanoma models.

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Keywords: melanoma, zebrafish, Xiphophorus, Medaka, glass catfish

Hydrogen production on the single-stage gasification system from Hungarian brown coal char

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Introduction: On one hand, it cannot be denied that the electricity generation has been highly depended on fossil fuels, like coal and it will be at least until the half of this century [1]. But on the other hand, the use of traditional technologies in coal power generation will lead to even higher emission levels. Clean coal technology (CCT) could be one of the solutions for this conflict. CCT could be grouped into two main categories as environmental protection and global warming [2]. Currently, gasification of coal is considered as the centre of CCTs

Aims: The main aim is the investigation of hydrogen production during the steam gasification process of Hungarian brown coal char.

Methods: The experiments of gasification process were carried out in the single-stage gasifier with an external heat source. The gasifier is made of heat resistant steel, with 80 mm of inner diameter and 1200 mm of effective length. The external heat source was realized by an electrical furnace. The synthesis gas samples were analysed by gas chromatography, using flame equipped with an ionization detection method. The experiments were conducted at 700/800/900 °C of gasification temperatures with 5 g/min of steam flow rate and at 900 °C with 5/7.5/10 g/min of steam flow rate.

Results: It was observed that there was a decrease in char yields and an increase in gas yields when the reactor temperature was increased from 700 to 900 °C. The dry gas yields increased dramatically from 0.41 Nm³/kg of coal at 700 °C to 0.98 Nm³/kg of coal at 900 °C. The higher steam flow rate resulted in an increase in char conversion and syngas yields. The syngas yields increased from 0.98 Nm³/kg of coal at 5 g/min to 1.24 Nm³/kg of coal at 10 g/min of steam within the same gasification experiment conditions. The gasification temperature had a significant effect on the hydrogen composition, while the effect of steam flow rate increased from 5 to 10 g/min was more ambiguous. The hydrogen composition was rather stable during the experiment. The hydrogen yield was increased at the higher gasification temperature. This could be explained by the higher synthesis gas yield at higher gasification temperature.

Conclusions: In this study, the hydrogen yield was improved in both case of higher gasification temperature and higher steam flow rate. The highest hydrogen yield attained at 900 °C of gasification temperature and 10 g/min of steam flow rate. However, the excess steam flow rate has to be taken in consideration in the case of gasification efficiency and energy consumption.

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Keywords: Clean coal technology, coal steam gasification, synthesis gas in coal gasification, hydrogen production.

Challenges in Teaching Medical Communication by Simulations at the Time of the Coronavirus Pandemic

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Introduction: The physician's language activity in the process of healing manifests in informing and educating the patient, as well as in communicating attitudes including empathy and trust. After evaluating the present situation, it seems certain that a significant portion of the medical communication may necessarily be conducted by phone or online.

Objective: Relying on the experiences gained in the process of online training, we wish to identify the factors most suitable for being developed through simulation, which, we assume, may best increase the efficacy of physician – patient communication conducted on this platform. We also aim to present and compare on-site and on-line simulation exercises.

Method: Educational and training at the Faculty of General Medicine at Pécs University has been conducted on-line. The Department of Languages and Medical Communication made a decision to use a Teams platform. Students were given the opportunity to participate in the simulation exercises one by one supported by a communication specialist, a physician and a medical actor-patient. The task in each case was to solve a situation typical during the time of the coronavirus pandemic. The exercises and the students' feedbacks on them were recorded, evaluated and compared with experiences of the on-site training.

Results: The students found the on-line exercises excellent, with special regard to the selection and timeliness of the situations. In the expert opinion of the participating physicians 90 percent of the students coped with the new situations and cases they had to face due to the pandemic. In terms of language use the students' performance was similar to that in the on-site education, only few students experienced difficulties in accommodating themselves to the on-line format.

Conclusions: Based on the students' feedback and the recordings we can conclude that – taking all the advantages and drawbacks into account - the simulation exercises were successful in the online format since they could ensure the development of students' communicative competences by means of opportunities provided by the tools of telemedicine.

Keywords: physician – patient communication, simulated medical interactions, coronavirus pandemic, distance learning, online platform

Investigation of protein aggregation in breast cancer samples

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Cancer is one of the leading causes of death worldwide. Amongst women the most common type of cancer is breast cancer, according to the WHO there were 2,300,000 new cases and 685,000 deaths in 2020 [1]. Early diagnosis and finding the best therapeutic approach, is key in curing the disease. One of the most widespread method is the use of neoadjuvant chemotherapy, where the patient gets a unique combination of drugs and depending on the response the tumour may disappear, or it can be surgically removed [2]. Those patients, who do not respond to the therapy, lose valuable time and this can hinder their chance of survival. Therefore, the improvement of diagnostic methods to predict the patient's response to therapy is crucial. Stress granules, P-bodies and other RNP complexes can play a major role in the stress response induced by these therapies [3][4]. The newly discovered NOT1-containing assemblysomes are another of these complexes, with possible importance in the response to chemotherapy [5].

Results: With the use of immunofluorescent microscopy, we have investigated the aggregation of RPB1, the largest subunit of RNAPII in biopsy samples taken from patients before the administration of neoadjuvant chemotherapy. The patients that later showed no regression in tumor size had accumulated numerous cytoplasmic RPB1 aggregated foci in their biopsy samples, compared to those who responded to the therapy with either partial or total regression of the tumor.

Conclusions: Cells with altered translation can buffer gene expression in such a way, that blocking of RNA transcription by therapeutic agents has little to no effect on their survival. RPB1 frequently aggregates during translation therefore serves as a good indicator of the chaperoning capabilities and translational accuracy of the cells. RPB1 appears to be a marker for predicting the response to chemotherapy, where the drugs used are blocking transcription.

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Keywords: cancer, chemoresistance, protein aggregation, diagnostics

Characterization of *Streptococcus mutans* host-microbes interaction

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Streptococcus mutans is a gram positive facultative anaerobic bacterium, naturally inhabitant of the human oral cavity, one of the principle etiological factors of dental caries, and occasionally with infective endocarditis. *S. mutans* can colonize the oral cavity through mechanism of adhesion to a solid surface, exopolysaccharide synthesis, acidogenicity and aciduricity to form dental plaque, also called biofilm causes of dental caries. Biofilm development is regulated by complex crosstalk between the host and pathogens, in which chemical communication among the microbial cells referred to as quorum sensing (QS) also play a pivotal role.

The major aims of this study were to develop *in vitro* model systems to describe host-microbes interaction by applying traditional microbiology methods and state of the arts molecular biology techniques, such as gene expression profiling of selected microbial genes involved in disease progression, as well as host defence related genes respectively.

This study was initiated to examine planktonic growth in Brain heart infusion (BHI) broth (Sigma-Aldrich), based on absorbance at 610 nm by UV/Vis spectrophotometry and cell-community attached to solid surface was evaluated by crystal violet staining, recorded at 595 nm by Multiskan Ex plate reader (Thermo Scientific). To determine *S. mutans* antibiotic susceptibility against vancomycin and erythromycin were performed by broth microdilution method, and biofilms eradication were followed crystal violet staining. RNA was extracted by using RNA MiniPrep kit (Zymo Research) according to the manufacturer's recommendation and quantified by Agilent 2100 Bioanalyzer (Agilent) based on High Sensitivity RNA Assay. cDNA synthesis was carried out by RevertAid First Strand Synthesis Kit (Thermo Scientific) and expression study was performed by using StepOne qRT-PCR (Applied Biosystems), based on gene specific primers and SYBR green labelling.

According to the bacterial growth curves of *S. mutans* characteristics time points were selected (8, 12 and 24 hrs after post-inoculation). Not surprisingly we found that, biofilm formation depending on the carbon source availability, consequently sucrose free medium does not promote biofilm formation. The antibiotics susceptibility test (Minimal Inhibitory Concentration, MIC) revealed vancomycin resistance, however *S. mutans* shows sensitive against erythromycin at 0.015 µg/ml concentration. Process of RNA extraction revealed high RNA integrity number (RIN>6) for the successful cDNA synthesis. Expression profiles of quorum sensing related genes (ComC, D and E) were determined in different time point of planktonic growth as well as in immatures and matured biofilms. Optimization of human tissue culture (TR146 human buccal cell line) conditions are in progress.

We hope that the presented data contributes to deepening the knowledge of host-microbes interaction.

Senior age group and smart furniture

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Retired people have a lot of free time, many of them with more affluent pensions and savings. There is morale that always defines the X+ generation, which they do not give in to; Family first. If you ask a person of an older age group what influences your purchasing decision-making you're most likely thinking about lasting the product, since you'll want to pass it on to your children or grandchildren someday. Most of this generation chooses to buy furniture when their health requires it. Do they retain the concept of "beauty" when shopping? They strive for the "best" solution they perceived as children (solid wood furniture), or would you like to move on to today's beautifully designed pieces of furniture? How deduced can they be in an area unknown to them, and given how and from where they receive good advice and help?

There are furniture manufacturers that have tried to catch age groups on the basic scheme, such as pensioners. It has had already been revealed that the retired generation is most likely to buy new pieces of furniture if their health condition requires it. They are forced to open up to more practical furniture and let go of the habit. A strong emphasis was placed on designs so as not to require unnecessary efforts to make use of the remodeling and practicality. Tools such as smart furniture are now available that older people are happy to buy and do the compulsory chores for themselves.

Smart furniture is the right one for everyone. They offer great solutions to make smaller areas more homely, innovative, creative, modern, and perhaps, which is their most positive feature, that they are affordable.

As older generations grow, so do their technological knowledge. By 2035, people under the age of 40 will be close to retirement age. These people include early adopters of the Internet, who will have been using the Internet for decades when they retire. Even people who are now in their 40s and who are not keen on using the Internet have almost 20 years to infiltrate e-commerce.

Keywords: older people, elderly, smart furniture, marketing

Sex-dependent effects of high-fat diet and HSPB1 overexpression in a mouse model of hyperlipidemia

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Introduction: The heat shock proteins (HSPs) are among the most conserved molecules in phylogeny. They are up-regulated in response to various adverse changes of the environmental conditions inducing cellular stress. Their most important function is to maintain the normal cellular protein homeostasis however, previous studies described, that HSPs are involved in several processes related to different diseases such as cardiovascular anomalies or diabetes.

Aim: We aimed to study the potential protective effects of HSPB1 in a mouse model of hyperlipidemia.

Methods: We used hyperlipidemic, high-fat diet-fed ApoB-100-overexpressing mouse strain (APOB/HFD) as a disease model, which was crossed with HSPB1-overexpressing mice (HSP/APOB/HFD) to study the effects of HSPB1. The control group was wild-type mice on a normal diet (WT/ND). After 7 months of diet, samples were collected to measure triglyceride (TG), HDL-, LDL- and total cholesterol levels. Expressions levels of different metabolism-related proteins were studied by RT-PCR, while morphological changes were assessed by histology in the liver.

Results: The HFD significantly increased the bodyweight (BW) of the animals, however, the overexpression of HSPB1 caused a further increase in the BW of APOB/HFD females. The serum TG and LDL cholesterol levels were significantly higher in the hyperlipidemic male groups compared to females. While TG levels were not influenced by HSPB1 overexpression, the serum LDL level significantly decreased in the male HSP/APOB/HFD group compared to APOB/HFD males. In contrast, HSP/APOB/HFD females showed a significantly higher LDL level compared to APOB/HFD females. Serum HDL levels were elevated only in hyperlipidemic females but remained unchanged in response to HSPB1 overexpression. We detected significantly higher liver weights in hyperlipidemic males compared to the healthy ones suggesting a hepatic lipid accumulation, which was confirmed by histology. We also found that the expression level of leptin receptor was significantly higher in the hyperlipidemic females compared to the corresponding male groups.

Conclusions: Our results confirm that male APOB-100 transgenic animals show more severe metabolic disturbances after 7 months of HFD compared to females. Moreover, we demonstrated that HSPB1 overexpression influences serum LDL- and HDL-cholesterol levels and weight gain, suggesting that this HSP may be involved in the regulation of HFD-induced processes, however in a sex-dependent manner.

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Keywords: HSPB1, APOB-100, hyperlipidemia, high-fat diet, transgenic mouse-model

Experimental investigation of syngas production using steam gasification of Refuse Derived Fuel char

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Landfilling considered to be the least preferred waste management option. Unfortunately, in Hungary landfilling is still the most common practice in municipal solid waste (MSW) management [1]. Even in developed countries with high level selective waste collection systems long-term non-recyclable residual municipal solid waste (RMSW) generation is expected [2]. To minimize the landfilling rate energy recovery should be applied to the non-recyclable wastes. As alternatives for energy recovery pyrolysis and gasification provide an opportunity to reduce the volume of generated RMSW and produce more valuable products (e.g. syngas, activated carbon) as well [3,4]. Refuse Derived Fuel (RDF) production from MSW allows the separation of the recyclable components from the mixed waste stream, that is why the energy recovery from RDF is preferable over the utilization of unsorted MSW according to the waste management hierarchy. Moreover, RDF has lower moisture content and higher heating value than mixed MSW. The focus of this work was to investigate the gasification characteristics of RDF-derived pyrolysis char. The RDF samples are originated from a Hungarian mechanical-physical waste processing plant. The pyrolysis char samples were produced in a laboratory scale system at 600 °C with a heating rate of 10 °/min. The char samples were gasified with steam as a gasification agent, with 10 g/h mass flow at 900 °C. We examined the quality and quantity of the products and residues as well. The specific gas production was 0.2 m³/kg in the pyrolysis period and 2.3 m³/kg during gasification. On dry basis 45.2 wt% of the initial pyrolysis char became solid residue. The overall H₂ and CO content of the syngas was 80.3 vol% and the H₂/CO ratio of the produced synthesis gas exceeded 2. The LHV of the produced gas reached 9.8 MJ/m³.

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Keywords: pyrolysis, gasification, char, syngas, RDF

Hungarians' Preferred Government Thirty Years After Democratic Transition

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Although there has long been empirical evidence that most Hungarians are particularly dissatisfied with and distrustful of the democratic institutions, very little is known about what expectations these opinions are based on. What kind of institutions should replace the existing ones according to the Hungarian people? What values shall the political institutions pursue? And, not least, is there any consensus on these issues within the society? We believe sufficient time has now passed since the regime change to discuss these questions on their merits. The scope of this contribution is, however, narrower than the whole spectrum of the political institutions. It focuses only on one institution: the supreme element of executive power.

The aim here is to present a picture of Hungarians' preferred government thirty years after the democratic transition within the frame of the theories of political culture and political values. The empirical background of the analysis presented is a representative survey (N=2000) conducted in the winter of 2020, in order to reveal the political value and identity patterns of the Hungarian society (*TK-01014677 Values, identities*). Consequently, the database provides us a unique opportunity to learn not only about the perceptions of ideal governance, but also about their social background and the correlations between government-related requirements and political value profiles.

Results: Descriptive statistics suggest that the Hungarian society's perception of ideal governance is rather ambiguous: there is a relatively high agreement with all types of government listed. The differences in ratios, however, show that people prefer slightly more a government respecting the law and the national traditions than a progressive government for whom these principles worth less. The choice between governments following different justice ideologies seems to be the most difficult question for respondents. Both meritocracy and social fairness enjoy broad public support, but the balance seems to tip slightly in favour of a government giving priority to the former.

Applying Principal Component Analysis (PCA), three latent dimensions can be identified in public thinking: (1) *Meritocratic and at the same time socially sensitive government*; (2) *Progressive and efficient government*; and (3) *Strong-armed government*. People representing the first view tend to be rather conservative, moderate, materialist and citizens living in rural areas. Conversely, people with the second view prove to be rather liberal, radical and postmaterialist. Those who favour a strong-armed, or even violent government, are strongly committed to order and stability. Similarly to the first group, they seem to be conservative and materialist, but they are rather radical and located in larger cities and the capital.

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Keywords: political culture, ideal governance, political values

Examination of new ion exchange membranes in bioelectrochemical system and other various electrochemical methods

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Bioelectrochemical systems (BES) are capable of treating almost any kind of wastewaters for example: liquid streams of various bioprocesses. One particular part of these kinds of systems is the membrane which is essential for the system to work. Thus it requires further investigation and research to obtain more efficient apparatus. In this study, various cation and anion exchange membranes were tested in microbial fuel cells (MFC). To get information about the behavior of the MFC installed with different membranes long term experiments (3 months) were carried out and the systems were characterized by electrochemical measurements such as linear sweep voltammetry (LSV), cyclic voltammetry (CV) and EIS. The four kinds of (anion and cation exchange) membranes led to columbic efficiencies between 15 and 30%. The MFCs could produce up to 0.48 V maximum potential (with 400 Ohm external resistor) and 4,25 mA*m⁻² current density.

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Keywords: bioelectrochemical system, microbial fuel cell, membrane, electrochemical measurement, power production

Healthcare characteristics of people with autism spectrum disorder

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Autism spectrum disorder is a pervasive neurodevelopmental disorder [1]. Symptoms are difficulties in reciprocal communication, social interactions and restricted stereotype and repetitive interests, activities and behaviors.[2] The prevalence is estimated at least 1,5% worldwide.[1] Biological treatments do not exist, despite of this, there are some assistive methods to improve skills.[3]

Objectives: Currently, there is no unified assistance system in Hungary to support the understanding of people with autism during healthcare. The research aimed to examine the attitudes, knowledge of medical staff, and healthcare characteristics, conditions at primary care, and specialist care.

Methods: Quantitative cross-sectional research was conducted between September 4, 2020, and February 28, 2021, by targeted sampling. Questionnaire was completed online by health care professionals (n=100). The methods were descriptive statistical analysis, Chi-square test, Fisher's test, Pearson's correlation, linear regression, Kruskal-Wallis test, Dunn's test and ANOVA were used at probability level of 95%. The evaluation of data happened by the use of SPSS version 25.0 software.

Results: 53% of health care workers had good/adequate knowledge, their average level of competence was indifferent (3.87/7). Those with 15-29 years of work experience performed higher rate at knowledge level of at least 82% (p<0.001). In active inpatient setting, the care of autistic individuals required significant extra time (p=0.004). There were significant relationship (p<0.001) and a positive moderate correlation between the degree of excess difficulty, physical examination (r=0.628), non-invasive intervention (r=0.651) and invasive intervention (r=0.535).

Conclusions: The research aimed to assess the Hungarian conditions as a pilot study and compare the results with similar studies. Despite of significant results, the generalization of the population is not possible due to the low number of answers. In-depth examination of the topic could bring us closer to the reforms of the care system, the increase of the level of competence of the professionals.

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Keywords: autism, healthcare, workers, needs, competencies

European Investigation Order – Lessons Learned from Hungarian Practice

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The European Investigation Order (from hereinafter referred to as: EIO) is a judicial decision issued by a judge or a prosecutor competent in the underlying criminal procedure. The EIO is an EU legal institution of procedural nature based on the principle of mutual recognition. Its aim is to enhance the cooperation of competent judicial authorities in the phase of investigation by providing a speedy and automatic procedure of recognising and executing decisions regarding the gathering of evidence abroad.

The EIO is one of the legal instruments underpinning the operational cooperation in criminal matters between Member States in the EU. As such, it is applied on a day-to-day basis resulting in an abundance of cases which can be researched in order to better understand the practice of the instrument. However, with its widespread use, it also brought forward important questions regarding the cross-border gathering of evidence and the protection of fundamental rights of individuals submitted to the investigative measures issued in EIOs.

The underlying research analyses Hungarian criminal cases in order to establish the place of the EIO in the framework of operational cooperation and to assess to what extent evidence gathered abroad in the framework of the EIO is admissible in national criminal procedures. In this context, the protection of fundamental rights must also be taken note of. The Professional Network of EU Law operating under the National Judicial Office provided several dozens of opinions on the application of the EIO directive. A few of these opinions concern the admissibility of evidence gathered abroad in the context of the protection of fundamental rights.

Results: The research is currently carried out. The data gathered so far indicates that the EIO is frequently applied in simple cases more than in cases requiring lengthy cooperation of competent authorities in order to investigate complex crimes and criminal organisations. However, upon its execution, the EIO has the possibility to discover complex criminal networks thus giving rise to other legal instruments designed to aid criminal cooperation in the EU. Regarding the other two important issues brought up in the research, the admissibility of evidence gathered in the framework of EIO is seldom questioned. However, in cases where the gathering of evidence is carried out in a manner violating fundamental rights, the evidence is deemed inadmissible.

Conclusions: In conclusion, the EIO is a novelty instrument in the operational cooperation of Member States. It finally managed to expand the application of the principle of mutual recognition in the phase of criminal investigation. It provides greater efficiency of cooperation than the traditional system of mutual legal assistance. In addition, so far, issues that have risen seems to pose little problems, so the directive seems to serve the admissibility of evidence and the protection of fundamental rights as well.

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Keywords: European criminal law, European Investigation Order, Hungarian, case-law analysis

Changes in number of practising midwives in European healthcare systems

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Background: Ensuring the supply of healthcare professionals is an important health policy issue nowadays.

Aim: Ensuring the supply of healthcare professionals is an important health policy issue nowadays.

Methods: Indicators analysed regarding numbers of practising midwives and total hospital beds were derived from the 'OECD Health Statistics 2021' online database, for the period 2000-2018. 24 European OECD countries were selected into our study. They were grouped according to type of healthcare system (Bismarckian-type, solidarity-based health insurance system or Beveridge-type national health system) and geographical location. Data were subsequently compared by parametric and nonparametric tests, focusing especially, on years 2000, 2010 and 2018.

Results: The average number of practising midwives per 100,000 population increased from 29.9 to 32.7 (+ 9%) in Bismarck-type countries and from 37.4 to 44.8 (+ 20%) in Beveridge-type countries between 2000 and 2018. During the same period, the average number of practising midwives per 100,000 population increased from 28.7 to 40.7 (+ 42%) in Western European countries, and decreased from 39.8 to 28.2 (- 29%) in Eastern European countries. Also, the average number of practising midwives per 100 hospital beds increased from 3.7 to 5.9 (+ 62%) in Bismarck-type countries and from 8.8 to 16.6 (+ 89%) in Beveridge-type countries. In geographical context, between 2000 and 2018, the average number of practising midwives per 100 hospital beds increased from 6.1 to 11.7 (+ 91%) in Western European countries and from 4.5 to 4.9 (+ 9%) in Eastern European countries. We obtained significant result in the average number of practising midwives per 100 hospital beds in the cross-sectional year 2018 ($p=0.035$) in geographical aspect.

Conclusions: We found that the average number of practising midwives per 100,000 population increased from 32.4 to 37.0 (+ 14%) and from 5.6 to 9.7 (+ 72%) per 100 hospital beds in the European OECD countries examined.

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Keywords: midwives, healthcare professionals, Bismarck, Beveridge, Eastern Europe, Western Europe

Epidemiological disease burden of hip osteoarthritis in Hungary

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Introduction: Osteoarthritis is a common degenerative disease that develops in many people with age. Any joint can be affected, but it most commonly develops in weight-bearing joints, including the hip. The estimated prevalence is nearly 1.5% of the total population and 15-25% of the population over 65 years. Hip osteoarthritis is a major burden for both the healthcare system and the individual.

Aim: The aim of our study was to examine the epidemiological disease burden of hip osteoarthritis based on the NHIFA data for 2018.

Methods: Data for the study were derived from the financial database of the Hungarian National Health Insurance Fund Administration (NHIFA), for the year 2018. Data assessed included annual patient numbers, case numbers and prevalence of care utilisation per 100,000 population according to sex and age groups. In our study, we have included the following health insurance treatment categories: in- and outpatient care, general practice care, home care, medical imaging, laboratory diagnostics, pharmaceuticals and medical aids. Patients with hip osteoarthritis were identified with the M16 code of the International Classification of Diseases 10th revision.

Results: In total, 607,252 patients were treated for hip osteoarthritis according to NHIFA data in all health insurance treatment categories. The highest number of patients were found in outpatient care (69,311 men, 148,375 women, in total 217,686 patients). The second largest number of patients were in general practice care (63,551 men, 138,030 women, in total 201,581 patients), followed by pharmaceuticals (29,071 men, 68,618 women, in total 97,689 patients). Prevalence was highest in outpatient care. The prevalence per 100 000 was 1,483 patients for men and 2,905 patients for women, for a total of 2,226 patients, according to the number of patients in outpatient care. Regarding sex, in outpatient care 31.8 % were men, 68.2 % were women.

Conclusions: Prevalence of the disease was 1.96-times higher among women than among men and increased significantly with age. The increase in prevalence is mainly due to increased physical workload, obesity and ageing society.

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Keywords: hip osteoarthritis, epidemiological disease burden, outpatient care, NHIFA, Hungary

Poszter szekció II.

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Poster session II.

Genome-wide localization of the product of *Histone H4 replacement (H4r)* gene of *Drosophila melanogaster* indicates its involvement in transcriptional memory

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Histone variants are generally different from their canonical counterparts in their gene copy number, structure and expression, fulfilling tissue or differentiation specific functions. The *Histone H4 replacement (H4r)* gene in *Drosophila melanogaster* is exceptional among histone variants: although the polyadenylated mRNA of this single-copy gene is expressed replication-independently, similarly to other histone variants, the amino acid sequence of its protein product is identical to that of the canonical H4 [1]. In order to reveal information about the function of this alternative histone we epitope tagged endogenous H4r and studied its expression and localization to chromatin at nucleosomal level.

Results: We found ubiquitous presence of H4r from the pronuclei of fertilized eggs throughout embryonic development. Expression of H4r became cell type-specific and cholinergic neurons showed the highest H4r level. In neurons, H4r was found at promoters of highly or inducibly expressed genes, with a strong co-localization with H3.3. Although the expression of this variant did not change significantly, upon heat stress - similarly to H3.3 - the amount of H4r per nucleosome increases significantly, and inbuilt H4r remains there after recovery as well.

Conclusions: Our data indicates that H4r fulfills variant histone functions, mostly, but not obligatory together with H3.3. The presence of H4r at the promoters of highly or inducibly expressed genes indicates its possible role in transcriptional memory.

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Keywords: histone variants, transcriptional memory

Exocyclic Strain in Olefin Cross-Metathesis: Late-Stage Modification of Prenylated Natural Products

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Prenylated small molecules display a substantial role in the group of bioactive natural products and there is high interest in their development and utilization in modern medicine. The prenyl functionality often increases the bioactivity of their backbone non-prenylated scaffolds.[1] Still, high lipophilicity of the prenyl moiety usually causes undesired pharmacokinetic and pharmacodynamic properties as lowered absorption or higher metabolism.[2] Due to this Janus-face property of the lipophile moiety a fine-tuning methodology is desired to modulate the favourable and less favoured effects carried by the prenyl-group.

Results: Our work focuses on an appropriate late-stage modification of prenylated natural products into their more polar variants via formal heteroatom insertion between the two terminal methyl-groups of the prenyl moiety by olefin cross metathesis. However, the metathesis between as highly substituted olefins as a prenyl derivative and a methylene or alkylidene heterocycle usually unsuccessful, the strain delivered by the four-membered heterocycles as oxetane or azetidines let us to perform the desired transformation at very mild conditions with reasonably low reagent excess and catalyst load.

Conclusions: By the introduction of four-membered 3-alkylidene heterocycles the lipophilicity of the prenylated molecules could be modulated without the fundamental change in the size, structure or reactivity of the parent scaffolds. Furthermore, ruthenium catalysed cross-metathesis allowed us to perform the desired modification even on a complex and highly functionalised molecules as Novobiocin or Cycloartenol.

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Keywords: late-stage modification, cross-metathesis, oxetane, azetidine, prenyl

Utilizing Artificial Intelligence to reduce dispensing errors in the modern clinical pharmacy practice: Overview of importance, challenges, and opportunities

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Background: “Artificial Intelligence” or “AI” involves using computer systems to perform tasks that would typically require human cognition, such as perception, interpretation, reasoning, and problem-solving. AI has the potential to “augment human intelligence and improve decision making and operational processes” if used properly and effectively. [1] Medication errors are preventable errors that could cause adverse drug events and occur in the process of ordering, dispensing, or administering a medication. A survey of drug dispensing errors in Hungarian hospital wards demonstrated an error rate of 14.1% for dispensed drugs. [2] A UK study has found incorrect drug, incorrect dosage form, incorrect strength, missing or added dose account for 54% of all medication errors during the study period. [3] Automation or technology assisted dispensing could potentially eliminate these types of errors. [4]

Methods: Literature review was performed to survey application of drug image recognition technology in real-world conditions, such as hospital wards. We have performed search queries on PubMed and Google Scholar with several keyword combinations, including Artificial Intelligence, Automation, Clinic, Pharmacy and Hospital or their abbreviation and synonyms.

Discussion: Increase in the processing speed and power of chipsets and development of AI-specific chips capable of performing computations more efficiently has made integration of AI possible in a wide range of devices and applications. This powerful technology has the potential to reduce dispensing errors, by programming it to detect dosage forms and medications in a healthcare facility. Although still an emerging trend, interest in this area has seen exponential growth in recent years because of the advancement of underlying technologies. Evaluation of select publications on AI-assisted pill recognition indicate they had limited success, with incoherent results which in many cases lack real world evidence and are based on small sample size. A study of a pill recognition system using a deep convolutional neural network revealed that background colors, lighting conditions, and exposure values in real-world conditions affect the performance of the image recognition model and the accuracy of drug recognition was not very high overall. [5] A pill identification system called MedSnap uses an adaptive color correction algorithm to overcome some of these limitations but it requires a controlled surface to improve its pill recognition rate.

Conclusions: Current accuracy of AI-enhanced point-of-care tools to reduce medication/ dispensing errors should be evaluated before such systems could be deployed in a healthcare setting. Good Clinical Practice procedures need to be established to enable healthcare workers to take advantage of these new technologies in a proper and effective manner.

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Keywords: pill recognition, medication errors, artificial intelligence

Terahertz pump transmission measurements in lithium niobate

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Terahertz waves fall between microwaves and infrared in the electromagnetic frequency spectrum. precise and accurate measurements of the terahertz electric field is very important to study the optical properties of the material in the THz radiation regime and THz radiation dynamics. The coherent generation and detection of an ultrashort THz pulse can be applied for a highly versatile spectroscopy technique. Where, the observed signal's frequency-resolved amplitude and phase are explicitly retrieved without any model-based assumptions about the signal. The right retrieval of the optical phase of the THz wave is critical for extracting dielectric properties (index of refraction and absorption coefficient) from THz-TDS measurements. In the same regard, LiNbO₃ crystals are growing at an incredible rate for multiple nonlinear optical applications, have been encouraged until now for further studies. In order to achieve the self-phase modulation nonlinear optical effect we experimentally investigate the nonlinear terahertz spectroscopy measurements, we employed the terahertz pump transmission and terahertz pump-terahertz probe measurements at different THz field strength as well as at cryocooled and room temperature using stoichiometric lithium niobate crystal. This system is pumped by a cryogenically cooled Yb:CaF₂ femtosecond pump laser with central wavelength 1030 nm, pulse energy 6 mJ, repetition rate 1 kHz and pulse duration 200 fs. Transmission spectroscopy method usually requires measurement of waveforms. The pulse of electromagnetic radiation passes through a sample and gets its time profile changed compared to the one of the reference pulse.

Results: According to the findings data which can be provide a comparison between the measurements for the three different Terahertz field strength from THz waveform and its corresponding spectrum generated and detected from reference and sample, It has been found that, the spectral transmission and the refractive indices at lower field are not the same as in highest field as well as at cryocooled and room temperature.

Conclusions: It can be concluded that, the preliminarily results were obtained give the support to indicate possible terahertz field strength dependent refractive index of stoichiometric lithium niobate crystals in the terahertz range, therefore, it can be presumed to achieve self phase modulation nonlinear optical effect. The resulting data still in progress in the necessity to re-optimize the measurements.

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Keywords: Keywords: Lithium niobate, Terahertz time domain spectroscopy, Self phase modulation.

Effect of clinically used PARP inhibitor olaparib on epithelial barrier integrity *in vitro*

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Background: Oxidative stress-induced epithelial barrier dysfunction plays a key role in the pathogenesis of inflammatory bowel disease (IBD) [1]. Oxidative damage leads to the over-activation of poly(ADP-ribose) polymerase (PARP) enzyme, which contributes to the loss of intestinal epithelial cells due to energy depletion and mitochondrial dysfunction [2]. In this project, we examined the effect of a clinically approved and available potent PARP inhibitor olaparib on epithelial barrier integrity and mitochondrial failure.

Methods: Caco-2 colon epithelial cell monolayer was used as an *in vitro* model of the experimental intestinal epithelial barrier and we induced the barrier disruption with a chemical colitogen dextran sulfate sodium (DSS). The monolayers were treated with different concentrations of DSS (1-5%) individually or combined with olaparib (10 µM) as a pretreatment, 30 min before DSS. Cell viability was measured with two methods: MTS assay and a cell electric impedance sensing system (xCELLigence). To assess mitochondrial dysfunction, oxygen consumption rate (OCR) and extracellular acidification rate (ECAR) were measured by Seahorse XFp Analyzer.

Results: Using the MTS assay, DSS caused a dose-dependent decrease in cell viability and olaparib showed a protective effect. Despite the DSS-induced increased cell death, we could not detect any morphological changes in the monolayer. The latter result was approved by the impedance-based method, where DSS did not have any effect on the barrier integrity and cell viability. To clarify these contradictory results, we examined the mitochondrial function, but DSS did not show any effect on the OCR and ECAR values compared to control group.

Conclusions: Based on our result, 24 hours DSS treatment had no effect on the viability of Caco-2 intestinal epithelial cells. We proved that the reduced MTS reduction caused by DSS treatment was not the result of the mitochondrial effect. These results demonstrate that the reliability of MTS assay in DSS treatment is questionable and further examinations need to clarify the molecular background of our results.

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Keywords: IBD, olaparib, DSS, MTS assay, mitochondrial failure

The Effect of Ascorbic Acid on Liquid Egg Products

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Eggs are considered the magical food that contains most of the micro and macro nutrients needed to support cell growth and replacement. With an amino acid score of 100 egg whites are known to be a good source of high-quality proteins, studies have shown that the net protein utilisation value for egg white proteins, whether it is cooked or uncooked, is higher than that of both whey and soybean proteins [1]. Egg products manufacturing was started in the late 1980s due to increased consumption and demand for stable products with diverse applications. Food manufacturers used dry egg products because it's easy to handle and relatively cheap [2]. Ascorbic Acid (vitamin C) is well known for its antioxidant properties and the ability to increase iron absorption. Fortifying food with ascorbic acid can increase antioxidant and antiinflammatory properties. The aim of this study is to determine the effect of fortifying 4 different liquid egg products with different dosage of ascorbic acid on the product's physical and chemical properties. Ascorbic acid was added to 3 samples of 200 g of weight of 4 different products which are: liquid whole eggs (LWE), liquid whole egg with salt (LWES), liquid egg white (LEW), and liquid egg yolk (LEY). 3 different concentrations were added to three samples of all products with the following dosage 1% 2% 3% respectively in comparison to a blank sample of the same product, then dry content, pH, Color change, and viscosity was measured.

Results: pH reading for all samples decreased with the increase of ascorbic acid concentrations, lightness increased with the increase of ascorbic acid concentrations respectively in all products but in LEW the lightness decreased. Viscosity was affected significantly with the increase of ascorbic acid concentration.

Conclusions: Fortifying egg products with vitamin C can affect the pH, color, and viscosity in all four liquid egg products. The importance of this research underlines the fact that a new egg product: fortified with Vitamin C with a better nutritional value and functional properties can be created.

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Keywords: Liquid Egg products, Vitamin C, Liquid whole Eggs, Liquid Egg white, Liquid Egg Yolk

International sheep meat consumption

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Meat is an essential component of human diets in many populations, providing high-quality nutrients and essential micronutrients, including iron, zinc, and B vitamins. Sheep give rise to four major products: meat, wool, milk, and skins. In many parts of the world, particularly temperate regions, meat is the major product and the importance of meat production is increasing worldwide. Sheep meat is sourced from a large variety of production systems that can determine muscle quality, meat composition, and nutritional characteristics – being rich in several minerals, vitamins and essential polyunsaturated fatty acids (PUFA). Like other ruminants, sheep meat is a good source of n - 3 PUFAs, branched-chain fatty acids (FAs), and PUFA biohydrogenation intermediates, particularly conjugated linolenic acid, CLA, trans-octadecenoic acids, which exhibit potentially beneficial effects on human health [1]. Besides having health effects, FA also plays an important role by enhancing the texture, flavor, and aroma, and subsequently acceptability of meat [2]. One of the problems for the sheep industries is that consumers have different opinions on quality across the world. This means that the production of a consistent, non-seasonal product is extremely difficult. This review article basically focuses on the comparison of international sheep meat consumption and processing technologies.

Conclusions: Sheep processed meat products are not as popular as pork, beef, or poultry and are generally considered not as important, they have a very important role in meat consumption around the world. Consumption of sheep meat is influenced by cultural factors and will be increasing as populations and incomes grow.

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Keywords: sheep meat, consumption, world wide

Környezeti tényezők változásainak hatása baktériumok zsírsavösszetételére

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A teljes celluláris zsírsavtartalom, azaz baktériumprofil, közvetlen és stabil expressziója a sejtgenomnak. A bakteriális zsírsavakat ezáltal gyakran használják baktériumok rendszertani besorolásához, valamint azonosítási célokra. Álláspontunk szerint a baktériumok bioszintézisét a környezeti feltételek változásai befolyásolják, így a baktérium különbözőképpen tud megjeleni eltérő gazdaszervezetekben. A baktériumok szerkezetének változásai segíthetnek feltárni a baktérium patogenitásának eddig ismeretlen kérdéseit. Kutatásunk célja, hogy különböző orvosi és mikrobiológiai szempontból kiemelkedő jelentőséggel bíró baktériumok külső behatások által megváltozott szerkezetét gázkromatográfiás-tömegspektrometriás (GC-MS) módszerrel nyomon kövessük.

Eredmények: Vizsgálatainkat egy gázkromatográfából és egy quadrupole tömegspektrométerből álló GC-MS készüléken végeztük, a mérésekhez egy ionfolyadék állófázisú, 60 m hosszúságú SLB-IL111 gázkromatográfiás oszlopot használtunk. A baktériumok azonosításához egy 26 komponensű bakteriális zsírsav-metil-észter standard keveréket alkalmaztunk. Munkánk során különböző hőmérsékleten (25, 37 és 42 °C) és táptalajon (agar- és véresagar) tenyésztett *Staphylococcus aureus* ATCC 29216 baktérium zsírsavösszetételét vizsgáltuk. A mintavételezést több napon keresztül végeztük. A baktériumokban található zsírsavakat retenciós idejük alapján azonosítottuk, majd a csúcs alatti területek segítségével meghatároztuk százalékos összetételüket.

Következtetések: A vizsgált baktérium képes igen változatos körülmények között életképes maradni, mind eltérő hőmérsékleti, mind tápanyagot érintő viszonyok között. A különböző hőmérsékleten és táptalajon vizsgált baktériumok eltérő zsírsavösszetételt mutatnak. Vizsgálataink során minőségi és mennyiségi eltéréseket is tapasztaltunk a zsírsavprofilokban. Eredményeink tehát alátámasztják, hogy a különböző környezeti tényezők a baktériumok bioszintézisét befolyásolják.

Támogatás: A kutatás az NKFIH K-125275, a PTE-AOK-KA-2017-19 és a PTE-AOK-KA-2019-08 támogatások segítségével jött létre, továbbá az Innovációs és Technológiai Minisztérium ÚNKP-21-3-II kódszámú Új Nemzeti Kiválósági Programjának a Nemzeti Kutatási, Fejlesztési és Innovációs alaphoz finanszírozott szakmai támogatásával készült. Köszönetet mondunk emellett a Richter Gedeon Talentum Alapítványnak a támogatásért.

A kutatásokhoz felhasználandó törzsek a PTE Klinikai Központ, Orvosi Mikrobiológiai és Immunitástani Intézetének mikrobiális telegyűjteményéből származnak.

Kulcsszavak: baktériumprofil, zsírsavak, ionfolyadékok, gázkromatográfia, tömegspektrometria

Shrek is the best cartoon: why we watch it even as adults

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Cartoon viewing has a widespread popularity among both children and adults. Animated fictional stories often portray relatable life situations, however, not everyone enjoys this type of entertainment. The present research aims to investigate the individual differences of subjective liking of cartoons in relation to personality such as cognitive styles (Field Dependence–Independence (FDI) and affective temperament in a sample of Hungarian cartoon viewers. In this study, we assessed the participants' FDI classification with the use of the Leuven Embedded Figures Test and affective temperament with the Affective Neuroscience Personality Scale (ANPS). Then 20 positive and 20 negative valence pictures of cartoons were presented to the participants to rate their likeability. Main results showed that ANPS playfulness has a strong effect in both the general liking of cartoons and the frequency of cartoon watching, while the valence of the pictures has a stronger effect on those with lower FDI score. Our results suggest that the cartoons we like are heavily influenced by affective and cognitive factors.

Keywords: cartoons, fairy tales, field-dependence, field-independence, affective personality

Isolation and structure determination of secondary metabolites from *Buglossoporus quercinus*

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Introduction: *Buglossoporus quercinus* is a poroid macrofungus belonging to the family of Fomitopsidaceae. According to our literature review, there is no available study about this species in terms of its chemical composition and/or biological activity.

Aim: The current study was conducted to examine the chemical profile of fruiting bodies of *B. quercinus*, to isolate the most important secondary metabolites and determine the potential pharmacological activities.

Methods: The freeze-dried *B. quercinus* sporocarps were ground and extracted with methanol on room temperature. The dried extract was dissolved in aqueous methanol, then subjected to solvent-solvent partition using n-hexane, chloroform and ethyl-acetate. The chloroform and n-hexane fractions were then separated in multiple steps by flash chromatography on normal and reversed phases, using n-hexane-acetone and water-methanol eluent systems, respectively. Final purification was performed by reversed phase HPCL using water-methanol or water-acetonitrile as eluent systems. The purification process was monitored by TLC and UHPLC-MS. The structure of compounds was established by extensive spectroscopic analyses, including 1D and 2D NMR and UHPLC-MS/MS techniques.

Results: In-depth chemical analysis led to the isolation of eight fungal metabolites, all belong to the vast group of triterpenes. Among them two constituents are new natural products, while the remaining six are identified for the first time in this species. Our detailed chemical investigation revealed that polyporenic acid A and its ester with malonic, methyl-malonic, and glutaric acids are the characteristic constituents of *B. quercinus* sporocarps.

Conclusions: The current study demonstrated that *B. quercinus* is a valuable source of fungal triterpene steroids. Further biological studies are planned to examine the potential pharmacological properties of the isolated compounds and to highlight the structure-activity relationships.

Keywords: *Buglossoporus quercinus*, steroid, chromatography

Az extracellulárisan keringő miRNS-ek, mint potenciális biomarkerek neuropszichiátriai rendellenességekben: Előzetes tanulmány

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Bevezetés: A neurológiai rendellenességek, például a sclerosis multiplex (SM) vagy az epilepszia (EP) olyan központi idegrendszert érintő elváltozások, amelyek súlyos társadalmi és gazdasági terhet jelentenek a népességre nézve. Az elmúlt évtizedben számos tanulmány foglalkozott e rendellenességek molekuláris hátterével, többek között a mikro-RNS-ek (miRNS) perifériás biomarkerként történő alkalmazásával. Az ilyen vizsgálatok eredményei gyakran kétértelműek, a miRNS-kimutatói módszerek és a különböző kiindulási anyagok széles repertoárja miatt.

Célkitűzés: Kutatásunk során célul tűztük ki egyes miRNS-ek expressziós szintjének vizsgálatát és összevetését egyéb klinikai paraméterekkel sclerosis multiplexben (SM) és epilepsziában (EP) szenvedő humán páciensekben, illetve állatmodellben.

Módszertan: Összesen 52 SM, 71 EP szérum mintát, továbbá kainsav (KA) által indukált TLE egerektől származó vér- és szövetmintákat vizsgáltunk. A szérumból, valamint a szövetekből RNS-t izoláltunk, a specifikus miRNS targetek abszolút kvantifikálására ddPCR rendszert használtunk.

Eredmények: A QX200 Droplet Digital PCR (Bio-Rad) rendszer érzékenysége lehetővé teszi az egyes target miRNS-ek abszolút kvantifikációját. A miR92a.3p és a miR486.5p szignifikáns összefüggést mutatott a cervicalis gerincvelői szakasz totál lézió térfogatával ($t = 2,040$, $p = 0,05$ és $t = 2,384$, $p = 0,023$). Az MRI vizsgálatok során mért metabolit koncentráció (tCr) szignifikáns összefüggést mutatott a miR142.5p-vel. TLE egerek vizsgálatakor 2 miRNS (*miR-146a.5p* és *miR-301a.5p*) expressziós szintjében találtunk különbséget a kainsavval kezelt és a kontroll állatok között.

Következtetések: A különféle neurológiai rendellenességekben szenvedő páciensektől-, valamint a KA-indukált TLE egérmódtól származó vér-és egyéb szövetminták vizsgálati eredményei kecsgettetők, a jövőben mindenképpen szükségesszerű további minták gyűjtése és feldolgozása. Néhány humán megbetegedés esetén már beigazolódott a miRNS-ek biomarkerként történő alkalmazásának relevanciája, azonban a miRNS kutatások során a vizsgálati módszerek sok esetben nem hoznak konstans eredményeket a nehéz reprodukálhatóság miatt. Éppen ezért szükséges egy, a hétköznapi rutin diagnosztikába is beépíthető, megbízható és reprodukálható miRNS vizsgálati módszertan kidolgozása.

Támogatás: A kísérleteket a Nemzeti Agykutatási Program (KTIA_NAP_13-2014-0019 és 2017-1.2.1-NKP -2017-00002), valamint az EFOP-3.6.2-16-2017-00008 „A neuroinflammáció vizsgálata a neurodegeneratív folyamatokban: a molekulától a betegágyig” című projektje támogatta.

Kulcsszavak: neurológiai rendellenességek, epilepszia, sclerosis multiplex, miRNS, ddPCR

Morphological analysis of carbon woven and nonwoven fabric reinforced composite products

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Nowadays, the importance on structural composites is increasing continuously worldwide due to their superior thermo-mechanical performances [1]. In this regard, researchers and manufacturers are trying to explore the new types of reinforcement material, fabrication protocols, and their application feasibilities. However, the reinforcement of fiber materials especially the synthetic category like carbon and glass is not always behaving uniformly, if not fabricated properly. Carbon is a prominent reinforcement materials for long times having superior attentions by the composite community. However, still now, the reinforcement of carbon woven and nonwoven fabrics are not yet studied for laminating together. Therefore, an attempt was taken in this study to explore the fabrication possibilities between the carbon woven and nonwoven material reinforced with the epoxy. The carbon materials (both woven and nonwoven) were donated by Zoltek, Hungary. The carbon woven fabric was plain weave structured material having fabric density 190 g/m², yarn input 2/27 worsted count, thickness 0.43 mm and carbon needle punched nonwoven fabrics had 500 g/m² fabric density, 1.7 dTex fiber Input, and 4.2 mm fabric thickness. Epoxy polymer with curing agents were procured from Liebe Engel, China. The epoxy and curing agents were mixed (1:3 proportion) uniformly through constant stirring before applying over the laminates. There were two composites produced through using epoxy resin. In the first cases, three carbon woven fabrics of 25 × 25 mm² were laminated where the mixed epoxy resins were poured by a spatula and spread uniformly. The laminate was then kept for 24 h at laboratory conditions (25 °C temperature and 65% relative humidity). Similarly, another three-layered carbon woven and nonwoven fabric reinforced composite was produced where a nonwoven fabric was placed at the middle of two woven fabrics. This composite was also cured through following the same protocols with carbon woven fabric reinforced composite.

Results: The morphological studies of the developed products were investigated to examine the fractured surfaces of the materials to confirm about the fiber to matrix interactions. SEM images of the composites were investigated before and after the fractures. It is found that, the surfaces are seemingly uniform and smooth whereas the fractured surfaces are showing fibers are pulled out indicating a strong adherence with epoxy resin on the surfaces. This phenomenon also demonstrates a stronger binding between the carbon fibers and polymer. However, comparatively a weaker adhesion is noticed in case of carbon woven/nonwoven reinforcements.

Conclusions: A successful reinforcement effect is found through the reinforcements of carbon woven and nonwoven materials with epoxy resin. The developed composites also showing a novel potentiality of nonwoven fabrics to be reinforced with woven material in the laminates.

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Keywords: Carbon fiber, Wove/nonwoven fabric, Thermosetting epoxy, Laminated composites, Structural morphology

Holdciklusok és a szülésszámok kapcsolata Magyarországon

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Bevezetés: Irodalmi elemzésekből és korábbi kutatásainkból ismert, hogy szignifikáns kapcsolat mutatható ki az egyes betegségek megjelenése és az időjárást befolyásoló tényezők között.

Célkitűzés: Kutatás célja megvizsgálni, hogy mi jellemzi az átlagnál kevesebb, a több és az átlagos szülésszámú napokat az évszakholdállás-front relációban.

Adatok és módszertan: Az Országos Egészségbiztosítási Pénztár adatbázisából retrospektívadatgyűjtés során 2018-2019 évek szülészeti adatait vizsgáltuk Magyarország valamennyi fekvőbeteg intézetének dokumentumai alapján. A vizsgált 730 napot a szülések száma alapján átlag alatti, átlagos és átlag feletti kategóriába soroltuk. Az adatfeldolgozás során leíró statisztikát és kétmintás t-próbát számoltunk SPSS program segítségével ($p < 0,05$).

Eredmények: Magyarországon naponta átlagosan 248 db bejegyzett szülés történik. Nyáron az utolsó negyed holdállásánál frontmentes időben volt a legtöbb szülés, a legkevesebb szülésszám ősszel volt, amikor újhold és frontmentes idő volt. Évszakos bontásban szezonálisan emelkedtek az esetszámok. Havi bontásban az átlagos napokon január és február hónapokban volt a legmagasabb a születésszám, a legkevesebb eset szeptemberben fordult elő. Téli időszakban szignifikánsabban több szülésszám volt az átlagos napokat nézve a többi évszakhoz képest. A vizsgált minta heti cirkadián ritmust mutat a hétvégéhez képest, hétfőn nagyon megugrik a szülések száma, ami hétvégéhez közelítve csökkenő számokat mutat. A holdfázisok vetületében megállapítható, hogy átlagos napokon telihold idején szignifikánsan több volt a szülések száma ($p < 0,05$). Az átlag feletti és alatti napokat figyelembe véve ott is telihold idején nőttek meg az esetszámok. A legkevesebb esetszám újholdkor volt megfigyelhető. Frontmentes időszakban szignifikánsan több szülés volt, mint fronthatás során ($p < 0,05$).

Következtetések: A globális felmelegedésnek köszönhetően folyamatosan változik bolygónk klímája, ezáltal hazánk időjárási jellemzői is változtak az évek alatt. Jelen kutatásunk kiemelt hangsúlyt fektet az egyes holdciklusokra. Jelen vizsgálatban összefüggés mutatható ki a szülésszámok megjelenése és a teliholdas időszakok között.

Kulcsszavak: szülésszám, holdfázis

The role of Langerhans cells in neuroimmune communication

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Introduction: The immune system is strongly linked to the nervous system within the human organism, to the point that in many diseases they cannot be discussed as separate entities. Specifically, some inflammatory skin diseases such as atopic dermatitis and psoriasis have been reported to be intensified by stress, and, interestingly the skin lesions in these diseases sometimes resolve after nerve injury. The putative cause underlying this empirical observation is that sensory nerves secrete neuropeptides and other mediators that are important members of neuro-immune communication. Neuropeptides play a key role in skin immunity, the inflammation process, and wound healing. Inside the epidermis, the only dedicated resident immune cells under steady-state are the antigen-presenting cells called Langerhans cells (LCs). LCs are anatomically associated with neurons that produce Calcitonin Gene-Related Peptide (CGRP), supporting the hypothesis that neuropeptides possibly play a role in cutaneous inflammation.

Previous reports have shown that CGRP reduces LC antigen-presentation to a Th1 clone while simultaneously, enhancing antigen-presentation for Th2 clones. Cytokine secretion after chicken ovalbumin (cOVA) challenge was shifted towards a Th2 profile, since IL-4 was increased while IFN γ production was decreased. While these results are interesting, they were carried out in mouse models, therefore we decided to investigate the role of neuropeptides on human monocyte-derived LCs.

Aim: In this project, our aim is to characterize the communication between LCs and neurons located in the skin. We wished to map the gene expression of neuropeptide receptors. We also analyzed the effect of relevant neuropeptides in the differentiation of monocyte-derived LCs (moLCs). We next wanted to investigate the neuropeptide effects on T cell proliferation with allogenic T cell coculture with monocyte-derived LCs.

Methods: We utilized RNA sequencing from moLCs samples from five donors and we detected the expression of neuropeptide receptor genes. These results were validated with q-PCR in moLCs. We determined the effect of all neuropeptides on the differentiation of moLCs with flow cytometry.

Results: We found a high expression of CGRP receptor and its coreceptor RAMP1 and also one of the neurotensin receptors (SORT1) and the Brain Natriuretic peptide receptor (NPR1). We discovered that NPR1 activation had significantly increased the differentiation of LCs. BNP doses increase the CD207 and CD1a positive population and also impact the T-cell proliferation with TLR agonists.

Conclusions: Taken together, our data suggest that BNP impacts on moLCs differentiation. BNP as well as influencing their ability to induce T-cell proliferation.

Keywords: Langerhans cells, neuroimmune communicatin, neuropeptides, BNP

Production of itaconic acid by continuous fermentation – bipolar membrane electro dialysis integrated system

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Introduction: Continuous fermentation combined with bipolar membrane electro dialysis (ED-BPM) is a new integrated technology for the production of itaconic acid [1]. Currently, production cost of itaconic acid – a promising platform chemical – is relatively high that hinders its widespread usage [2]. Continuous fermentation systems are suitable for the optimisation the use of raw materials, in which, after selective removal of the product, the residual fermentation broth is recycled into the feed stream. ED-BPM is a product removal method that does not need the use of additives and also regenerates pure alkali solution for fermentation pH control. The feasibility of the continuous fermentation part of the integrated technique was investigated using *Aspergillus terreus* NRRL 1960 microorganism, which is a natural itaconic acid overproducer.

Aim: In this research semi-continuous and continuous fermentation processes were investigated to reveal key parameters for efficient long-term operation. Deacidified broth from ED-BPM was recycled in continuous fermentation without supplementation to investigate its effect on the *Aspergillus terreus* morphology that influences the productivity.

Results: Results show that phosphate is essential in feeding medium in semi-continuous fermentation, providing the renewal of biomass. Maintaining a high sugar concentration only moderately improves itaconic acid productivity while significantly increases cell mass. Insufficient oxygen supply completely prevents itaconic acid formation, thus, it is a key parameter. Itaconic acid concentration in fermentation effluent averaged around 30 g/L, in narrow range. The maximal yield of itaconic acid from glucose was 0,66 mol/mol. The recycling of unsupplemented deacidified broth resulted in divers fungal morphology.

Conclusions: In continuous operation phosphate and carbon source dosing should be optimised. Effective oxygenation technique is key to avoid the inhibition of itaconic acid formation. Results are promising in the nutrient retention using ED-BPM, but it has to be clarified whether the adverse morphological changes in micelia were caused by nutrient deficiencies or by some retained metabolites.

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Keywords: *Aspergillus terreus*, bipolar membrane electro dialysis, continuous fermentation, itaconic acid

A közfoglalkoztatás jogi szabályozásának hatásai

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Témakörök

1. *A foglalkoztatáspolitikai célja és feladatai és elvárásai: A szociális biztonságot az állam aktív munka-erőpiaci eszközökkel tudja hosszú távon megteremteni. A passzív eszközök a biztosításon alapuló ellátotti időre csökkentik a munkahiány következményeit, de nem tudják megakadályozni annak egyéni és társadalmi hatásait.* A kormányzati szakpolitika célja hosszú ideig a közfoglalkoztatási rendszer erősítése volt. A közfoglalkoztatással, mint foglalkoztatáspolitikai eszközzel kívánták tehermentesíteni a szociális ellátórendszert. A programokat működtető közigazgatási szerveknek, önkormányzatoknak, munkaügyi központoknak a feladatok ellátásakor felmerülő sarkalatos problémái a gyakorlatban.

2. *Hazánk jóléti rendszerével szemben támasztott elvárások és a szegénység enyhítésének feladatai a 2008-as válság idejétől napjainkig, a segélyezési rendszer alakulása* Hazánk jóléti rendszerének hiányosságát nem magyarázhatjuk egyszerűen azzal, hogy csökken az államháztartáson belül a jóléti kiadásokra fordítandó összeg. Miközben a segélyek mértéke és reálértéke csökkent, a közfoglalkoztatásra fordított kiadásoké nőtt. A szociális segélyezés helytelenül nevezhető jóléti kiadásnak, mert a szélsőséges élethelyzettől, szegénységtől óv meg. Möt. feladatfinanszírozása és az Sztv. segélyezési feltételrendszere nem akadályozza meg, hogy legyenek ellátatlanok. A szociálpolitika nem vizsgálhatja a szegények érdemességét vagy érdemtelenségét a juttatások nyújtásakor. „Segélyért munkát” végeztetni a legkiszolgáltatottabb és legsebezhetőbb csoportok védelmének teljes hiányát jelenti.

3. *A közfoglalkoztatás fogalmi megközelítése és szerepe a hazai foglalkoztatáspolitikában és szociálpolitikában:* A közfoglalkoztatás az állam piaci szabályozó és irányító mechanizmusára épül. Másodlagos és harmadlagos munkaerőpiacot hoz létre mesterségesen, kényszermegoldás, negatív hatása van a versenyszférára. A kormányzat foglalkoztatáspolitikai és szociálpolitikai választásának a kikövetelt elvárása a helyi munkaerő-piacon megnövelt foglalkoztatás szintje. Célja: szegénységnyhítás, mert a hátrányos helyzetű térségekben egyetlen munkaerő lehetőség és a segélyhez jutás feltétele, munkaerő-piaci integráció, mert foglalkoztatási esély, piaci igényeknek is megfelelő képzésben részesülhet.

4. A szociális biztonsághoz való jog Alaptörvényből levezethető értelmezése, hogy a rászorulóknak számára nincs biztosítva egy megélhetéshez szükséges minimum, amit az Alkotmány még tartalmazott. A szociális biztonsághoz való jog második generációs alapjog, államcél, amelynek garantálása erősen függ a gazdaság teherbíró képességétől. **A mindenkori kormányzat dönt az állami kötelezettségvállalás mértékéről.** A közfoglalkoztatásról szóló törvényi szabályozás kizárásra vonatkozó feltételrendszere sérti az emberi méltósághoz való jogot, tisztességes hatósági eljáráshoz való jogot és jogorvoslathoz való jogot, hátrányos megkülönböztetést eredményez.

5. **A közfoglalkoztatás jogi szabályozásának társadalmi következménye tudatátformálás, önbecsülés hiánya, helytelen jövőkép, továbbá a generációk között „öröklődik” a szegénység és szociális bizonytalanság elfogadása!**

Silicone based transdermal delivery system for diallyl disulfide

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Introduction: One of the main challenges of the expanding field of hydrogen sulfide and polysulfide research is the lack of ideal donor compounds. Concerns are most often raised due to short plasma half-life, poor stability, and inconvenient routes of administration. To address the aforementioned problems, we have developed and investigated a silicone based transdermal delivery system.

Methods: The substance release properties of silicone based model transdermal therapeutic system (TTS) loaded with diallyl disulfide (DADS) and they have two different content of adjuvants was measured in vitro. In vitro testing was performed in two ways. First, we measured in a Franz cell which models the static and vertical subcutaneous drug dissolution. In the second method, patches were examined in a flow-through cellular device that mimics the dissolute drug concentration in the blood. The amount of the released DADS was measured with UV spectrophotometry at 206nm for 6 hours in vitro.

Results: DADS was stable inside the silicone reservoir for more than one week. DADS release from the TTS was sustained during the measurements. In Franz cell we have measured the vertical release of DADS in different patches. In flow-trough cell the effect of the amount of excipient on drug release was examined, as well as the stability of the patches over time.

Conclusions: Our results indicate that the release of DADS from a silicone based TTS is controlled. Further experiments with TTS loaded with various polysulfides and hydrogen sulfide releasing compounds are needed to optimize their potential therapeutic values.

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Keywords: diallyl-disulfide, silicone, transdermal therapeutic system, analgesia, release kinetics

Changing Trends and Attitudes towards Online Assessment

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The presentation aims at eliciting insight into the results of ongoing research regarding evolving trends and attitudes towards online assessment of English and other subjects. The focus pin-points online as one of the most trending forms available during the global pandemic. The study was first initiated in 2019 in which its main target was to reveal the intriguing question of students' and assessors' attitudes towards online assessment. The research questions the attitudes towards the latest trends, possible online task types, their advantages and disadvantages through an in-depth experimental process currently undergoing implementation. Material and methods include surveys, needs and wants analysis and thorough investigations regarding candidates' and assessors' attitudes towards online tests. The examined test tasks include various online tests drafted in both English and Hungarian by student volunteers at the Medical School of the University of Pécs, Hungary.

Results: Over 400 respondents from more than 28 countries participated in the survey, which gives us an international and intercultural insight into how students with different cultural and educational background deal with the evolving online world. The results show the pandemic's impact which brought the slumbering online world of assessing roaring alive, fully operational and now bears phenomenal relevance in today's global education. Undeniably, the results can be used as a perspective in a vast array of contents.

Conclusions: The survey hypothesized the generation of the 21st century expect everything readily available online, however, questions whether they are ready for this challenge are lurking in the background.

Acknowledgements: I am grateful for the professional aid and encouragement of Dr. Vilmos Warta and Jon Marquette.

Keywords: assessment, attitude, online, trends

What are the gains regarding peer involvement in Pharmacy English education? Introductory study of pharmacist student demonstrator activities

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Introduction: The benefits from peer teaching are well documented in reference to higher education. Previous studies conducted at the University of Pécs Medical School included intence focus on Hungarian medical students' English language competence development through peer involvement. [1][2].

Aim: The present pilot study aims to map innovative methodologies regarding peer teaching implementation into Pharmacy English language teaching using a qualitative, exploratory approach. Study participants include first-year pharmacist students enrolled in a foundational Pharmacy English language course. The peer demonstrator is a senior undergraduate in the English Pharmacy Program.

Material and Methods: Student feedback is collected and adjusted to each session providing flexibility while matching educational content. The survey questions focus on student motivation, knowledge and performance development.

Results: Since the study aims to evaluate the outcome of an ongoing course, expected preliminary results will be evaluated following the completion of the 12-week course.

Conclusions: Hopefully, the findings will provide meaningful, relevant and up-to-date information intended for higher institutional educators for course design options and to optimize demonstrator activities in language courses for the participating students and teachers' mutual benefit.

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Keywords: demonstrator, language competence, methodology, peer teaching, Pharmacy English

Dependence of the photoacoustic sensitivity parameter on the heat capacity ratio of the measured gas and on the acoustic properties of the measuring system

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Sensitivity parameter of a gas phase photoacoustic system depends on two factors: on the frequency dependent acoustical properties of the measuring system and on the heat capacity ratio of the measured gas sample. Based on the calibration of the PA system with an analyte buffered in various gas mixtures, a method is developed that unravels and quantifies both of these dependencies. Execution of the method starts with a set of calibration performed by using buffer gases that contain one heavy and one light noble gas (e.g. argon and helium, respectively). By keeping the total concentration of the two noble gas components constant, the heat capacity ratio of the gas mixture remains constant too, while the resonance frequency of the PA cell is changing, therefore from this type of calibration the acoustic frequency dependence of the sensitivity parameter can be deduced. The second part of the proposed method is based on the calibration of the PA system with various gas mixtures that changes both the acoustic frequency of the measuring system and the heat capacity ratio of the gas sample as well. From the results of this second set of calibration the previously determined acoustic frequency dependence can be separated yielding the heat capacity dependence of the sensitivity parameter.

Results: First, in case of constant heat capacity ratio the frequency dependent acoustical properties was determined from 5050 to 6000 Hz by measuring the signal in different gas mixtures that contains H₂S (buffered in CH₄) in various concentrations, while keeping the total concentration of the two noble gas (Ar and He) components constant. Once these acoustic properties are known, the heat capacity ratio dependence can be measured separately. The $\gamma-1$ value was varied from 0,32 to 0,6 by setting different gas mixtures of H₂S buffered in CH₄, He and Ar. The slopes of H₂S calibration lines were evaluated by linear regression and these slopes in the unit of $\mu\text{V}/\text{ppm}$ corresponds to the sensitivity of the PA system.

Conclusions: A novel method was developed that can be used to determine the effect of the two major sources of sensitivity parameter variation, i.e. the frequency dependence of the acoustical properties of the PA system and the variation of the heat capacity ratio of the measured gas with the gas composition, separately.

Keywords: photoacoustics, calibration method

Study of swelling biodegradable crosslinked polymers by NMR

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Nowadays, the focus of polymer research has been on the production of new polymers that are biocompatible and degradable. This change is explained by the growing demand of medicine, pharmacy and the environmental protection. [1] Polyurethane-based polymers are such materials which also have excellent physical and mechanical properties. They are usually made up of three main constituents: diisocyanates, diols, and crosslinking agents. The latter increases the number of crosslinks between the polymer chains, which determines the macroscopic properties of the polymer. [1] Several methods are known for determining crosslink density, the most common is the study of polymer mass in the presence of well-swelling liquids. Liquid phase NMR is a good alternative to this, where the relaxation time (T_2) of the polymer-swelling liquid is measured, which is related to the number of crosslinks. [2] In my work I investigated polyurethane-based crosslinked polymers by special NMR techniques in different swelling liquids (H_2O , $DMSO$). The polymers were prepared by polyaddition reaction of poly (ϵ -caprolactone) diol and 1,6-hexamethylene diisocyanate in the presence of different amounts of crosslinking agent (sucrose). [1]

The swollen polymers were examined by NMR relaxometry and three different mobility relaxation domains were isolated. Based on their mobility as well as their change during swelling, the domains were assigned to different parts of the polymer backbone and to the filling fluid (cross-linked chain, mobile chain, filling fluid). Conclusions on the degree of cross-linking were drawn from a comparison of the domains and a comparison of the relaxation times measured during swelling. In this way, low- field relaxometric measurements were in good agreement with the conventional swelling experiments. Information on the movement of the liquid in the pore structure and the extent of the confining effect of crosslinks was obtained by NMR diffusometry. The size of the compartments in the pore structure was studied by NMR cryoporosimetry in aqueous medium and for some samples the size of the slit-like compartments was successfully determined.

In summary, I optimized low- field NMR spectroscopic methods for the determination of crosslink density in biodegradable polymers, the significance of which is the development of an accurate, non-destructive technique that can be applied in polymer characterisation.

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Keywords: polyurethane, crosslink, NMR, swelling

Examination of the PAC1 receptor colocalization with Ca²⁺-binding proteins and cochlea-efferent markers in the auditory pathway of pituitary adenylate cyclase-activating polypeptide - knock out (PACAP KO) and wild type (WT) mice

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Introduction: The neuroprotective and cytoprotective effects of PACAP are well known. In PACAP KO mice, we showed elevated hearing thresholds along with higher apoptosis rate and increased synthesis of Ca²⁺-binding proteins (parvalbumin, calretinin) of hair cells in the organ of Corti.

Methods: In this present study, we examined the role of PACAP in the auditory pathway of 1.5, 4, and 8-month-old mice. The synthesis of Ca²⁺-binding proteins and of PAC1 receptor were visualized with calretinin-parvalbumin-PAC1 receptor immunostaining in the cochlear nuclei of PACAP KO and WT mice. Choline acetyltransferase (ChAT)-tyrosine hydroxylase (TH)-PAC1 receptor triple immunostaining was performed in the nuclei of the superior olivary complex participating in cochlear efferentation.

Results: PAC1 receptor showed colocalization with parvalbumin and calretinin positive cells in the ventral cochlear nucleus. The number of parvalbumin positive cells significantly increased with the age in both genotype, however, the number of PAC1 receptor containing parvalbumin positive cell had a less pronounced increase. In the dorsal cochlear nucleus we also found a similar, but less pronounced elevation in the KO animals. In young animals, PAC1 receptor was colocalized more with parvalbumin positive cells than with calretinin positive cells in the dorsal cochlear nucleus in both genotypes. In the superior olivary complex, PAC1 receptor was detected in the third of ChAT and TH positive cells. We did not find significant differences between the age groups and the genotypes.

Conclusions: The age-related increase of parvalbumin in the auditory pathway is known. Based on our experiment this elevation is less marked in the cells of the ventral cochlear nucleus which also synthesize PAC1 receptor. Higher PAC1 receptor association with parvalbumin cells in the dorsal cochlear nucleus could show that PACAP does not affect all cells similarly in this nucleus. PAC1 receptor colocalize with ChAT and TH positive neurons - which take part in the efferent innervation of cochlea - in both genotype. Our experiments prove that PACAP plays a role in the auditory system not only in the cochlea, but also in other parts of the auditory pathway.

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Keywords: PACAP, PAC1 receptor, auditory pathway, superior olivary complex, ventral cochlear nucleus, dorsal cochlear nucleus

First experiences with the "What would you do in a similar situation?" questionnaire

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The gender-based violence is – by definition – a sexist act which produces injuries and traumas in a physical/psychological/emotional way [1] and it also might be the consequence of the discrimination of women. According to my previous findings, there are 8 different forms of violence committed specifically against women: (1) financial, (2) occupational, (3) institutional, (4) psychological, (5) verbal, (6) physical, (7) sexual and (8) symbolic. These 8 types of violence have one feature in common: directly or indirectly they can lead to femicide, the act of homicide committed specifically against women [2]. Furthermore, there can be several motives behind the violent acts, such as stereotypes and preconceptions fixated from the youth [3], or evolutionary and biological approaches [2].

According to official statistics, 35% of women suffer from physical or sexual abuse at least once in a lifetime, but the percentage might be higher (70%) because of the lack of realization and denunciation [4]. In my recent research I tried to create a questionnaire which shows the recognition of the different forms of maltreatment and violence in Spanish and Hungarian samples.

Results: The questionnaire called "What would you do in a similar situation?" gave 8 different, violence-related, fictional situations to the participants, whose task was to answer 4 questions: (1) What do you think could have happened?; (2) How Anca /the fictive character/ might have felt?; (3) As a witness, what would you do in a similar situation?; (4) As a witness, how would you feel in a similar situation? According to the results of the pilot study, there were differences in the participants' recognition and behaviour between the demonstrated situations. They tended to feel powerless when being a witness of psychological, verbal or occupational violence, meanwhile giving help was easier when the attendees perceived institutional or symbolic abuse. The financial form of violence was harder to recognize: most of the participants did not suspect the fictive character's partner.

Conclusions: With the identification of different forms of maltreatment and violence in Spanish and Hungarian samples, my results can help develop different methods of future prevention and sensitization programs, targeting the importance of the social discourse about equality between women and men.

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Keywords: violence against women, forms of violence, "What would you do in a similar situation?" questionnaire

Flexible manufacturing processes to support the challenges of the automotive industry in the 21st century

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Slowly leaving the economic crisis behind and then grappling with the technologies of the electric trend, the automotive industry once again faced major challenges with the emergence of pandemic COVID-19 and, in parallel with the huge shortage of semiconductors in our already rapidly changing world. All these, together with quality problems, recalls, stricter environmental laws, regulations, Brexit, new technologies, electric vehicles, labour shortages, and many other factors are hampering the automotive industry.

How can any flexibility still be maintained in the supply chain under such factors? The current circumstances present several challenges for all automotive operators, from manufacturing companies to logistics to sub-suppliers at the end of the chain.

Adaptivity plays a huge role during this period, as car factories must react very quickly and resiliently to the situation to remain on the market. In the face of continuous external influences, they must adapt to the new post-pandemic situation while maintaining the old systems. During the research, we examine this resilient adaptation and its origin.

This turbulent business environment requires the entire supply chain to respond promptly to changing customer needs. Consequently, the flexibility of supply chains has become one of the most important features in the process.

The current procedures do not yet reach the appropriate level of flexibility, so our aim is to develop an agile process to help automotive operators respond rapidly to current market challenges.

In addition to the general definition of flexibility, we would also like to explore the flexibility that best applies to the automotive industry in this article.

Keywords: resilience, automotive industry, flexibility, supply chain

Development a Q-system based transgenic model of Huntington's Disease

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Introduction: Huntington's disease (HD) is a monogenic dominant neurodegenerative disorder, for which genetically valid animal models can be generated by overexpression of the mutated huntingtin (HTT) gene. Bipartite gene expression systems are commonly applied for regulated expression of transgenes. In the fruit fly *Drosophila melanogaster* the most commonly used such system is the GAL4/UAS/GAL80ts expression system that allows tissue specific and inducible expression of transgenes cloned after a UAS sequence. Most of the *Drosophila* stocks currently available from stock centers that can be used for transgene overexpression or gene knockdown by RNA interference were generated using UAS expression vectors. To be able to perform genetic interaction experiments with HTT transgenes and available UAS lines without promoter interference we decided to develop a *Drosophila* HD model based on an alternative bipartite expression system, the so-called Q system [1].

Results: We generated transgenic flies that express mutant and wild-type HTT under the control of the QUAS regulatory element and the elav-QF2 pan-neuronal transcriptional factor. We show that there is no cross-regulation between the GAL4/UAS and the QF2/QUAS expression systems and demonstrate that the Q-system based HD model shows reduced lifespan and neurodegeneration.

Conclusions: The results confirmed that the new Huntington's disease model works, however, it shows weaker phenotypes than our GAL4 / UAS model. Additional experiments are planned for validation, such as gene expression assays and western blot analysis. Next, the model is intended to be used in genetic interaction tests to test UAS transgenes or RNAi constructs.

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Keywords: Q-system, *Drosophila melanogaster*, neurodegenerative disorder, Huntington's disease

Adaptation strategies of international students at the beginning of the pandemic using social media

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My poster shows the results of a case study related to international students of the University of Pécs. These students play a key role, they become highly skilled experts by completing their studies, and they are also a major financial source for the hosting cities. Approximately 1,420 students participated in a diploma mobility program at UP in the 2018/2019. They have to adapt to many changes in the host country, in the academic environment and in their everyday lives. Miller and Madianou [1] pointed out that different cultures prefer different communication channels and build media use strategies to navigate in the host country and overcome new difficulties.

The outbreak of the pandemic 2020 has changed the lives of international students; Hungary introduced restrictions to reduce social contacts. The international students were left alone in their first wave of the pandemic, away from home, without proper support and information. I examine what specific difficulties students were affected by, and what role the use of social media played in overcoming these difficulties.

Results: The results of my online survey with 220 students show that international students of the University of Pécs were left alone at the beginning of the pandemic and did not receive adequate information about the situation in the host country mostly due to lack of common language skills and inadequate communication channels used by the university.

Conclusions: In the future, it is important for the universities to know the communication habits of the students, so that a real dialogue can develop and it is possible to avoid parallel societies between Hungarian higher education institutions and their international students.

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Keywords: pandemic, international students, media usage, adaptation strategies

Investigation of the aminocarbonylation reactions in green solventsNuray Uzunlu¹, Attila Takács¹, László Kollár¹¹Department of Inorganic Chemistry, University of Pécs, Ifjúság u. 6, H-7624 Pécs, Hungary

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Introduction: Solvents are indispensable tool in organic synthesis, albeit there are some methods which are carried out without using any solvent. However, its usage brings about some economical and environmental problems. For example, approximately 80% of the waste comes from only the solvents used in the drug industries [1]. To prevent this, the use of bio-derived solvents is an important research topic for industrial and academic fields, because the most effective reaction media in organic synthesis are the conventional solvents (e.g. DMF, THF, toluene etc), but according to REACH Regulation some restrictions have been specified, because of the hazardous substances (particularly volatile organic solvents (VOCs)) and to eliminate or minimize waste generation in chemical processes [2]. Moreover, the solvents should be cheap, biodegradable, non-toxic, stable and also they should not produce peroxide during the storage [3,4]. Briefly, the solvents should be suitable towards 12 principles in Green Chemistry.

Aim: In this research, our goal was to find comparatively effective bio-derived solvent for the reaction media of the palladium-catalyzed aminocarbonylation reaction, which is a widely-used and effective approach for the synthesis of valuable carboxamides. First, we chose the GVL (gamma-valerolactone) as a biomass-derived solvent for comparing the previous results of our research group, in which the DMF has been used as a conventional solvent. In the present work, several iodo(hetero)arene and iodo-alkene substrates have been used in the presence of *tert*-butylamine. Furthermore, the 2-MeTHF and the ethyl levulinate as well-known bio-derived solvents have been also used and investigated. The optimization study of the reaction of iodobenzene and morpholine has been performed. Following this study, the optimized conditions have been used to extend the scope of the substrates as well as the amine nucleophiles.

Conclusions: The conceivable conclusion obtained in our experiments is that GVL and ethyl levulinate can be promising solvents in the aminocarbonylation reactions, but these solvents deserve more investigation to understand their behaviour better for the future research.

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Keywords: palladium, aminocarbonylation, green solvents, carboxamide, carbon monoxide

Participants and their accomplishments in a MOOC course

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The field of informatics is an ever-changing and evolving area becoming critical in everyday life, so it is necessary to motivate people to gain skills on their own terms. That is why we are in need of a platform that collects several aspects and fields of IT. To help people with this process, an „Experiential Informatics” MOOC course was created with different modules like Problem-based learning, Collaboration, Using Micro:Bit in education, 3D modeling, Video editing, and many others. Anyone can register for the course free of charge (student, teacher, professor, parent, or anyone interested in learning IT) progressing at their own pace and finishing studies at any level they wish. Opening it to the broad public, we felt the need for automatization. In order to help them become more and more engaged, we had to motivate them with a “like” based peer evaluation and Badger-based award system.

Results: With every open course, some people are dropping out because they might not have the interest, time, or capacity to learn something new, but with more than a thousand registered students, we can differentiate three groups of participants: Some are active as soon as they start the learning process, they cannot stop. Several of these students already completed all the modules, and they are waiting for new ones to learn. Others probably registered with a concrete goal in mind, to solve a few modules and get the certificate for it, because a few people completed one module immediately after registering, but not any others. And there are observers, they are the ones who just read through a few things, but they never contributed and they never submitted a task. We compared the results of the peer evaluation with our own assessment; generally speaking, both younger students and adult learners submitted well-thought-out solutions and projects receiving adequate “likes” and badges. Those who completed their studies also filled out a course evaluation questionnaire that seemed to acknowledge our approach for enjoyable learning and evaluation strategies.

Conclusions: : This study focused on introducing ways learners can get familiar with several fields of IT effectively while they are also enjoying the process. The investigation of their progress is based on the data of their behavior and actions administered in the course. We used several automatization strategies to allow the course to run itself with a massive amount of participants, yet under a supervised evaluation in which participants can learn from each other and network during the process. With the use of Badgr, we paid attention to reward only those who properly represented the knowledge they gained. Although we are almost satisfied with the data, we are administering some changes and continuing data collection to compare results with new hypotheses in mind.

Keywords: MOOC (Massive Open Online Course), IT, Badgr, badge system, Experiential Informatics, motivation, online learning, self-regulated learning

Az egészségérték és fogyatékos személyekkel kapcsolatos attitűd vizsgálata

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Az egészségkultúra, aktualitása ellenére, egy igazán alulkutatott terület és a többségi társadalom fogyatékosággal élőkkel szembeni attitűd területe sem élvez kellő figyelmet [2]. Nemzetközi adatok alapján magasnak mondható a gazdaságilag aktív korcsoportban (15-65 év) a fogyatékosággal élők száma [1]. 2020-ban végzett felmérés szerint a válaszadók 45%-ának van fogyatékosággal élő ismerőse [4]. Ukrajna, Magyarország és Románia közül hazánkban a legnegatívabb a hallgatók attitűdje a fogyatékosággal élő társaikkal szemben [3]. Az attitűdöt befolyásolja a nem, az életkor, korábbi kapcsolat egy fogyatékosággal élő társsal, az előzetes tudás, az önértékelés, az életminőség és a kulturális faktorok is [3]. Nemcsak a fogyatékosággal élőkkel szembeni attitűdöt, de az egészségről alkotott képünket is befolyásolják a kulturális tényezők. Kutatásunkban a feltételezésünk igazolódott, miszerint az egészségérték és a fogyatékos személyekkel kapcsolatos attitűd összefügg. Az adatgyűjtéséhez validált attitűd kérdőívet (MAS, ATDP-O), az eszköz- és célértéket mérő Hofmeister-Tóth – Neulinger értékkálát alkalmaztunk, saját kérdésekkel kiegészítve, amelyet 111 fő töltött ki. Az adatok feldolgozása SPSS 24.0 statisztikai programmal készült.

Eredmények: Az egészség az eszközértéknél az első (4,83), a célértékeknél a második helyen szerepel (4,73) a boldogságot követően (4,77). Szignifikáns a kapcsolat a MAS kérdőív affektív ($p=0,006$) és megismerési ($p=0,006$) dimenzió, valamint a viselkedési komponens ($p=0,01$) eredményei és az ATDP-O között. Összefügg az ADTP-O eredményei és az egészség, mint célérték ($p=0,024$). A válaszadók attitűdjéről a MAS kérdőív eredményei alapján mind a három dimenzióban (érzelmi, viselkedési, megismerési) igen negatív kép rajzolódik ki. Érzékenyítő foglalkozáson a válaszadók 36%-a (40 fő) részt vett, míg 64% (71 fő) egyáltalán nem.

Következtetések: Az érzékenyítő foglalkozások, az attitűdformálás létkérdés, hiszen a többségi társadalom fogyatékos személyekkel szembeni attitűdje negatív.

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Kulcsszavak: életminőség, egészség-érték, fogyatékoság, attitűd, érzékenyítés

Instagram közösségi média használata a kiállítási kommunikációban

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Az okos eszközök és a közösségi média tömeges elterjedése az élet többi területéhez hasonlóan megváltoztatta a múzeumlátogatók tartalomfogyasztási szokásait, valamint azokat a viselkedésmódokat, amelyek segítségével a látogatók a kiállításokon szerzett tapasztalataikat feldolgozzák és az élményeiket megosztják másokkal. Előadásomban egy olyan iskolai pilot programot mutatok be, amely keretében a hallgatóimmal egy múzeumi foglalkozáson használtuk hibrid képek létrehozására az Instagram alkalmazást. Feltételezésem szerint a közösségi médiában megosztott képek a múzeumok szempontjából releváns tartalmakat jelenthetnek és alkalmasak lehetnek arra, hogy az intézmények ezeket kommunikációs eszközként használhassa.

Eredmények: A kutatás eredményei remélhetőleg hozzájárulnak további, olyan múzeumi iskolai foglalkozások, „jó gyakorlatok” fejlesztéséhez, amely segítik a múzeum illetve a kiállítás térbeli és időbeli kiterjesztését a személyes történetek megosztása révén.

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Kulcsszavak: kiállítási kommunikáció, vizuális keretezés, virtuális valóság, kiterjesztett valóság, múzeum

Quality by design approach for fabrication of stabilized n-propyl-gallate loaded liposomes for nose to brain delivery

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The goal of this work was to fabricate novel PG-encapsulated liposomes utilizing a modified direct pouring technique and Quality-by-Design (QbD) methodology. Another goal was to coat liposomes with hyaluronic acid (HA) to increase the formulation's stability within the nasal mucosa. Critical quality features of PG-loaded liposomes coated with HA were determined using the QbD method. To study the effect of composition and process variables on particle size, polydispersity index (PDI), and zeta potential, the Box–Behnken design was used to identify the suitable formulation [1]. The optimized liposomal formulation was used for the physicochemical characterization, *in vitro* release and permeability experiments, as well as accelerated stability studies.

Results: The stabilized formulation showed $90.6 \pm 2.2\%$ encapsulation efficiency, hydrodynamic diameter of 167.9 ± 3.5 nm, PDI of 0.129 ± 0.002 , and a zeta potential of -33.9 ± 4.5 mV. When compared to uncoated liposomes, coated liposomes demonstrated considerably better properties under *in vitro* release test ($>60\%$), *in vitro* permeability measurement ($420 \mu\text{g}/\text{cm}^2$) within 60 mins, and under accelerated stability conditions.

Conclusions: The PG-containing liposomes showed excellent anti-oxidant property through hydrogen-peroxide scavenging assay. It can be concluded that optimizing PG-encapsulated liposomes and coating it with HA offers a lot of pledge for treating variety of brain diseases via intranasal intervention.

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Keywords: nose-to-brain delivery, particle size, encapsulation, liposomes, permeability

„How did we get so dark?” Convergences and divergences among the dark traits of borderline- and histrionic personalities

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The empirical description and classification of maladaptive dark traits are connected to the clinical debates about the origin and nature of personality disorders [1]. Borderline- and Histrionic Personality Disorder (BPD and HPD) are two common form of these for type of pathologies, which was earlier never analyzed with the D-concept of personality [2] in order to find their common and distinctive features. In our current study with the use of self-report assessment tool, we aim to find the subclinical links between the two maladaptive personality manifestations.

Results: We identified one common and several distinctive dark personality traits: Machiavellianism is a negative predictor of histrionic personality and positive of borderline personality organization. Psychological Entitlement and Moral Disengagement are connected negatively to borderline personality while Greed found to be interrelated in a positive way. Histrionic Personality was found to be associated with Narcissism and Psychopathy in a positive way.

Conclusions: Although being in the same cluster of personality disorders, borderline- and histrionic personalities seems to have dominantly different connection with basic dark traits. While manipulation is a common feature of the two personality types, they have a divergent relationship. Our findings highlight the relevance of the typological differences of otherwise often related manifestation of maladaptive personalities, which could serve as a relevant input to the refining of diagnostic processes and treatment methods.

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Keywords: *borderline personality, histrionic personality, D-factor, personality psychology, clinical psychology*

Role of PACAP in age-related systemic amyloidosis

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Introduction: PACAP (Pituitary Adenylate Cyclase-Activating Polypeptide) is a neuropeptide, which can be found in many tissues and organs of the body. Its general cytoprotective, anti-inflammatory, and anti-apoptotic effects have been proven; however, there are just a few data available of its role in aging. [1] The aim of our experiment was to compare the tissues of wild-type (WT) and PACAP (KO) deficient mice of different age groups to explore the role endogenous PACAP in aging.

Methods: Samples were taken from more than 20 organs of two age groups of WT and PACAP KO mice (n=30). We divided the following age groups: 3-12-months, 13-24-months-old animals. 3-µm-thick sections of the samples were stained with hematoxylin-eosin, Congo-red staining and anti-β-amyloid immunohistochemistry, after we have found signs of amyloid deposits. A semi-quantitative scoring to grade Congo-positive deposits from 0-3 was performed according to pathological criteria. Complete blood count, serum analysis from the animals' blood and cytokine array examinations from kidney samples were performed.

Results: Histopathological analysis showed that in the PACAP KO mice the lesion in all organs seemed more severe and was present at a younger age. Among the WT and PACAP KO mice, significant difference occurred in the esophagus, kidney, liver, spleen, thyroid, and skin. Complete blood count, serum analysis and cytokine array examinations (BLC, IL-1ra, RANTES) have shown differences, due to the lack of PACAP.

Conclusions: Using young and aging PACAP KO mice, here we demonstrated that in mice lacking endogenous PACAP senile amyloidosis appeared accelerated, more generalized, more severe and affected more individuals. In summary, here we describe accelerated systemic senile amyloidosis in PACAP KO mice, which might indicate an early aging phenomenon in this mouse strain. Thus, PACAP KO mice could serve also as a model of accelerated aging, with human relevance.

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Keywords: amyloidosis, PACAP, aging

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