

# NATIONAL SCIENTIFIC CONFERENCE "UNDERSTAND THE SCIENCE"

IV EDITION

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SEPTEMBER 26, 2020

THE BOOK  
OF ABSTRACTS

WHAT?  
HOW?  
WHY?

# **National Scientific Conference**

## **„Understand the Science”**

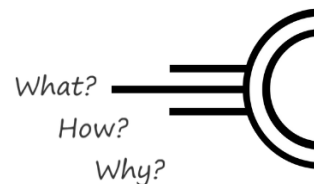
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**September 26, 2020**



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**TECHNICAL SCIENCES**

***PRESENTATIONS ONLINE***

## **RISK AND SAFETY ANALYSIS OF ELECTROSTATIC PRECIPITATOR, OPERATIONS TO SUPPORT THE VERIFICATION OF THE DEVICE TECHNICAL STATE**

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### **A few words about the author:**

Aleksandra Czajkowska, is a PhD student in the Mechanical Engineering Faculty, at the University of Science and Technology in Bydgoszcz. She specializes in the field of Energy Plant. The main area of research are electrostatic precipitators.

### **Abstract:**

A risk and safety analysis was performed for the electrostatic precipitator (ESP). The risk assessment results from the standards included in the Machinery Directive 2006/42/EC. The exhaust gas purification installation (dedusting) consists of many elements and assemblies, for which there is no effective method to define a time period for scheduled preventive inspections. The RCM method (Reliability Centered Maintenance) may be a good starting point.

### **Keywords:**

risk matrix, risk assessment, risk and safety analysis, technical facilities, electrostatic precipitator, power unit's

## **VARIABLE EMISSIONS OF POLLUTANTS FROM THE ENERGY SECTOR AS AGAINST THE RAISE DEMAND FOR ELECTRICITY IN POLAND**

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### **Abstract:**

The Polish energy sector is one of the most difficult business sectors due to the applicable emission standards for pollutants to the environment. Raw restrictions on among others CO<sub>2</sub> emissions and promotion by the European Union of the increase in obtaining electricity from Renewable Energy Sources (RES) cause that traditional models of energy production are slowly becoming insufficient in the period ahead, in the Polish power industry has to happen groundbreaking changes in order to meet emission standards.

### **Keywords:**

electricity production, blackout, pollutant emission, exhaust gas cleaning methods

## ON THE PHYSICAL MEANING OF THE GREITZER MODEL PARAMETERS

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PhD student at the Institute of Turbomachinery, Lodz University of Technology. Interested in shape optimization, mathematical modelling and unstable phenomena in radial compressors.

### **Abstract:**

Radial compressors are used in a broad range of industries. Their failure can cause significant financial losses due to their key role in many systems. Surge phenomenon is one of the common sources of rapid and unexpected compressor failure.

Therefore, surge prevention is a necessity. Mathematical surge models are required for a better understanding of the phenomenon and design of anti-surge systems. Greitzer model created in 70' is still the one most commonly used.

This talk presents an overview of the model parameters and discusses in detail the doubts concerning a translation of the parameters of the idealized compressing system proposed by Greitzer to the real-life industrial installations. This discussion is preceded by presenting the theoretical background and applied numerical methods.

### **Keywords:**

Greitzer model, surge phenomenon, radial compressors, mathematical modelling



## OVERVIEW OF VISUAL PROGRAMMING LANGUAGES AS TOOLS SUPPORTING PROGRAMMING LEARNING IN ELEMENTARY SCHOOL

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### **A few words about the author:**

Student of the Lublin University of Technology. Interested at IoT, education, brewing.

### **Abstract:**

For beginners learning programming, one of the most difficult moments is to understand the basic programming principles programming (e.g. principles of operation and creating loops), elimination of typing mistakes or remembering the basic syntax and keywords specific to a text-based programming language. For such people it may be useful to use visual programming languages (VPL), i.e. environments where scripting is based on manipulating graphic elements and combining them into logical whole, rather than writing scripts in text-based form as it is the case with typical solutions. The most popular solution in this area is the Scratch development environment, on the basis of which other languages were created. Some solutions in this field have the ability to convert scripts into text programming language. The purpose of this work is to present solutions is to present solutions by compiling examples of environments based on visual programming languages that can be used to teach programming in elementary school.

### **Keywords:**

education programming VPL

## USE OF 3D MODELING TOOLS IN AUTODESK INVENTOR TO IMPLEMENT EDUCATIONAL AIDS

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Student of the Lublin University of Technology of computer science and technology education studies. Interested computer science and utility graphics.

### **Abstract:**

The study raises the need to using educational aids with work in Autodesk Inventor in teaching. The useful functions of the program facilitating the development of spatial intelligence, which have a significant impact on the later technical creativity of students, have been shown. The method of creating a 3D model, performing strain analysis or working drawings of designed parts was presented. Drawing upon Inventor in early development learning results in more satisfying learning outcomes for young people. This technique 3D design approach provides an easy and accessible way to acquire knowledge and design skills that may prove invaluable in later working life. Due to the current demand on the labor market of people with vocational, and especially technical, education, the use of as many tools as possible to support the teaching process is an obvious didactic solution nowadays.

### **Keywords:**

Inventor, education, educational aids

## **MODEL OF SIMPLE EXTRUDER AS TEACHING AID IN TEACHING OF DESIGN AND TECHNOLOGY**

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### **A few words about the author:**

Student of the Lublin University of Technology. Co-author of a utility model covered by protection law. Interested at education and polymer processing. Volunteer and workshop leader.

### **Abstract:**

If one wants to teach design and technology effectively, they need to use a special teaching aid. Core curriculum projects include teaching about polymer processing. It is difficult to find appropriate teaching aids when talking about this issue. This work shows model of a simple extruder and how it can be used to present some of the problems concerning design and technology.

### **Keywords:**

extruder, teaching, design and technology

## SIMPLE PROOF OF THE ERDÖS-GALLAI THEOREM

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### **A few words about the author:**

I am a PhD student on the doctoral school "Academia Copernicana" in the Nicolaus Copernicus University in Toruń. I am interested in combinatorics and graph theory.

### **Abstract:**

In my speech, I will present Erdős-Gallai theorem with simple proof using the Havel-Hakimi theorem.

### **Keywords:**

graph realization problem

## A DIFFERENT APPROACH TO SEGREGATION ISSUES IN URBAN DESIGN

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### **A few words about the author:**

Architect, until recently a junior inspector dealing with spatial planning decisions in the department of architecture of one of the Polish cities, currently a doctoral student at the Cracow University of Technology (CUT).

### **Abstract:**

In many urban areas there is an observable segregation of public space, in addition to the fact that many housing districts are spatially isolated from the city as a whole.

The emergence of enclaves of poverty and wealth, the decay of housing development and the encroachment of cars into public spaces, the privatisation of public spaces (so called gated communities), limited revitalisation and gentrification - lead to spatial chaos and growing conflicts.

As traditional methods of urban analysis provide poor guidelines in this context, an attempt to investigate this problem and present a different approach to segregation in urban design was made.

Space Syntax is a human-focused, academic imaging of the relationship between the spatial layout and a range of social, economic and environmental phenomena – leading to better understanding the social logic of spatial structures. It also makes it possible to read and analyze the accessibility and flow of people in the urban structure.

Space-Syntax-based urban analysis enables demonstrating significant structural differences between districts and to determine the impact of urban forms on the spatial advantages of different areas of the city. It provides new opportunities to address segregation in urban design and formulate more effective anti-segregation interventions.

### **Keywords:**

Space Syntax theory, urban analysis, urban planning

## VISUALIZATION OF NEURAL NETWORKS LEARNING PROCESS

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### **A few words about the author:**

Izabela Perenc is a Ph. D. student at Lodz University of Technology. Interested in artificial intelligence and bioinformatics, mainly focused on neural networks and fuzzy logic.

### **Abstract:**

While Artificial Intelligence enters everyone's life, the urge to understand how it is possible is indispensable. Especially for beginners which usually jump from one neuron to deep neural networks the principles of how a neural network is learning should be clearly and thoroughly presented.

In order to show how neural networks are learning a new approach was applied. The output of a network's hidden layer was visualized for easier understanding of its structure. The solution allowed to visualize how parameters of hidden layer affect the results and how the learning is conducted.

The approach allows to investigate a neural network and to follow its learning process. The proposed visualization method is easily understandable for beginners and allows to explain easily the purpose of hidden layers in neural networks.

### **Keywords:**

neural networks visualization, education

## A LEARNING COMPARISON OF LSTM-BASED NEURAL NETWORKS FOR ENGLISH AND POLISH TEXT CORPUSES

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### **Abstract:**

Development of Artificial Intelligence allows for generating various data like videos, images and texts. As videos and images are universal because the results of processing graphical data are useful for everyone. This is in contrary to textual data, which can be fully understood and assessed only by a fluent speaker of a chosen language.

In modern world English is the dominant language, thus neural networks textual learning is based mostly on English corpuses. Models are adjusted to this language and rarely checked for any other. The goal of the presented research is to check LSTM model's ability to generate a text in Polish language.

The designed neural network that uses letters as input was learned on a database of Polish lectures (about 11 million characters). Then, the network was used to generate a short text after feeding it with a beginning sentence. A set of hyperparameters for text generation was used in order to present different levels of network "creativity" arising from different sampling in the resulting probability space.

In result a set of texts was produced. Some are similar to Polish but have no meaning. Others resemble Polish, but contains words that do not exist, nevertheless they look like correct words.

The research shows the differences between similar network structure learned on English and Polish databases. The model is capable of learning to generate simple text fragments in both languages but requires more data for Polish than for English.

### **Keywords:**

Polish text generation, LSTM model



## WHAT IS BLOCKCHAIN? CONTEMPORARY PROGRAMMING SOLUTIONS

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### **A few words about the author:**

My name is Łukasz Pietraszek and I am a third-year student of computer science with a specialty in "Business application programming" at the Kazimierz Wielki University in Bydgoszcz. The main area of my interests is the Blockchain technology.

### **Abstract:**

Blockchain is a technology that has appeared relatively recently and creates huge opportunities. It is a distributed database containing an ever-growing amount of information. The main purpose of Blockchain is to enable fast and secure transactions regardless of distance, which is done with cryptocurrencies. There are three methods of verifying online transactions: Proof of Work (PoW), Proof of Stake (PoS) and Proof of Existence (PoE). The public and private key technique guarantees security, thanks to which this technology can be used in many areas of life, including trade, public administration and banking. Blockchain technology is implemented using many different programming languages, but the JavaScript library – web3.js – has the most extensive documentation. Decentralized applications designed in this way use dedicated smart contracts, which are created with the Truffle development tool. Blockchain is already very useful in many areas of life. The potential of this technology has a real chance to make the vast majority of solutions will use it in the future.

### **Keywords:**

Blockchain, dApp, Smart Contracts, web3.js

**TECHNICAL SCIENCES**

***PRESENTATIONS***

## **STOPPING TIME IN THREE DIMENSIONS - VISUALIZATION OF THE BUILDING OF COLLEGIUM GODLEWSKI BASED ON PHOTOGRAMMETRIC ARCHIVAL PHOTOS**

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### **A few words about the author:**

I study geodesy and cartography. My interests are closely related to the field of study I chose. I believe that the visualizations of historic buildings that I have made will contribute to the preservation of cultural heritage.

### **Abstract:**

Photogrammetry is a field of technical sciences that allows obtaining information about objects by means of photogrammetric observations, such as ground and aerial photos, and their interpretation, in order to obtain various types of studies. Obtaining reliable data showing complete information about objects and their surroundings is often difficult due to their shape and size. For the documentation of architectural objects, so-called phototheodolites, i.e. metric analog cameras, allowing the creation of terrestrial photogrammetric photos in the form of a stereogram were used. With the technological development, these devices ceased to be used, however, there are many archival photos of non-existent objects that can now be visualized on the basis of photographic documentation. One of the architectural monuments with complex geometry is the building of Collegium Godlewski, located in Krakow at 21 Adama Mickiewicza Avenue. The aim of the research was a three-dimensional visualization of the Collegium Godlewski building obtained on the basis of photogrammetric data in the form of processed archival photos based on terrestrial laser scanning.

### **Keywords:**

photogrammetry, analog photo, 3D modeling, visualisation

## MORPHOLOGY STUDIES OF THE FUNCTIONALIZED POROUS SAMPLES

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### **A few words about the author:**

I am PhD student at Maria Curie-Skłodowska University in Lublin (Poland). I am interested in physical chemistry, material synthesis, their functionalization and investigation.

### **Abstract:**

Adsorbents are substances with well-developed surfaces on which the adsorption process occurs. On the other hand, the substances adsorbed by the adsorbents are the adsorbates. Therefore, an adsorption is the process of binding of the molecules, atoms or ions on the surface or interface of physical phases causing local changes in concentration. The process reverse to the adsorption is desorption. Sorption processes are of great importance in practice. Adsorption and desorption processes are commonly used in the catalysis, protection of environment, medicine, or cosmetology. Hence, the structure of adsorbents is very important. On the basis of the morphology of the studied samples it is possible to predict the behaviour of the adsorbent and adsorbate (interactions between adsorbent and adsorbate) and therefore design the systems with strictly desired characteristics. Moreover, the low-temperature nitrogen sorption data analysis is very often used as one of the primary techniques to assess the structural properties of the porous samples. In this work, the surface functionalized porous samples were obtained and further studied using low-temperature nitrogen sorption analysis.

### **Keywords:**

adsorption, low-temperature nitrogen sorption analysis, porous media

## **RIVER REGULATION ON THE EXAMPLE OF THE ODRA RIVER**

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### **A few words about the author:**

I am a PhD student at the Gdańsk University of Technology. I deal with issues related to hydrotechnics and hydrology. I am looking for a direct translation between theory and practice.

### **Abstract:**

Already in the times of the Kingdom of Poland, the Odra River was used for commercial purposes. Trade caravans from the north to the south of Europe sailed on its waters. The river lies in the narrowing of the European continent, hence it has been an important element on shipping maps for centuries. To be able to use the waterway on the river, it was necessary to regulate the river, both the variability of the water level in the river and the characteristics of the terrain. The first elements of regulations that arose on the river were weirs. The course of the river bed was changed many times, however, large floods changed its route. Building a canal to Świnoujście was also a big investment. Then spurs were built on the river. River regulation would not be complete without obligatory landowners' maintenance. The presentation shows the ways of regulating the Odra River along with a technical description of the solutions used. Reference was also made to the current river regulation process.

### **Keywords:**

Odra River, spurs, river regulation

## CARBON AND NANOTECHNOLOGY

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### **A few words about the author:**

First-year student of second degree of chemical analytics, AMU Faculty of Chemistry.

### **Abstract:**

Carbon is an omnipresent element. It is a main constituent of nutrients (sugars, proteins, fats and vitamins), various organic compounds (such as well-known ethanol, acetic acid or octane), some inorganic compounds (for example sodium bicarbonate or calcium carbonate, used as baking soda and calcium supplement respectively, widespread carbon dioxide and very scary monoxide) and coal (whose exact structure is not completely known). Apart from this, carbon itself tends to form many allotropes, the best known are diamond, graphite, fullerenes and nanotubes. Fullerene C<sub>60</sub> and carbon nanotubes are the most prominent allotropes used in nanotechnology, namely in medicine.

### **Keywords:**

nanotechnology, nanomedicine

## INTERACTIONS OF STARCH OF DIFFERENT BOTANICAL ORIGIN WITH FERULIC ACID

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### **A few words about the author:**

PhD candidate at the Institute of Food Technology and Analysis at the Lodz University of Technology. His primary interests focus on issues related to the study of carbohydrates, hydroxy acids and healthy properties of food ingredients.

### **Abstract:**

The starch granules from different botanical sources also vary in size, shape, and content of amylose and amylopectin, which affects their chemical and physical properties. Amylose, a primarily linear polysaccharide of (1 → 4)- $\alpha$ -D-glucose units, displays a folding in a helical conformation and has an ability to form an inclusion complex with a variety of ligands. The aim of the study was to investigate the influence of botanical origin of starch (on the example of wheat and potato starch) on the possibility of interaction with ferulic acid. In the obtained preparations, the efficiency of complexation by HPLC method, the antioxidant potential (DPPH, ABTS) and the fiber content were examined. Then, the appearance of the external structure (SEM) and the complexation process productivity were assessed.

The results clearly showed that it is possible to interact wheat and potato starch with ferulic acid. As a result of the complexation reaction, the best efficiency of complexing ferulic acid molecules with starch and showing antioxidant activity was obtained in preparations with the use of potato starch. Also in preparations made of potato starch, the highest fiber content of the insoluble and soluble fractions was demonstrated. Both in the case of wheat and potato starch, after adding a solubilizing agent, better complexing efficiency was obtained during the interactions between starch and ferulic acid.

### **Keywords:**

wheat starch, potato starch, ferulic acid, complexation reaction



## THE INFLUENCE OF AUTOMATIC LEVEL CROSSING SYSTEMS ON SAFETY AT LEVEL CROSSINGS

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### **A few words about the author:**

Eng. Jakub Holcman is a MSc student at the Poznan University of Technology. The main area of the author's interest includes railway automation and control systems in transport.

### **Abstract:**

In terms of safety, level crossings are critical points in the land transport infrastructure. They are single-level intersections of roads and railroads. In Poland, there are six categories of level crossings and passages: A, B, C, D, E, F.

In 2019, as many as 69.1% of accidents on the railway network took place within railroad level crossings. Automatic level crossing systems are used to secure the traffic at level crossing of categories: B, C, E(B) or E(C). The crossings consist of a set of railway traffic control devices that form a coherent whole. These are for instance the warning devices (warning lights with acoustic devices, barriers, distant signals), the impact devices (wheel detectors, track magnets), the control and supply devices. Each element plays a specific part in securing traffic at level crossings. Human error is minimized due to the automation of the traffic security process. There are fewer accidents observed on B and C category crossings equipped with the automatic level crossing systems as compared to the category D level crossings not equipped with the railway traffic protection devices.

### **Keywords:**

automatic level crossing, safety in transport, railway traffic control systems

## GLYCOCONJUGATES DERIVATIVES OF MUCOCHLORIC ACID – SYNTHESIS AND ACTIVITY

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### A few words about the authors:

The team is working on the synthesis of biologically active compounds and determining of their activity, especially anti-cancer, antibacterial and antifungal.

### Abstract:

Vitamin C is one of the best known antioxidants, which contains in its ring structure of 2(5H)-furanone. Other examples of the 2(5H)-furanone derivatives are the naturally occurring penicillanic acid, that inhibits the growth of Gram+ bacteria, and the 3-aryl-4-alkylamino-2(5H)-furanone, which has antifungal activity. It has also been shown that 3-alkanoyl-5-hydroxymethyl-tetronic acid derivatives inhibit the enzyme catalyzing the last stage of the HIV-1 replication cycle. 2(5H)-furanone alone has been shown in the literature to exhibit anti-tumor properties.

The glycoconjugates of 2(5H)-furanone and 2H-pyrrol-2-one derivatives were obtained under click-chemistry reaction conditions. The resulted structures differed in the point of attachment of the linker to the sugar unit. Following previous research results, some of the obtained glycoconjugates contained a silyl moiety in the furanone molecule.

18 compounds were obtained, the cytotoxicity of which was determined by the MTT test, while the effect of derivatives on the cell cycle was determined by flow cytometry and microscopic preparations.

### Keywords:

3,4-dichloro-5-hydroxy-2(5H)-furanone, glycoconjugates, anti-cancer properties

## PREPARATION AND PROPERTIES OF LIPOSOME CAPSULES WITH SELECTED POLYPHENOLS

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### **A few words about the author:**

I am PhD student at the Lodz University of Technology. My research interests lie in the fields of encapsulation of polyphenols using different methods and the application of the resulting preparations to food products.

### **Abstract:**

Liposomes are spherical phospholipid vesicles that can serve as biodegradable drug carriers. Due to the thermolability and oxidation of many polyphenolic compounds, their application to food is limited. The formation of liposome capsules of selected polyphenols may contribute to the improvement of functional properties of the preparations obtained from them.

The aim of the study was to characterize liposomal formulations of selected polyphenols. Liposomes were obtained by spontaneous hydration of a dry phospholipid film. The total polyphenolic content and the antioxidant activity of polyphenol liposome were determined using the Folin-Ciocalteu method and in vitro tests (DPPH, FRAP, ABTS). Short- and long-term stability of polyphenol liposome were also evaluated.

Encapsulation of polyphenols into liposome caused an increase in the total polyphenol content and antioxidant activity (DPPH, FRAP, ABTS) as compared to the empty liposomes. The highest content of polyphenols in the tested preparations was found in liposomes with gallic acid (661.33 mg of catechin /g of sample), and the lowest one was observed for empty liposome (182.68 mg of catechin/g of sample). The liposomes with gallic acid were characterized by the highest antioxidant properties as determined by the DPPH, ABTS, and FRAP assays. The liposomes with catechin showed the highest short- (100 °C, 2h) and long-term (37 °C, 1 month) stability, while capsules with gallic acid showed the lowest one.

### **Keywords:**

encapsulation, liposomes, polyphenols, antioxidant activity

## NEW ANALYTICAL TOOLS FOR THE DETERMINATION OF ANTHROPOGENIC POLLUTANTS IN THE ENVIRONMENTAL SAMPLES

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### **A few words about the author:**

Klaudia Kokoszka – Master of Science in Analytical Chemistry, at the Department of Inorganic and Analytical Chemistry and Electrochemistry at the Silesian University of Technology. From 2019, a PhD student at the Silesian University of Technology.

### **Abstract:**

Along with the development of highly urbanized communities, the problem of new emerging pollutants, i.e. synthetic compounds that are not found naturally in the environment. Pharmaceuticals belong to this group and constitute a dangerous group of compounds due to their high biological activity and universal application. The negative effects of the presence of antibiotics in the environment, such as the formation of drug-resistant strains of bacteria, and disturbance of the hormonal balance of marine animals are observed. An additional problem is the compounds formed by degradation of the parent medicament under environmental conditions.

The aim of this presentation is to systematize the current knowledge on modern methods of identifying pharmaceuticals and their degradation products in environmental samples. The topic of biodistribution of the most popular pharmaceuticals in the environment and the consequences of this for the ecosystem will be discussed. The basic biochemical changes that pharmaceuticals can undergo into the environment will be presented. Particular attention will be paid to the use of HPLC-MS/MS in the non-targeted analysis of antibiotic degradation products in environmental matrices.

This presentation should broaden the knowledge on modern methods for targeted and non-targeted analysis of pharmaceutical contaminants in environmental samples and pay attention to the growing danger related to introduction of pharmaceuticals into the environment.

### **Keywords:**

new emerging pollutants, tandem mass spectrometry, non-target analysis, pharmaceuticals, environment

## EVALUATION OF THE CYTOTOXICITY OF POTENTIAL METABOLITES FROM QUINOLINE GLYCOCONJUGATES CONTAINING THE 1,2,3-TRIAZOLE RING

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### **A few words about the author:**

I am a PhD student at the Silesian University of Technology. My research is related to the synthesis of glycoconjugates of biologically active compounds and the assessment of their anti-cancer activity.

### **Abstract:**

Cancer's diseases are one of the greatest challenges of modern medicine and one of the leading causes of death in the world. Therefore, it is important to search for new effective tumor treatment strategies. We focused on the synthesis of glycoconjugates with potential anti-cancer activity. Their structure consisted of three basic building blocks: a biologically active compound (e.g. 8-hydroxyquinoline), a linker containing 1,2,3-triazole ring, and a sugar unit. The heteroaromatic fragment is capable of forming complexes with Cu(II) ions, which are an essential cofactor for the growth and angiogenesis of cancer cells. Sugar is responsible for improving the pharmacokinetic properties of the preparation such as solubility, stability, and selectivity. In this way, by the use of selectively acting metal chelating agents, an important factor for cancer growth can be eliminated from the body. Several of these designed compounds showed an interesting profile of activity against a variety of cell lines, exceeding the activity of the quinoline derivatives itself. However, it is not known whether the observed cytotoxicity is due to glycoconjugates action or also metabolites formed therefrom, and glycoconjugates only function as prodrugs. It seems advisable to check the biological activity of products that can be released from glycoconjugates under the action of hydrolytic enzymes. The results of the preliminary evaluation of the anticancer activity of such compounds will be presented.

### **Keywords:**

quinoline, glycoconjugates, metabolites, 1,2,3-triazole, anticancer activity

## METHODS FOR SYNTHESIS AND CHARACTERIZATION OF NANO GEL DRUG CARRIERS

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### **A few words about the author:**

Karolina Pietrzak – first year PhD student at the Silesian University of Technology. Scientific interests include free radical polymerization of nanogel carriers for the release of anti-cancer drugs.

### **Abstract:**

The biggest challenge associated with effective cancer therapy is selective drug targeting to tumor tissue. It can be implemented by trapping drugs to nanocarriers and effective transferring of such nanoparticles to cancerous tissue through active transport. One of the increasingly considered drug carriers, with an emphasis on capturing and releasing biologically active compounds with anti-cancer properties, are nanogels. Nanogels are physically or chemically cross-linklinked, nanosized three-dimensional networks of hydrophilic polymers that swell in water. They are widely studied as drug carriers due to their unique properties, such as: high surface area to volume ratio, biocompatibility, large capacity, protective properties for trapped drugs against in vivo degradation and possible sensitivity to factors such as: ionic strength, pH or temperature.

The aim of this presentation is to discuss optimal conditions for free radical polymerization of nanogel carriers, including different types of initiation systems based on the literature review and conducted experiments. Obtained nanocarriers were characterized by determining hydrodynamic diameter, dispersion stability under various conditions and susceptibility to degradation at physiologically-relevant pH values.

### **Keywords:**

nanogel, drug carrier, free radical polymerization, polymerization initiation system

# **TECHNICAL SCIENCES**

## ***POSTERS***



## NEW AMINOPROPAN-2-OL DERIVATIVES AS POTENTIAL BETA-BLOCKERS

**Natalia Buszta**

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Rzeszow University of Technology*

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### **A few words about the author:**

Natalia Buszta is a PhD student at the Faculty of Chemistry at the Rzeszow University of Technology. In her work she deals with the synthesis of new compounds from the group of beta-blockers. Passionate about personal development and social psychology.

### **Abstract:**

Diseases of the adrenergic (cardiovascular) system are classified, next to cancer, as civilization diseases which are the most common cause of death in Europe. Therefore, research is continuing to find effective drugs to reduce mortality caused by their occurrence. In the treatment of cardiovascular diseases, 2-aminopropanol derivatives are the most commonly used. These compounds, classified as adrenergic antagonists, are called beta-blockers. Beta-blockers are also used to alleviate alcohol withdrawal symptoms in addicts, in hyperthyroidism, the treatment of stage anxiety, treatment of anxiety attacks or alleviating stress symptoms.

The synthesis of new aminopropan-2-ol derivatives, which were obtained in the form of racemates and pure enantiomeric forms will be presented on the poster.

### **Keywords:**

beta-blockers, adrenergic system, adrenergic antagonists

## STUDIES OF THE PREPARATION OF THE MICROPOROUS CARBON MATERIALS FROM MOLASSES

**Karolina Kielbasa\*, Nikola Maciejewska, Adrianna Kamińska**

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Engineering, Department of Catalytic and Sorbent Materials Engineering,  
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### **A few words about the authors:**

Karolina Kielbasa – assistant professor; Nikola Maciejewska – masters student; Adrianna Kamińska – PhD student; scientific interest of all authors: CO<sub>2</sub>, CH<sub>4</sub> adsorption, activated carbons

### **Abstract:**

Carbon materials are widely used in almost every branch of modern industry as sorbents, catalysts, or electrodes in supercapacitors. In this study, the raw material for their preparation was a molasses solution with a sucrose concentration of 1 mol/dm<sup>3</sup>, placed in an autoclave for 12 hours at 200 °C. After synthesis, the sample was removed from the autoclave, rinsed with deionized water until neutral, and dried at 110 °C. After drying, the spherical material obtained from hydrothermal synthesis was activated with a saturated KOH solution for 3 hours. The mass ratio of carbon to modifier was changed in the range of 1 to 2. The material was heated at 750 °C under nitrogen (flow 20 dm<sup>3</sup>/h). The prepared carbon materials containing the decomposition products of potassium hydroxide or potassium carbonate were washed with distilled water to achieve a neutral reaction. Subsequently, the activated carbon was dried at a temperature of 110 °C for 20 h.

Activation of carbon spheres with potassium hydroxide used contributed to obtaining carbon materials with a well-developed porous structure. It was found that the obtained parameters of the porous structure, such as the specific surface area or volume of micropores, were increased by using more KOH in the process of activation of carbon spheres.

The work has been financed by the National Science Center as research project no. 2019/03/X/ST5/00780.

### **Keywords:**

carbon materials, activation, CO<sub>2</sub> adsorption, N<sub>2</sub> adsorption

## COVID-19 AND HARD COAL MINES IN POLAND

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### **A few words about the author:**

Anna Lubosz – PhD student at the faculty of mining, security engineering and industrial automation of the Silesian University of Technology in Gliwice. Topics of interest: work safety, accidents at work, motivation of employees to work.

### **Abstract:**

The author took on the problem related to COVID-19 among miners. Shows the procedure for fight against coronavirus, screening tests and extractions in mine. The author shows practices applied in hard coal mines to discipline the crew.

### **Keywords:**

mining, COVID-19

## **COMPUTER-AIDED DESIGN OF ULTRALIGHT INJECTION-MOLDED COMPOSITES WITH REINFORCEMENT PRODUCED IN THE SLM PROCESS**

**Aleksandra Nieszporek, Marcin Rzeszutek\*, Mariusz Król**

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### **A few words about the authors:**

Aleksandra and Marcin are Material Engineering students. As part of student research group supervised by Mariusz Król, they are developing their skills.

### **Abstract:**

Ultralight composite structures enjoy great popularity due to their low density, which reduces the weight of the finished product while maintaining its strength properties. The aim of the work was to present an innovative approach to the design and production of ultralight, durable composite components on a polymer matrix, reinforced with skeletons produced by the SLM method. The design of the 3D model was carried out with the help of the SolidWorks program, which enables 2D and 3D design as well as MES numerical simulation. The injection process was designed in Autodesk Moldflow.

### **Keywords:**

ultralight constructions, computer aided design, SLM, injection molding process

## INERTIAL MOTION CAPTURE SYSTEM AS A TOOL FOR HUMAN MOVEMENT ANALYSIS

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### **A few words about the author:**

The author is a PhD student at the Rzeszów University of Technology. Her research work focuses on modeling and simulation in medical applications. She is also interested in biomaterials and the use of Rapid Prototyping techniques in medicine.

### **Abstract:**

Motion tracking (MT), also called motion capture, is commonly known for its application in the entertainment industry, where it is used for the animation of characters in film and computer games. It also enables measuring movement so that it can gather information about the mechanics of the musculoskeletal system during the execution of a motor task. This information can be analyzed to determine the motion features or kinematics. Such data can be used as an investigative or diagnostic tool in the areas of medicine, sports, video surveillance, physical therapy, and kinesiology.

Optical Motion Capture systems are often thought of as the laboratory gold standard in motion tracking. However, they have some limitations as complex and time-consuming operation. Furthermore, such systems are constrained by the operating environment due to line-of-sight difficulties, which can result in missed data.

In recent years, it appears a new type of system that can be used for movement analysis: inertial motion capture (IMC) systems. With the MEMS technological development, the accuracy of inertial sensors improves, so the inertial sensors become one of the choices of more people in the motion capture system. This kind of system has a chance to reach one of the biggest challenges in motion tracking - having an accurate estimation with non-invasive sensors and a non-limited workspace. The purpose of the work is to present this system and compare it with the OMC system.

### **Keywords:**

Inertial Motion Capture, Optical Motion Capture, Inertial Measurement Unit, biomechanical model, movement analysis

## AN ATTEMPT TO IMPROVE THE WORKING CONDITIONS OF GEOTHERMAL PLANTS BY CHEMICAL STIMULATION OF ABSORPTION SYSTEMS

**Jacek Zieliński**

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### **A few words about the author:**

I am a fourth year student of doctoral studies. In my scientific work I deal with the problems of renewable energy and, in particular, the use of geothermal energy for this purpose.

### **Abstract:**

The biggest technical problem preventing the development of geothermal technology in Poland is the phenomenon of the collation of absorbent holes, consisting in the precipitation of various chemical compounds on casing pipes, filters and, in particular, the deposit layer from the injected water into the rock mass. This is particularly important in the case of geothermal plants working in geothermal doubles, operating on the Polish lowland. Due to high water mineralization, e.g. in Pyrzyce 120 g/l, this water cannot be disposed of in any other way than by being injected into the same aquifer. As a result of thermal water cooling, the precipitated products block the sandstone pore collectors, which are characterised by low porosity and volume, as well as insufficient hydraulic connections. The porosity of sandstones used as absorptive systems is too low for effective drainage of geothermal water. Such a situation largely limits and sometimes even makes such an investment technically impossible or economically unprofitable. For this reason, many scientific centres are working on methods of counteracting these unfavourable phenomena, or at least on the possibilities of improving the working conditions of such a system both technically and economically. One way to deal with this situation is to use different chemicals dosed into the installation or directly into the lymphatic holes in order to make it clear.

### **Keywords:**

geothermal energy, geothermal water conditioning, absorptive holes, sealing

**NATURAL SCIENCES**

***PRESENTATIONS***

## PREBIOTICS IMPACT ON LACTOBACILLUS SPP. PROBIOTIC STRAINS METABOLISM

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### A few words about the author:

As PhD student, I am working on elaboration of synbiotics for monogastric animals at the Institute of Fermentation Technology and Microbiology. The study involves in vitro selection of pro- and prebiotic, and synbiotic effectiveness analysis (in vivo).

### Abstract:

The aim of the research was to determine the impact of selected prebiotics (inulin, maltodextrin, apple pectin,  $\beta$ -glucan and corn starch) on *Lactobacillus* spp. (*rhamnosus* LOCK 1087, *paracasei* LOCK 1091, *reuteri* LOCK 1092, *plantarum* LOCK 0860, *pentosus* LOCK 1094) metabolism. Changes in enzymatic profile and concentrations of lactic acid, short chain fatty acids (SCFAs), as well as acetaldehyde and ethanol synthesized by bacteria were analysed in correlation with prebiotics used for probiotic cultivation.

Selected probiotic strains were activated in MRS broth with glucose for 24h at 37°C. Afterwards, monocultures were centrifuged, washed with PBS and then resuspended in PBS to adjust optical density ( $\lambda = 600\text{nm}$ ) that corresponded for  $1 \times 10^8$  colony-forming units per millilitre (CFU/ml). MRS broths in which glucose was replaced with each prebiotic, separately, in three different concentrations (1.0%, 1.5% and 2.0%) were inoculated with prepared monocultures suspensions in PBS. After 24h of cultivation at 37°C, 1 ml of each sample was and API® zym enzymatic test was performed. Subsequently, each sample was centrifuged and supernatant (2ml) was subjected to high performance liquid chromatography (HPLC) to determine the concentrations of analysed metabolites.

Inulin used for *Lactobacillus* spp. cultivation resulted in beneficial changes in metabolism and enzymatic profile.

This research was funded by the National Centre for Research and Development, grant no. PBS3/A8/32/2015.

### Keywords:

probiotics, prebiotics, *Lactobacillus*, metabolism



## NUTRITIONAL VALUE OF EDIBLE CORNU SNAIL MEAT - A LITERATURE REVIEW

**Aleksandra Garbacz\* (1), Beata Dzięgiel (2)**

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*(1) Faculty of Food Sciences and Biotechnology, Student Research Group of Biotechnologists "Biome"*

*(2) Faculty of Veterinary Medicine*

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### **A few words about the authors:**

Aleksandra Garbacz – student of the University of Life Sciences in Lublin.  
Dr Beata Dzięgiel – specialist, employee of the University of Life Sciences in Lublin.

### **Abstract:**

Meat obtained from edible Cornu snails is used in the food industry due to its high nutritional value and taste. The nutritional value of this raw material is determined by its energy value, biological value and digestibility. The meat of edible snails has low energy value due to the low content of carbohydrates and a high biological value due to high content of exogenous compounds. In addition, this raw material contains vitamins A, B, E and minerals, thanks to which meat consumption has a positive effect on the human body.

The aim of the study was to determine the nutritional value of edible Cornu snail meat on the basis of a literature review.

### **Keywords:**

nutritional value, biological value, energy value, meat, snail

## MARKET ANALYSIS OF THE INSTANT KISSELES WITH FREEZE-DRIED FRUIT AND EVALUATION OF CONSUMER PREFERENCES

**Anna Ignaczak\*, Ewelina Masiarz, Agnieszka Ciurzyńska, Hanna Kowalska**

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### **A few words about the author:**

I am a second year student of master's studies at the Warsaw University of Life Sciences (SGGW), Department of Food Technology. Currently, I am focusing on preparing my master's thesis, in which I am developing the technology of dried carrot snacks.

### **Abstract:**

Today's consumers lead an active lifestyles and spend less and less time preparing meals. They often reach for „convenient food”, which is easy and quick to prepare, and above all durable and sensory attractive. For this reason, the market has seen a significant increase in demand for so-called „convenient food”. The group of these products includes, among other things, instant kisseles, which as instant dessert concentrates are currently very popular among Polish consumers. The variety of these products is mainly due to a rich range of flavours, whose sensory attractiveness has been enriched by the addition of sublimation-dried fruit.

Such a diversified market offer of instant kisseles with freeze-dried fruit has led to a market analysis and the availability of this type of products in three stationary stores and one online store. The scope of the study also included an assessment of consumer preferences for instant kisseles with freeze-dried fruit and a sensory evaluation of instant kisseles with freeze-dried strawberries from three different producers. The analysis of the market of instant kisseles with freeze-dried fruit showed the taste diversity of this type of products. The survey of consumer preferences proved, that the majority of respondents use this type of products and the main factor determining their purchase is price. According to the sensory assessors, Gellwe's kisseles turned out to be the most desirable product in sensory terms.

### **Keywords:**

freeze-drying, freeze-dried fruit, analysis, dessert concentrate, convenient food

## ETIOLOGY FACTORS FOR CALF DIARRHEA DEPENDING ON AGE

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### **A few words about the authors:**

We are students of the 5th year of Veterinary Medicine at the Faculty of Veterinary Medicine of the University of Life Sciences in Lublin.

### **Abstract:**

The aim of the study is to present several causes of calf diarrhea classified according to age. Diarrhea is the second most common cause of death in calves. An important risk factor responsible for calves being affected is keeping animals in large group, bad hygiene, bad quality of milk replacers, irregular feeding and inappropriate temperature. Dehydration and metabolic acidosis are actual causes of death. The etiology is likely multifactorial. Bovine coccidiosis, *Cryptosporidium parvum* are one of the most common causes of diarrhea in older calves and cattle. Bacterias like *Escherichia coli*, *Salmonella enterica* or *Clostridium perfringens* are also responsible for this illness. There are various factors which have to be taken into consideration.

### **Keywords:**

calf diarrhea, coccidiosis, calves

## ACRITARCHS AND PRASINOPHYTES FROM THE UPPERMOST DEVONIAN SAPPINGTON FORMATION (NORTH-EASTERN USA)

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### **A few words about the author:**

PhD student in field of geology. I am especially interested in stratigraphy and palaeontology.

### **Abstract:**

A palynological investigation has been carried out on samples obtained from lower black shales deposits of the Sappington Formation in south-eastern Montana State (USA). All twelve samples were taken from the top of Peak 9559 within the Bridger Mountain Range. Almost all samples taken from 120 cm section contain well preserved both- acritarchs and prasinophytes. The prasinophyte assemblage consists mainly of *Leiosphaeridia* sp., *Tasmanites* sp. and *Maranhites* sp. Acritarch is strongly dominated by *Gorgonisphaeridium* spp. and *Stellinium* spp. The whole microphytoplankton assemblage is dominated by *Leiosphaeridia*. Preliminary analysis of acritarch morphotype variability, fluctuations in acritarchs diversity and the ratio of microphytoplankton were used to know paleoenvironmental interpretations. All obtained data suggest deposition in a offshore marine environment but a regressive environmental change is indicated by a decrease in the acritarch taxonomic diversity in the topmost samples. Moreover, an increase in terrestrial palynomorphs can be observed in the samples from the uppermost part of the section.

### **Keywords:**

geology, stratigraphy, palaeontology

## THE PALYNOLOGY OF THE MIDDLE DEVONIAN DEPOSITS FROM SOUTH-EASTERN POLAND (HOLY CROSS MOUNTAINS, ŁYSOGÓRY REGION)

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### **A few words about the author:**

PhD student in field of geology. I am especially interested in palynology and stratigraphy.

### **Abstract:**

The Middle Devonian spore succession from south-eastern Poland (Miłoszów, Łysogóry Region, Holy Cross Mountains) has been carried out in terms of palynology. All samples revealed a great abundance of palynomorphs including terrestrial and marine components.

The miospore assemblage was dominated by the spores of Geminospora. Within the miospore assemblage, several important taxa were recognised: Aneurospora extensa, Chelinospora concinna, Cymbosporites magnificus, Densosporites devonicus, , Geminospora lemurata, Rhabdosporites langii, Samarisporites triangulatus. Based on the terrestrial microflora, the age of the samples was established as a local "Geminospora" Extensa zone.

The relationship between the most numerous aneurophyte spores Aneurospora extensa and Rhabdosporites langii showed a noticeable decrease in number of R. langii and proliferation of A. extensa. The relative percentage of the marine components (acritarchs, prasinophytes and scolecodonts) was increasing upward the section with the maximum occurring within the top of the Ex 3 sub-zone. This might indicate a weak transgression signal. It could be supposed that the rapid rise of a sea-level was the reason for the R. langii producers to lose their nearshore habitats. A. extensa producers since they inhabited removed from the shore areas, were less affected by eustatic cycles changes.

This project was financially supported by NCN grant nr 2017/27/N/ST10/01699 for M. Kondas (University of Silesia in Katowice).

### **Keywords:**

geology, palaeontology, palynology

## THE ANALYSIS OF CURRENT ORGANIC FOOD MARKET IN POLAND

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### **A few words about the authors:**

Klaudia Kopczyńska: PhD student, her dissertation topic: "The impact of the production system on the quality of courgette fruit". Karolina Misztal: Scientific assistant of the international project "Code of Practice for organic food processors".

### **Abstract:**

The organic food in Poland is growing part of the food sector. Organic products are in high demand by Polish consumers. However, the distribution network is significant lower than other European countries. The aim of the analysis was to characterize the current situation on the organic food market in Poland and to indicate development prospects on the basis of available sources. The analysis shows that in recent years the number of organic producers and agricultural land has decreased, but the number of preparators has increased. The number of organic farms with only plant production (especially industrial plants and legumes for dry seeds) is increasing, but the number of organically farmed animals is decreasing (except poultry). Most of the organic food sold in Poland are from other countries. Despite these facts, the analysis of the current organic food market showed many strengths and development opportunities.

### **Keywords:**

organic market, polish organic food

## THE VOLATILE COMPOUNDS OF KIWI BERRY JUICE (ACTINIDIA ARGUTA), APPLE JUICE, AND THEIR MIXES

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### A few words about the author:

Ph.D. student of the third year of studies at the Warsaw University of Life Sciences. In my work, I study the health-promoting and physicochemical properties of hazelnuts grown in Poland. Author of several international scientific publications.

### Abstract:

The plant *Actinidia arguta*, in contrast to the more popular kiwifruit (*Actinidia chinensis* and *Actinidia deliciosa*) is known as the 'kiwiberry', 'mini kiwi', 'baby kiwi' and has recently grown in popularity worldwide. *Actinidia arguta* is a very promising crop thriving in various climatic zones. Currently, about 1.600 tons of kiwiberry are annually produced worldwide, mainly in the USA, Chile, China, Australia, as well as in European countries, such as France, Belgium, Netherlands, Austria, Switzerland, Germany, and Poland. The consumers appreciated sweet and aromatic flavor of the flesh together with considerably sour taste of the skin of the kiwiberry fruits. Kiwiberry based products are already consumed around the world including juices, ice creams, jams and wine. For aroma profile compounds analysis, an electronic nose system based on ultrafast gas chromatography can provide a non-invasive, rapid, sensitive and relatively low-cost test. Therefore, the aims of this work were to move the research forward into detailed descriptions of volatile compounds of kiwiberry juice.

### Keywords:

VOC, arome profile, minikiwi, actinidia

## **NEW TRENDS IN THE BAKERY PRODUCTS MARKET**

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### **A few words about the author:**

I am a PhD student at the Warsaw University of Life Sciences. My work concerned the risk and hazard analyses, as well as the analysis of the capabilities of interactive models in simulations and optimizations of the production in a bakery.

### **Abstract:**

In recent years, the bakery products market has opened up to enriched products with increased nutritional and health value. Fruit and vegetable pomace is high in fiber and many valuable ingredients, making it a potential addition to this food group. Products with the addition of pomace show increased water retention capacity, which results in improved texture or lower energy value of food without changing the viscosity of the product. Scientific research has shown both the benefits of using pomace in bakery products: increased fiber content, crumb moisture, dough yield, high sensory ratings (up to 20% additive) and negative effects: deterioration of crumb elasticity and hardness, dough stability during rising and sensory assessments (for an addition above 20-25%). The presentation is an overview of the latest trends in additives for bakery products.

### **Keywords:**

pomace, fiber, trend



## CHARACTERISTICS OF RAW MATERIALS FOR THE PRODUCTION OF GRANULAR BARS

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### **A few words about the author:**

I am a PhD student at the Warsaw University of Life Sciences. My work concerned the risk and hazard analyses, as well as the analysis of the capabilities of interactive models in simulations and optimizations of the production in a bakery.

### **Abstract:**

Cereal and granular bars are snacks that provide a healthy and nutritious alternative to sweet or salty products on the market. A frequent addition to this group of foods is dietary fiber, which is a key bioactive substance for the proper functioning of the body. The presentation is an overview of the additives used in cereal-grain bars along with a brief description of their properties. The following additives have been described: the mentioned fiber, linseed, sunflower seeds, pumpkin seeds, oatmeal, honey and barley malt extract.

### **Keywords:**

granular bars, fiber, linseed, sunflower seeds, pumpkin seeds

## THE EFFECT OF CANNABIDIOL ON THE CHEMICAL COMPOSITION AND PHYSICO-CHEMICAL PROPERTIES OF BROILER CHICKEN BREAST MUSCLE

**Damian Bień (1), Monika Michalczuk (2), Arkadiusz Matuszewski (2)\*,  
Monika Łukasiewicz (2), Wojciech Wójcik (2), Paweł Konieczka (3)**

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### **A few words about the author:**

Arkadiusz Matuszewski is a PhD student at Animal Breeding Department, Warsaw University of Life Sciences. His research area concerns different poultry scientific areas with special regard to using nanoparticles and feed additives in poultry breeding.

### **Abstract:**

Keeping broiler chickens in the intensive rearing conditions reduces the resistance of birds to stress factors, which causes increasing health problems. The efficiency of the immune system of birds, apart from hereditary defects, can be compromised by many immunosuppressive factors, such as: microorganisms, environment pollution, inadequate nutrition, as well as unfavorable living conditions on farm. Potential regulators with immunomodulatory activity effect is cannabidiol (CBD) from Cannabis-plants. However, the effect of CBD on the indices determining meat quality are unknown. The aim of the study was to evaluate the effect of CBD supplementation in the broiler diets on chemical properties of broiler chicken breast muscle. Ross 308 chickens were divided into groups: control group (not supplemented CBD) and experimental group supplemented with CBD over a feeding period of 35 days. It was demonstrated that addition of CBD in broiler diet did not significantly influence on the protein, fat and crude ash in breast muscle. The CBD also did not affect the color parameters, pH and breaking strength of the breast muscle. The obtained results confirmed that the use of CBD as a natural immunostimulants represents a potential means in birds immunomodulation while maintaining good quality of meat that meets the requirements of consumers.

This work was supported by the National Science Centre, Grant No. 2018/29/B/NZ9/01351.

### **Keywords:**

broiler chicken, cannabidiol, breast muscle

## DIETARY SUPPLEMENTATION OF CANNABIDIOL AFFECTS SLAUGHTER YIELD OF BROILER CHICKENS

**Damian Bień (1), Monika Michalczuk (2), Arkadiusz Matuszewski (2)\*,  
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### **A few words about the author:**

Arkadiusz Matuszewski is a PhD student at Animal Breeding Department, Warsaw University of Life Sciences. His research area concerns different poultry scientific areas with special regard to using nanoparticles and feed additives in poultry breeding.

### **Abstract:**

Cannabinoids are unique compound only present in cannabis plants *Cannabis sativa*. More than 70 cannabinoids have been discovered in cannabis plant: Cannabidiol (CBD), Cannabinol (CBN),  $\Delta$  9-tetrahydrocannabinol (THC), cannabigerol (CBG) and cannabichromene (CBC). For many years they have been tested for their healing properties. Natural exogenous immunostimulators are substances derived from bacteria, plants and fungi that stimulate the immune system. Many authors proved that the addition of immunomodulators directly administered to the feed or water leads to the improvement of the immune status of the animal's organism, and thus may contribute to better production results. Therefore, CBD might be considered as interesting agents to be used in birds to support their health status but there is a lack of research in this field in chickens. The aim of the study was to investigate the effect of dietary supplementation of cannabidiol on slaughter yield of broiler chickens. Ross 308 chickens were divided into groups: control group (not supplemented CBD) and experimental group supplemented with CBD over a feeding period of 35 days. It was demonstrated that CBD reduced body and muscles weight but did not negatively affect dressing percentage.

This work was supported by the National Science Centre, Grant No. 2018/29/B/NZ9/01351.

### **Keywords:**

broiler chicken, cannabidiol, slaughter yield

## THE EFFECT OF DIFFERENT FORMS OF SELENIUM IN DIET ON THE CHEMICAL COMPOSITION OF BROILER CHICKEN BREAST MUSCLE

**Damian Bień (1), Monika Michalczyk (2), Arkadiusz Matuszewski (2)\*,  
Monika Łukasiewicz (2), Wojciech Wójcik (2), Paweł Konieczka (3)**

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### **A few words about the author:**

Arkadiusz Matuszewski is a PhD student at Animal Breeding Department, Warsaw University of Life Sciences. His research area concerns different poultry scientific areas with special regard to using nanoparticles and feed additives in poultry breeding.

### **Abstract:**

Selenium (Se) is well known for its antioxidant properties and stimulates the immune system to increase the production of antibodies, thus leading to increased activity of immune cells. Many authors pay attention to the relationship between enrichment of feed with selenium compounds and the physiological state and immune response of the organism. It is a completely new approach to the subject of bird health and the quality characteristics of animal products. The purpose of the study was to investigate the effect of different forms of Se in chicken diet on chemical composition of breast muscle. The experiment was carried out at Agricultural Experimental Farm Wilanów-Obory. 300 Ross 308 broiler chickens were divided into four groups with 5 repetitions of 15 birds in each, according to the following arrangement: diet I with Se content of 0.3 mg/g of feed (inorganic Se, control group), 2. diet II with Se content of 0.5 mg/g of feed (inorganic Se), diet III with Se content of 0.5 mg/g feed (Sel-Plex – selenized yeast) and diet IV with Se content of 0.5 mg/g of feed (Nano-Se). Our results suggested that Se form did not affect the fat and protein content in breast muscle. However it was observed that the water content was significantly the lowest in group fed with Nano-Se. The collagen content was the highest in Sel-Plex group.

This work was supported by the National Science Centre, Grant No. 2018/29/B/NZ9/01351.

### **Keywords:**

broiler chicken, breast muscle, selenium, chemical composition

## THE USE OF HEMP IN DIFFERENT ANIMAL SPECIES FEEDING

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### A few words about the author:

Arkadiusz Matuszewski is a PhD student at Animal Breeding Department, Warsaw University of Life Sciences. His research area concerns different poultry scientific areas with special regard to using nanoparticles and feed additives in poultry breeding.

### Abstract:

Hemp have been used for thousands of years. Initially they were used to produce fibers, but the high fat content of hemp seeds of 30-35% made them used to obtain the oil. Hemp oil is a rich source of polyunsaturated fatty acids (PUFA) (75-80%), with 17-19%  $\alpha$ -linolenic acid (ALA) and 60% linoleic acid (LA). In addition, cannabis is a source of substances known as cannabinoids. They are produced in glandular organs called trichomes. The most popular cannabinoid is Delta-9-tetrahydrocannabinol (THC). It is a psychoactive substance and accounts for up to 90% of cannabinoids in parts of hemp except for seeds and roots. Other substances are cannabinal (CBN) and cannabidiol (CBD). Furthermore, cannabinoid acid can be found in hemp oil. They are characterized by anti-inflammatory properties and are therefore used in the treatment of human and animal diseases. They are most often used for painful situations, stress, chemotherapy, neurodegenerative diseases or epilepsy. The aim of this presentation was to present the use of hemp products in animal nutrition based on previous scientific reports.

This work was supported by the National Science Centre, Grant No. 2018/29/B/NZ9/01351.

### Keywords:

hemp, THC, CBD, animal feeding

## PLASTIC BIODEGRADATION BY BACTERIA IDEONELLA SAKAIENSIS

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### A few words about the author:

My name is Anita Rządiewicz. I am in the third year of environmental protection studies at Adam Mickiewicz University in Poznań. I am interested in biotechnological methods used in environmental protection.

### Abstract:

Plastics are present at almost every stage of our lives. However, the high utility values of plastics, such as durability and resistance to environmental factors, making them very difficult to degrade. A large part of the plastic ends up in the natural environment, where they can decompose for 1,000 years. It is known today that plastics have a negative impact on all ecosystems, and microplastics can also have a negative impact on human health. Worldwide accumulation of plastic has become an impulse to undertake research on the search for innovative technologies for the disposal of plastic waste deposited in the environment. These activities also include the biodegradation of plastic, i.e. a process under the influence of biological systems such as bacteria and fungi, which result in the degradation of the polymer in the environment.

This presentation describes the current state of knowledge on the biodegradation of plastics by Gram-negative, aerobic bacteria *Ideonella sakaiensis*. The scientists analyzed the bacteria is able to break down polyethylene terephthalate (PET) – synthetic polymer necessary for the production of mainly plastic bottles. The characteristics also include the description of the mechanism of action of hydrolytic enzymes secreted by microorganisms: PETase and MHETase, which are involved in the entire process.

### Keywords:

plastic, polymer, plastic waste, biodegradation, PET-ase

## POLYMORPHIC FORM OF B - LACTOGLOBULIN AND THE LIPID FRACTION OF MILK

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### **A few words about the author:**

PhD student at Institute of Animal Sciences.

### **Abstract:**

One of the factors increasing the attractiveness of cow's milk may be the use of polymorphic forms of  $\beta$ -lactoglobulin. It is one of the main representatives of whey proteins in cow's milk. The aim of the study is to assess the influence of  $\beta$ -lactoglobulin forms on the formation of bioactive components of the lipid fraction of PHF cows' milk.

Studies have shown that the B  $\beta$ -LG allele is associated with a higher concentration of de novo synthesized fatty acids (C14: 0, C16: 0, C16: 1) and a lower level of C18: 0 and C18: 2. Thus, a decreased ability to transport and metabolize C18: 0 and C18: 2 acids, as well as the ability to respond to a greater supply of dietary fat in the form of supplements, is associated with the  $\beta$ -LG B allele. On the other hand, in cows with the A allele, the studies showed a much lower concentration of de novo synthesized acids, which proves that the energy needed for the synthesis of these fatty acids is transferred towards the synthesis of lactose and general protein. Therefore, milk from cows with the A  $\beta$ -LG allele is characterized by a higher concentration of these components. The genetic variant BLG is not only an indicator of the technological quality of milk, it is also a factor influencing the level of bioactive components of the protein fraction and lipid milk of PHF cows.

### **Keywords:**

polymorphic,  $\beta$ -lactoglobulin, bioactive components

## **THE AGE OF THE FIRST CALVING AND THE PRODUCTION POTENTIAL OF THE PRIMIPAROUS PHF**

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### **A few words about the author:**

PhD student at Institute of Animal Sciences.

### **Abstract:**

The growing world population, and with it the growing demand for food, causes a number of activities aimed at increasing the production of food of plant and animal origin. One of the leading areas in animal production is obtaining milk from cows. Due to the high demand for the raw material, animal improvement programs have been developed. Animal genetic improvement programs assume genetic changes in a chosen direction, which are determined by the effect of the environment. Dairy farming around the world is based on the most productive Holstein-Friesian (HF) breed. The situation is similar in Poland, where its variety was created - Poland Holstein-Friesian (PHF) as a result of crossing which displaced low-yielding native breed cows with bulls of the HF breed. It owes its high production of HF to consistently conducted breeding work towards milk production. The aim of the study is to determine the effect of the age of first calving on milk yield during the first lactation.

### **Keywords:**

milk production, first calving, PHF



# **THERMAL AND OXYGEN DEPENDENCE OF FLIGHT PERFORMANCE IN AGING FLIES OF DROSOPHILA MELANOGASTER: EFFECTS OF RAPAMYCIN-INDUCED CELL SIZE CHANGES**

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## **A few words about the authors:**

Ewa Szlachcic – PhD student, recently focus on the role of cell size in the functioning of organisms. Marcin Czarnołęski DSc – main interests: life history evolution, evolutionary ecology, optimal resource allocation theory, optimal cell size theory.

## **Abstract:**

Millions of years of evolution caused enormous differences in the organisms' size. However, we still do not know why organisms differ in cell size. Cellular architecture can influence functioning of organisms, thus fitness. According to the theory of optimal cell size, cell size results from a compromise between costs and benefits, which differ between environments.

We studied fruit flies *Drosophila melanogaster* to examine whether cell size affects flight performance in various environments in aging flies. We used rapamycin added to food during larval development to induce flies with smaller cell size. To assess flight performance, we measured wing-beat frequency in 10 and 25 day-old males at two temperatures (warm vs hot) combined with two oxygen levels (normoxia vs hypoxia). As expected, flies tested in warm and normoxic conditions had higher wing beat frequency than either cold or hypoxic flies. Against predictions, wing beat frequency did not differ between rapamycin and control flies. However there is a significant interaction between temperature, oxygen level and rapamycin treatment. Our results suggest that smaller cells help organism to perform better in slightly warmer temperature (warm) and hypoxic conditions but not in hot environment with temperatures approaching thermal maxima. We discuss our results in the context of current theories concerning life history evolution and optimal cell size.

The study was supported by NSC grant to MCz (OPUS 2016/21/B/NZ8/00303).

## **Keywords:**

oxygen, plasticity, temperature, wing-beat frequency, wing load

**MEDICAL SCIENCES**

***PRESENTATIONS ONLINE***

## SELECTED ANTI-CANCER MECHANISMS OF VITAMIN D ACTION ON THE HUMAN ORGANISM

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### **A few words about the author:**

I am a student of bachelor's dietetics at the Faculty of Medical Sciences and Health Sciences at the University of Natural Sciences and Humanities in Siedlce.

### **Abstract:**

The topic of vitamin D is gaining popularity every year, but with good reason though. This vitamin, demonstrating pleiotropic effects on the human body, deserves to be distinguished among the other vitamins. Among many benefits, one of the greatest properties of this vitamin is its anti-cancer effect. The aim of the study was to present selected anti-cancer mechanisms of vitamin D activity in the human body. It turns out that this vitamin, apart from a number of benefits for the entire human body, has the ability to prevent the development of cancer also through a number of mechanisms such as activation of apoptosis of neoplastic cells, inhibition of their proliferation and inhibition of angiogenesis processes, and its influence in maintaining tissue integrity according to the DINOMIT theory. Taking into account the fact that cancer diseases are one of the two main causes of death in Poland, ensuring the appropriate concentration of vitamin D in the blood serum in the form of the 25(OH)D metabolite could significantly reduce the number of cases, and thus deaths due to cancer. Undoubtedly, the anti-cancer properties of vitamin D should be the subject of more and more research.

### **Keywords:**

vitamin D, cancer, proliferation, apoptosis, angiogenesis

## HEALTH- PROMOTING PROPERTIES OF BEE POLLEN

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I am a student of bachelor's dietetics at the Faculty of Medical Sciences and Health Sciences at the University of Natural Sciences and Humanities in Siedlce.

### **Abstract:**

Bee pollen is, next to honey and propolis, one of the main products produced by bees. These beneficial insects collect pollen and mix it with nectar, honey and saliva, which produces bee pollen. This product is considered to be one of the greatest gifts of the nature because it contains almost all the ingredients that are essential for human life. Its main pro-health properties include anti-inflammatory, hypolipemic, antibiotic, anti-hepatotoxic, detoxifying, anti-anemic and anti-cancer properties. It owes its action to a whole set of vitamins, minerals, enzymes and coenzymes, lipids, fatty acids, phenolic compounds, amino acids and many others. No wonder that it shows a number of such important pro-health properties for the human body. However, the knowledge about properties and the current popularity of this product, is undoubtedly still too little and disproportionate to the health benefits that result from consuming this product. Bee pollen should certainly be the subject of further research in order to discover even more of its health- promoting properties.

### **Keywords:**

bee pollen, health

## AMYGDALIN - THE FORGOTTEN CANCER KILLER

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### A few words about the author:

I am student of biomedicine in Lublin. I am a student who likes to research natural substances and their anticarcinoma properties.

### Abstract:

Nowadays, the incidence of cancer is increasing drastically by increasing human exposure to carcinogens. Despite the advances in medicine and the use of new treatments, the lifespan of cancer patients is still very low. Numerous pharmacological studies around the world have confirmed the anti-cancer effect of many herbal medicines. These include amygdalin (AMY), which is a glycoside found in common quince and seeds of fruit trees such as apricot, cherry and peach. The AMY study revealed that it could act as a multifunctional drug in the treatment of cancer, especially when used as a targeted therapy, as AMY activates apoptotic pathways and lowers proliferative protein levels. According to research, AMY has cytotoxic and analgesic properties that stop neoplasia and reduce pain levels with chemotherapy. Research using AMY must be particularly accurate and safe due to the toxicity of hydrogen cyanide (HCN) converted from AMY in cells. In addition, further research should look at more types of cancer to test all the properties of AMY in different cancer cases. Amygdalin may become a targeted anti-cancer drug in new methods of fighting cancer.

### Keywords:

amygdalin, cancer, natural substance

## **PRESSURIZED INTRAPERITONEAL AEROSOL CHEMOTHERAPY - A PROMISING TREATMENT FOR PERITONEAL CARCINOMATOSIS OF PANCREATIC ADENOCARCINOMA**

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### **A few words about the authors:**

We are final year medical students and active members of Student Scientific Group at the Department of Oncological Surgery at the Medical University of Lublin.

### **Abstract:**

Pancreatic cancer is the third most common gastrointestinal cancer in the Western population. The five-year survival for pancreatic ductal adenocarcinoma (PDAC) does not exceed 7%. Resection is the only efficient way of treating PDAC, however up to 80% of operated patients are going to experience cancer recurrence during the 2-year period after a procedure. About 50% of those patients present a peritoneal relapse.

The standard chemotherapy for peritoneal metastases (PM) of PDAC is linked with a major toxicity and median overall survival equal to 6 -11 months. Pressurized intraperitoneal aerosol chemotherapy (PIPAC) is an innovative method of treatment that may improve the quality of life as well as the OS of patients showing PM. PIPAC is performed during a laparoscopy procedure by administration of chemotherapeutics in form of an aerosol directly into the peritoneal cavity. As a result, the penetration of drugs into the tumour tissue is more effective than during an intravenous infusion. Furthermore, PIPAC is also characterized by a lower toxicity as it does not induce any systemic side effects.

Available data concerning the application of PIPAC in the treatment of PM from PDAC is scarce. Large prospective studies consisting of control groups are still lacking. Nevertheless, the results of accessible studies, displaying a median OS of participants reaching 14-16.8 months with no G3 and G4 complications (according to CTCAE v4.0), are encouraging and justify further research.

### **Keywords:**

PIPAC, pressurized intraperitoneal aerosol chemotherapy, pancreatic cancer, peritoneal carcinomatosis

## IS THERE ANY ROLE OF A DIET IN THE DEVELOPMENT OF MALIGNANT MELANOMA?

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### **A few words about the authors:**

We are students of Faculty of Medicine at Medical University of Lublin and members of Student Scientific Group at the Department of Oncological Surgery.

### **Abstract:**

Malignant melanoma (MM) is a skin cancer that develops from melanocytes. The prevalence of MM is increasing worldwide. MM usually affects young and middle-aged people and it constitutes a major socio-economic problem.

The analysis is based on the publications concerning the risk factors for development of MM from 2010 to 2020, that are available on PubMed platform.

The most important risk factor for MM development is an excess exposure to ultraviolet (UV) radiation. Other common risk factors include: melanoma in a family history, number of melanocytic nevi, history of sunburns, type of skin, However, there seems to be an interesting relationship between a diet and development of MM, too.

Consumption of caffeine may help to reduce the risk of MM as well as inhibit its development and progression. On the other hand, citrus products, especially grapefruits, are rich in psoralens and furocoumarins. They can react with the UV radiation, which may stimulate the development of MM. Moreover, during the conversion of ethanol into acetaldehyde the reactive oxygen species are formed and they may induce DNA damage. The influence of folic acid and niacin and vitamin D is still debatable.

In conclusion, the relationship between diet and MM is still unexplored. A deeper understanding of the mechanisms linking a type of diet, nutrients and food items with MM incidence may contribute to establishing new innovative preventive strategies and more effective methods of treatment.

### **Keywords:**

malignant melanoma, diet, nutrition

## LUNG ULTRASOUND AS A METHOD OF PNEUMOTHORAX DETECTION

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### **A few words about the authors:**

We are medical students from Medical University of Lublin.

### **Abstract:**

Pneumothorax is a condition in which air is present in the pleural cavity. It is often a life-threatening condition that requires quick response and protection. Therefore, a sensitive and specific diagnostic method is needed. Computed tomography is the gold standard in the detection of pneumothorax, but it has its limitations. On the other hand, the chest X-ray is characterized by a relatively low sensitivity (47%). Ultrasonography (USG) has become a method that is gaining interest and more and more willingly used in emergency medicine in recent years.

USG is an imaging method that uses ultrasound. It is non-invasive, safe, reproducible, bedside accessible, portable and does not generate radiation. The ultrasound signs of pneumothorax are absence of lung sliding, absence of B-lines, absence of lung pulse and presence of lung point. The ultrasound is 91% sensitive and 99% specific for the detection of pneumothorax, which allows more accurate ruling in and ruling out the diagnosis of pneumothorax than supine anterior chest radiography. Therefore, lung ultrasound should be used in situations where pneumothorax is among the suspected diseases and may be a good strategy as an initial diagnostic study in critically ill patients.

### **Keywords:**

lung ultrasound, pneumothorax, emergency medicine



**MEDICAL SCIENCES**

***PRESENTATIONS***

## PSEUDOHYPOPARATHYROIDISM - RARE DISEASE DIAGNOSTIC CHALLENGES AND TRAPS

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### A few words about the authors:

Prof. Aldona Kowalska, prof. Artur Kowalik, dr Agnieszka Walczyk and mgr Kinga Hińcza are physicians and/or scientists at the Holycross Cancer Center. Grzegorz Chmielewski is a member of a student scientific organization at Jan Kochanowski University.

### Abstract:

Pseudohypoparathyroidism (PHP) is a heterogeneous group of rare, hereditary disorders of the calcium-phosphate metabolism, which are a result of tissue resistance to parathormone (PTH). A 45-year old woman was admitted to the Endocrinology Clinic in 2017 to undergo a complex evaluation of hypercalcemia in the course of chronic kidney disease. For years, she has been treated operatively, due to a diagnosis of epiphyseal plates defect. She was supplementing calcium and alfacalcidol due to newly diagnosed hypocalcemia and hyperphosphatemia. Until admission, she had never had her PTH level tested. Physically: short stature, obesity, enamel hypoplasia, mild intellectual disability, bone and joint deformations, hypothyroidism and cataracts in both eyes. The patient's phenotype and medical history corresponded to Albright's hereditary osteodystrophy (AHO), which is a particular presentation of PHP type Ia. Calcium supplementation was discontinued until normalization of calcium levels and kidney function tests. Later, an increase in serum PTH level was observed, characteristic to PHP. In order to maintain the calcium levels in the reference range, oral supplementation was restarted. Genome sequencing discovered a mutation in the GNAS gene. Correct diagnosis of PHP at possibly earliest age is crucial for timely introduction of appropriate treatment. PHP should be taken into consideration in every case of hypocalcemia, hyperphosphatemia together with the characteristic features of AHO.

### Keywords:

pseudohypoparathyroidism, Albright's hereditary osteodystrophy, hereditary diseases, GNAS gene

## CRISPR GENE EDITING-BASED FUNCTIONAL THERAPIES FOR NEURODEGENERATIVE DISORDERS

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### **A few words about the author:**

5th year faculty of medicine student at the Jagiellonian University Medical College.

### **Abstract:**

CRISPR (clustered regularly interspaced short palindromic repeats) gene editing is a technique based on bacterial CRISPR-Cas9 system that allows for modification of living organisms genomes. Despite the advances in research regarding the genome-wide association studies and growing catalogue of genes being the risk factors for neurodegenerative diseases, little is known about the specific pathways those connections are mediated by. This review focuses on the potential role of CRISPR in discovering such pathways, allowing us to identify new potential therapeutic targets. By inducing specific genome changes responding to previously detected risk factors in human cell cultures we are able to study their functional consequences thus undiscovering causal determinants of cellular vulnerability. What is more, CRISPR activation and interference allows to alter not only the structure of the genes but also their expression. To conclude, by performing specific changes in gene structure CRISPR has enormous potential as a tool for discovery of specific pathways connected to neurodegenerative diseases as well as potential therapeutic target.

### **Keywords:**

CRISPR, neurodegenerative disorders

## ANALYSIS OF DIFFERENCES IN COURSE OF MOVEMENT DISORDERS ACCORDING TO SEX - LITERATURE REVIEW

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### **A few words about the author:**

5th year faculty of medicine student at the Jagiellonian University Medical College.

### **Abstract:**

Movement disorders are a group of heterogenous diseases characterized by gradual die off of varied types of neurons affecting the function of both central and peripheral nervous systems. Recent years brought abundance of evidence indicating sex-based differences in natural courses of various diseases such as Alzheimer disease, stroke or movement disorders. This literature review focuses on recent advancements in the field of sex-related differences in natural courses of the diseases. We will go over the evidence suggesting the potential stimulative effect of sex steroid hormones on survival of substantia nigra cells and their composition in specific states such as pregnancy. We conclude that further detection of sex-specific differences in movement disorders may help as a stratification tool for both diagnosis, treatment and prevention in the context of precision medicine. Future epidemiological studies should be performed in order to elucidate differences in less prominent diseases due to lack of evidence in disorders different than Parkinson's disease.

### **Keywords:**

movement disorders, sex-specific differences, Parkinson's disease

## ANALYSIS OF PATTERNS AND FACTORS OF FAMILICIDE

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### **A few words about the author:**

5th year medical student from Jagiellonian University Medical College. Interested in researches in the field of psychiatry, psychology and pathology.

### **Abstract:**

Familicide is a type of murder or murder suicide in which perpetrator kills close family members. The act can take various forms and include one or more victims. The aim of this research was analysis of 14 cases of murders among family members combined with the suicide of perpetrator. Data was investigated in terms of homicide pattern, weapon used, place of the events, age, gender and previous psychiatric treatment.

Majority of these crimes were committed by men (86%), the average age of the perpetrator was 47.71 (SD 16.37). Out of 14 cases 2 (14%) were under the influence of alcohol and 2 had a history of psychiatric treatment. In 11 cases (79%) a perpetrator killed one person, in 2 cases (14%) two people, in one case (7%) three. Most often a murderer and a victim were a spouse (12 from 16 victims). Four victims were children of perpetrator.

Most common way of murder was inflicting injuries using sharp weapon.

### **Keywords:**

forensic medicine, familicide

## ANALYSIS OF KINEMATIC AND DYNAMIC MOTION PARAMETERS WITH THE USE OF MEASURING TOOLS

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### **A few words about the author:**

I am a student of three courses. My main courses are Physiotherapy and Neurobiology. I write articles for magazines. In future I would like to go to third degree and I would like to make studies and researches.

### **Abstract:**

The aim of the work was to review the existing tools for measuring dynamic and kinematic parameters of motion. Describing the tools, the focus was mainly on the measurement principles and the use of individual tools. In order to understand the selection of an appropriate tool, the first part of the work describes what are the kinematic and dynamic parameters of motion and what are the essential differences between them. Then it was crucial to describe the forces acting on the human movement apparatus, such as static and dynamic forces. The following sections present selected tools for the analysis and measurement of kinematic and dynamic motion parameters. The variables on which the traffic analysis depends, such as age, gender, weight, were taken into account. Gait determinants are depicted. Among the tools for measuring the dynamic and kinematic parameters of movement, gait analysis, the speckle photography method, and the holographic interferometry method were taken into account.

### **Keywords:**

biomechanics, motion parameters, motion analysis

## TREATMENT OF CASTRATION-RESISTANT PROSTATE CANCER

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### **A few words about the authors:**

Justyna Jandernal-specialist in clinical oncology, dealing in the diagnosis and treatment of cancer patients for several years. Dr. hab. Ewa Ziółkowska-specialist in oncological radiotherapy, professor at the Academy of Kalisz at the Medical Faculty.

### **Abstract:**

Oncology is one of the most intensively developing fields of medicine. Each year, thousands of new molecules and medicines are tested for oncological indications. Because of new therapies, the way people perceive cancer has changed. Today, we can offer patients if not a cure, it is an extension of overall survival. Because of society is aging, civilization is changing and the progress of diagnostics, more and more men get prostate cancer. Prostate cancer is a disease that is often depends on hormonal activity. We can stop it from growing through castration. What if the cancer stops responding to this therapy? What if it gets out of our control? How are we trying to break resistance to castration? In our presentation, we would like to present the current possibilities of oncological management. We also refer to how new therapies affect the way we treat patients who are resistant to castration.

### **Keywords:**

prostate cancer, castration, resistance, oncology

## CONGENITAL LACK OF MAXILLARY LATERAL INCISORS - A PROBLEM OR A CHALLENGE FOR MODERN DENTISTRY?

Natalia Kazimierczak\*, Ewa Ziolkowska

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### A few words about the authors:

Natalia Kazimierczak – dentist, MSc in Orthodontics graduate of Danube University in Krems.  
Ewa Ziolkowska – PhD, Associate Professor, specialist in oncology – radiotherapy, expert witness, leader.

### Abstract:

Tooth agenesis (OMIM #106600), i.e. congenital absence of tooth germs, is the most common dental anomaly. In the anterior segment of the dental arch, it mainly affects the lateral incisors of the maxilla, which clinically strongly affects the aesthetics of the smile. The etiology may be different. Congenital deficiency is a consequence of disorders of their initial development at the stage of formation and proliferation. Recognition at the right time allows for a satisfactory dental treatment effect. However, one must remember about the interdisciplinary dental approach. The therapy is to result in healthy periodontium, functionality and smile aesthetics.

**Aim:** The aim of the study is to characterize the agenesis of the maxillary lateral incisor (s) and to present the authors' point of view on the treatment options for this disorder.

**Materials and Methods:** Query of PubMed databases was conducted to search for studies covering the frequency of dental agenesis in maxillary lateral incisors. The inclusion criteria were the literature in English and Polish.

### Keywords:

tooth agenesis, hypodontia, etiology, dentistry



## COMBINING DRUGS IN EPILEPSY WITH PARTICULAR EMPHASIS ON FEMALE POPULATION

**Jerzy Król**

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### **A few words about the author:**

Medical Student from Jagiellonian University Medical College.

### **Abstract:**

Being a woman with epilepsy is not the same as being a man with epilepsy. Women at reproductive age constitute about 25% of the population of patients with epilepsy. Use of specific medications among this particular population should take into account the impact of different aspects of life. Certain antiepileptic drugs have cosmetically unfavorable effects.

Approximately 65% of females suffering from epilepsy have seizures more frequently during menstruation (the term catamenial epilepsy is reserved for those cases where seizures occur only in the period immediately preceding menstruation and during the menstrual period).

Reproductive dysfunction in women with epilepsy relates to hormonal abnormalities, infertility and sexual dysfunction. As the result they have a huge impact on the overall health of women and their quality of life.

### **Keywords:**

epilepsy, women, combining drugs

## CLINICAL EXPERIENCE WITH LEVETIRACETAM IN PATIENTS WITH EPILEPTIC SEIZURES AFTER STROKE

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### **A few words about the author:**

Medical student from Jagiellonian University Medical College.

### **Abstract:**

Stroke is one of the most frequent causes of epilepsy in the elderly population. The nature of vascular damage of the brain plays a significant role in the risk of seizures. Seizures are more frequently a complication of haemorrhagic stroke (3–25%) than the ischemic (5–10%). Among epileptic seizures of a post-stroke etiology, the following seizures are distinguished: early onset (up to 2 weeks after stroke) late onset (more than 2 weeks after stroke). Seizures appear approximately in 3–5% of patients in the year after stroke and in 1–2% one year after the stroke.

In the case of post-stroke epilepsy it is common to encounter certain difficulties that may concern medical specialists. One of the most common is its treatment.

Although many of the newer anticonvulsants such as levetiracetam have been studied as adjunctive agents for post-stroke seizures, in practice they are often used as monotherapy.

### **Keywords:**

epilepsy, Levetiracetam, stroke

## THE ANTI-CANCER PROPERTIES OF TURMERIC ON THE EXAMPLE OF BREAST, LUNG AND COLON CANCER

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### A few words about the author:

President of the ISOMERS Student Research Club - Medical University of Lublin, Bachelor in Biomedical Sciences (Faculty of Medicine, MUL) 3rd year medical student (Faculty of Medicine, MUL).

### Abstract:

The active ingredient of the *Curcuma longa* plant is curcumin. Numerous studies are currently underway in the context of its anti-inflammatory, antioxidant, radioprotective, antimutagenic, antipyretic and immunostimulatory properties.

The increasing incidence of this cancer among women prompts to develop effective measures both in the field of primary and secondary prevention. This substance deserves special attention due to its numerous chemopreventive properties. Its effectiveness in inhibiting tumor growth has been observed at various molecular levels.

Recently, much attention has been paid to the benefits of dietary, bioactive compounds in the prevention of lung cancer. This is mainly due to their low toxicity as well as their long history of use in the population, making them appear safer to use.

After ingestion, curcumin is practically undetectable, and its highest concentration can be observed in the area of the large intestine and prostate gland. Consequently, this substance is often used in colon cancer treatment studies. Numerous reports have shown the modulation of many cell signaling pathways with curcumin and molecular molecules in various cancer cell lines with which it reacts.

In this presentation, I present an analysis of several dozen in vivo and in vitro tests with the use of *Curcuma longa* active ingredients in models of breast, lung and colon cancer.

### Keywords:

turmeric, breast cancer, lung cancer, colorectal cancer, curcumin

## THE ROLE OF LEPTIN IN THE DEVELOPMENT AND COURSE OF PARKINSON'S DISEASE

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### A few words about the author:

Jan Skarbimir Milanowski is a second-year student of pharmacy at Collegium Medicum, Nicolaus Copernicus University; since last year working at the Students Research Club of Medical Biology.

### Abstract:

Parkinson's disease (PD) mainly affects the elderly and is the second most common neurodegenerative disease in the human population. It is characterized by motor disorders, including instability, tremor, bradykinesia, and non-motor symptoms (NMS), as pains, depression and loss of smell. All symptoms are associated with a decreased amount of dopaminergic neurons and the accumulation of  $\alpha$ -synuclein in substantia nigra. Body mass loss is characteristic of PD patients in the course of the disease. The changes in the amount of adipose tissue may influence the secretion of adipokines, hormones released by adipocytes. One of the best known adipokines is leptin, a peptide hormone secreted by white adipose tissue. Leptin is responsible for the regulation of appetite, maintaining energy homeostasis, but also for inducing the formation of cellular fat droplets and adipogenesis. Changes in its concentration have been studied in the context of body mass loss in patients with PD. Many researchers have investigated the correlation between serum leptin levels and disease incidence, progression, the use of anti-PD drugs and cognitive abilities in affected patients. The vast majority of studies have not indicated any statistically significant relationships between the occurrence and course of PD and the concentration of leptin. Only the correlations between leptin levels and body mass, amount of body fat, gender, age have been described in both patients and healthy people.

### Keywords:

adipokines, leptin, Parkinson's disease

## EVOLUTION OF POLISH NUTRITIONAL GUIDELINES DURING THE LAST 20 YEARS

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### **A few words about the authors:**

Karolina Misztal: Scientific assistant of the international project "Code of Practice for organic food processors". Klaudia Kopczyńska: PhD student, her dissertation topic: "The impact of the production system on the quality of courgette fruit".

### **Abstract:**

Over the last 20 years lifestyle and eating habits of Poles have changed. At the same time, due to epidemiological studies and the constantly improving knowledge, experts had know increasingly more about the nutrition impact on health. Based on this the Institute of Food and Nutrition is able to provide valid nutrition guidelines for maintaining good health. The main changes in the guidelines have been: reducing the consumption of meat and animal fats, increasing the consumption of vegetables, fruits and fiber, reminding to hydrate, reducing salt and sugar intake. The emphasis on physical activity as the fundament of the pyramid was also a very important element in the evolution of the guidelines. Over the years, the needs of specific nutritional groups were also noticed and dedicated dietary suggestions were published. Nutritional guidelines are nowadays not only dietary patterns but the healthy lifestyle recommendations.

### **Keywords:**

nutritional guidelines, nutrition pyramid

## THE USE OF ANTICOAGULANT PROPHYLAXIS IN PATIENTS WITH TERMINAL NEOPLASTIC DISEASE

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### A few words about the authors:

Paweł Myśliborski-Wołowski is an internal medicine specialist currently working in the department of clinical oncology in Grudziądz. Ewa Ziolkowska is a specialist in oncological radiotherapy and a professor at the The Academy of Kalisz.

### Abstract:

The incidence of various forms of venous thromboembolism among patients with active neoplastic disease is 4-8 times higher than the population risk. The risk of recurrent thrombosis also increases 3 times. Oncological patients under hospice care are exposed to additional risk factors for the development of VTE, such as long-term immobilization, multiple and massive distant metastases, tumor mass and associated venous blood stasis. The use of active anticoagulant prophylaxis in this group of patients would reduce the risk of thrombosis symptoms and extend life. However, the main task of home and inpatient hospices is to ensure the highest quality of life, reduce suffering, and not persistently prolong it. The decision to use anticoagulant prophylaxis should be made after careful analysis of the benefits for the patient, taking into account the risk factors resulting from the therapy.

### Keywords:

venous thromboembolism, hospice care, anticoagulant prophylaxis

## NON-SMALL CELL LUNG CANCER - ONE OF THE SCOURGES OF THE XXI CENTURY

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### A few words about the author:

I am a second-year PhD student at the Faculty of Medicine. My interests are molecular biology and histology.

### Abstract:

Lung cancer is the most frequently diagnosed malignant neoplasm, the most common cause of death from malignant neoplasm, one of the worst prognosis of malignant neoplasms and is the main burden of the disease in Poland. Over 80% of all diagnosed lung cancers belong to the group of non-small cell lung cancer (NSCLC). The greatest number of cases of lung cancer in Poland is recorded in people over 60 years of age. The dominant risk factor for lung cancer is smoking, but advanced age, recurrent inflammation, air pollution, and poor diet can also contribute to the disease.

The search for new methods of treatment has become a challenge for modern medicine. Advances in the study of the molecular characterization of cancer cells have led to the development of new approaches to fight cancer, such as targeted therapy. Targeted therapy in the treatment of non-small cell lung cancer uses modulation of the apoptosis process as well as immunomodulatory drugs, such as Nivolumab. No less important are further studies on the effect of chemopreventive agents on cancer cells in order to increase the effectiveness of therapy and the survival time of patients, and even to interfere with the early stages of cancer, such as inhibiting the initiation or promotion of cancer.

### Keywords:

non-small cell lung cancer, disease, epidemiology, treatment

## THE CELL CYCLE - SUCCESSFUL ANTICANCER THERAPY

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### A few words about the author:

I am a second-year PhD student at the Faculty of Medicine. My interests are molecular biology and histology.

### Abstract:

Cancer is often referred to as "cell cycle disease" because one of the basic features of cancer cells is uncontrolled proliferation. The cell cycle is regulated by the so-called checkpoints. Their task is to condition the beginning of the next phase of the cell cycle and to monitor the correct course of events that take place in its individual phases. It has been observed that most neoplastic cells show changes in the mechanisms regulating the progression of the cell cycle. Understanding how cell cycle checkpoints work was a breakthrough in understanding how cancer cells behave, as well as how these cells respond to drugs. Checkpoint regulation mechanisms could become targets for new, more selective cancer therapies.

### Keywords:

cancer, cell cycle, checkpoints, therapie



## OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY IN OPHTHALMOLOGICAL PRACTICE

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### **A few words about the authors:**

We have been working in Department of Ophthalmology in Regional Hospital in Kielce.

### **Abstract:**

Optical coherence tomography angiography is currently the most advanced imaging technique used in the visualisation of the structure and vascular perfusion of the retina and choroid. The greatest advantages of the technique include its non-invasive character and the ability to analyse individual vascular layers. Despite certain shortcomings in the software, the technology is constantly developing. In clinical practice it is used to detect and compare neovascularisation in disorders such as age-related macular degeneration and central serous chorioretinopathy, as well as the foci of ischaemia associated with diabetic retinopathy, central retinal vein occlusion, and other ophthalmological vascular diseases. At present its potential is being studied as a screening test for early stages of diabetic retinopathy and for glaucoma. Due to difficulties with the interpretation of the results, it is important to improve the skills of ophthalmologists in this respect, and to raise the awareness of the potential applications of this method.

### **Keywords:**

optical coherence tomography angiography, choroidal neovascularisation, vascular disorders, age-related macular degeneration

## POSSIBILITIES OF USING IMMERSIVE VIRTUAL REALITY IN PHYSICAL CULTURE

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### **A few words about the author:**

Physical education teacher, physiotherapist, PhD.

### **Abstract:**

The last few years have seen a breakthrough in the market for active video games due to the dynamic development of immersive virtual reality (IVR) technology, which blurs the boundary between the physical and digital worlds. Thanks to appropriate pointing devices it is possible to practice various forms of physical activity and the feelings accompanying the exercises are extremely realistic. This new virtual environment should therefore be treated more and more seriously as an element of modern physical culture. Currently IVR is used in sport, physiotherapy and tourism. There are also many potential IVR applications in physical education. The aim of the presentation is to present the existing and potential possibilities of using IVR in a broadly understood physical culture.

### **Keywords:**

immersive virtual reality, physical culture, sport, physiotherapy, tourism, physical education, physical activity

## EFFECT OF ETHYL ALCOHOL ON SUICIDALITY

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### A few words about the author:

5th year medical student interested in forensic medicine, mainly suicides. Author and coauthor of several projects from an area of legal medicine, participant of several medical conferences.

### Abstract:

#### INTRODUCTION

According to WHO data from 2018, Poland has a 28.9 suicide ratio for males and 4.3 for females (per 100.000 per year). This statistic places us very high (22nd position of 183 total) in suicide ranking. Suicides are globally the second leading cause of death among 15-29-year-old people. Suicide by hanging is the most common method of suicides in Poland (according to police reports from 2017-2019). In our project, we wanted to evaluate how alcohol can affect suicides.

#### MATERIALS & METHODS

We analyzed 1521 cases of suicides by hanging, stored in the Cathedral of Forensic Medicine, Collegium Medicum Jagiellonian University. Data was collected in an Excel file, and next went under statistical analysis in RStudio.

#### RESULTS

51% of the suicides were sober, 44% of the suicides were under the influence of alcohol; the rest of the cases hadn't had alcohol level measured. 86% of the suicides had a higher concentration of ethanol in their urine than in their blood, which can be associated with the last moment of alcohol consumption. 83% of the suicides were men; among them, 46% were sober. Among women, 75% were sober.

#### CONCLUSIONS

Our study showed that a significant part of the suicides were under the effect of alcohol. A suicide act might be easier to commit due to impulsive behavior caused by alcohol consumption. A higher percentage of sober women might indicate that men are more willing to commit suicide when they are under the effect of alcohol.

### Keywords:

forensic medicine, suicide, alcohol

## EPIGENETICS - FUTURE OF MEDICINE

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### **A few words about the author:**

5th year medicine student, passionate of epigenetics and sport especially from orthopedic view.

### **Abstract:**

The ever-ongoing progress of science allows us to constantly discover new diagnostic and therapeutic possibilities. There is a new method is the use of epigenetic mechanisms - controlling the activity of genes. According to new research environmental factors such as tobacco smoke or alcohol can interfere with these processes. Modifications that can initially be reversed can lead to permanent changes in the long run and consequently to a disease such as cancer. The two main mechanisms are histone changes - methylation, phosphorylation, ubiquitination, and dna methylation. These modifications present at particular sites in the gene can become a biomarker that is detected in the laboratory. This allows the assessment of the potential risk of disease occurrence to instill healthy cells, as a result of which the disease incidence may be reduced. This type of diagnostics also allows for the detection of the disease at an early stage, for example in osteosarcoma, and in the monitoring of relapse, which allows us to more effectively control the course of diseases. Based on epigenetic changes, individual treatment can be applied to each patient depending on the type and site of modification. this allows for more effective treatment, especially in the case of cancers of the lymphatic system and the central nervous system. Epigenetics is a relatively new field that, due to its effectiveness, availability, and cost, is the future of medicine both as a diagnostic and treatment tool.

### **Keywords:**

epigenetics, genetics, orthopedic, treatment

## PHYSICAL ACTIVITY TO IMPROVE IMMUNITY IN PEOPLE WHO PREFER ACTIVE OUTDOOR REST IN THE COVID-19 ERA IN AUTUMN

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### **A few words about the author:**

Master of physiotherapy.

### **Abstract:**

WHO recommendation: at least 60 minutes or more of aerobic exercise per day with moderate to vigorous physical exertion, including at least three times a week of daily exercise to strengthen muscles nad bones. Exercise can positively influence the functioning of the immune system. Action is important in the body's defense against viruses. According to studies, regular, moderate exercise can reduce the risk of developing upper respiratory tract infections by up to 33 procent. The available scientific sources show that regular physical activity afforts our respiratory system in many ways.

Physical effort is responsible for increasing the number and activity of macrophages. Pshysical activity contributes to an increase in lymphocytes nad an increase in the concentratation of antibodies in the blood. Increase in body temperature - reduces the weekend autumn walk with a dozen or so minutes of outdoor gymnastics, these can be simple general development exercises or selected sport we practice, yoga or thai-chi.

### **SUMMARY**

Physical activity is very important nad we want to enjoy fresh air and beatiful landscapes all year round. Autumn is characterized by moderate air temperatures with a decreasing daily averge, nad relatively large annual precipitation. The source of Cov-2 is an infected person, we can get infected directly from anther person, remember about the rules that cannot be ignored.

### **Keywords:**

physical activity, respiratory system, gymnastics, immunity

## KOREAN HAND THERAPY - A REVIEW OF SCIENTIFIC RESEARCH ON THE EFFECTS OF HAND ACUPUNCTURE ON THE HUMAN BODY AND FUNCTIONING

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*Jagiellonian University Medical College*

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### **A few words about the author:**

A fifth-year student of medicine at the Jagiellonian University Medical College.

### **Abstract:**

Search for reliable and efficient ways to cure diseases has been fueling worldwide research for decades. One of scientists working in this field was doctor Tae-woo Yoo – creator of well-known Korean hand acupuncture technique, Koryo. It is a non-invasive, simple and efficient way of treating various amenities. I decided to review latest research regarding use of this technique by performing literature search and 15 high quality papers which research efficacy of KHT in therapeutic scenarios. I describe it's use in treatment of drug – induced nausea in both children and adults, decreasing symptoms connected with both menopause and premenstrual syndrome as well as alleviating pain in various conditions. I believe our holistic approach will help our readers understand complex aspects of Koryo therapy as well as promote it's beneficial use in treatment of various illnesses.

### **Keywords:**

Korean Hand Therapy, Koryo, Acupuncture

## **SODIUM GLUCOSE COTRANSPORTER-2 INHIBITORS (SGLT2) – GAME CHANGING DRUGS FOR DIABETIC AND NON-DIABETIC PATIENTS ?**

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University of Warmia and Mazury in Olsztyn, Olsztyn*

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### **A few words about the author:**

I am a student of medicine at University of Warmia and Mazury in Olsztyn. This work was prepared as a part of my activity in Pathophysiology academic circle.

### **Abstract:**

Sodium glucose cotransporter-2 inhibitors (SGLT2) are group of new drugs which have been recently introduced as a possible therapeutic option for patients with non-insulin-dependent (type II) diabetes. The mechanism of action of this group of drugs is unique. It is based on blocking the sodium glucose cotransporters-2, which are located in proximal tube (in kidney). These cotransporters are responsible for the reuptake of glucose and sodium from the primary urine. Blocking these cotransporters by SGLT2 inhibitors results in removing the glucose with urine, which results in lowering the blood glucose level of patients.

What is really fascinating about these drugs is the fact that recent studies have shown that SGLT2 inhibitors are reducing the mortality of patients with heart failure with reduced ejection fraction. Moreover, this effect was noticed in both diabetic and non-diabetic patients.

This presentation will focus on presenting in a comprehensive way, currently available knowledge about the SGLT2-inhibitors and their possible use in treatment both diabetic and non-diabetic patients.

### **Keywords:**

SGLT-2 inhibitors, diabetes, heart failure

## **DRUGS INTERACTIONS - IMPORTANT, BUT OFTEN FORGET PROBLEM OF NOWADAYS MEDICINE**

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University of Warmia and Mazury in Olsztyn, Olsztyn*

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### **A few words about the author:**

I am a student of medicine at University of Warmia and Mazury in Olsztyn. This work was prepared as a part of my activity in Pathophysiology academic circle.

### **Abstract:**

Drug-drug interaction (DDI) is a situation, when the action of a medicine undergoes modification, due to the simultaneous presence of another drug in the organism.

Currently, due to the increasing number of medicaments used by patients, DDIs become one of crucial problems of nowadays medicine. The prevalence and incidence of clinically observable DDIs is estimated to be between 5-10%, but potential number of DDIs is at least three to five times higher (from 15% to 50%), and even a nearby figure to 100% in geriatric patients on pharmacological treatment.

This presentation will focus on presenting in a comprehensive way, currently available knowledge about selected drug-drug interactions and how they can be avoided.

### **Keywords:**

drug-drug interaction, pharmacology



## DEMOGRAPHIC CHANGES IN SUICIDES AND THEIR IMPACT ON FORENSIC SCIENCES

Lucja Zaborowska\*, Ositadima Chukwu, Emil Dadański, Jakub Maciejewski,  
Adam Pytlewski

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### A few words about the author:

Young researchers, graduating medical students of the Jagiellonian University Collegium Medicum.

### Abstract:

Suicide remains one of the leading causes of death in Poland, responsible for 1.4% of the overall population mortality. Investigating suicide patterns and their association with different age groups is crucial to understanding the problem and improving prevention efforts. We aimed to document mentioned patterns concerning their changes in time, with a particular focus on demographic factors, such as age and gender. We analyzed 1521 cases of suicides found in the archives of the Department of Forensic Medicine of Jagiellonian University Medical College in Cracow in the years 2009-2019. R software was used for statistical analysis. The study group had an average age of 47.21  $\pm$  17.42 years. The majority of the suicides (83.1%) were committed by males, while females accounted for 16.9%. 76.86% of all the deceased chose hanging as their suicide method, with a statistical difference between men (80.7%) and women (57.98%). We found a statistically significant correlation between the suicide method and the age of the deceased ( $p = 0.001$ ). People who have chosen other suicide methods than hanging were significantly younger than other groups (34.61 years vs. 47.49 years). This finding bears a certain prompt – the deaths of the younger generation may require more in-depth investigation and might pose a significant challenge to forensic scientists. Our study confirmed noteworthy changes in suicide patterns connected with age and gender, consistent with the available statistical data.

### Keywords:

forensic science, suicides, demographics, age

## UNUSUAL CASE OF LATE ONSET OF HEREDITARY MEDULLARY THYROID CARCINOMA IN A PATIENT WITH THE GERMLINE C634R RET MUTATION

**Kajetan Zgubieński\* (1), Agnieszka Walczyk (2, 3), Artur Kowalik (4, 5), Aldona Kowalska (2, 3)**

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### A few words about the authors:

Prof. Aldona Kowalska, prof. Artur Kowalik, dr Agnieszka Walczyk are physicians and/or scientists at the Holycross Cancer Center. Kajetan Zgubieński is a member of a student scientific organization at Jan Kochanowski University.

### Abstract:

Multiple endocrine neoplasia type 2A (MEN2A) is characterized by the development of medullary thyroid carcinoma (MTC), pheochromocytoma (PHEO) and/or hyperparathyroidism related to germline RET mutations. MTC usually occurs in early adulthood, however the relation between type of RET mutation and an average age of MTC onset is known. The objective of the current case report is to highlight the uncommon late onset of hereditary MTC. A 71-year-old woman, with a family history of C634R RET mutations, was referred for evaluation due to suspicion of MEN2A upon detection of germline RET mutation at her granddaughter. Basal and calcium-stimulated calcitonin concentrations were increased. The bilateral MTC was found in fine needle aspiration biopsy. Germline mutation of RET at codon C634R in exon 11 was identified. The patient was referred for a relevant surgery after exclusion of PHEO. Histologically, MTC pT2N1aR1 was confirmed. Post-operatively basal calcitonin was slightly increased and no structural distant metastases were detected.

Virtually all germline RET mutation carriers develop MTC. The age of onset in hereditary MTC is different in the different RET related risk groups. In patients with the C634R mutation mean age at diagnosis is  $17.3 \pm 13.1$  years and age-related penetrance for MTC is 85% by age 30 rising to 100% by age 50. However, the diagnosis of hereditary MTC related to germline C634R RET mutation shouldn't be ignored in elderly patients, as in the presented case.

### Keywords:

MEN2A, C634R RET mutation, hereditary medullary thyroid carcinoma, late onset of hereditary MTC

## SPASTICITY AND TREATMENT METHODS

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### **A few words about the author:**

I am a student of two courses. My main course is Physiotherapy. I write articles for magazines. In future I would like to go to third degree and I would like to make studies and researches.

### **Abstract:**

The aim of the study was to present the most important clinical aspects of spasticity needed for diagnosis and to review existing treatments for the treatment of spasticity. The first part of the article describes the definition of spasticity and its possible causes. The division of spasticity depending on the location of the lesion and the clinical grades of spasticity is depicted. The existing classifications used for the diagnosis of spasticity and the principles of clinical evaluation are presented. The basic clinical symptoms that occur in patients and the related difficulties are discussed. Thereafter, the methods of pharmacological and physiotherapeutic treatment of spasticity are mentioned. In general, spasticity treatment methods can be divided into several groups: pharmacological treatment, orthopedic treatment, surgery, and physiotherapy. Physiotherapy methods are presented using the division into kinesiotherapy and physical therapy methods. These methods include movement therapy through stretching and electrostimulation with currents of various frequencies.

### **Keywords:**

spasticity, physiotherapy, kinesiotherapy, physical therapy

# **MEDICAL SCIENCES**

## ***POSTERS***

## THE BIOCHEMICAL MARKERS OF CARTILAGE STRUCTURES WITH JUVENILE IDIOPATHIC ARTHRITIS (JIA) PATIENTS

Nadia Chochlińska\*, Karolina Myśliwiec, Katarzyna Winsz-Szczotka

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### A few words about the authors:

We study at the Medical University of Silesia in the field of Medical Analytics. We conduct research as part of work in a student research club at the Department of Clinical Chemistry and Laboratory Diagnostics.

### Abstract:

Juvenile idiopathic arthritis (JIA) is a heterogeneous group of joint diseases that may contribute to the disability of an afflicted child, due to disturbances in the structure and function of the osteoarticular system.

Due to clinical consequences of abnormalities of cartilage structures, co-formed by the collagen type II, the aim of the study was to evaluate the serum concentration of both, C-terminal propeptide of collagen alpha-II (II) chain (PIICP), which reflects the extent of joint cartilage biosynthesis, and C-terminal telopeptide of collagen alpha-II (II) chain (CTXII) as a biomarker of resorption of this tissue, in JIA patients before and after treatment with etanercept (ETA).

Concentration of PIICP and CTXII in plasma of 20 healthy children and 20 patients with JIA was assessed, both before and during 24 months of anti-TNF- $\alpha$  therapy.

The significant difference was observed in plasma PIICP and CTXII levels between pre- and posttreated subjects as well as between control. During ETA therapy, the level of PIICP is gradually decreasing, while CTXII is increasing. ETA is normalising only the cartilage synthesis indicator.

Concentrations of cartilage markers circulating in the blood observed in treated children with JIA, after their clinical improvement, indicates the need to continue therapy, which will help to reduce pain and suppress inflammatory processes, and will simultaneously lead to complete regeneration of articular cartilage.

### Keywords:

juvenile idiopathic arthritis, CTX II, PIICP, cartilage

## DEFICIENCY GENE EXPRESSION RELATED WITH BASE EXCISION REPAIR IN RHEUMATOID ARTHRITIS

**Grzegorz Galita\* (1, 2), Gabriela Zając (1), Tomasz Popławski (1)**

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### **A few words about the authors:**

Grzegorz Galita – Full-time Doctoral Study in Molecular Genetics, Cytogenetics and Medical Biophysics, III year;

Gabriela Zając – Student at the Department of Molecular Genetics;

Tomasz Popławski – Professor at the Department of Molecular Genetics.

### **Abstract:**

Rheumatoid arthritis (RA) is the most common autoimmune heterogeneous joint disease of still unknown etiology. The pathology of RA leads to chronic inflammation of the joint tissues, which causes joint cartilage and bone destruction. There are suggestions that one of the causes of the etiology of rheumatoid arthritis is oxidative stress. Reactive oxygen species (ROS) have a contribution to proliferative synovitis in RA. However, if the ROS concentration increases, it can damage cellular components such as lipids in cell membranes, as well as protein and nucleic acids. One of the main pathways involved in repairing oxidative DNA damage is base excision repair (BER). We assumed that changes in gene expression involved in BER contribute to the susceptibility and severity of RA.

Expression of 15 genes related with BER was studied in 50 RA patients and 50 healthy controls using quantitative PCR assay.

Our results showed statistically significant changes in 14 out of 15 genes related with BER. Decreased expression was observed in RA patients compared to healthy controls. The BER pathway is disturbed in RA patients. The results obtained show reduced expression of genes transcripts related with BER in RA patients.

This work was supported by the National Science Center (Poland) UMO2018/25/B/NZ6/01358.

### **Keywords:**

Rheumatoid Arthritis, Base Excision Repair, DNA

## ASSESSMENT OF THE CARDIOVASCULAR SAFETY OF DRUGS ACTING IN THE NERVOUS SYSTEM BY MOLECULAR MODELLING TECHNIQUE AND PHARMACOLOGICAL TESTS

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### **A few words about the authors:**

The authors of the research are employees and a doctoral student at the Faculty of Pharmacy at CM UMK in Bydgoszcz.

### **Abstract:**

Safety Pharmacology is one of the most dynamically developing scientific fields, whose task is to estimate a potential risk of pharmacotherapy. Safety assessment is a crucial part of introducing a new pharmaceutical on the market. Toxicological tests are also carried out for medicines already in use, for example, during the registration of new indications. The assessment of heart toxicity of drugs is extremely important, because cardiac disorders of multiple heart rates were the cause of drug withdrawal. In silico calculation methods are useful for assessing the safety of medicines. They allow to save the cost of research as well as the number of experiments on animals. In order to estimate the proarrhythmic risk of molecules in 2013 a new strategy was applied for the first time: Comprehensive In Vitro Proarrhythmia Assay (CiPA). It focuses on the interaction of molecules with calcium, sodium and potassium ion channels models. Therefore, cardiotoxicity studies of selected drugs acting in the nervous system were carried out in order to verify their potential impact on the above-mentioned channels. The studies were carried out using computational chemistry methods, using Autodock Tools software. The obtained results provided information on potential toxic effects of the studied molecules. However, it is necessary to confirm the results in vitro tests.

### **Keywords:**

safety pharmacology, in silico tests

## GLYCEMIC CONTROL AND HOSPITALIZATION RATES IN ADOLESCENT PATIENTS DIAGNOSED WITH TYPE 1 DIABETES MELLITUS

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Anna Wędrychowicz (2), Jerzy Starzyk (2)**

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*(2) Department of Pediatric and Adolescent Endocrinology, Collegium Medicum,  
Jagiellonian University, Krakow, Poland*

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### **A few words about the author:**

Work conducted by the members of the Pediatric and Adolescents Endocrinology Student Scientific Society.

### **Abstract:**

**INTRODUCTION:** Diabetes mellitus type 1 is considered the most common chronic paediatric endocrine pathology. Education of young DM1 patients is essential for establishing good glycemic control in adult life, reducing the incidence and progression of long term complications.

**AIM:** The purpose of this study was to assess diabetes management, including glycemic control (HbA1c) and hospital admissions in adolescents with T1D.

**MATERIALS AND METHODS:** We have retrospectively examined records of adolescent patients diagnosed with DM1, born between 1st January 2002 and 31st December 2004 and treated in our institution.

**RESULTS:** Our group comprised 273 patients, 148 males (54%) and 125 females (46%). The mean age of diagnosis was 9.58 years (SD 4.23) and the average time from diagnosis was 7.01 years (SD 4.28). We have looked into the correlation between the HbA1c and duration of disease, as well as HbA1c and age group (15, 16 and 17 YOA), however without statistically significant results. We have also examined the incidence rate of hospitalizations due to ketoacidosis. No significant difference has been found comparing the average incidence rate between 2-9 YOA and incidence rate between 10-17 YOA.

**CONCLUSION:** Based on our results we can conclude that good glycemic control (represented in our study by HbA1c) is not influenced by the age of diagnosis, disease duration and current age in the paediatric population.

### **Keywords:**

glycemic control, type 1 diabetes, adolescents, HbA1c, ketoacidosis



## CHARACTERIZATION OF POLISH POPULATION OF PATIENTS UNDERGOING CAROTID ENDARTERECTOMY AND ITS POSTOPERATIVE COMPLICATIONS – SINGLE-CENTRE LARGE VOLUME EXPERIENCE

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Andrzej Brzychczy, Mariusz Trystuła**

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### **A few words about the author:**

The study was conducted by student researchers of Academic Research Team for Vascular Diseases and Interventions, Jagiellonian University Medical College Kraków, Poland.

### **Abstract:**

Stroke is the 3rd cause of death and the leading cause of permanent disability in Polish adults. Carotid artery stenosis is an origin of 10-20% of strokes, in those patients, carotid endarterectomy (CEA) is performed in order to prevent stroke.

To characterize population of patients undergoing CEA and to determine the most frequent postoperative complications during the hospitalization we analyzed medical records of all consecutive patients who underwent CEA in our Institution from 1st Jan 2013 to 31st Dec 2017. Patients who underwent CEA combined with other procedure were excluded from the study. In this period, 1051 (35.78% females) patients underwent CEA. The mean age was 70. In 55.09% of cases, procedure was performed on left interior carotid artery and in 3.43% the operated artery was occluded. Subtotal stenosis (95-99%) occurred in 18.27%. 48.24% of patients had history of stroke, 22.26% of TIA and 64.51% of either one. Amaurosis fugax occurred in 3.52% of patients. 90.96% had arterial hypertension, 31.30% type 2 diabetes mellitus, 24.83% were smokers. 20.46% suffered from myocardial infarction, 9.04% were obese. Any postoperative complication occurred in 11.13%. The most common complication was partial cranial nerve paralysis 3.52%, followed by behavioral disorders 2.47% and reoperation (regardless of reason) 2.19%, arrhythmias 1.71%, surgical site infection 1.24% and seizure 0.76%. Serious complications, death and stroke occurred in 0.57% and 1.24%, respectively.

### **Keywords:**

carotid endarterectomy, vascular surgery, postoperative complications, population study

## **LOOKING FOR IN VITRO FERTILIZATION (IVF) ALTERNATIVES: INTRAUTERINE INSEMINATION (IUI) AS INFERTILITY THERAPY METHOD**

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Department of Gynaecology and Endocrinology*

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### **A few words about the authors:**

Authors are final year medical students, active members of Reproductive Endocrinology and Oncofertility Students Interests Group.

### **Abstract:**

Infertility is known as common problem (estimated prevalence 12-18%) in developed countries. Identifying the cause and providing successful treatment occur as current challenges of medicine. We reviewed medical records of all couples who underwent intrauterine insemination (IUI) procedure between 25th March 2016 and 9th September 2019 at our Institution. We investigated females medical history, previous infertility treatment, procedure's descriptions and males semen analysis. Out of 174 couples of patients 135 (77.58%) underwent the procedure more than once. The median number of procedure was 3 (range: 1 to 11). The mean age of female patients was 32.57 and males 34.58. Polycystic ovary syndrome was the most frequent comorbidity among females patients (28.16%). Endometriosis coexisted in 21 patients (12%). 150 (86.20%) of female patients underwent controlled ovarian hyperstimulation. The injectable gonadotropins were used in 334 (73.73%) procedures for 150 (86.7%) females patients. Letrozol was second the most common drug (284 (62.69%) procedures, 134 (77.01%) patients). In 14 (8.04%) cases IUI procedures achieved pregnancy. We collected patients follow-up from control appointments in our Institution. Further research on our study group including male factors and controlled ovarian hyperstimulation pattern is necessary. Coexistence of comorbidities in our study group may have affected the pregnancy rate after IUI.

### **Keywords:**

infertility, intrauterine insemination, gynecology, endocrinology

## IS ATRIAL FIBRILLATION A DANGEROUS CONDITION?

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### **A few words about the author:**

Anna Maria Zoń is a PhD student at Wrocław Medical University, who also works in cardiology outpatient clinic.

### **Abstract:**

Atrial fibrillation (AF) is the most common clinically significant arrhythmia. It is marked by disorganized, rapid and irregular atrial activation. The ventricular response to atrial activation is usually irregular and rapid. AF is extremely unusual in children. Atrial fibrillation occurs in fewer than 1% of people of aged 60 to 65 but in about 10% of those older than 80 years. Prevalence is higher in men than in women and in Caucasians than in Afroamericans. The other predisposing risk factors for this arrhythmia include cardiovascular disease and its risk factors. Atrial fibrillation is associated with a fivefold risk for stroke and is estimated to cause 15% of all strokes. It is also associated with a twofold risk for all-cause mortality, independent of comorbid conditions.

Some patients have prominent symptoms, the others are asymptomatic.

An electrocardiogram (ECG) test during episodes is the only way to confirm the diagnosis. If the diagnosis is suspected and the ECG test is normal, longer monitoring may be useful.

There are three reasons to treat atrial fibrillation: reduce symptoms, prevent thromboembolism and prevent cardiomyopathy. A stroke is the most common form of clinically detectable arterial thromboembolism associated with atrial fibrillation.

It is essential to screen patients for AF: patients above 65 years old, patients after a transient ischaemic attack or a ischaemic stroke or those at a high stroke risk.

### **Keywords:**

atrial fibrillation, epidemiology, diagnosis, stroke

## THE MRI IMAGING OF MARROW OEDEMA OF SACROILIAC JOINTS IN CHILDREN

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### A few words about the authors:

Medical students at Jagiellonian University in Kraków, Medical College and also active members of Students' Research Group at the Chair of Radiology.

### Abstract:

The structure and orientation of sacroiliac joints (SIJ) is very challenging for imaging and interpretation especially in children. MRI is the method of choice as manifestations of sacroiliitis can be seen, including bone marrow oedema. The aim was to evaluate the additional value of contrast-enhanced sequences in comparison with diffusion-weighted imaging (DWI), short tau inversion recovery (STIR) in imaging marrow oedema of SIJ in children. In the analyzed group there were 26 females and 27 males. Such sequences were evaluated: STIR, T1-weighted sequence, DWI sequence, contrast enhanced T1 sequence, T1+contrast perfusion. The images were assessed by an experienced radiologist and by an independent observer. The sensitivity and specificity for the non-contrast enhanced sequences were as follows: for DWI 0.63 and 0.97 respectively, for STIR 0.68 and 0.97. Those parameters for contrast enhanced sequences were as follows: for contrast enhanced T1 0.74 and 0.94, for T1+ contrast perfusion 0.79 and 0.94. DWI and STIR together had the sensitivity as high as that in contrast enhanced T1 sequence. Contrast enhanced sequences are associated with higher health costs, so due to our findings, it is more reasonable to use DWI and STIR and obtain comparable results.

### Keywords:

MRI, sacroiliac joints, bone marrow oedema

**HUMANITIES SCIENCES**

***PRESENTATIONS ONLINE***

## THE FUNCTIONS AND RESULTS OF JUDGMENTS ISSUED IN THE NON-CONTENTIOUS PROCEEDINGS IN THE CASES CONCERNING REAL ESTATE IN THE EMPIRICAL RESEARCH

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### **A few words about the author:**

Author is doctoral candidate on Faculty of Law and Administration of the University of Warsaw and attorney in the District Bar Association in Warsaw. His research interests are non-contentious proceedings, real estate, judgments and civil cases.

### **Abstract:**

The non-contentious proceedings involves cases concerning different rights on real estate for instance: ownership connected with declaration of acquisitive prescription, certificate of acquisition of inheritance and specific bequest, the dissolution of co-ownership, partition of estate or division of marital property upon termination of community property between spouses, administration related with co-ownership and usufruct, making and entry in the land and mortgage register and in the National Court Register, the limited proprietary rights as servitude right of way necessity, establishing necessity passage or transmission easement right. I decided to do some research on real court case files, because I wanted to know application of law in practice not only in book. I have begun my research from the first August 2016. I had taken notes from court files to twelfth February 2018. Nowadays I have been analyzing them. The research involves judgments, cost and orders in the non-contentious proceedings in the cases concerning real estate. On account of the lot of information I limited to the topic of my presentation to the functions and results of judgments issued in the non-contentious proceedings in the cases concerning real estate in the empirical research. The functions and results of judgements depend on the civil law or civil procedure law. The result of judgements are declaratory (do not create rights, because they have already existed) or constitutive (create rights).

### **Keywords:**

judgments, non-contentious proceedings, real estate

## **OBLIGATION TO REGISTER SIM CARDS AND STATE SECURITY IN POLAND**

**Przemysław Mazurczak**

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### **A few words about the author:**

The author is a PhD student working at the University of Natural Sciences and Humanities in Siedlce. The author deals with security sciences, his main area of interest is state security and cybersecurity in Poland.

### **Abstract:**

In June 2016, the Act on anti-terrorist activities entered into force, which deals with the registration of cards throughout the country. Mobile network operators were immersed in the data including the pesel number and place of residence. The purpose of the act was to prevent anonymous communication by terrorists and criminals, give way to criminals communication and public communication.

### **Keywords:**

cybersecurity, state security, law, a sim card, terrosim

## **POLISH STUDENT PROTEST IN 2018 - THE STRUCTURE AND DECISION-MAKING PROCESS**

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*University of Warsaw*

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### **A few words about the author:**

Małgorzata Mróz is a student in the Faculty of "Artes Liberales" and the College of Inter-area Individual Studies in the Humanities and Social Sciences at the University of Warsaw. Her research interests include social movements and grassroots.

### **Abstract:**

The author conducted a study on the Polish student protest in 2018. The research focused on the structure and decision-making process of this movement, as well as on the motivations and political views of the participants. The results of the research allow to notice a unique decision-making process, based on direct democracy and communication through social media, and a non-hierarchical structure of the movement. The disappearance of the movement after the sit-ins puts the question about the ability to sustain mobilization in the absence of structures.

### **Keywords:**

protest, movement, student



## EMANCIPATORY EMPLOYMENT OF THE POLISH NATIONAL EMBLEM

**Dominik Puchala**

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### **A few words about the author:**

Dominik Puchala — student, activist and member of many movements and organizations working to protect human rights (e.g. Student Antifascist Committee). Co-organizer of International Interdisciplinary Conference “Fascism Research”.

### **Abstract:**

In this presentation, using the CDA perspective, the discourse related to modified national symbol used by minority group for emancipation purposes has been analysed. After taking into account the situation of LGBTQIA+ people and the general socio-political context in Poland after 2015, the author has examined how the Polish national emblem with a rainbow background is presented in media, as well as how minority and majority groups interacting with the indicated modification are presented. In order to better understand the analysed discourse, the author also decided to conduct semi-structured in-depth interview, which was used to verify the conclusions drawn on the basis of CDA. The applied methodology made it possible to conclude that the usage of modified symbolism is related to attempts both to include the identity of LGBTQIA+ people in national identity, and to stop this process with a conservative anti-colonial rhetoric.

### **Keywords:**

national symbol, LGBTQIA+, identity, emancipation

## THE CONSTITUTIONAL PROBLEMS OF THE CONFISCATION POSSIBILITY IN POLISH CRIMINAL CODE

Weronika Stawińska

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### A few words about the author:

Ph.D. student, training for attorneys-at-law. She had studied in Germany at TU Dresden and UKSW in Warsaw. Recipient of the Polish Ministry of Science and Higher Education Scholarship. Currently also employed on a research Grant.

### Abstract:

Nowadays it is possible to control the legality of revenue even up to 5 years back since the crime has been committed. In case of a court conviction, the preparator is obligated to prove the legality of the property which was acquired in those years.

A very controversial solution is a possibility of confiscation from the third-party estate, which has been previously purchased from the perpetrator. However, it is necessary to prove that this person knew or should have known that the purpose of these actions was to avoid the confiscation. The main purpose of the above regulation is to eliminate the situation in which the preparator illegally prescribes the acquired property to family or friends.

What is more, the court will be able to take away the property which comes from the crime. What is interesting, the confiscate property is possible without conviction - in specific situations, for example when the criminal proceedings must be discontinued in case of death of the offender or his escape.

It has to be noted, that ownership in Polish constitutional order is a fundamental constitutional norm. Ownership is a pillar of the social market economy. Another constitutional problem is a transfer of the burden of proof of the offense. The principle is that the prosecutor must prove something to the accused, but in this case it looks different. That is why it is so important to discuss the above topic in order to guarantee civil liberties.

### Keywords:

confiscation, property, crime, criminal code,

## CAN EMOTIONAL AWARENESS OF LIARS INFLUENCE DECEPTION DETECTION EFFECTIVENESS?

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### **Abstract:**

Emotional awareness is defined as the ability to cognitively process emotional arousal by an individual; it is the understanding of one's emotions, but also of these experienced by someone else. During lying, the most important thing is to conceal true emotions and fabricate new ones, while – at the same time – control for the affective state of people who are to believe in this lie to rate chances for success. Therefore, we hypothesized that emotional awareness - being defined as the ability to understand, categorize and describe emotions of self and others - may play an important role in the process of creating a convincing lie. Participants ( $N = 40$ ) of the study were asked to complete Levels of Emotional Awareness Scale and record videos containing either true stories or false ones, which were then rated (as truth or lie) by the group of 400 volunteers. Obtained results allowed us to confirm correlational relationships between emotional awareness (general awareness, self – awareness and awareness of others' emotions) and effectiveness of the deception. The higher the emotional awareness of the participant was, the more effective was the deception (lower detection rate).

### **Keywords:**

emotional awareness, deception detection

## **POLISH RELIGION LIFE DURING THE CORONAVIRUS PANDEMIC ON THE EXAMPE OF CBOS RESEARCH**

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*The John Paul II Catholic University of Lublin, Poland*

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### **A few words about the author:**

I graduated from BA studies in applied rhetoric and MA studies in Theology at the John Paul II Catholic University of Lublin. In 2016, I started the PhD studies in the field of Media Education, also at the same university.

### **Abstract:**

The first case of the COVID-19 virus was diagnosed in Poland on March 5, 2020. Since then, the government in Poland has considered introducing restrictions in various spheres of social life. The introduced restrictions also affected religious life. Among the numerous scouts, the biggest problem was the limitation of the number of the faithful participating in liturgical assemblies to 5 people. In response to the government's guidelines, the Polish Episcopal Conference granted a dispensation from participation in Sunday Masses, at the same time encouraging participation in the liturgy of the Holy Mass through the mass media. In the presentation we will pay attention to how the government's guidelines and the dispensation from participation in the Holy Mass influenced the religious life of Polish people. We will use the data contained in the announcement of the Public Opinion Research Center, which conducted research in this area.

### **Keywords:**

COVID-19, coronavirus, religion, Holy Mass, CBOS

## REVIEW OF GOOD PRACTICES IN THE PLASTIC SECTOR IN THE CONTEXT OF CIRCULAR ECONOMY

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### **A few words about the author:**

Agnieszka Czaplicka-Kotas is PhD student at Faculty of Management in the AGH University of Science and Technology.

### **Abstract:**

In the European Union, plastic waste generation has increased by 12% from 2014 to 2018. Currently, the plastic sector is one of the main strategic areas of the circular economy. In response, in January 2018 The European Commission introduced first-ever European Strategy for Plastics (COM/2018/028 final), underlining the problem and needs of this sector. Two years later "A new Circular Economy Action Plan For a cleaner and more competitive Europe" (COM/2020/98 final) highlighted the challenges mostly related with among others: microplastics in the environment, single-use of the plastic, use of biodegradable or compostable plastics and sourcing, labelling and use of bio-based plastics. To fully implement actions aimed to minimize the impact on the environment caused by the plastic industry, it is necessary to enforce activities on local, regional, national level. Therefore the presentation aims to present the current actions undertaken by the European Countries for reduction of consumption of plastics. However, the crucial role in the introduction of the solutions has industry. Therefore, additionally, the good practices in the decrease in consumption of plastic will also be presented at the company level.

### **Keywords:**

plastic, circular economy

**HUMANITIES SCIENCES**

***PRESENTATIONS***

## **THE INFLUENCE OF TOXIC SUBSTANCES ON ECOLOGICAL SAFETY IN POLAND**

**Przemysław Mazurczak**

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### **A few words about the author:**

The author is a PhD student working at the University of Natural Sciences and Humanities in Siedlce. The author deals with security sciences, his main area of interest is state security and cybersecurity.

### **Abstract:**

The dynamic and universal civilization progress of the modern world is, on the one hand, a source of human prosperity and development, and on the other hand, it contributes to various threats, including those related to environmental contamination. These contaminations can be of various character related to the presence of chemical, biological or radioactive substances in the environment, having a negative impact on humans, animals or nature. The aim of the article is to draw attention to ecological safety, in particular to the issue of environmental contamination by toxic substances.

### **Keywords:**

ecological safety, radioactive substances, toxic substances

## QUALITY IN HIGHER EDUCATION

**Paulina Bialka**

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### **A few words about the author:**

PhD student working on quality and excellence in Higher Education. The research is an attempt to answer the question of how quality and excellence are conceptualized by three different actors: academics, politics and employers.

### **Abstract:**

An attempt to characterize the concept of quality of education and to explore its meanings and to answer the question: what are the ways of thinking about the quality of education. The aim of the research is to „sketch the map” of thinking about quality.

The issue of measurability and gradability of quality. Due to its multifaceted and multidimensional character, as well as philosophical rooting it might seem that this is not the case. After all, quality functioned for hundreds of years as one of the categories of intellect, contrasted with quantity, and yet, when reviewing the literature, we will meet with research related to: ensuring and improving the quality of education, quantification, measurements, accountability. The quality of education standards are discussed in the assessment of students / graduates of universities, quality management, quality standards, etc.

The complex nature and pace of changes that take place in the modern world make it difficult to determine what shapes and changes the understanding of the quality of education in higher education and who (in the sense of a social actor) is responsible for these changes.

### **Keywords:**

quality in education, quality in the university



## IMAGE OF WOMAN-MONARCH IN THE 12 TH -13 TH CENTURY IBERIAN PENINSULA

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### **A few words about the author:**

I am a student of chemical technology. My fields of interests are herbalism and phytotherapy. I am also interested in history of Christianity and women participation at historical events and processes across the ages.

### **Abstract:**

In my presentation, I would like to focus on the role of women as participants in historical processes on the Iberian Peninsula, especially in the 12th and 13th centuries. It was a crucial period for the Reconquista's success.

The Reconquista was a long-lasting period covering almost the entire history of the medieval Iberian Peninsula (8 th -15 th century). This centuries-long time was marked by endless struggles between Christian and Muslim rulers. Medieval sources provide information on the diverse roles of women who lived during the time of these struggles. They were monarchs, mothers, wives, diplomats and even military leaders.

I will use information from a number of primary sources such as the anonymous *Chronica Adefonsi Imperatoris* or *Book of Deeds* by King James I the Conqueror as an important element of my presentation. The methodology assumes, among others, an attempt to sketch a comparative picture of the women described on the pages of these works.

### **Keywords:**

Iberian Peninsula, Castile, Aragon, Reconquest, Middle Ages

## THE ORANGE ALTERNATIVE – OR HOW DWARFS TOPPLED COMMUNISM

**Natan Czwojdrak**

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### **A few words about the author:**

I am interested in psychology and history. I spend my free time outdoors, run or read books. I love art galleries and museums. My dream is to visit each of the seven continents before I turn 30.

### **Abstract:**

The purpose of the presentation is to familiarize the wider audience with the historical phenomenon that took place in the 1980s in the Polish People's Republic. The Orange Alternative, as an anti-communist movement, but above all an artistic-activist movement (though artistic-anarchist according to some), was a unique phenomenon, which not only loom large in the communist security apparatus mind but was also extensive coverage in Western Europe and beyond. The reader will learn from this presentation who Waldemar Fydrych was, where the dwarfs came from in Wrocław (because this is where OA started) and how every single policeman became a work of art. The work will discuss the basic assumptions of the manifesto of socialist surrealism. I will also point out the goals of the title movement and the ways of their implementation. It is rarely mentioned that in communist era the opposition to authorities did not have to be in form of slogans calling for fight nor actions leading to escalation of violence. It was possible to clash with the Party's forces on a completely different area, on which the authorities, as it turned out over time, could not win. Major alias Commander of Festung Breslau reduced the reality that surrounded him to one great performance in which both happenings, viewers and the militia (the name of Polish police during 1980s) had their roles to play. The presentation will include information on individual, most important happenings carried out by the OA.

### **Keywords:**

Dwarfs, Communism, happening

## **DIGITIZATION OF HEALTH POLICY - CHALLENGES DURING THE SARS-COV-2 PANDEMIC**

**Marcin Flis**

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### **A few words about the author:**

PhD student at the Institute of Political and Security Sciences at the University of Szczecin, in his research he deals with the issues of e-government and health policy, enthusiast of the digital world and comics books.

### **Abstract:**

Digitization of the Polish public health care system is a long, tedious and time-consuming task. Implementation of the eHealth project started in 2007 and encountered many problems, however, some IT systems have been implemented. The SARS-CoV-2 virus pandemic has proven to be a test of many digital systems operating within public administration. The legal changes introduced in 2019 prepared the health care system to implement the basic tasks of health policy during the pandemic- remote medical visit. E-visit turned out to be crucial for all patients, because during such a visit it is possible to issue a sick leave or a prescription in digital form. Time of the pandemic has an impact on the increase in the use of public IT systems by citizens, also in the field of health care (e.g. searching for information about coronavirus). The research problem was defined as: How did digital systems support the implementation of health policy tasks during the SARS-CoV2 pandemic? The aim of the study is to examine the functioning and use of IT systems by actors of public health in Poland. The system analysis method was used to analyze the public health care with the IT systems operating in it. In order to examine the relationship between entities in IT systems, the Data Flow Diagram was used to present it in a graphic form. The analysis of these data will allow to determine what has been achieved in the area of digitization of health care, and what challenges the system is facing.

### **Keywords:**

public policy, health, Healthcare, e-government, digitization

## CASTLES, PALACES AND MANORS IN POLAND AS COMPONENTS OF CULTURAL HERITAGE

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### **A few words about the author:**

A PhD student at the Faculty of Geographical Sciences at the University of Lodz, a graduate of Bachelor's and Master's studies in geoinformation.

### **Abstract:**

Castles, palaces and manors are an important part of the immovable monuments. There are many such objects in Poland which are often underestimated and little known. They differ in location, architectural style, ownership, state of preservation and also in their current function. There is no single common database covering these monuments with their spatial reference. An attempt to create such a spatial database was made by geoinformation students during their studies. Common work and marking the monuments on the map was made possible by Geographic Information Systems (GIS), and more precisely by software operating in the cloud - ArcGIS Online. The list of objects was drawn up on the basis of the list of immovable monuments of the National Heritage Institute. The created database contains locations of castles, palaces and manors with a number of attributes describing them.

### **Keywords:**

castles, palaces, manors, Geographical Information Systems

## **ELECTRONIC SUPPORT OF CIVIL PROCEEDINGS AND THE NEED FOR DATA PROTECTION IN POLAND**

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### **A few words about the author:**

The author is the Associate Professor at Humanities Department at Wroclaw University of Technology. She conducts the research in the field of new technology and civil law.

### **Abstract:**

Computerization of the judiciary entails considerable risks connected with the disclosure of information about the participants of the proceedings.

The availability of the judgments on the web is a recent innovation. Personal data should be anonymous, instead of the names of participants, shall be published only initials.

Electronic support of judicial civil proceedings, inter alia the video record of the hearing, also planned possibility to communicate with the court via Internet, can lead to disclose the details of the trials, even if the case is remained confidential.

Data relating to court cases, generated by the courts is stored on servers that require strong security, they may fall victim hacking attacks and be disclosed.

It is necessary to ensure both the appropriate tools, such as proper education about the need for protection of personal data and the potential criminal liability for failure of protection standards.

### **Keywords:**

civil proceedings, civil law, data protection, polish judiciary

## THE IMPORTANCE OF SHAPING THE SELF-AWARENESS OF PEOPLE WITH AUTISM

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### **A few words about the author:**

A part-time lecturer - The University of Adam Mickiewicz in Poznań / Lecturer University of health sciences in Bydgoszcz (the Poznań department) / PhD Student – University of Zielona Góra / Teacher and therapist (ASC).

### **Abstract:**

**THESIS:** The mind of people with the autism spectrum can be organized and targeted in a different way than in neurotypic people. Therefore, it is particularly important to pay attention to this aspect in therapy.

**DISCUSSED CONCEPTS:** People in the autism spectrum think and perceive themselves in an autistic way - but this is an ambiguous and multifaceted concept. This is a conclusion based on the analysis of cognitive processes in people with autism regarding self-knowledge. Autistic people perceive themselves differently, but not "incorrect" or "false". It is extremely important to adapt the contents of the therapy program to the areas of self-awareness.

**RESULTS AND CONCLUSIONS:** The purpose of this presentation is to present the phenomenon of other minds. The aim is also to present examples of activities related to shaping the self-awareness of people with autism.

**NOVELTY/ COGNITIVE VALUE OF THE APPROACH:** This paper is a fragment of the author's research about the self-knowledge of people with an autism spectrum. This subject is rarely covered in the literature.

### **Keywords:**

self-awareness, autism, the spectrum of autism

## COMPARISON AND ANALYSIS OF THE DEVELOPMENT OF SOCIALIST REALIST CITIES ON THE EXAMPLE OF ZAPOROZHYE AND NOWA HUTA, CRACOW

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### **A few words about the author:**

I am a third-year student of architecture at the Cracow University of Technology. I am a member of the "Young Urban Planning" science club.

### **Abstract:**

Socialist realist cities are unique structures among many cities built during the post-war period. They were created in response to the needs of the housing and labour markets, mainly for the labour force in large production plants. They were characterized by a monumental form and attention to the needs of everyday life of their inhabitants. The way each city was planned is based on similar urban and ideological assumptions and at the same time each city has its own individual characteristics, which is influenced by the a level of development, structure of the economy, landscape conditions and, above all, the local community. An example of two cities established on similar principles is Zaporozhye in Ukraine and currently one of Cracow's districts, Nowa Huta. They are at a different stage of economic and social development. The characteristic architecture and specific urban planning make both residents and visitors perceive these spaces in a contrasting way. This is influenced by the scale of the city and the degree of its development or degradation. Following general changes, mainly economic ones, cities often lose their original functions and adopt a new development strategy by investing in services, residential and industrial zones, changing their proportions. The basis of the presentation is to illustrate the differences and similarities between the cities with similar urban planning and style, whose origins are based on related stories.

### **Keywords:**

socialist realist, society, urban, architecture

## **CURRENCY CRISES CAUSED BY DELIBERATE ACTIONS OF PARTICULAR COUNTRIES AGAINST CURRENCIES OF ANTAGONISTIC COUNTRIES**

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### **A few words about the author:**

I am a student of economics at the Cracow University of Economics. My scientific interests focus on currency crises, monetary policy, national accounts, geopolitics and geoeconomics.

### **Abstract:**

Typology of currency crises currently dominating in economics is not broad enough and do not include currency crises being an effect of hostile actions of a particular country against another country. These crises are caused by deliberate actions of particular countries against currency of antagonistic countries in order to destabilise its exchange rate. The aim of the presentation is to explain a phenomenon of currency crises of this kind.

### **Keywords:**

currency crises



## DISADVANTAGES OF GDP AS A MEASURE OF WELFARE

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### **A few words about the author:**

I am a student of Cracow University of Economics. My scientific interests focus on currency crises, monetary policy, national accounts, geopolitics and geoeconomics.

### **Abstract:**

Disadvantages of GDP as a measure of welfare are widely known in economics. Nonetheless, it is still used by politicians and in public debate as a main way to measure countries prosperity. Therefore it is important to remind paradoxes of GDP.

### **Keywords:**

GDP, welfare, disadvantages of the GDP

## **PROFESSION - SOCIAL MEDIA MANAGER - COMPETENCES AND ACTION**

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### **A few words about the author:**

PhD student at the University of Maria Curie-Skłodowska in Lublin.

### **Abstract:**

Social media are recognized as an integral part of human functioning. taking into account a wide range of contacts and connections they include, one can observe they fulfill not only social but also professional and consumer functions.

### **Keywords:**

internet marketing, web marketing, social media, social media manager

## ASSESSMENT OF TOURISM POTENTIAL OF RESORTS BY THE AZOV SEA IN TERMS OF RECREATIONAL SPACE

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### **A few words about the author:**

I am a third-year student of architecture at the Cracow University of Technology. I am a member of the "Young Urban Planning" science club.

### **Abstract:**

Tourism potential is a very broad concept, which includes all the elements that influence the development of a region. Among them we can distinguish natural values, components of tourism infrastructure, as well as the availability of services and products which are the basis for the attractiveness of a given place for tourists. Tourism demand for attractive places is growing every year, which mobilises more and more regions to dynamise their infrastructure and try to promote themselves nationally or internationally. One example of a place that fits into this trend may be the Azov Sea coast, or more precisely, the Ukrainian resort of Kyryvka. It is the closest holiday place for the inhabitants of two large cities – Zaporizhzhya and Dnipro, which belong to the Zaporizhzhya region. It can be observed that since the 1990s the infrastructure built there has influenced the region's prosperity and at the same time tried to match the landscape and encourage potential recreation. The use of places attractive in terms of nature, often plays a decisive role in the development by creating new jobs and economic growth in the region.

### **Keywords:**

tourism potential, resorts, recreation, urban, architecture

## **SOCIAL SECURITY BENEFITS IN THE VOIVODESHIPS OF THE SOUTHERN MACROREGION OF POLAND IN 2017-2019- THE SELECTED PROBLEMS**

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### **A few words about the author:**

The Phd Student of the 3rd year of Economics in the Institute of Economics and Finance. My research area include the following issues: labour market, labour market tools, socio-economic policy, socio-economic development, social security system.

### **Abstract:**

The paper regards the social security benefits in the voivodeships of the southern macroregion of Poland in 2017-2019. The aim of the article is the identification of the level of the social security benefits in the voivodeships of the southern macroregion of Poland in 2017-2019 within the selected problems. The following research problems were put forward: How does the diversity of the level of the social security benefits in the voivodeships of the southern macroregion of Poland in 2017-2019 within the selected problems look?; Which of the researched groups of the social security benefits in the voivodeships of the southern macroregion of Poland in 2017-2019 characterised with highest, middle and lowest level? In the theoretical part of the paper were depicted the situation of the social security system in Poland. In the empirical part was presented the analysis of the average monthly gross retirement pay and pension in the voivodeships of the southern macroregion of Poland in 2017-2019 (in PLN); amount of retirees and pensioners in the voivodeships of the southern macroregion of Poland in 2017-2019 (in persons). In the studies was carried out the analysis of the documentation, statistical analysis, comparative analysis, analysis of the dynamics. The results showed that the researched voivodeships characterised with different tendencies within the social security benefits. The inference process took place in the deductive way.

### **Keywords:**

social security, benefits, voivodeships, Southern macroregion, Poland

## **THE LINGUISTIC AND COMMUNICATIVE FUNCTIONING OF A CHILD WITH SPEECH IMPAIRMENT DUE TO BILATERAL PRELINGUAL PROFOUND HEARING LOSS - A CASE STUDY**

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### **A few words about the author:**

Teacher of the deaf and hearing-impaired, psychologist, speech therapist.

### **Abstract:**

The article presents a case study of a child with bilateral, prelingual profound hearing loss at the age of 10 years and 4 months, using hearing aids. During the study, patient's history, document analysis, observation and diagnostic tests were performed, using the D. Emiluta-Roza's Global Logopedic Test and K. Krakowiak and M. Panasiuk's Communication Behaviours Assessment Card. The aim of the conducted case study was to provide a full surdologopedic diagnosis and to show the disorders of linguistic development and communication skills in a child with bilateral, prelingual profound hearing loss, as well as to show the necessity to perform a multi-aspect, in-depth surdologopedic diagnosis in order to create an appropriate therapeutic programme determining the next steps of work for a specialist in surdologopedics (speech therapy for the deaf and hearing impaired people).

### **Keywords:**

surdologopedics, case study, diagnosis, hearing loss

## NOMINATE AND INNOMINATE COMMERCIAL LEASE - REFLECTIONS ON THE EXAMPLE OF THE POLISH AND FRENCH LAW

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### **A few words about the author:**

The author is a final-year student of Law at Adam Mickiewicz University in Poznań and a bachelor in French Literature and Language working in one of the law firms in Poznań. His academic interests include Polish and French commercial and banking law.

### **Abstract:**

Lease agreement, an agreement for the purposes of conducting business activity by the tenant, is often considered the basis of running a business. The regulations related to commercial lease therefore have a significant impact on this issue, whether and to what extent certain entities undertake such business activities. In the French Commercial Code, the contract in question was nominated and regulated mainly by the technique of mandatory rules - significantly restricting the principle of freedom of contract. On the other hand, the Polish Civil Code does not nominate a commercial lease as a specific type of the lease contract, leaving the contractual relations to be settled primarily through declarations of intent by the parties, respecting the provisions regarding the general lease contract. The author's aim is to critically compare the implementation of this institution in the Polish and French legal systems in order to determine the practical benefits and threats resulting from the realization of two models in question.

### **Keywords:**

commercial lease, comparative law, French law, Polish law

## THE ROLE OF LEON PETRAZYCKI IN SHAPING THE SOCIOLOGY OF LAW

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### **A few words about the author:**

Second year student at Warsaw University of Life Sciences, I like to travel and watch good movies.

### **Abstract:**

The subject of the study is to capture the beginnings of the formation of the field of general law sciences in Poland, sociological components in philosophy and theory of law in the view of Leon Petrazycki, who put on the empirical phenomenon of law. The unique position of psychology and sociology in Petrazycki's deliberations stems from the conviction that the theory of law should be based on scientific inquiries. Leon Petrazycki was an internationally recognized authority in the field of law theory and sociology. The most important concept of the scientist was that of legal pluralism. The author of the view gave the law priority over morality, while he proclaimed that the essence of the law is human emotions, experiences, because they are the real motives of our conduct. From Petrazycki's point of view, the law is psychological experience, namely imperative-attributory emotion. That is why Petrazycki's pioneering approach enabled activism in conducting research within the framework of law functioning as a social fact. The law as an experience makes us aware of its omnipresent functioning in society.

### **Keywords:**

law, pluralism, sociology, philosophy

## ALCOHOLISM AS A SOCIAL PATHOLOGY THREATENING THE FUNCTIONING OF A FAMILY UNIT

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### **A few words about the author:**

A bank employee, student Siedlce University of Natural Sciences and Humanities, interests: social security, social pathologies, personal security.

### **Abstract:**

The problem of alcoholism touches many people and has detrimental effects on their existence. With the progression of the addiction comes the suffering for the family. The behaviour of the addict parent affects interactions between other family members. Thus, it is not only the problem of the abuser, as he does not live in a social void. Negative fallout can influence his surrounding, but mainly the closest relatives.

### **Keywords:**

social pathologies, security, family, alcoholism



## THE COMPETENCES OF POLISH FOOTBALL ASSOCIATION JUDICIAL BODIES IN IMPOSING DISCIPLINARY PENALTIES

**Jakub Styrna**

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### **A few words about the author:**

I am a 4th year student of law at the University of Economics Krakow. During my studies, I try to broaden my knowledge and constantly engage in scientific projects. My research interests include economic analysis of law, sport law as well as tax law.

### **Abstract:**

Polish Football Association bodies have played an important role in polish football in recent times. There is no doubt that is very hard to find a football fan in Poland, who had never heard about the disciplinary penalty, which was imposed on MKS Cracovia S.S.A. Those were penalties imposed due to football hooliganism.

By the way of introduction, it is important to analyze the structure of the Polish Football Association. It seems the construction of PFA is very characteristic. It should be noted that the legal form of analyzed organization is an association in the meaning of the law of 7 April 1989 „the law of associations”. What is more, there is no doubt, that the Polish Football Association is characterized by considerable autonomy, which is limited only by the FIFA and UEFA regulations and obviously by the generally applicable law regulations. Followingly, here comes the circular question: Is it a good solution, that the Polish Football Association has, so much autonomy?

Independently from the above, it should be noted, that the considerable autonomy of the Polish Football Association, have an impact also on the competences of judicial bodies. Consequently, the legal scholarship has converted some regulations from the Polish Assentation Statute, as well as disciplinary regulations. The controversy especially concerns, the following issues: rights of defense and the right to a fair trial. Thus, is crucial to both of these rights are necessary for a democratic state.

### **Keywords:**

Polish Football Association, disciplinary penalties in sport, judicial bodies

## INTEGRATION QUALITY MANAGEMENT SYSTEMS IN HEALTHCARE ENTITIES

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### **A few words about the author:**

PhD student at the WSB Academy in Dąbrowa Górnicza. Lecturer, Trainer, Advisor of quality management systems in health care.

### **Abstract:**

More and more healthcare entities decide to combine many different quality concepts and management aspects into one system. This allows for more effective management of the medical entity and reduction of waste resulting from duplicating documents and actions taken. The presentation deals with the integration of management systems at the level of improvement of medical entities. Considerations about possible methods and tools for integrating management systems in healthcare are based on the most common combinations of system quality management with the medical accreditation standards personal data protection system or management control by law.

The aim of the considerations is to present theoretical issues as well as to analyze the practical aspects of integrating quality management systems with other management concepts aimed at increasing the effectiveness of the functioning of medical entities.

The presented conclusions are the result of the application of the method of analysis and study of selected literature sources adequate to the issue in question and the method of critical analysis of the situation related to the author's more than fifteen years of experience as a lecturer and consultant in the field of modern management systems for medical entities.

### **Keywords:**

quality management systems, integration, ISO, healthcare entities

## USE OF MOBILE APPLICATIONS BY TEACHERS OF EARLY SCHOOL EDUCATION

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### **A few words about the author:**

I am a student of Early Education Pedagogy from the University of Warmia and Mazury in Olsztyn. In the future I want to be a teacher who is very patient.

### **Abstract:**

The main aim of this work was to check what is the knowledge of applications among teachers of early school education. At the beginning of the work, the applications that were used during the research were characterized. The respondents were 30 teachers of early education from the Primary School Nicolaus Copernicus in Lubawa.

A questionnaire was used to conduct the research. Based on the results obtained, the respondents chose Kahoot and Mentimeter as the best applications. Teachers declared that they are using these applications because they are very safe for students. The most common slogans which were used to in the respondents' opinions were words such as memory and attractiveness.

### **Keywords:**

teachers, school, mobile applications

## DIFFERENT FACES OF LOVE IN THE NOVEL “DE AMOR Y DE SOMBRA” BY ISABEL ALLENDE

**Kinga Wiśniewska**

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### **A few words about the author:**

The fourth year student of Spanish philology at Maria Curie-Skłodowska University. In her works to date, she has dealt with the influence of football on Argentina's national identity and the analysis of Latin American literature.

### **Abstract:**

The work entitled; „Different faces of love in the novel “De amor y de sombra” by Isabel Allende” presents an analysis of one of the most famous novels by the Chilean writer Isabel Allende "De amor y de sombra". The main subject of the research is the different types of love presented in this book. At first glance, it seems that this Chilean author's book is mainly about the love relationship between a young journalist Irene Beltrán and an photographer Francisco Leal. However, it is worth noting that in her novel Isabel Allende also talks about many other kinds of love, such as parental love, love for the country or for God. The novel covers many different topics. The story takes place during the Pinochet dictatorship. In this book the youth contrasts with old age, luxury with poverty, happiness with violence, sadness and fear.

### **Keywords:**

love, Chile, Isabel Allende, Of Love and Shadows, military dictatorship of Chile

## THE SEARCH FOR IDENTITY IN THE ARGENTINEAN NOVEL "LOS TOPOS" BY FÉLIX BRUZZONE

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### **A few words about the author:**

The fourth year student of Spanish philology at Maria Curie-Skłodowska University. In her works to date, she has dealt with the influence of football on Argentina's national identity and the analysis of Latin American literature.

### **Abstract:**

The work entitled; "The search for identity in the Argentinean novel "Los topos" by Félix Bruzzone" presents an analysis of the novel "Los Topos" by Félix Bruzzone, who's parents disappeared during the last dictatorship in Argentina. In his work, he presents a character with a similar past, who is trying to find his real identity in a new world. The book shows us the steps of the character's transformation. The decisions he takes in life are sometimes very surprising. This book is also an innovative form of drawing attention to the memory of people who disappeared during a dictatorship. It is an example of a realistic novel, although it also contains parts of character's dreams and imaginations.

### **Keywords:**

military dictatorship in Argentina, Argentine literature, identity, Félix Bruzzone

## SHAPING AWARENESS AND SOCIAL RESPONSIBILITY FOR PUBLIC SPACE IN THE INITIAL STAGES OF EDUCATION

**Patryk Włodarczyk**

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Young Urban Planning Science Club, Warszawska 24, 31-155 Cracow*

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### **A few words about the author:**

I am a third year student of architecture and a member of Young Urban Planning Science Club.

### **Abstract:**

The initial stages of education are early school years, in which the awareness and responsibility of a young person is formed, among others in terms of aesthetics and perception of the surrounding world. Social responsibility is a feature that has a direct impact on space and is caused by the willingness to act in favour of positive changes in the social environment.

It is the commitment of one person to create a better social reality. Public space is a part of everyone's life where people meet social needs. A lack of adequate public space causes a deterioration in human relations. Education in this field should focus on developing human imagination, artistic sensitivity and a sense of aesthetics, so that in the future young people will care about common spaces and also create them. In order to create a suitable place to live, one should talk about the links between man and urbanised spaces and their ties to architecture. You should learn how to perceive architecture and urban planning, what parts of the environment have a positive or negative impact on people. After implementation of such education, there would be noticeable changes in the society which would positively affect the condition of public spaces and the level of human impact.

### **Keywords:**

social responsibility, awareness, public spaces

## SCIENCE, CULTURE, MEDIA AND THE BRITISH SOFT POWER

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### **A few words about the author:**

Jakub Wołyniec is a PhD candidate at the International Relations Department of the Faculty of Political Science and Journalism at UMCS. His research interests revolve around strategic culture and foreign and security policy of the UK.

### **Abstract:**

Soft power of a state is the ability to shape the preferences of others. It is the attractiveness and power of attraction of the state and the resources that cause it. The term coined by Joseph Nye in the 1980s is today an analytical tool for researchers. Potential soft power sources can include such diverse things as art, literature, education, music, sport, but also dance, design, fashion, film, food and computer games. Everything depends on the sender and recipient country. According to Nye, the main soft power resources are political values, foreign policy and culture. In the context of culture, the issue of cultural diplomacy and the media arises. The presentation's aim is to showcase British scientific, cultural and media soft power basing on the case study of three elements: British universities (science), the British Council (culture) and the BBC (media).

### **Keywords:**

soft power, United Kingdom, science, culture, media

# **HUMANITIES SCIENCES**

## ***POSTERS***



## HYBRIDITY OF BORDERS OF THE EUROPEAN UNION

**Oliwia Bleszyńska**

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### **A few words about the author:**

I am student of International Relations at Pedagogical University of Krakow. I am interested in the Middle East- society and religion. Currently my interest are focused on migration policy and refugee crisis.

### **Abstract:**

The poster presents the results of research focused on the analysis of the concept of the hybridity of borders of the EU. The idea of borders within the European Union matches with the concept of the hybrid structure of the EU itself. The poster presents the concept itself as well as the main research thesis that can be found in the sources.

### **Keywords:**

hybridity of borders, European Union, concept of the hybrid

## PSYCHOANALYSIS OF SIGMUND FREUD - BASIC INFORMATION

**Magdalena Buż**

*Psychology Institute, University of Opole*

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### **A few words about the author:**

My name is Magda. I studying psychology in University of Opole. What's more I interesting a law and a sport.

### **Abstract:**

Psychoanalysis is one of the theoretical concepts used in clinical psychology. It was discovered by Sig-mund Freud. It includes the structure of the human personality, psychosexual phases of human devel-opment and defense mechanisms. From the posters you will learn what defense mechanisms are and you will get to know some examples of such mechanisms.

### **Keywords:**

psychoanalysis, Sigmund Freud

## WHAT A CLINICAL PSYCHOLOGIST DOES?

**Magdalena Buż**

*Psychology Institute, University of Opole*

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### **A few words about the author:**

My name is Magda. I studying psychology in University of Opole. What's more I interesting a law and a sport.

### **Abstract:**

Most people know only the profession of a psychologist and a psychotherapist. However, there is a separate prefession of clinical psychologist. Have you ever wondered what a clinical psychologist does? What tasks does he or she have? Where can he or she works? The poster below will provide answers to these questions.

### **Keywords:**

clinical psychologist, work

## UNIVERSALIZATION OF VALUES AS A MANIFESTATION OF GLOBALIZATION

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*University of Opole*

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### A few words about the authors:

We are Amelia and Miriam. We are friends. We are students of psychology at the University of Opole. We are interested in social psychology, globalization and psychology of consumer behavior. What's more, we like to conduct research.

### Abstract:

The study concerned the universalization of values as a manifestation of globalization. Its aim was to investigate the differences between people from the countryside and cities in terms of preferring material and non-material values. It was checked whether students from the countryside will display a different hierarchy of material values in relation to students from cities. The second hypothesis was that students coming from the countryside will show a different hierarchy of intangible assets in relation to students from cities. The Scale of Values (Brzozowski, 2011), the Polish adaptation of ValueSurvey and M. Rokeach, and their own collection of material goods were used. Statistical analyzes performed with the Mann-Whitney U test showed statistically significant results for both research hypotheses. Students from rural areas actually displayed a different hierarchy of material and non-material values in relation to students from cities. Considering material values, significant differences appeared in items such as "clothes", "car" and "electronic equipment". Analyzing the results obtained in intangible values, statistically significant differences between the responses of people from the countryside and the city appeared in the items "salvation", "freedom", "peace in the world". In the values of human characteristics, significant differences occurred between the studied groups with such characteristics as "possessed" and "brave".

### Keywords:

globalization, material values, intangible assets, village, city

## BRAND INFLUENCE ON THE PERCEPTION OF OUR WEALTH

**Amelia Fudali**

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### **A few words about the author:**

My name is Amelia. I am a psychology student at the University of Opole. I like doing various psychological research. I am interested in social psychology, consumer behavior, interpersonal relations and globalization.

### **Abstract:**

The study was to find out if the brand influences the perception of us by others and our wealth. A set of photos of the same products differing in the visibility of the brand's logo (visible immediately or hidden) and a set of statements about luxury products assessed by the respondent on the Likert scale were used for the research. The survey was conducted via social networks. It was checked whether more people living in the city would choose products with a visible brand logo than with a hidden one. The second hypothesis was that women prefer well-known brands more than men. The last hypothesis was that city residents perceive brands as a symbol of success. It would seem that the answer to these questions is quite simple, because it has been assumed that people from the city know more about expensive brands and want to show them to others as a symbol of wealth, women care more about their clothes, and in the city we want to show more using the outfit that we were successful. U Mann-Whitney test was performed. To my surprise, the analyzes showed that there were no statistically significant differences in any of the hypotheses.

### **Keywords:**

brand, wealth, logo visibility, perception of us by others

## QUALIFICATIONS AS A CATEGORY THAT DESCRIBES AN OCCUPATION

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### **A few words about the author:**

Graduate of Public Health and Psychopedagogy. Research interests concern health in all its dimensions. He carries out his research on uniformed groups and other high-risk professions.

### **Abstract:**

The progress of civilization is inevitably associated with a change in the environment, including the professional environment, and requires better and better preparation for employment. Performing work is possible thanks to the obtained qualifications, which include skills transformed in the process of work into habits, and then skills - the activist side of the profession.

The history of mankind proves that in every area of human activity it is necessary to perform various activities. It was thanks to the activity that it was possible to adapt reality to human needs. This adaptation is possible due to the intellect and the need to learn - components of self-learning.

Learning alongside the master survived the modern times and functions to this day, but now it is associated with the craft, the essence of which consists in the gradation of the degree of mastering the activities of the work process, starting from the apprentice, through the student, to the master. The division into grades allows not only to be proficient in performing activities, but also to shape the attitude to work and attitudes necessary for their proper performance.

In modern times, new methods of teaching work have been introduced in order to quickly prepare the training staff.

### **Keywords:**

qualifications, occupation

## COMPETENCES AND THEIR IMPORTANCE FOR PROFESSIONAL WORK

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Graduate of Public Health and Psychopedagogy. Research interests concern health in all its dimensions. He carries out his research on uniformed groups and other high-risk professions.

### **Abstract:**

The road to competence leads through qualifications. The common feature of qualifications are skills, it is different in the case of abilities and inspiration - elements of competences being disseminated today. Competences are the scope of knowledge, skills, responsibility, powers of attorney and powers granted on the basis of qualifications (authorizing to act, decide and judge). Competence is the range of knowledge, skills and efficiency that determines the ability and need to use knowledge. Capability is only a human quality, therefore it is always a subjective category. Competence is always someone's, which distinguishes it from the values, norms, patterns and rules of the belief of a particular person as to the need to use this ability. It is more than a skill or skill acquired through training. Qualifications are created, in addition to skills and abilities, by the knowledge and degree of conviction about the need to use this ability. Competencies are: the individual's ability to undertake activities that require independent planning, implementation and self-monitoring; ability to perform work or occupation in accordance with the standards; the ability to use knowledge about the product, technology, and as a result, effective operation to achieve the goal; the ability of employees to use their knowledge, skills, experience and attitudes in relation to the position or potential opportunities in other activities.

### **Keywords:**

competences, professional work



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