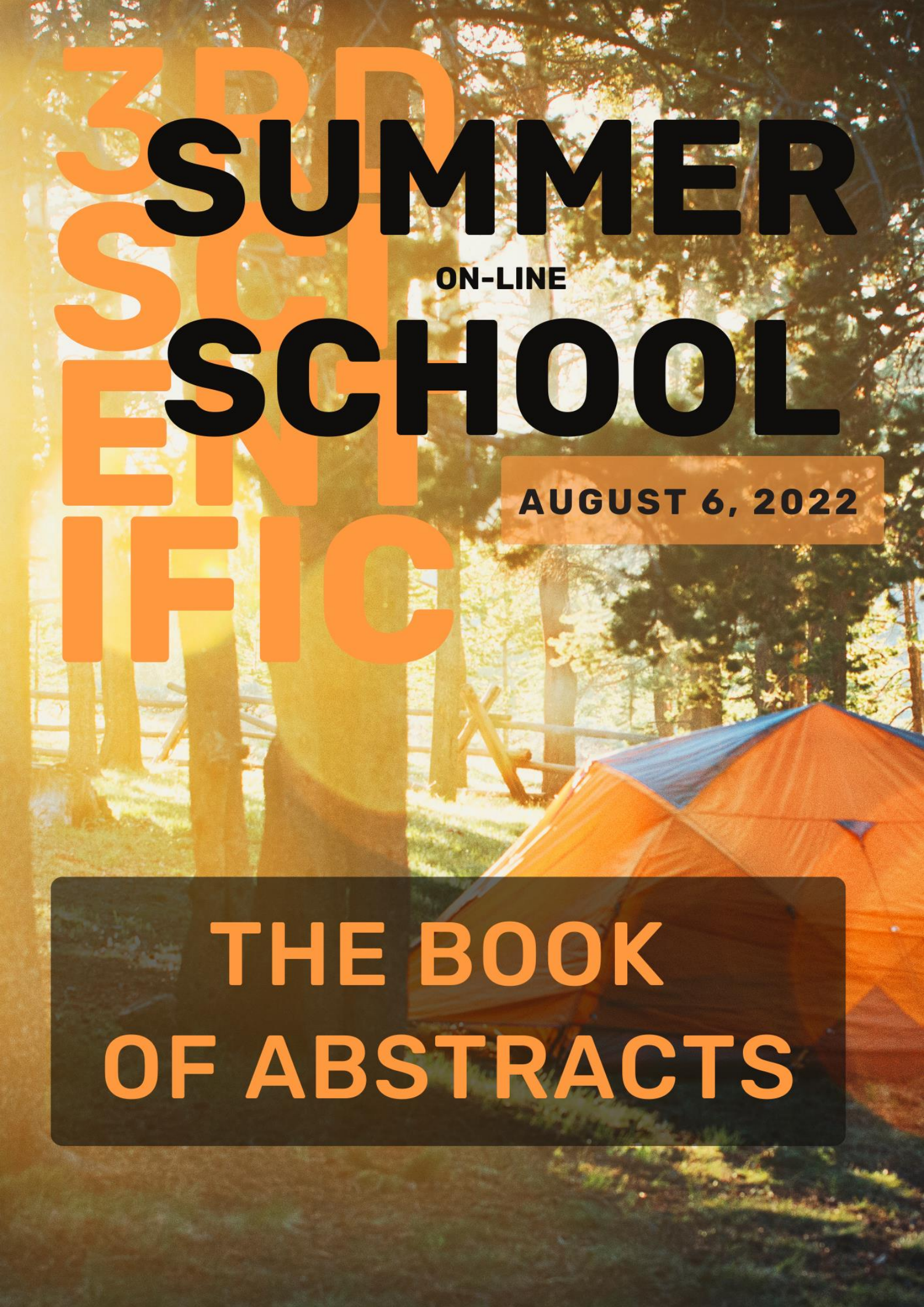
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National Scientific Conference
„3rd Summer Scientific On-line School”

The Book of Abstracts

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COMPARATIVE ANALYSIS OF THE LINGUISTIC AND STRUCTURAL ASPECT OF THE INTERNET PORTAL "PUDELEK.PL" AND "ONET.PL"

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A few words about the author(s):

I am a student of journalism and social communication. The area of my research is media language and media remediation.

Abstract:

The aim of the research is to show the differences and similarities in the linguistic and structural context of two Internet portals: "Pudelek.pl" and "Onet.pl". The two portals above stand in opposition to each other in many respects, including language. The paper will focus on discussing the style of the language used in the mentioned portals but will also analyze the structure of them. The research material in the work will be analyzed portals and articles published there, while the research method will be a comparative analysis. The basic questions that focus on the analyzed problem relate to language: how language shapes the final portal effect and what discourses are used by given portals.

Keywords:

language, Internet, journalism, analisis

TIKTOK SOCIAL NETWORKING PLATFORM AND ITS INFLUENCE ON GENERATION Z USERS

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A few words about the author(s):

The author has a bachelor's degree in Logistics and Administration in the Media. Research interests: social media, views and beliefs of generation Z, youth political involvement.

Abstract:

This study investigates TikTok's influence on generation Z users and their use of the app. Due to the sudden growth of the app's reach, there is a lack of scientific resources on this subject. The popularity of the platform among exceptionally young people induces relevance for understanding the mechanisms of TikTok. This paper includes 3 hypotheses: users of the platform are not aware of the types and amount of data gathered by TikTok, the app influences its users' behaviour, views and/or beliefs and Generation Z users are exposed to non-entertainment content. To verify the hypotheses, the author used a quantitative research method and conducted a survey among participants between the ages 12 to 27. Results confirmed all of the hypotheses. Respondents were not acquainted with types of personal data gathered by the app. The study also shows that TikTok might influence its users and they are exposed not only to entertainment content, but also informational and educational videos.

Keywords:

TikTok, generation Z, social media influence

ARAB FEMINISTS' VIEWS ON THE HIJAB

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Arabic philology student at the Adam Mickiewicz University in Poznań. Interested in Arab emancipation movements, especially the relationship between feminism and veiling.

Abstract:

The goal of the slideshow is to present various and often radically different opinions of Arab feminists on the hijab. The audience is first introduced to the topic by bringing up basic information about Islam and its influence on women's life and attire. The perception of the female body as a taboo turns out to be a key factor on the topic of veiling. Various aspects and reasons for wearing the hijab are discussed. Islamic feminists and their reinterpretations of the Quran prove to be of importance, especially in the field of compulsory veiling. Secular feminists are also mentioned as they are more contradictory in their views on the hijab – some of them perceive the headscarf as an emancipation tool, while some recognize the danger the hijab may bring to the socio-political position of women.

Keywords:

veiling, hijab, Arab feminism, headscarf

WORK LIFE BALANCE IN THE DAILY LIVES OF GENERATION Y AND Z

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A master's student with an engineering degree from the Poznań University of Economics and Business specializing in quality science, with experience in quality management systems and environmental management systems in the energy industry.

Abstract:

The older generations are accustomed to making sacrifices for work 12h a day, working on weekends or during vacations. Generation Y (1981-1995) and Z (1997-2012), however, want to live differently. Nowadays, everyone wants to have time for family, friends and to pursue their own passions. For this reason, the idea of work-life balance plays an important role, which allows us to combine professional and private responsibilities, so that they form a whole and provide balance. The purpose of the study was to gather opinions on this idea on the basis of a survey questionnaire. Respondents were asked to indicate the benefits of the work-life balance concept, activities that help employees achieve work-life balance and activities proposed by the employer. The survey showed that generations Y and Z are trying to maintain this balance, and employers support them in this through by allowing flexible working hours, giving the possibility of remote work or the promotion of physical activity. Most of those surveyed were students and people working in service companies and large corporations.

Keywords:

work, life, balance

SOCIAL EXCLUSION AS A CRIMINOLOGICAL CONCEPT

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A few words about the author(s):

3rd year law student at the Pedagogical University in Krakow. Interested in family law, inheritance law, civil proceedings and criminology. Member of the "student legal clinic" research club.

Abstract:

Social exclusion as a criminological concept is an extremely broad concept, which as a phenomenon concerns not only perpetrators of crimes but also victims. Social exclusion is multi-level, but its causes, although so varied, always stem from the lack of acceptance by the environment for, for example, a certain manner of behavior or appearance. Dealing with all aspects of social exclusion requires learning a myriad of theories and research on the subject, so it is appropriate to limit the topic to a given field, in this case criminology, which analyzes the concept of "social exclusion" in terms of committed crimes. Therefore, it is worth looking at this phenomenon as an effect of committing acts unacceptable by law and, most importantly, by society, and to combine these two spheres as interacting and creating patterns that marginalize individuals.

Keywords:

criminology, criminal, social exclusion, marginalization

BETWEEN BUDDHISM AND PSYCHOLOGY

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Student of philosophical consulting and coaching. A Silesian from Zabrze. Passionate about philosophy, politics, psychology and mental health. Member of the student government.

Abstract:

The aim of this article is to present Buddhist teachings as an inspiration for contemporary psychology. Common points of Buddhism and psychology were analyzed on the basis of source texts. The article concludes that Buddhism can be an inspiration for psychologists and coaches.

Keywords:

Buddhism, psychology, inspiration, coaching, eastern philosophy

INFLUENCE OF THE PANDEMIC ON THE AWARENESS OF HAND HYGIENE AMONG FOOD INDUSTRY EMPLOYEES

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Student of the Poznań University of Economics specializing in quality sciences, having many interests in management systems, ecology and investing.

Abstract:

Companies producing, processing, storing, transporting or retailing of food must pay particular attention to the quality of their products. One of the elements that is crucial for the quality of the products, especially for safety and durability, is the personal hygiene of the employees. In most cases, the staff comes into contact with food by hand, which is why the company checks the purity of the workers' hands. In most cases it is carried out on the basis of the swab method. This procedure involves taking a sample and placing it in a sterile liquid. The sample is then shaken thoroughly and sawn onto a plate of agar medium. The sowing is incubated in a greenhouse. This research is a Case Study of one company in which such check is carried out in each department once a month and 4-5 employees are randomly selected, who are swabbed by both hands after passing through the sanitary lock. The period from January 2020 to June of the same year with one of the departments was taken into account. In January and February, the number of mesophilic oxygen bacteria deviated from the defined range in some cases. In the following months, a significant improvement in results was noted. It is worth mentioning that in March 2020 the Covid 19 pandemic began in Poland. This event had a big impact on people’s awareness of personal hygiene and compliance with hygiene regulations. In addition, emphasis was placed on disseminating information on handwashing.

Keywords:

hand hygen, food, pandemic

THE TRANSLATION OF CHILDREN'S LITERATURE IN REFERENCE TO "WINNIE THE POOH" BY A.A.MILNE AND ITS POLISH TRANSLATIONS

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I am a student of Ethnolinguistics at Adam Mickiewicz University in Poznań. I am interested in translation.

Abstract:

The translation of children's literature is subject to other rules than translation of other literary genres. The perfect examples are Polish translations of "Winnie the Pooh" by A.A. Milne. The translation made by Irena Tuwim in 1938 ("Kubuś Puchatek") and the translation from 1986 whose author is Monika Adamczyk-Garbowska ("Fredzia Phi-Phi") were the subjects of the analysis. The aim of this presentation is to present various aspects of translating children's literature. Among other things, issues such as contextual adaptation, didacticism and censorship, double readership or correlation of text and illustrations are presented. When describing the above issues, examples from "Winnie the Pooh" and its Polish translations were used.

Keywords:

"Winnie-the-Pooh", translation, children's literature

MUTUAL REGULATION BETWEEN EPIGENETIC MODIFICATIONS AND THE CIRCADIAN CLOCK AND CANCER DEVELOPMENT

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Mikołaj Maj – student of Adam Mickiewicz University in Poznań. Interested in the exact sciences (biology and chemistry) and humanities (linguistics), getting the best of both worlds.

Abstract:

Circadian rhythms are biological processes that regulate not only our sleep-wake cycle, but also many different physiological functions, such as hormone release, eating habits and digestion, temperature, and other important bodily functions. Since epigenetics regulates the expression of our genes, it is also involved in regulating our circadian rhythm. Disturbances in the circadian clock are associated with obesity, sleep disturbance, depression, Alzheimer's or bipolar disorder, cardiovascular disease, changes in cognitive function and memory formation, carcinogenesis.

Keywords:

Circadian rhythms, cancer, epigenetic

SUSTAINABILITY TRENDS OF POLISH CONSUMERS IN FOOD PURCHASING – COMPARISON WITH GERMAN AND BRITISH CONSUMERS

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A few words about the author(s):

I am a student of commodity science, as well as a member of the Qualitas student research club related to quality management. Currently, I am most interested in the subject of environmental management.

Abstract:

The modern market provides a wide range of food products. Consumers make purchasing decisions based on various selection criteria. Often one of the most important aspects is the price of the food, as well as the taste preferences. On the other hand, consumers are more and more aware of the environmental impact of the products they buy. For this reason, more and more is being said about the idea of sustainable development and its significant impact on the future of future generations. In the food industry, it may include, for example, the use of recycled packaging, reducing the carbon footprint, gas emissions or choosing products that include ingredients from organic and native crops. Growing competition forces producers to take actions in the field of sustainability, both to encourage customers to buy the food they offer, and to have an impact on the environment. In 2022, a report on consumer trends in the field of sustainability was carried out on the German and British markets. The results show that buyers make informed and sustainable decisions and actions when purchasing . The aim of this research was to find out about sustainability behaviours of Polish consumers and to compare them with consumers from Germany and Great Britain. The survey research was conducted in July 2022. The research method was a survey questionnaire, and research technique CAWI (computer assisted web interview). The survey consisted of closed questions, mostly single choice.

Keywords:

sustainability, food products, consumers

CUSTOMER NEEDS DURING MAKING PURCHASING DECISIONS

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A few words about the author(s):

I am a student of the 1st degree in the field of Commodity Science. I am a member of student research club - Qualitas. I take part in a various events and projects that allow me to broaden my knowledge.

Abstract:

Nowadays, customers have a very wide range of products or services to choose from. Due to increasing competition, manufacturers give them the opportunity to buy products that best meet their expectations. Very important factors influencing purchasing decisions are of course the needs of consumers, which can be divided into several categories. They make a person feel the need to buy a given item or use a service. However, they do not have to result from the fact that something is very necessary in life. Sometimes the determinant of a purchase may be the desire to impress others. In order to meet the needs, a person makes a purchase and is faced with the choice of a product that is suitable for his needs. However, when it comes to making a purchasing decision, the customer focuses on many aspects. Fulfilling consumers' requirements is not an easy process, but it does increase their loyalty and spread the good reputation of the brand. There are many methods for examining the loyalty aspect. Often, to check whether stationary points of sale are adapting to the prevailing rules of customer service, the "mystery shopper" method is used. Regardless of the method, the most important thing is to meet the client's expectations as much as possible and meet them. The purpose of this presentation is to show what influences customer's purchasing decision and their behavioral models. This vas obtained by the in-depth literature review.

Keywords:

customer, shopping, shopping decision

SOCIAL TEACHING OF POPE FRANCIS IN ENCYCLICALS LAUDATO SI' AND FRATELLI TUTTI

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Jakub Pabian – student of the fifth year of theology at Faculty of Theology at University of Warmia and Mazury in Olsztyn. Also a member of student science club of ecumenist theologians.

Abstract:

Social teaching is becoming more and more important in Church Teaching. Pope Francis seems to acquire to this trend. In his documents he deals with numerous social problems. In this work I researched aspect of Catholic Social Teaching in encyclicals Laudato si' and Fratelli tutti. In the first one pope focuses on issue of environment. He lists contemporary threaths to earth – pollution, climate changes, issue of potable water, loss of biodiversity etc., their reasons and some suggestions to solve them. In the second encyclical pope recalls mainly issues connected with relations of people. He promotes solidarity, cooperation and compassion of all people independently from nationality, race, religion etc, especially in context migrants. He wants to prevent poverty and crime, that's why he points out "a better kind of politics". The social teaching of these two encyclicals are crucial for whole contemporary Catholic Social Teaching and it shows current global problems which mankind need to solve as soon as possible.

Keywords:

Pope Francis, Laudato si', Fratelli tutti, Catholic Social Teaching, global problems

ECONOMIC ASPECTS OF NUCLEAR ENERGY

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PhD student at Cracow University of Economics, College of Economic, Finance and Law. Master's degree in economics from Cracow University of Economics in 2018; Engineer's degree at Silesian University of Technology in 2018.

Abstract:

The future and development of the energy sector are one of the most important problems in both domestic and world politics. The responsibility of the energy sector for climate change on Earth, as well as the need to ensure enough energy, are the main challenges facing the energy sector today. To meet these requirements, it is necessary to make appropriate investments related to the development of production infrastructure and to shape an appropriate climate and energy policy. The current changes in the structure of electricity generation consist of a gradual departure from sources with high greenhouse gas emissions in favor of low- and zero-emission sources. In this context, nuclear energy is of particular importance as it, apart from the absence of carbon dioxide emissions, guarantees a stable electricity supply. The development of the global nuclear industry, however, is struggling with financial problems, safety issues, the processing of nuclear waste, the recruitment of appropriate personnel, as well as strong competition from alternative production assets based on cheaper shale gas or renewable energy. The aim of my speech will be to compare the economic competitiveness of a nuclear power plant against other technologies. Current plans and forecasts for the functioning of nuclear energy in the world will be presented.

Keywords:

nuclear energy, energetic safety

SEARCH FOR THE "ARTISTIC COMPASS". IN THE FOOTSTEPS OF TADEUSZ ZIELIŃSKI (1859-1944)

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A few words about the author(s):

Anna Szewczykowska, a PhD student of literature. Her studies focus on the Antiquity in relation to the great classical scholar, researcher of the ancient culture and teacher Tadeusz Zieliński who lived at the turn of the 19th and 20th centuries.

Abstract:

Tadeusz Zieliński (1859-1944) was an undisputed authority on the Antiquity, an outstanding classical philologist, researcher and educator. He devoted his entire life to his great passion – the ancient culture, which interested him the context of modern times, both as a research field and as a school subject. His main goal, however, was propagating the ideas of the Antiquity among young people, among other things, by encouraging them to read classical literature in the original. A thorough knowledge of Latin was a necessary requirement for this purpose, but the classical languages were losing their status in school education and were taught less and less. That was why Zieliński strongly supported educational reforms within the humanities. He often emphasised that building a future would only be possible on the basis of ancient values, first of all, on the basis of truth, which is the essence of beauty.

Keywords:

Antiquity, classical philologist, Latin, educator, orator

WOMEN'S ENTREPRENEURSHIP, THEIR IMPACT ON INNOVATION AND FIRM PERFORMANCE

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Abstract:

In recent years, there has been a growing interest among researchers in women's entrepreneurship and it is emphasized that enterprises run by women significantly contribute to economic growth, mainly by creating jobs and implementing innovations important for sustainable development. The aim of the work is to present women's entrepreneurship and their impact on innovation and firm performance. It was noticed that women's entrepreneurship is a feature of developed economies. In developing countries, women face institutional gaps, extreme poverty, a lack of skills and knowledge as well as the low cultural status of women. In countries where society is patriarchal, women's entry into the labor market and starting their own business is a huge challenge. Many barriers that women have to face inhibit the development of their innovativeness. The paper shows the positive impact of implementing innovations on the firm performance. It was emphasized that the presence of women has a positive impact on increasing the level of innovation and firm performance. The situation of women in Poland was also analyzed. Despite the constitutional guarantee of gender equality, there are visible differences in the treatment of women and men in the labor market. The situation of women in managerial positions in Poland is very unfavorable. The influence of women on innovation and profitability of the company is still underestimated, and women's talents are wasted.

Keywords:

women's entrepreneurship, innovation, firm performance

ECO-PHILOSOPHY IN THE FACE OF ANIMAL SUFFERING

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BA of cognitive science at the NCU, scientifically oriented around neuroscience. In her research, she deals with the neurobiological foundations of social bonds, the non-obvious possibilities of neuropeptides, the role of language in cognition.

Abstract:

The human-animal relationship is specific insofar as it still represents, in principle, a certain wilderness that stems from our inability or unwillingness to ethically define animals. Relatively recently (in the context of the prevalence of the phenomenon), a trend has begun to emerge, stating the inclusion of animals in the scope of the human moral universe, with the important result of gradually redefining the status of animals. There was a significant change in the perception of animals after the two world wars and, above all, after the forced labour camps and the Gulags. After the events of those years, the level of empathy among people towards other creatures - including animals - increased, since at that time there was even mass-scale mutual treatment of people worse than animals. Many artists over the past decades have more than once taken up the discussion of issues related to the suffering of animals and the ethics of how humans behave. This paper aims to discuss the socio-historical and cultural view of bioethics-animal relations.

Keywords:

eco-philosophy, animal suffering, bioethics

RUSSIA-THE WEST: REFLECTIONS ON GEOPOLITICAL AND MENTAL LEVEL RELATIONS AND THE GAZPROM CASE

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BA of cognitive science at the NCU, scientifically oriented around neuroscience. In her research, she deals with the neurobiological foundations of social bonds, the non-obvious possibilities of neuropeptides, the role of language in cognition.

Abstract:

Zbigniew Brzezinski described Russia as a world power with regional influence. The dissolution of the USSR gave rise to a kind of Russia complex. The talk is not so much about the transformation of a superpower into that defined by Brzezinski, but even a superpower into only a big player. Throughout history, the Russia-Europe relationship has been a key factor influencing Russian activity on the international arena, and to the formation of new currents of geopolitical culture in Russia, such as the Westernizers school, or its rival, the Slavophile school. In the modern world, Russia's position has been replaced by the United States, which can hardly be classified as a factor with a potentially positive impact on the mutual relations of these countries. However, the Russian Federation has strong ambitions to return to superpower status. Russia's gas policy has provoked many extreme emotions over the years, particularly among some members of the European Union, the United States and Ukraine. It is perceived as a serious threat in terms of overdependence on the Russian Federation. In addition to its regional influence in provoking conflicts (as in the case of Lithuania, Latvia and Estonia), or waging an international information war, as well as its energy policy, which has been used for years as a form of pressure, in early 2022 Russia began an open armed conflict with Ukraine.

Keywords:

Russia, the West, geopolitics, mentality, Gazprom

GENERATION Z: ENGLISH AS A SECOND LANGUAGE PRACTITIONER'S, QUICK, GUIDE TO LEARNING WITHIN FORMAL EDUCATION SETTINGS

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A few words about the author(s):

Arthur S. Laskowski is a trained ESL/EFL teacher, practitioner and a mentor who promotes learning styles and motivation within a formal education-classroom setting.

Abstract:

The aim of this article is to present weathered author's take on needs, wants, approaches, activities and methods that tend to be successful within the English as a Foreign Language formal educational setting, specifically geared towards the exigencies of the Generation Z age, learners.

Keywords:

Generation Z, English as a Foreign Language (EFL), formal educational setting, approaches, cohort characteristics

ABSTRACTS OF
POSTERS

HUMANITIES
SCIENCES

THE IMPACT OF THE COVID-19 PANDEMIC ON THE INTEREST RATES IN POLAND

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A few words about the author(s):

Economist and law student at the Jagiellonian University. Especially interested in economy policy.

Abstract:

The COVID-19 pandemic, which was announced in 2020, has had a significant impact on the global economy. The poster presents the impact of the coronavirus pandemic on the polish monetary policy, with particular emphasis on interest rates. In the course of deliberations, particular attention was paid to decisions made by the Polish Monetary Policy Council in the face of threat to the domestic economy. By drawing attention to the effects of lowering and increasing interest rates, the effects of the above-mentioned decisions have been analyzed. The purpose of the considerations and analyzes carried out is to determine the impact of the pandemic on the shaping of interest rates in Poland.

Keywords:

interest rates, pandemic, coronavirus

PUBLIC FINANCE FROM THE PERSPECTIVE OF THE BUCHANAN'S PUBLIC CHOICE THEORY

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A few words about the author(s):

Research profile: economic sociology, social basis of economic systems, meta-economics and praxeology, economic aspects of non-professional human behaviours. Member of many scientific groups, for example KNRO, KNU „Risk Management".

Abstract:

Public Choice Theory, whose the most recognizable representative is J. M. Buchanan is a branch of the economic theory which not only analyse but also formulate political-economic reality (Miklaszewska 2001). The purpose of the poster it to present the influence of the institutional economy on the process of modelling public finance of the country. Despite many limitations which affects economics theory and empirical material and despite the fact that economists do not always are capable of giving the exact answers to the questions asked about the economy, their contribution to formation and understanding of the public finance may be significant (Auebach 1993). Public Choice Theory is not denying the need of the government impact on the country's economy, provides many significant tools and methods allowing for analyse of the current government policy and facilitate drawing conclusions for the future (Miklaszewska 2001). Moreover governing, according to the Buchanan's observations, follow the principle of maximizing budget revenue, so he suggested that there should be numerous berries limiting the power of government in order to improve the operation of invisible hand of the market (Przesławska 2006). On the other hand, one of the institutional economy predecessor's A. Down's thought that governments aim to maximise of the political support (Downs 1957) so that their shaping of expenses could be ineffective in financial terms, therefore meeting the objectives of policy makers.

Keywords:

public finance, institutional economy, political economy

THEORY OF MIND

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Master, PhD student at the Department of General Pedagogy at the John Paul II Catholic University of Lublin.

Abstract:

Theory of mind is the ability to infer about other people's states of mind (their thoughts, intentions, beliefs, desires) and skill use this information to interpret their words, understanding behavior and anticipating what they will do.

It is also called "mind reading" or "Social inference". Being able to read the mind is extremely important in correctly reading irony, sarcasm, metaphors, and also in recognizing if someone is trying to cheat us. The theory of mind also influences the development of empathy because the ability to read the mind enables the child inference about how someone might interpret the event and how it may feel.

Keywords:

mind, human theory, methods, two approaches

FISCAL ILLUSIONS AS A PSYCHOLOGICAL MEANS OF INFLUENCING PERCEPTIONS OF TAX JUSTICE

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A few words about the author(s):

Jan Machejek, Research profile: behavioural economics, including psychological factors of decision making; psychology of religion and culture; psychology of social influence, emotions and motivation.

Abstract:

Over the last few years, economic psychology has been going through a period of intense development. It is a broad field which, by definition, deals with mental mechanisms and processes - these in turn underlie economic behaviour. Such behaviour includes, among other things, economic behaviour linked to fiscal illusions and behaviour relating to the perception of nominal and real value in the tax process Economic psychology divide behaviours by examining and evaluating how they are influenced by personality, decisions, preferences, choices and other factors related to the individual. The field also focuses on the consequences of decisions made and the transfer of their effect to the degree to which needs are satisfied. In addition, it determines the impact of economic phenomena on human reactions and feelings of well-being (Niesiobędzka, 2004). Taxpayers always develop in a specific tax environment, which can be analysed in four areas: economic, normative, organisational and psychological. In this presentation, I want to address the topic of tax justice from the perspective of psychological sciences and draw attention to the essence of fiscal illusions (Owsiak, 2000) in the context of the perception of economic processes.

Keywords:

economic psychology, taxation, taxation justice

PSYCHOLOGICAL AND CULTURAL FACTORS IN EMOTIONAL INVESTMENT DECISIONS USING THE ART MARKET AS AN EXAMPLE

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A few words about the author(s):

Jan Machejek, Research profile: behavioural economics, including psychological factors of decision making; psychology of religion and culture; psychology of social influence, emotions and motivation.

Abstract:

The art market is currently one of the fastest growing capital markets in the world and also one of the most promising. This is due to the fact that works of art, unlike other forms of investment such as shares and bonds, are immune to corporate and sovereign bankruptcies. As a result, works of art have grown in popularity over recent years and have become an important component of an investment portfolio. This is due not only to the diversification of the risks involved in investing, but also to the choice of such an alternative good for aesthetic and emotional reasons. In this poster, I will try to present the psychological and cultural factors that lead people to purchase emotional investments, including works of art.

Keywords:

economic psychology, emotional investments, art market

IDENTITY OF THE EUROVISION SONG CONTEST – BETWEEN KITSCH AND A MEDIA EVENT

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A few words about the author(s):

A certified cultural and media expert, currently in the course of second-cycle studies in the field of pedagogical therapy at the Walbrzych Higher School of Management and Enterprise. In his articles he raises issues related mainly to popular culture.

Abstract:

The poster puts forward hypotheses – Is the Eurovision Song Contest kitsch? Is it a celebration of popular music and a big media event? An analysis of media texts was carried out. The whole is of a review nature. The coverage from the semi-finals and the final of the contest in different years was used. The statistics of views, actions and activities in social media taken by The European Broadcasting Union proved to be extremely helpful. Reference was made to the assumptions of kitsch aesthetics and media performances and it was transferred to the ground of the Eurovision Song Contest. The whole is an attempt to define the Eurovision identity, its connections with various forms of society and cultural diversity.

Keywords:

Eurovision, kitsch, media event, media, culture

SUMMER AS A SPECIAL TIME FOR THE INTEGRAL DEVELOPMENT AND UPBRINGING OF A CHILD BY A PARENT

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PhD student at the John Paul II Catholic University of Lublin, works as a teacher.

Abstract:

Summer is a particularly important time to deepen the bond between children and parents. Long walks together, talks and singing by the fire are the times that a child remembers for a lifetime. A huge role of every parent is to care for the integral development of the child.

The family is a natural environment and is the first educational institution affecting a child. It creates conditions that favor or inhibit a child's development.

The family environment is by its very nature a place where a person develops and is brought up. The role of parents during the first years of a child's life is crucial and extremely important in the proper process of its development. During the first months and years, the child develops its senses, motor skills and a number of spheres. Only later does moral or spiritual development take place.

The most powerful pillar of human development and self-development is the family. It is the people from the closest environment who notice the child's first achievements. Certain activities of the child are either reinforced by the immediate environment, which is manifested in positive gestures and contentment, or inhibited when disapproval is visible. Over time, any actions taken by a child take on emotional significance, causing them to feel positive or negative.

Keywords:

summer, family, relationship, time together, integral education, development

ABSTRACTS OF

PRESENTATIONS

MEDICAL SCIENCES

NON-PHARMACOLOGICAL TREATMENTS FOR INSULIN RESISTANCE - THE IMPACT OF PLANT-BASED DIETS

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A few words about the author(s):

I am a graduate of dietetics at the Poznan University of Medical Sciences In 2022, I obtained a master's degree. I am going to continue my education in doctoral studies. The subject of my interests is insulin resistance and bromatology.

Abstract:

Plant-based diets are becoming increasingly popular. Vegetarian diets are better for the environment and exhibit health benefits. A correctly balanced plant-based diet is appropriate at every stage of life. Compared to omnivores, vegetarians consume more fruits and vegetables, more fibre, vitamins C and E, magnesium and less saturated fats. In general, they have better nutrition knowledge, and they are slimmer, healthier and live longer than omnivores. It also seems that following a plant-based diet prevents the onset of chronic diseases such as cardiovascular diseases, hypertension, type 2 diabetes, obesity and some cancers. Food intake has a key influence on insulin resistance. Consumption of calorie-rich and highly processed foods, meats and sweetened beverages is a characteristic element of Western diets. They promote and elevate insulin resistance and type 2 diabetes. In contrast, intake of pulses and exclusion of meats as well as animal products bring significant benefits to vegetarian diets. According to studies, vegetarians and vegans have better blood parameters, including better glucose, insulin, total cholesterol, and LDL cholesterol levels. Their homeostatic model assessment for insulin resistance (HOMA-IR) test results are also better. More plant-based foods and fewer animal foods in a diet result in lower insulin resistance and a lower risk of prediabetes and type 2 diabetes.

Keywords:

vegetarian diet, vegan diet, insulin resistance, insulin sensitivity

TOKOPHOBIA – PATHOLOGICAL FEAR OF PREGNANCY AND CHILDBIRTH

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A few words about the author(s):

I am a medical student at Nicolaus Copernicus University Ludwik Rydygier Collegium Medicum in Bydgoszcz.

Abstract:

Feelings of uncertainty and anxiety surrounding birth are quite common among women. Those emotions can become pathological when they are severe enough to impact the everyday lives of patients.

Such a condition is called fear of childbirth (FOC) or tokophobia. It has been defined as a psychological disorder that ranges from insignificant to extreme pathological fear of pregnancy and can even lead to avoidance of childbirth. The condition may be an indication for a Caesarean section to ease the fear of birthing naturally. It affects women from childhood to old age and can be classified as primary or secondary.

Primary, the more common type, can be defined as a morbid fear of childbirth in a woman, who has no previous experience of pregnancy. Secondary tokophobia can be a result of a traumatic obstetric event in a previous pregnancy.

About 6–10% of pregnant women are reported to be living with FOC which takes a toll on their everyday life.

Risk factors include past traumatic birth or any traumatic experience in health care, anxious personality types, long duration of infertility, previous miscarriages or sexual abuse, low social support, and poor partner relationships.

Psycho-education, CBT-based treatments, and pharmacotherapy have been found to improve the condition. The purpose of this work is to review the latest scientific research on this topic.

Keywords:

tokophobia, childbirth

ELECTRONIC STETHOSCOPE AS A POWERFUL DIAGNOSTIC DEVICE IN SCREENING TEMPOROMANDIBULAR JOINT EXAMINATION

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A few words about the author(s):

The authors of the abstract are a research team cooperating in the field of technical and dentistry solutions.

Abstract:

Electronic Stethoscopes are common known and used in medicine. That tools are also useful in dentistry especially in temporomandibular disorders. The transmission of records can be helpful in case of online consultations that is the more important for unexperienced dentist. The number of people with joints problems is still increasing. Records from the temporomandibular joint can be also visualised as time domain waveforms and spectrograms . The aim of the work is to present various types of sound recording form the temporomandibular obtained by commercially available electronic stethoscope. The sounds from joints were recorded separately during opening and closing movements per 15 seconds. The analysed examples show the diagnostic usefulness of signals recorded with generally available equipment, thanks to which it is possible to widely and commonly use this methodology in dental offices during the basic and screening examination of patients.

Keywords:

temporomandibular joints, stethoscope, dentistry

AEROBIC FITNESS OF CHILDREN AFTER SURGICAL TREATMENT OF CONGENITAL CARDIAC DEFECTS

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We are the team of scientist from University of Physical Education and Sport in Gdansk, interested in subjects of physiology, cardiology and physiotherapy.

Abstract:

BACKGROUND: Atrial septal defect (ASDII) as well as ventricular septal defect (VSD) entails structural and functional problems in the heart. Determining aerobic capacity of children after ASDII or VSD surgical corection is important to improve their functional condition, quality of life and progresion in growth and maturation.

OBJECTIVE: To evaluate aerobic capacity of children with ASDII and VSD correction compared with healthy controls peers.

METHODS: Children 9 to 11 y with a surgically (operated, n = 15) managed A/VSD were compared with healthy peers (controls, n = 25) regarding spiroergometric measurements: maximal workload (WRmax), maximal heart rate (HRmax) and peak oxygen uptake (VO_2peak).

RESULTS: Valid results of cardiopulmonary exercise testing were obtained in 69 and 81 %, respectively in opearted and controls group. HRmax emerged as non-significantly lower in operated subjects. Aerobic capacity in regards to WRmax and VO_2peak was lower ($p<0.05$) in children with correction of congenital heart defects. In conclusion, children with surgically closed VSDs and ASDII have a normal exercise capacity and they are considered themselves healthy. Simultaneously, low physical activity level observed in these group may results in ther lower exercise capacity.

Keywords:

physical capacity, physical fitness, children, VSD, ASDII

ASSESSMENT OF THE RISK AND THE PREVENTION OF RECURRENCE OF HEPATOCELLULAR CARCINOMA IN PATIENTS AFTER LIVER TRANSPLANTATION

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A few words about the author(s):

I am a medical student at Ludwik Rydygier Collegium Medicum in Bydgoszcz.

Abstract:

Hepatocellular carcinoma (HCC) is the most common primary liver cancer, the incidence of which has been increasing in recent years and is still characterized by high mortality. Liver transplantation remains the most effective treatment method, especially for patients who meet the Milanese criteria, i.e. the presence of a single tumor up to 5 cm in diameter or up to three independent lesions, none of which exceed 3 cm in diameter. HCC recurrence after liver transplantation occurs in 8% -20% of patients, however, extending the eligibility criteria for transplant patients beyond the Milan criteria in recent years carries the risk of increasing the number of recurrences of neoplastic disease, therefore it is very important to assess this risk, appropriate supervision and HCC recurrence prevention regimens. So far, many risk factors for HCC recurrence have been identified, including the number and size of tumors, the level of alpha-fetoprotein or, for example, the ratio of neutrophils to lymphocytes in the peripheral blood. Appropriate methods of preventing recurrences are not yet refined, the studies conducted so far have not shown the benefits of adjuvant treatment, therefore it is necessary to continue looking for methods to prevent recurrence of HCC, especially in very high-risk patients.

Keywords:

HCC, liver transplantation, recurrence

ROLE OF VIRAL INFECTION IN NEURODEGENERATIVE DISORDERS

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A few words about the author(s):

Authors of this work are masters students of Biomedicine with Bachelor's degree at the Medical University of Lublin. We conduct a deal of science work in Microbiology Students Research Group supervised by Małgorzata Kozioł, PhD in microbiology.

Abstract:

Neurodegenerative diseases are characterized by progressive loss of neurons. The most common ones represent Alzheimer's Disease (AD), Parkinson's Disease (PD), and Multiple Sclerosis (MS). Due to the increasing number of cases, these diseases constitute a serious health problem. Primary risk factors for neurodegenerative disorders include gene polymorphism and age. However, recently more attention is paid to the role of neuroinflammation caused by viral infection. Some studies indicate that specific viruses can be linked to a particular disease, for instance, a strong association between Herpes simplex virus 1 (HSV-1) antibodies and patients with AD. Furthermore, there has been evidence of increased Herpesvirus 6A (HHV6A) and Human herpesvirus 7 (HHV-7) in patients with late-onset AD. What is more, higher seropositivity to Cytomegalovirus (CMV), Epstein Barr virus (EBV), and HSV-1 was detected in PD patients compared to the control. In addition, viruses appear to play a role in triggering MS in genetically susceptible individuals, for eg. the link was found with EBV, HHV-6, Varicella zoster virus (VZV), and Human endogenous retroviruses (HERV). The aim of the study was to analyze the newest evidences for the association between infectious agents and neurodegenerative diseases. Even though the mechanisms underlying them remain unclear, every study makes one step closer to the development of new effective therapeutic options.

Keywords:

virus, neuroinflammation, neurodegeneration, Alzheimer's Disease, Parkinson's Disease

PSILOCYBIN AND ITS USE IN MEDICINE - REVIEW OF THE LATEST SCIENTIFIC LITERATURE

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Abstract:

Psychedelics, which are serotonergic hallucinogens, are psychoactive substances that alter perception and mood and affect a myriad of cognitive processes. They are considered physiologically safe and generally do not lead to dependence or addiction. There has been a recent renewal of interest in their use as a potential treatment for psychiatric disorders.

One of them is psilocybin found in fungi, especially the Psilocybe genus. It is commonly known as “magic mushrooms”. There is evidence that its use may even predate written history and it has been used all over the world. In the 1950s it was identified and synthesized and later used in psychopharmacological and therapeutic clinical research. However with the start of “the war on drugs” it was classed as a Schedule I drug in 1970 in the US and the rest of the world soon followed. It has significantly limited the research on psilocybin for decades to come.

In recent times regulations have been loosened and there has been a renewal of interest in studying the use of psilocybin as a potential pharmacotherapeutic. There have been numerous preliminary studies showing its potential in treating obsessive-compulsive disorder, major depressive disorder, treatment of depression in terminally ill cancer patients, and even pain conditions.

The aim of this work is to review the latest scientific research on this topic.

Keywords:

psychedelics, psilocybin

SYNAPTIC PLASTICITY – THE BASIS OF MEMORY CONSOLIDATION PROCESSES?

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A few words about the author(s):

I am a student of the 2nd year of medicine at the Collegium Medicum UMK. I find it interesting to discover the scientific physiological conditions of phenomena known to us from everyday life.

Abstract:

Learning is a mechanism for assimilating new information, and memory is designed to preserve it. At the neuropathic level, we can distinguish, above all, short-term memory and long-term memory - declarative or non-declarative (non-descriptive) memory. The brain consists of individual structures which are responsible for memory consolidation, for example, the hippocampus is a main structure for spatial memory. It has been hypothesized that memories are encoded by modifying synaptic strength through cellular mechanisms of synaptic plasticity such as long-term enhancement (LTP) and long-term depression (LTD).

Both mechanisms are consistent with the Hebb's rule and are a frequent subject of considerations and studies on the animal model that will be presented in this presentation.

Keywords:

memory, synaptic plasticity, synapse, the hippocampus, long-term enhancement

WHAT IS THE HEALTH CONDITION OF ESPORTS PLAYERS?

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A few words about the author(s):

Damian Poręba – 5th year student of physiotherapy. His field of interest in orthopedics and human biomechanics.

Abstract:

Esport is a modern phenomenon that brings together hundreds of millions of people. It has become a full-fledged sport in some areas, and electronic gamers are now referred to as full-fledged players on a par with classic sports. This discipline has many features in common with classical sport, such as the level of competition, organizational structures and specialized training. However, unlike classic sports, it is not as thoroughly scientifically tested. The purpose of the study is to determine the state of knowledge about the general health of esports players. An extensive search of the PubMed database was performed to identify studies and reviews of the general health of esports athletes. The analysis included 4 reviews of the overall health of esports players and 5 studies of various aspects in the field, such as musculoskeletal pain, weight problems or tendons. A study in this thematic area found significant differences between esports players relative to the general population. Athletes show significant differences from the general population in terms of body weight and health behavior. Research shows that it is important to implement preventive measures for this social group and increase the number of health programs that can be offered to them.

Keywords:

Esport, Health, BMI

THE EFFECT OF FENOFIBRATE ON THE SENSITIVITY OF AT-2 PROSTATE CANCER CELLS TO DOCETAXEL

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A few words about the author(s):

I am a second-year graduate student in the field of Molecular Biotechnology. For four years, I have been conducting research on prostate cancer cells under the supervision of Professor Jarosław Czyż at the Department of Cell Biology.

Abstract:

Prostate cancer is the most common malignant tumor. The low effectiveness of its therapies is strongly related to the ability of cancer cells to develop drug resistance. The solution to this problem is provided by the combined therapies, in particular the application of fenofibrate to increase the sensitivity of drug-resistant cells to cytostatics. It has previously been shown that fenofibrate indeed sensitizes human prostate cancer cells to docetaxel. This study aims to determine the activity of fenofibrate in a highly heterogenic rat model. Dunning rat prostate cancer AT-2 cell line and its subpopulation exhibiting enhanced drug resistance (AT-2_DCX20) were used. Their morphological heterogeneity enabled estimation of fenofibrate/docetaxel activity against individual subpopulations displaying differential invasiveness. The additive effect of docetaxel and fenofibrate on the proliferative activity, motility and invasiveness of the AT-2 and AT-2_DCX20 cells was observed. Their combined application also resulted in the up-regulation of connexin43, phenotypic shifts towards epithelial morphology, as well as in the reorganization of the actin cytoskeleton in both cell populations. These results suggest that fenofibrate increases the sensitivity of drug-resistant rat prostate cancer cells to chemotherapy. Due to the differences between the human and rat models, it confirms the universal effect of fenofibrate and its potential effectiveness against drug-resistant prostate tumors.

Keywords:

prostate cancer, drug resistance, docetaxel, fenofibrate, metabolic therapy, combined therapy

THE ROLE OF FERROPTOSIS IN THE ETIOPATHOGENESIS AND THERAPY OF ALZHEIMER'S DISEASE

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A few words about the author(s):

Sylwia Samojedny is a student of medicine at University of Rzeszów, a member of the Physiology Student Research Club "Neuron".

Abstract:

Cell death is a necessary process that occurs in every organism and allows for the maintenance of homeostasis. Ferroptosis is a newly discovered type of programmed cell death in which iron ions play an important role. A number of specific changes in morphology and metabolism has been proven in ferroptotic cells. Through it this process is distinct from other forms of cell death. Ferroptosis can be induced by multiple pathways among which inhibition of cystine/ glutamate antiporter (Xc system) and inhibition of glutathione peroxidase 4 (GPX-4) play a key role, leading to accumulation of lipid peroxides and increase reactive oxygen species (ROS). Ferroptotic cells are characterized by shrunken mitochondria with increased bilayer membrane density, reduced of mitochondrial cristae and preserved nucleus.

Ferroptosis is a widespread process in many systems and is also important in the development of neurodegenerative diseases. Numerous studies on animal models indicate that the ferroptosis may play a significant role in the etiopathogenesis of Alzheimer's disease (AD). Moreover targeting this type of cell death can provide a novel mechanism to protect against AD. This presentation summarizes current research on ferroptosis, its underlying mechanisms, and its importance in the progression and treatment in AD.

This work was created as part of the implementation of the projects (UMO-2016/21/B/NZ7/01623 and UMO-2016/23/N/NZ4/01337) financed by National Science Center.

Keywords:

ferroptosis, Alzheimer's disease, cell death

CLOSTRIDIOIDES DIFFCILE INFECTION – WHAT DO WE KNOW AND HOW DO WE DEAL WITH IT?

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Author of this work is a Biomedicine student at the Medical University of Lublin. I am a member of the Medical Microbiology Students Research Group supervised by Małgorzata Kozioł, PhD in microbiology and Piotr Barszczewski, MD, PhD.

Abstract:

Clostridioides diffcile infection (CDI) is one of the increasing health concerns post-long hospitalization. The number of estimated cases in Poland alone accounts for 11,592 cases, and there is a spike noticed every year. The clinical manifestations of CDI range from post-antibiotic diarrhea to severe pseudomembranous colitis. The etiological agent responsible for signs and symptoms is Gram-positive bacillus producing toxins, predominantly toxin A (TcdaA) and/or toxin B (TcdB). Transmission is mainly via the fecal-oral route. Major risk factors causing to clinical manifestations of the disease development are the use of broad-spectrum antibiotics and old age. Making a successful clinical diagnosis requires analyzing symptoms and a positive laboratory test which is usually multi-stage. The treatment method for patients with CDI is individual and depends on multi factors. As initial treatment for CDI begins with antibiotics including metronidazole, vancomycin, or fidaxomicin which is expensive. The method which is gaining popularity is fecal microbiota transplantation (FMT), especially recomended in patients with recurrent CDI (rCDI). As well recent studies involved human monoclonal antibodies for rCDI which blocks the action of TcdB. The aim of the study was to present and analyze the latest information about CDI. Especially in the era of increasing numbers of novel resistant C. difficile strains, there should be more emphasise efficient therapies and diagnostic.

Keywords:

CDI, post antibiotic-diarrhea, fecal microbiota transplantation, fidaxomicin

CLINICAL MANIFESTATION OF MALASSEZIA SPP. INFECTION ON THE SKIN – HOW TO DIAGNOSE AND TREAT

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A few words about the author(s):

Authors of this work are students attending 3rd year of medical faculty. We conduct a great deal of science work in Medical Microbiology Students Research Group supervised by Małgorzata Kozioł, PhD in microbiology.

Abstract:

Every year it is observed increasing number of cases of skin infection caused by fungi. Dermatophytosis are the most common but also yeast can cause that problems. Those from genus Malassezia are lipophilic, have pathogenic potential and drived from a variety of mammals being as skin commensals and opportunistic cutaneous pathogens. It is estimated that approximately 5.8% people suffer from Malassezia spp. infection. Mostly yeast casuse pityriasis versicolor, folliculitis, seborrheic or atopic dermatitis in people. The most common symptoms of pityriasis versicolor are changes in skin pigmentation. Malassezia globosa plays an important role in the pathogenesis of this disease (isolated from patients in 14-97% of cases). Among the many described treatments oral administration of ketoconazole is highly effective. Sometimes it is difficult to recognize Malassezia infection becasuse it is associated with the occurrence of many dermatological diseases, both as an etiological factor (pityriasis versicolor, folliculitis) and as a pathogen that intensifies skin lesions caused by other mechanisms (psoriasis, atopic dermatitis). Many people are unaware of fact that it can also cause systemic infections under special circumstances: immunosupresion, parenteral nutrition in premature babies or that their animals can be main source of this pathogenic fungi. The aim of the study was to present patogenic potenial of Malassezia spp., proper clinical/laboratory diagnosis and menagemnet.

Keywords:

pityriasis versicolor, folliculitis, dermatitis, zoonosis

ERYSIPELAS- NEW INSIGHTS INTO AN OLD DISEASE

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A few words about the author(s):

Authors of this work are students attending 3rd year of medical faculty. We conduct a great deal of science work in Medical Microbiology Students Research Group supervised by Małgorzata Kozioł, PhD in microbiology.

Abstract:

Erysipelas is an acute bacterial infection of the dermis and hypodermis that is associated with clinical inflammation. It is a specific clinical type of cellulitis and, as such, it should be studied as a specific entity. Erysipelas is generally caused by group A streptococci and Staphylococcus aureus.

Erysipelas can affect people of all age groups, races, and sex. Some studies showed that erysipelas is more common in females and the extremes of age.

Antibiotics against streptococci (penicilin G, amoxicilin and macrolides) should be initiated when erysipelas is suspected. Penicillin remains the first-line antibiotic used for the treatment of erysipelas.

Erysipelas need to be differentiate with celulitis,because Erysipelas is a form of cellulitis and is characterised by pronounced superficial inflammation. The term erysipelas is commonly used when the face is affected. The lower limbs are by far the most common sites affected by cellulitis and erysipelas. According to epidemiological data in Poland, in 2013 5242 cases of erysipelas was recorded. Research in Belgium in 2004 approximated the incidence of erysipelas to be 249 per 100,000 individuals in Europe.

The aim of the study was to analyze the risk factors and the most common clinical manifestation area of erysipelas with disscusion of the terapeutic options. The best management supoose to be provide to reduce reccurent of the disease especially in a group of risk and to avoid antibiotic use.

Keywords:

Streptococcus pyogenes, skin infection, soft tissue infections, diabetes

PREDICTORS OF CHRONIC KIDNEY DISEASE PROGRESSION. AN ARTICLE REVIEW

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A few words about the author(s):

I am a 5th year medicine student.

Abstract:

The prevalence of chronic kidney disease (CKD) has been increasing.

The definition of CKD is a persistent more than 3 months abnormalities of renal structure or function of importance to health.

Hypertension and proteinuria are modifiable predictors of kidney disease progression in CKD. Another one is anemia, hypoalbuminemia, hyperphosphatemia, and vitamin D deficiency.

The latest research says that there is a significant association between acute kidney injury (AKI) and CKD.

AKI more than likely results in permanent kidney damage and may also result in damage to non-renal organs.

Acute kidney injury may increase the risk for CKD, progressive CKD, end-stage renal disease, cardiovascular events, and mortality.

It is very important to protect patients from developing CKD. Understanding and controlling modifiable risk factors for kidney disease progression in chronic kidney disease will help to do that.

Keywords:

kidney, CKD, AKI

DEPRESSION TREATMENT AND ITS ROLE IN SUICIDE RISK REDUCTION

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A few words about the author(s):

Damian Świątkowski is a medical student of Collegium Medicum in Bydgoszcz. His interest in psychology and psychiatry resulted in this speech.

Abstract:

Every year circa 60 million people die. Even 850 000 of them end their lives as a result of suicide which major reason is depression or another mental illness - at least 50% of cases. In highly-developed countries even 14% of inhabitants might be affected by unipolar depression during their lifetime and among them nearly 20% could experience suicidal behaviour. Depression treatment is believed to reduce this risk and decrease the global annual number of suicides. Management methods having proven efficacy in improving depression symptoms are psychotherapy protocols and antidepressant drugs - although the last ones are able to temporarily increase the risk during the first period of time after starting or dose adjustment in certain age groups. Diet and lifestyle modifications also have ability to improve patients mood and help in prevention of coexisting somatic diseases like asthma or diabetes.

Keywords:

depression, psychotherapy, lifestyle, somatic diseases

OPINIONS ON PTSD AND ACCESSIBILITY TO SPECIALISED CARE

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A few words about the author(s):

We are third-year public health students who are active in the Young Managers' Research Circle as president and vice president. We are interested in problems related to our field of study, which include the topics we present.

Abstract:

It seems that Post-Traumatic Stress Disorder (PTSD) as well as avenues of assistance for the affected remain on the spectrum of public ignorance.

Therefore, we decide to study the level of awareness of participants about this topic.

Our analysis intends to investigate the Polish perception of PTSD, those affected by it, and access to specialised help.

We decide to collect data using the CAWI (Computer-Assisted Web Interview) technique with the help of electronic questionnaires in Google Forms.

Our initial assumption is that the public have little knowledge of PTSD and the factors contributing to the development of this disorder. This hypothesis is confirmed by contradictory results in which respondents – declaring that they know what PTSD is and how it develops – answer subsequent questions on the questionnaire incorrectly.

It is noteworthy that the results indicate that respondents have widely differing views on the availability of specialised treatment for the disorder.

Keywords:

knowlegde, trauma, disorder, opinion

ANALYSIS OF THE CORRECTNESS OF ANTIBIOTIC USE BY ADULT PATIENTS IN POLAND

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We are third-year public health students who are active in the Young Managers' Research Circle as president and vice president. We are interested in problems related to our field of study, which include the topics we present.

Abstract:

In relation to the interest in the issue of advancing case of spreading antibiotic resistance, it has been decided to investigate the extent to which Polish adults do not adhere to the recommendations for antibiotic therapy, which of the modifications are the most common, and what are the factors that contribute to the antibiotic being taken incorrectly. It was decided to collect data using CAWI Computer-Assisted Web Interview) technique and the research tool was an electronic questionnaire in Google Forms.

It was assumed, that taking an antibiotic for viral infections was a high-profile problem. This thesis was confirmed by the results of the survey, as only half of the respondents declared that they had never treated a cold or flu with antibiotics. It was noted that being related to a medically educated person correlates with greater adherence to antibiotic treatment, as in this group fewer people made the mistake of taking an antibiotic during a viral infection.

A finding, which is somewhat controversial to interpret, is that the most common reason for making modifications in antibiotic use turned out to be the desire to drink alcohol.

Keywords:

antibiotic resistance, adherence, compliance, antibiotics, self-medication

THE ROLE OF SELENIUM IN THE TREATMENT OF PATIENTS WITH PCOS

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A few words about the author(s):

Agata Bawolska is a medical student at Collegium Medicum Nicolaus Copernicus University in Bydgoszcz. In the area of her interest is medical science. In particular, the effect of minerals in the treatment of endocrine diseases.

Abstract:

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women of reproductive age. Patients with this diseases suffers from biochemical hyperandrogenism, menstrual irregularities and presence of polycystic ovary morphology. One of the recommended treatments is lifestyle modification including diet and exercise. In some studies, deficiency of many common vitamins and mineral have been observed in patients with PCOS. Selenium is an essential trace element with proven antioxidant properties. It is a major constituent of antioxidant enzymes such as glutathione peroxidase. Severe deficiency of these mikroelement can lead to serious consequences. This review will discuss the potential of selenium as therapeutic agent in PCOS. Current studies showed that supplementation of this essential element has promising effects on the course of the disease. Selenium supplementation had beneficial effects on metabolism parameters and on reproductive outcome and hormones. However, a further constructive studies with longer follow-up, different dosages and larger group of respondents are required.

Keywords:

selenium, PCOS, treatment

ADIPONECTIN – OBESITY AND CARCINOGENESIS.

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Abstract:

Obesity and overweight are a problem on a global scale, affecting the risk and prognosis of many disease states, including cardiovascular diseases and cancer. Adiponectin is one of the adipokines secreted in the greatest amount by adipose tissue cells. It is a factor regulating glucose and lipid metabolism and insulin sensitivity, and additionally has anti-atherosclerotic and anti-inflammatory properties. Its concentration increases as a result of weight loss or a reduction in caloric intake. It has been suggested that it may play a significant role in the treatment of obesity, type 2 diabetes, atherosclerosis, and even in the treatment of cancer. The ability of adiponectin to increase insulin sensitivity synergistically with its antiproliferative properties made this adipokine a promising diagnostic and prognostic biomarker as well as a new therapeutic tool for the treatment of cancer. Some studies explain the relationship of adiponectin with obesity and cancer, but more research is needed to understand the exact mechanisms of its action.

Keywords:

adiponectin, carcinogenesis, obesity

GASTRINOMA – WHAT IS A TUMOR?

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Abstract:

Neuroendocrine neoplasms can be classified according to various criteria. One of them is the division into "functional" and "non-functional" neoplasms. Functional NETs are hormonally active and release hormones and other substances that constitute the clinical symptoms of a given tumor. Non-functional NETs do not produce any hormones or they release so little that they do not cause any clinical symptoms, which significantly delays their diagnosis. Pancreatic neuroendocrine tumors (pNETs) constitute a heterogeneous group of malignant neoplasms with a diverse clinical picture, tumor morphology and prognosis. Among them, there is a gastrinoma, most often diagnosed in the sixth decade of life, mainly in men. It constitutes 15-20% of pNETs and in 75% it occurs accidentally, and in 25% it is associated with the occurrence of the MEN-1 genetic syndrome. The majority of gastrinoma are malignant neuroendocrine carcinoma, located 60% in the pancreas and 30% in the duodenum. They are characterized by the excessive secretion of gastrin, which is associated with many clinical symptoms. The diagnosis of gastrinoma is important due to their slow-growing nature, which causes late diagnosis already at the moment of the ongoing metastasis process in the body.

Keywords:

gastrinoma, gastrin, neuroendocrine tumors, gastroenteropancreatic neuroendocrine tumors

EFFECTS OF INTERMITTENT FASTING ON TREATMENT AND GENERAL HEALTH IN PSORIASIS PATIENTS

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A few words about the author(s):

I am student of fifth year medical studies at the Nicolaus Copernicus University in Toruń.

Abstract:

Psoriasis is a complex, chronic immune cell-mediated inflammatory skin disease. The underlying pathomechanisms involve complex interaction between the innate and adaptive immune system. The disease presents with itching, red, scaling plaques and its worsening has been associated with lifestyle factors. It is often associated with multiple comorbidities. Although it remains unclear how diets affect these comorbidities and the general health conditions in psoriasis patients, it is supposed that dietary lifestyle interventions plays a role in its pathogenesis and might affect the disease in terms of lesional severity. Intermittent fasting is an interventional approach where people are subjected to variable periods of fasting, which can be abstinence or strong limitation of calories for 12 to 48 h alternated with periods of regular food intake with no restrictions. Nutrition plays a principal role in the pathogenesis of psoriasisand can improve many of immunological disturbances in psoriasis or in affecting drug pharmacokinetics and pharmacodynamics. Intermittent fasting diet is suggested to suppress the inflammatory processes involved in pathogenesis of psoriasis. This diet has beneficial effects on severity of the disease in psoriasis patients and could be considered during treatment to exert a host of health benefits.

Keywords:

intermittent fasting, dietary intervention, psoriasis

ROLE OF CIRCULATING TUMOR DNA (CTDNA) IN DETECTION TUMORS

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The thesis was written by Dominik Drobek and Oskar Kwietniewski, biomedicine students from Medical University of Lublin under the supervision of PhD Katarzyna Skórka.

Abstract:

Neoplastic diseases are one of the leading causes of death in the world. The molecular characterization of solid tumors has provided significant advances in oncology, and genome profiling using circulating tumor DNA (ctDNA) has helped improve the quality of medical care for cancer patients. Liquid biopsy is a diagnostic molecular test aimed at demonstrating the presence of circulating tumor DNA or circulating tumor cells released from primary or metastatic solid tumors. Moreover, the minimally invasive nature of the liquid biopsy allows for the quick verification of the degree of malignancy of the neoplasm and allows to determine the risk before radiological examinations. Observation of ctDNA in blood tests is of great importance during the treatment phase, it enables the determination of resistance to the applied treatment, response to therapy and prediction of relapse before it occurs. Techniques for ctDNA analysis today mainly rely on sequencing, quantitative real-time polymerase chain reaction (qRT-PCR) or digital polymerase chain reaction (dPCR). Moreover, in recent years, genomic profiling has become a huge breakthrough in the treatment of solid tumors. Molecular profiling was introduced, on the basis of which more effective therapeutic regimens resulting in the remission of diseases that were once considered resistant to treatment were developed. This enabled a more precise approach to a given type of cancer and an individualized attitude towards the patient.

Keywords:

circulating tumor DNA, CTC, nanomedicine, cancer, liquid biopsy

REHABILITATION IN RESPIRATORY DISEASES

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A few words about the author(s):

I am a medical student. My interests are topics related to the studied major. Hobbyistically I play the piano and I love contact with interesting people.

Abstract:

Rehabilitation in respiratory diseases

In recent years, many scientific papers based on medical evidence (EBM) have been published, confirming the effectiveness of pulmonary rehabilitation in lung diseases. In patients with chronic obstructive pulmonary disease (COPD), pulmonary rehabilitation has become an accepted treatment modality and is recommended by guidelines of the Polish Pulmonary Society as well as an international group of experts. The beneficial effects of pulmonary rehabilitation in other respiratory diseases have also been demonstrated: in bronchial asthma, cystic fibrosis and interstitial lung diseases. Papers have been published presenting the effects of pulmonary rehabilitation as an adjunctive therapy in patients before and after lung surgery, including patients undergoing surgical treatment for lung cancer.

The benefits of rehabilitation in patients with respiratory diseases are: beneficial effects persist long after the completion of exercise, beneficial respiratory muscle training, especially when combined with exercises that increase overall fitness, improved health-related quality of life, prolonged life, improved exercise capacity, decreased feelings of dyspnea, decreased feelings of anxiety, reduced length of hospitalization

Keywords:

pulmonary rehabilitation, pulmonary diseases

CAFFEINE CITRATE AS THE PHARMACOLOGICAL TREATMENT FOR APNEA OF PREMATURITY

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A student in the Faculty of Medcine at Ludwik Rydygier Collegium Medicum in Bydgoszcz.

Abstract:

Caffeine citrate is the most frequently used medication in preterm neonates for the prevention of apnea of prematurity. By reducing the need for mechanical ventilation, caffeine citrate lowers the rate of bronchopulmonary dysplasia in infants with very low birth weight. This summary presents the history and the most recent facts about caffeine citrate in neonatal medicine.

Keywords:

caffeine citrate, apnea of prematurity, bronchopulmonary dysplasia

SELUMETINIB – NEW PERSPECTIVES IN THE TREATMENT OF NEOPLASMS IN THE COURSE OF NF-1

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I am 6th year medicine student.

Abstract:

Plexiform neurofibromas which patients with NF-1 are dealing with may be much problematic beacuse they can reach very large dimensions, causing pressure on nerve structures or infiltrate the surrounding nerves. Along with their growth, deformation of the figure, neurological disorders and other complications disturbing everyday functioning occur, and their surgery may carry a risk that outweigh the benefits. There is also a risk of malignant transformation into a highly malignant tumor of the peripheral nerve sheath (MPNST).

Until 2020, no disease-modifying drug NF-1 was registered in the world, Selumetinib was approved by the FDA that year. This drug is an inhibitor of MEK, which at the moment is the only option for patients with inoperable plexiform neurofibromas. The development of a drug limiting the growth of neoplasms, which are so frequent and severe in the course of NF-1, is a breakthrough step, especially considering that it is a rare disease. Even in 70% cases the tumor shrinks so it gives great hope for this group of patients.

Keywords:

plexiform neurofibroma, neurofibromatosis, MEK, Selumetinib

AN IMPACT OF FASTUNG DURING RAMADAN ON THE PARTICULAR ORGANS

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I am a medicine student from Bydgoszcz University.

Abstract:

Ramadan is a 9th month of the muslim calendar. Believers are obliged to fast everyday from sunrise to sunset by not consuming any drinks and food. People with serious or chronic diseases are exempt from fasting of course but still many of them want to fulfill this religious practice. So at this point questions about safety of not drinking even water for teen of hours per day are definitely appearing. Among patients with hypertension, diabetes, urolithiasis, acute kidney damage, one of the most taken under safety aspect consideration is chronic kidney disease (CKD). About many helath conditions the scientific research show unclear results or oposite to each other.But about advanced CKD we can find results that fasting for a long time definitely have harmful effect and shoud be strongly discouraged. During presentation we will consider as well who is in the group of the higher risk and how big the risk is in real.

Keywords:

ramadan, fasting, CKD

EFFECTS OF MESENCHYMAL STEM CELLS IN PATIENTS WITH PEYRONIE'S DISEASE

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A few words about the author(s):

Medical student of the 5th year with interests in the field of paediatrics, nutrition and science. The Head of the SRC Pediatric Allergology and Gastroenterology. An enthusiast of a healthy lifestyle and interior design.

Abstract:

Peyronie's disease (PD) is a noncancerous, chronic disorder which concerns tunica albuginea and leads to the formation of fibrous scar in it. The fibrous plaque presence results in penile malformation, sexual impairment, penile pain and mental health problems. Statistics show that PD affects men mostly 40-70 age. Currently, effective and specific treatment for PD does not exist. Surgical treatment is mainly used technique. There are studies suggest that using stem cell treatment in patients with PD may become a beneficial treatment, an alternative to surgical procedures.

Keywords:

stem cells, Peyronie's disease

ROLE OF MITOCHONDRIAL DYSFUNCTIONS IN DEVELOPMENT AND COURSE OF AMYOTROPHIC LATERAL SCLEROSIS

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A few words about the author(s):

Dorian Julian Jarek is a second-year student of medicine at Collegium Medicum, Nicolaus Copernicus University, since October 2020 working at the Students Research Club of Medical Biology.

Abstract:

Amyotrophic lateral sclerosis (ALS) is the most common motor neuron disease and third most common neurodegenerative disorder worldwide, causing muscle weakness and atrophy. There are a lot of symptoms, of which motor disorders, such as muscle weakness, spasms, loss o ability to control voluntary movements and severe neuropathic and nociceptive pain are most common. About 30-50% of patients develop cognitive dysfunction, with 10-15% of them to show signs of frontotemporal demention. All of the mentioned symptoms are caused by neurodegeneration affecting upper and lower motor neurons, main factor responsible for progression of the disease. Mitochondrial dysfunctions are often associated with the pathogenesis of various neurodegenerative disorders and their presence in ALS prior to symptoms of the disease points them as main potential culprits. However, clinical trials trying to use mitochondria as a therapeutic target have so far produced disappointing results. Defective mitochondrial integrity has been shown to play an important role in other neurodegenerative diseases. The presence of similar mitochondrial disorders in ALS suggests at least a secondary role of mitochondria impairment in the development of this neurodegeneration.

Keywords:

amyotrophic lateral sclerosis, mitochondrial dysfunction

PTAU217 VARIANT AS A KEY BIOMARKER OF ALZHEIMER'S DISEASE

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Abstract:

Alzheimer's disease (AD) is the most common neurodegenerative disease, affecting about 5 million patients every year, 60-70% of whom suffer from dementia. Characteristic symptoms include motor disorders, such as apraxia, and non-motor symptoms, including sleep disorders, disorientation, agnosia and memory loss, which is the most recognizable symptom. All of these are caused by amassing of neurofibrillary tangles and amyloid plaques resulting in neurodegeneration leading to macroscopic atrophy. Neurofibrillary tangles are formed by phosphorylated tau (pTau) peptides of various types. Cerebrospinal fluid (CSF) total-tau is used as a marker to many neurological disorders but only some of pTau peptides are used in AD diagnostics, being specific for it. Phosphorylated Tau-181 (pTau181) is a commonly used marker, but there are several studies stating that phosphorylated Tau-217 (pTau217) has higher accuracy than pTau181 variant. What is important is that pTau217's concentration remains normal in the tau-related frontotemporal lobe degeneration and other tauopathies, what makes it perfect for differentiation AD and non-AD disorders. It is accuracy varies between plasma and CSF, with the second being more precise one. Undoubtedly, pTau217 easily outclasses pTau181 accuracy in it's respective solvent and may even predict pathological changes in Tau PET. This makes pTau217 a highy accurate, AD discriminative and predictive marker of AD, which can be used in various tests.

Keywords:

Alzheimer's disease, dementia, phosphorylated tau-217

ROLE OF MITOCHONDRIAL DYSFUNCTIONS IN DEVELOPMENT AND COURSE OF FRONTOTEMPORAL DEMENTIA

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Abstract:

Frontotemporal demention (FTD) is the second most common cause of dementia, causing atrophy in anterior temporal and frontal lobes. The most recognizable symptom, namely memory loss, presents in different ways depending on a disease variant. Additionally, the disorder's development seems to be strongly linked to amyotrophic lateral sclerosis, which happens to co-manifest with FTD. That type of dementia is thought to be caused by inclusion bodies in neurons, that consist of tau protein, TAR DNA-binding protein 43 or heterogeneous nuclear ribonuclein P2. Mitochondrial dysfunctions are thought to be associated with the pathogenesis of many neurodegenerative diseases, including FTD is known to have some connections. Many mechanisms impaired in FTD are known to be under regulation of signalling between mitochondria and endoplasmic reticulum. Tethering between mitochondrial protein PTPIP51 and endoplasmatic reticulum's protein VAPB seems to be damaged in FTD. This process might present the mitochondria's involvement in the disease, which is now studied as a target of possible future FTD drugs.

Keywords:

frontotemporal dementia, mitochondrial dysfunction

EXPRESSION OF A CHOSEN CELL CYCLE PROTEIN IN A TUMOR CELL LINE

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A few words about the author(s):

We are a group of researchers fascinated by science.Each of the team members took an active part in the preparation of this work.The labor will be expanded with an additional cell line and will be redrafted for a scientific publication.

Abstract:

Neoplastic diseases are one of the leading causes of death worldwide. They cause considerable difficulties in early detection, which often results in their sudden development and consequently, may lead to death. Lung cancer is one of the most common types of cancer. The aim of this study was to evaluate the effect of increasing doses of cisplatin on the expression of cyclin C in the A549 non-small cell lung cancer cell line. The effects of the cytostatics were assessed using the Cell Counting Kit (CCK-8) test. The obtained results confirmed the previously suspected cytotoxic effect of cisplatin on A549 cells. Mayer hematoxylin staining was used to observe dose-dependent changes in morphology. Cisplatin has been shown to reduce the number of cells and increase the intercellular spaces. Using a flow cytometer, the number of apoptotic cells was measured, and the cell cycle was analyzed. It was found that apoptosis was the predominant type of cell death. All the doses induced the accumulation of the cell population in the G1 / G0 phase, and the application of the 5 μM cisplatin dose caused a slight increase in the fraction of cells in the S and G2 / M phase, which may indicate activation of cell cycle checkpoints. It was shown, that with the increase of the dose of cisplatin, the expression of cyclin C also increased, which suggests its potential participation in the response of cells to the applied cytostatics.

Keywords:

lung cancer, cisplatin, cyclin C

NAIL DISEASES

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A few words about the author(s):

My name is Ewelina Kaminska. I have a degree in cosmetology. Cosmetology is my passion, hence the idea to participate in the conference with a presentation on nail diseases that can be acquired as a result of beauticians' mistakes or improper hygiene.

Abstract:

There's no denying that the media is buzzing with the promotion of more and more cosmetic services. The world is chasing beauty. One of the current trends is to have long, beautifully styled nails. In stores, you can buy entire kits for nail styling at home, but lack of proper knowledge and practical skills can lead to the acquisition of various nail diseases. It is not only at home that we can acquire these diseases, it also happens that nail stylists don't always work according to health and safety rules, don't sterilize tools, or use disposable nail products on several clients. It is worth thinking before using someone's services, do a review of such services in your city, suggest customer reviews, so that the styling performed is safe and does not contribute to various nail diseases. Healthy nails are those that are of uniform color, without visible discoloration, smooth, without pits or bulges, the free edge of the nail should be white in color. No substance should ooze from under the nail plate and the lateral and posterior nail shafts. The nail plate and its surroundings should not be tender and painful. Any deviation from such an appearance may indicate some kind of disease, in any case of observing any changes, it is worth contacting a doctor.

Keywords:

nail diseases, causes, prevention, manicure, hygiene

INTERMITTENT CLAUDICATION – REHABILITATION AS AN EFFECTIVE CONSERVATIVE TREATMENT

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Abstract:

Intermittent claudication (IC) is one of the main symptoms of peripheral arterial disease, which causes approximately 40,000 hospitalizations and 9,000 amputations in Poland each year. IC is characterized by lower extremity pain. Conservative treatment of IC patients should include risk factor reduction, pharmacological treatment, physiotherapy and education. In this case, rehabilitation including physical activity is one of the most important and the oldest forms of non-invasive treatment. The most popular rehabilitation method used in this group is supervised walking training on a treadmill, which, according to the current recommendations, should be performed 3 times a week for a minimum of 3 months. Alternatively, there are attempts at therapy through strength training and Nordic Walking. All of the above-mentioned actions are aimed at improving the quality of life of patients, inter alia, by extending the distance of a painless walk. The aim of the study is to discuss the main methods of rehabilitation of patients with IC and to indicate the problems that stop patients from regular physical exercise. Despite the fact that physical training is so important and effective in the treatment of IC, patients in this group are people who are reluctant to take up physical activity. Pain during training, insufficient education about the benefits of regular exercise, and environmental barriers are the factors that have the greatest impact on patients' lack of motivation.

Keywords:

rehabilitation, intermittent claudication, physiotherapy, training, physical activity

CARBAMAZEPINE AND ITS DERIVATIVES IN THE TREATMENT OF BIPOLAR AFFECTIVE DISORDER

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Oliwia Kotowska is a second-year student of medicine at Ludwik Rydgier Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruń, a member of the Student Research Club of Medical Biology.

Abstract:

Bipolar disorder (BD) is a group of recurrent psychiatric disorders that result in depressive, manic or hypomanic syndromes separated by periods without symptoms. BD is not curable and the treatment is limited to the use of medicines to ease the course of the disease. Mood stabilizers are the basis of most treatment regimens. Lithium is the most common medicine, but due to low satisfaction with its effectiveness or the occurrence of contraindications to its use, the use of anticonvulsants such as carbamazepine (CBZ) and its derivatives, namely oxcarbazepine (OXC) and eslicarbazepine (ESL), has been increased. They belong to the dibenzazepine family of antiepileptic drugs and are all believed to act primarily on sodium channels. The mechanism of action involves inhibiting the repeated excitation of action potentials in neurons and reducing the transmission of excitatory stimuli across synapses. These drugs result in a reduction of aggressiveness and irritability, displaces feelings of anxiety and depressive states. The metabolism of OXC is different from that of CBZ. OXC causes fewer pharmacokinetic interactions than CBZ, and thus, it likely has less side effects. However, the therapeutic efficacy of OXC in BD has not been validated as well as CBZ. For ESL, its efficacy in BP remains largely unknown. An overview of the efficacy of the mentioned drugs in the treatment of BD, their comparison and action are discussed in this paper.

Keywords:

bipolar disorder, carbamazepine, eslicarbazepine, oxcarbazepine

THE ROLE OF INTERLEUKIN 15 IN THE TREATMENT OF CANCER

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Abstract:

Cancer immunotherapy is a treatment method whose mechanism of action is based on the mobilization of the patient's immune system to fight cancer. Interleukin 15 (IL-15) belongs to the cytokine family that contains four α-helixes and binds to the β- and γ-subunits of the interleukin 2 (IL-2) receptor. The presence of an additional IL-15-specific α-subunit is a distinguishing feature of this cytokine. IL-15 expression occurs in many cells, including monocytes, macrophages, dendritic cells, keratinocytes and epidermis cells, fibroblasts, muscle, kidney, lung and placenta. IL-15 stimulates the proliferation of T, B and natural killer (NK) cells. Moreover, it induces stem, central and effector memory CD8 + T cells, leading to enhanced antitumor responses. Therefore, IL-15 may modulate immunosuppression and promote immune activation. Studies have shown a similarity of an in vitro biological activity between IL-2 and IL-15, which is related to their common receptor component, IL-2/15Rβγ. This indicates that similar therapeutic effects are expected in cancer patients. However, different biological effects of these cytokines in vivo depend on their binding to specific α chains. Therefore, IL-15 may affect other immune cell populations without significant toxic effects. Thus, IL-15 can be suggested as a promising candidate in the fight against cancer, providingnew opportunities for the development of anti-cancer therapies.

Keywords:

cancer immunotherapy, interleukin 15, natural killer cells

BIOARTIFICIAL KIDNEY CONTAINING HUMAN CELLS IN PATIENTS WITH ACUTE RENAL FAILURE

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I am a 5th year medical student, my field of interest is General surgery.

Abstract:

Acute renal failure in intensive care unit patients continues to have mortality rates exceeding 70%. The application of cell therapy to the successful substitution process of hemofiltration may improve the poor prognosis of patients with acute renal failure. The bioartificial kidney is a synthetic hemofilter connected in series with a bioreactor cartridge containing approximately human proximal tubule cells, as a renal tubule assist device (RAD), within an extracorporeal perfusion circuit utilizing standard hemofiltration pump systems. Use of the RAD in this clinical setting demonstrates maintenance of cell viability and functionality.

Keywords:

renal failure, bioartificial kidney

ACROMEGALY CAUSED BY NEUROENDOCRINE NEOPLASMS

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A few words about the author(s):

Joanna Kruszka is a second-year student of medicine at Collegium Medicum, Nicolaus Copernicus University; working at the Students Research Club of Medical Biology for last two years.

Abstract:

Acromegaly is a disease caused by excessive secretion of growth hormone (GH). It is most commonly associated with GH-producing pituitary tumors or, rarely, in the case of so-called "ectopic acromegaly", with the production of GH outside the pituitary or with the secretion of growth hormone releasing hormone (GHRH). Regardless of the source of the hormone, the disease exhibits the same clinical features. These mainly include changes in the external appearance, such as enlargement of the face, hands and feet, as well as abnormal growth of soft tissues, bones and internal organs. Systemic changes, such as increased incidence of neoplasms or metabolic and cardiovascular diseases, are also characteristic of acromegaly. It is a rare disease, with a frequency of 2.8 and 13.7 / 100,000 and more common in women. Neuroendocrine tumors, through the production of ectopic GHRH, affect the pituitary, causing its hypertrophy and increased secretion of GH. They can also produce GH directly, which will cause similar symptoms. Most often, these tumors are found in the pancreas and lungs.

Keywords:

acromegaly, neuroendocrine tumors, growth hormone

GENERATION OF A DIFFUSE LARGE B-CELL LYMPHOMA (DLBCL) RITUXIMAB-RESISTANT CELL LINE AS A MODEL TO INVESTIGATE THE EFFICACY OF NOVEL ANTITUMOR STRATEGIES

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A few words about the author(s):

The team, consisting of immunology enthusiasts and medical doctors, is focused on studying regulation of CD20 antigen and developing strategies to increase the effectiveness of anti-CD20 monoclonal antibodies in treatment of B-cell malignancies.

Abstract:

Rituximab (RTX), employed in a treatment of several B-cell malignancies, is an anti-CD20 antibody (mAb) engaging effector mechanisms of the immune system to eliminate cancer cells. Its efficacy is unquestionable, yet a considerable percentage of patients develop resistance. Therefore, a thorough investigation of mechanisms involved in RTX resistance is of utmost importance. The aim: Generation of RTX-resistant DLBCL cell line as a model to investigate the efficacy of novel antitumor strategies. DLBCL DHL-4 cell line underwent a 24h-incubation with increasing concentrations of RTX in the presence of human serum as a source of complement 5 times. The cytotoxic effect of RTX was assessed by ATP quantification with CellTiter-Glo ®. The expression of selected antigens in rituximab-resistant cells was analyzed using flow cytometry and western blotting (WB). Generation of DLBCL rituximab-resistant cell line (RRCL) DHL4 was confirmed by comparing the sensitivity of parental and RRCL to RTX-mediated complement-dependent cytotoxicity. Furthermore, levels of CD20 and other surface molecules that serve as potential therapeutic targets were analyzed with cytometry. RTX-resistant DHL4 cell line phenotype substantially differs from parental cell lines. These cells can serve as a model to further investigate the efficacy of antitumor strategies. To broaden the scope of this study and confirm the observed changes the production of new RRCLs arising from other DLBCL cell lines is planned.

Keywords:

rituximab, DLBCL, rituximab-resistance, CD20 antigen

APPLICATION OF REGENERATIVE MEDICINE IN PATIENTS AFTER RADICAL CYSTECTOMY

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A few words about the author(s):

I am a 5th year medical student, my field of interest is internal medicine. However, as long as I am studying, I allow myself to explore different fields of medicine, both clinical and academic.

Abstract:

Radical bladder resection is the current standard of treatment, mainly used to treat invasive bladder cancer. Shortly after surgery, the question arises "what next?" Nowadays, a replacement bladder made of bowel or bowel insertions are typically performed. However, regenerative medicine is coming to the rescue with new solutions to spare the patient's bowel and avoid or minimise complications associated with the operation. Regenerative medicine uses newly developed methods such as collagen-polymer conduit or fat smooth muscle cells placed on synthetic, biodegradable scaffolds to create urinary drainage mechanisms. Both methods have promising results in animal studies and certainly deserve attention.

Keywords:

regenerative medicine, tissue engineering, urinary diversion

COMPLICATIONS AND REHABILITATION AFTER CONSERVATIVE TREATMENT OF ISCHIAL TUBEROSITY FRACTURE IN ADOLESCENTS

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A few words about the author(s):

I am a sixth-year medical student. My special interest is orthopedics and traumatology. In addition, I am interested in lifestyle medicine. My main interests are football, the gym and Italian cuisine.

Abstract:

Ischial tuberosity fracture occurs as a result of multiple micro-traumas or as a result of a single strong overload. This is a common injury among adolescent athletes. Late complications of this injury include herniated discs in the lumbar spine and abnormal tension of the quadratus lumborum muscles. The patient (age 23) has been suffering from hamstrings muscle pain for eight years. He sustained a right ischial tuberosity fracture at the age of 15. A CT scan showed a displaced bony fragment. NSAIDs and PPIs were prescribed and physical activity was avoided for 3 months. In addition, TENS currents and electromagnetic field were recommended. After this time, the patient continued to complain of pain and put weight on the affected leg when walking. After returning to sports, he continued to load his legs in an unbalanced manner resulting in an overload of the L5/S1 segment of the spine during a jump (December 2017). An MRI scan showed posterior-left extrusion of the intervertebral disc with compression of the left nerve roots. Needle therapy and pelvic posterior tilt strengthening exercises were then recommended. In 2021, the patient suffered another injury while exercising at the gym. While lifting a weight from the ground, a severe spasm of the right quadratus lumborum muscle occurred so that the patient was unable to move.

Conservative treatment was administered correctly, but the effects of the injury are still present today.

Keywords:

ischial tuberosity fracture, conservative treatment in adolescents, consequences of ischial tuberosity fracture

THE ROLE OF SELECTED PRO-INFLAMMATORY CYTOKINES IN ISCHEMIC STROKE

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A few words about the author(s):

Jan Skarbimir Milanowski is a student of medicine at Collegium Medicum, Nicolaus Copernicus University, working at the Students Research Club of Medical Biology for last three years. Interested in neurodegenerative diseases.

Abstract:

Stroke, most often an ischemic one, is the third cause of death in the world after heart disease and cancer. It also may lead to permanent disability. After a stroke, most of the nerves that are ischemic become inflamed, which promotes damage, causing cell death, but also promoting recovery. Thus, inflammation is known to play an important role in the course of stroke. Interleukins are a group of pro-inflammatory cytokines involved in the mentioned above processes. Assessing the correlation between a number of interleukins and the clinical status of patients could shed new light on the stroke. High concentrations of tumor necrosis factor (TNF-a), interleukin 6 (IL-6) and interleukin 1B (IL-1B) allow to expect poor clinical condition in cardioembolic infarct. Interleukin 17 (IL-17) and IL-1B correlate positively with the severity of neurological disorders. The concentration of interleukin 18 (IL-18) during the first 24 hours may be a predictor of the area of damage confirmed in a computed tomography (CT) scan. What is more, it allows the doctor to predict the patient's condition in the next 2 weeks. Getting to know as many of such relationships as possible will allow for acceleration of the stroke diagnostics and its treatment.

Keywords:

cytokines, inflammation, interleukins, stroke

DOSTARLIMAB - THE FIRST ANTI-PD-1 ANTIBODY APPROVED FOR THE TREATMENT OF RECURRENT OR ADVANCED ENDOMETRIAL CANCER

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A few words about the author(s):

I am 5th year student of medicine at the Collegium Medicum in Bydgoszcz.

Abstract:

Dostarlimab is an investigational anti–PD-1 antibody that binds with high affinity to the PD-1 receptor. The European Medicines Agency (EMA) has fast-tracked registration of this medicine for the treatment of adult patients with recurrent or advanced solid tumors (including endometrial cancer) with mismatch repair deficient (dMMR) DNA repair genes. The EMA's decision to register dostarlimab was based on the results of the multi-cohort GARNET trial, which included a cohort of women with recurrent or advanced endometrial cancer with dMMR/MSI-H who progressed during or after platinum compound-based chemotherapy. The Phase I GARNET study is still ongoing, with recruitment in some cohorts underway. The Phase I GARNET trial, which is still ongoing, is evaluating the use of dostarlimab as monotherapy in patients with advanced solid tumors.

Keywords:

dostarlimab, endometrial carcinoma, immune checkpoint inhibitor, immunotherapy

ANALYSIS OF CHOSEN BIOCHEMICAL PARAMETERS IN MELANCHOLIC DEPRESSIVE PATIENTS AS COMPARED TO HEALTHY CONTROL – PRESENTATION OF PRELIMINARY RESULTS OF THE STUDY

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Abstract:

Depression is one of the most common psychiatric diseases in the world. There is a growing number of studies concerning biological correlates of depression. The aim of this study is to analyze the differences in levels of selected biochemical parameters between melancholic depressive patients and a healthy control group. 26 depressive patients, hospitalized in Psychiatric Hospital in Choroszcz, have been included in the study. The control group comprised 17 healthy volunteers. The mental state of all study participants was assessed with the use of the Beck Depression Inventory (BDI), Hamilton Depression Scale (HAM-D), and Hamilton Anxiety Scale (HAM-A). Blood, urine, and saliva samples were collected from all participants. The study group was then assessed again after 4-6 weeks of treatment. A basic laboratory test were performed so far from the blood samples. A broader analysis of samples would take place after sample collection would have ended. The mean scores in the study group at the beginning of the study were: 24 in HAM-D, 30 in BDI, and 21 in HAM-A. After psychiatric treatment, the mean HAM-D score decreased to 8 in the study group, as was the case for HAM-A and BDI scores, which decreased to 7 and 17, respectively. No statistically significant differences were noted in any of the biochemical parameters assessed so far. More detailed laboratory tests are necessary to find differences between study and control groups in terms of biochemical parameters.

Keywords:

depression, biomarkers, melancholic, blood, saliva

UNFULFILLED HOPES: UNSATISFACTORY RESULTS OF SIS-BASED URINARY BLADDER AUGUMENTATION

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A few words about the author(s):

Aleksandra Nowacka is medical student at Collegium Medicum in Bydgoszcz. Her areas of interest include regenerative medicine and art.

Abstract:

Regenerative medicine and tissue engineering techniques raised hopes for urinary bladder reconstruction in patients with bladder diseases. Until now, many biomaterials have been used for bladder augumentation – one of them is small intestinal submucosa (SIS), an acellular matrix. SIS-based technique allows for regeneration of all bladder-like layers and receptors with proper structure. Potentially reducing the risk of the bowel-based complications when compared with the conventional surgical procedure, SIS was considered as a promising alternative. However, the encouraging outcomes in animal models did not translate to clinical results. Due to the unsatisfactory increase in bladder compliance and the risk of malignancy of the regenerated bladder this technique cannot be recommended as an alternative for enterocystoplasty. Nevertheless, surgical bladder reconstructions, current gold standard are reaching their limits hence regenerative medicine methods should gain more attention.

Keywords:

regenerative medicine, bladder augumentation, small intestinal submucosa, tissue engineering

BABESIOSIS IN HAEMOTHERAPY

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A few words about the author(s):

The graduate of medical biotechnology at Medical University of Silesia in Katowice.

Abstract:

Climate warming caused the period of tick activity to be extended, which resulted in an increase in the number of tick bites. The ticks are responsible for the transmission of many pathogenic viruses, bacteria, rickettsiae and protozoa. The tick-borne diseases represent a serious problem of public health and haemotherapy. The most commonly diagnosed tick-borne diseases include the Lyme disease and tick-borne encephalitis. However, from the point of view of haemotherapy, an important role is played by babesiosis which is rare in Poland. Babesiosis is an infectious disease caused by intraerythrocytic protozoa of the genus babesia which can be transmited during blood transfusion. These parasites are able to survive in concentrated red blood cells stored at 4°C or in frozen concentrates. In Poland and the European Union countries the incidence of babesiosis is the cause of lifelong disqualification of blood donor.

Keywords:

babesiosis, tick-borne disease, haemotherapy

NOVEL MRNA-BASED VACCINES AGAINST COVID-19

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A few words about the author(s):

Lab worker of Clinical Medicine Center DiMedical

Abstract:

The invention of vaccines contributed to elimination of many deadly diseases and the saving of millions human lives. In the fight against the COVID-19 pandemic we have various types of vaccines at our disposal. We can distinguish protein, atenuated, inactivated or genetic vaccines available on the market. All types of vaccines are designed to stimulate an immune response without causing illness. This response builds immune memory, so our body can fight off SARS-CoV-2 in future. The genetic vaccines contain mRNA (messenger RNA) encoding SARS-CoV-2 spike protein (S protein). Primary advantage of novel mRNA-based vaccines is rapid production and low costs.

Keywords:

mRNA-based vaccines, vaccines, SARS-CoV-2

CONVECTION-ENHANCED DELIVERY FOR THE TREATMENT OF GBM

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A few words about the author(s):

Marcin Setlak - doctor during specialization training in neurosurgery, student of the Doctoral School of the Medical University of Silesia in Katowice.

Abstract:

Glioblastoma is a common primary tumor of the central nervous system classified according to WHO grade IV. The current therapy is based on the neurosurgical removal of the tumor mass with the additional use of chemotherapy and radiotherapy, which does not bring satisfactory results and results in patient survival within several months from diagnosis. Therefore, other methods of therapy are constantly searched for in order to achieve more satisfactory results. One of the approaches is the use of the Convection-Enhanced Delivery method, which allows drugs to be administered directly to the tumor area, physically bypassing the blood-brain barrier and limiting the systemic, toxic effect of the therapeutics used. The following presentation takes into account the technique, advantages and disadvantages as well as the effects of this method.

Keywords:

glioblastoma, Convection-Enhanced Delivery, CED, blood-brain barrier

NEW METHODS OF INTERVENTIONAL RADIOLOGY IN THE TREATMENT OF DISEASES OF THE CENTRAL NERVOUS SYSTEM

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A few words about the author(s):

Marcin Setlak - a doctor during specialization training in neurosurgery, student of the Doctoral School of the Medical University of Silesia in Katowice.

Abstract:

Interventional radiology methods have for many years supported the classic methods of treatment of central nervous system diseases for many years. Endovascular embolization of both ruptured and accidental aneurysms is currently the most common treatment. There are more and more new types of stents on the market that allow to perform complex procedures. However, vascular diseases are not the only area of interest in this field of medicine. Recently, the first attempts at endovascular treatment of hydrocephalus have been made.

In this presentation, let's take a closer look at this new and promising procedure.

Keywords:

biomimetic transdural shunt, hydrocephalus, aneurysm, embolisation

CHORDOMA OF THE BASE OF THE SKULL

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Mikołaj Dymek – doctor during the postgraduate internship, chairman of the Student Scientific Organisation of Neurosurgery and the Student Scientific Organisation of Interventional Radiology of the Medical University of Silesia in Katowice.

Abstract:

Chordomas are rare neoplasms most commonly located at the base of the skull, sacrum, or the movable part of the spine. Their histological origin is defined as the dorsal chord residue. Numerous therapeutic methods are used, including surgery. Complete resection of these tumors provides the best possible results with the longest possible survival time. Endoscopic techniques dominate neurosurgery in the cranial base. They provide excellent therapeutic effects with less invasiveness compared to traditional open surgical accesses. Endoscopic chord resection, due to their location and often expansion into the posterior cranial cavity, remains one of the most skillfully and technically demanding forms of transnasal endoscopic surgery. The aim of this work is to present the problem of chords in neurosurgery and to outline the surgical technique and related theoretical aspects.

Keywords:

chordoma, endoscopic resection, transnasal

ACNE IN ADOLESCENTS: PREVALENCE AND QUALITY OF LIFE

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A few words about the author(s):

The authors received a reserach grant from the municipality of Wroclaw within the FAST program – GMIN.C260.21.005. The presented topic is a part of this grant.

Abstract:

INTRODUCTION: Acne is a frequent chronic inflammatory disease, which affects most commonly adolescents. This study was conducted to assess the prevalence of facial acne among adolescents and to evaluate its influence on quality of life (QoL).

MATERIAL AND METHODS: This cross-sectional study was carried out on high schools students aged 15-19 years old. A total of 730 students were included in the final analysis. Standardized photographs according to the Investigator's Global Assessment (IGA) were used for self-assessment of both the presence and severity of facial acne. The Dermatology Life Quality Index (DLQI) was employed to evaluate subjects' QoL impairment.

RESULTS: Facial acne was found in 547 (74.9%) respondents with no significant difference in acne prevalence among females (75.1%) and males (74.6%). The vast majority of subjects (90.9%) suffered from minimal and mild acne, moderate acne was reported by 7.3% and severe one by 1.8% of acne students. Acne had a small effect on QoL (DLQI mean score of 2.8 ±3.6 points); females had significantly more decreased QoL than males (3.17 ±3.74 and 1.76 ±2.69 points, respectively). QoL impairment positively correlated with the clinical severity of facial acne.

CONCLUSIONS: Acne is a common health problem in adolescents. Although it is not very severe in the majority of subjects it significantly decreases their QoL.

CONSERVATIVE AND SURGICAL MANAGEMENT OF SPONTANEOUS PRIMARY PNEUMOTHORAX IN A PATIENT OVER 50 YEARS OF AGE: A CASE REPORT

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Medical student of Collegium Medicum im. Ludwika Rydygiera w Bydgoszczy Uniwersytet Mikolaja Kopernika w Toruniu.

Abstract:

Pneumothorax is a condition in which air enters the pleural cavity. This causes compression of the lung, which affects proper ventilation. Typical symptoms are unilateral chest pain, shortness of breath and cough. The patient, age 52, suffers from recurrent primary spontaneous pneumothorax. The first case of spontaneous pneumothorax occurred at age 45 for no specific cause. It started with a cough that caused pain on the right side of the chest. The pneumothorax was decompressed by needle aspiration. After year, the situation recurred. After another year, the situation repeated, the symptoms and management were the same as before, additionally, kinesiotherapy was introduced. The following year, the situation repeated for the fourth time. It was then decided to perform VATS during which air cells were removed, the apex of the right upper lobe was excised and talc pleurectomy was performed. Another pneumothorax did not appear until 2 years later, it was quite small. The pneumothorax was decompressed by needle aspiration. After about a month, another pneumothorax developed, and a right-sided thoracotomy was decided. During the right-sided thoracotomy, wedge resection of the seventh segment, pleurectomy, and talcum pleurodesis was performed.The patient is not a typical case. It is important to consider whether the patient should have been scheduled for surgery sooner, which could have reduced the recurrence rate. It is worth considering whether the guidelines need to be refined.

Keywords:

pulmonology, pneumothorax, VATS

DIAGNOSTIC PROCEDURE OF NEPHROTIC SYNDROME IN CHILDHOOD AND IT'S FURTHER EXAMINATION

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A few words about the author(s):

I am a fifth year medical student. I am particularly interested in family medicine and obesity. Outside of science, I am interested in volleyball.

Abstract:

The most common cause of Nephrotic Syndrome in children is Idiopatic Nephrotic Syndrome based on the Minimal Change Disease. Secondary causes, such as reaction to medication (NSAIDs, or penicillin) as well as bacterial and viral infections, are also attributable to that. Complications of the disease include: oliguria, dysproteinemia, hiperlipidemia and hypercoagulability. The 22-year-old female patient suffered from the Nephrotic Syndrome three times during her childhood. It appeared for the first time when she was 2-years-old and had just gone through a Urinary Tract Infection caused by the pseudomonas aeruginosa bacteria. The second time resulted as a complication of the scarlet fever. At the age of 5 years she was sick once again as a complication of another Urinary Tract Infection, which this time was caused by the Escherichia coli bacteria. During each of those times the primary disease was treated. When the patient was 2- and 5-years old, the disease was treated with glucocorticosteroids. When she was 3-years-old, the disease withdrew without the use of glucocorticosteroids. No further complications were found. The described case touches upon the paediatric patient whose disease relapses withdrew after she reached 6 years of age. Since medical treatments proved to be successful, currently the patient does not experience any complications of the disease. Despite that, she has regular urine and lipid profile check-ups.

Keywords:

nephrotic syndrome, pediatric patient

IMMUNOMODULATORY EFFECTS OF VITAMIN D AND MELATONIN IN PREGNANCY

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Abstract:

Melatonin, as well as vitamin D, are both immunomodulators essential for a successful pregnancy. Melatonin, produced mainly in the pituitary gland, is a biogenic monoamine with an amphipathic structure, which allows it to be transported between biological barriers, including the placenta. It plays an important role during pregnancy as an effective antioxidant that protects the tissues of the fetus, mother, and the placenta against oxidative damage. Moreover, this hormone has an immunomodulatory effect; changes in its concentration during gestation affect the activity of immune processes. T-cell subpopulations, namely Th17 and regulatory T (Treg) cells, have an essential role during pregnancy. Endogenous melatonin has been found to be involved in regulating the Th17/Treg balance during pregnancy in humans. The active form of vitamin D also modulates T lymphocytes. Tregs exhibit suppressive activity and have a crucial role in curtailing the destructive response of the immune system during pregnancy and preventing autoimmune diseases. Dysregulation of T cells plays a crucial role in the pathogenesis of autoimmunity. Thus, many pregnancy pathologies are associated with vitamin D deficiency. The effects of vitamin D supplementation in the modulating of the immune system during pregnancy require further clinical research.

Keywords:

autoimmunity, melatonin, pregnancy, T lymphocytes, vitamin D

ANALYSIS OF THE EXPRESSION OF GENES DETERMINING THE INCREASED EFFICIENCY OF THE BACTERIAL CELLULOSE SYNTHESIS PROCESS IN KOMAGATAEIBACTER XYLINUS UNDER THE INFLUENCE OF A ROTATING MAGNETIC FIELD

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A few words about the author(s):

Anna Żywicka is an assistant professor at West Pomeranian University of Technology in Szczecin. She specializes in research on the application of bacterial cellulose as a carrier for the immobilization of bioactive substances and microorganisms.

Abstract:

Bacterial cellulose (BC) synthetized by Komagataeibacter xylinus is currently one of the most promising class of biopolymers. However, low production rates and high culture media costs limit commercial uses of BC. In recent years, it has been proven that various types of magnetic fields (MFs) like rotating MF may be used as a novel approach to improve the effectiveness of different biotechnological processes such as BC production.

The aim of this study was an analysis of the expression of genes determining the increased efficiency of the BC synthesis process under the influence of RMF.

In first stage, suspension of K. xylinus cells was incubated in the bioreactor with the RMF generator, where different exposure modes were applied: different frequency (5 - 50 Hz); different time of exposition (12-72 h). The expression of genes responsible for quantity and quality of BC biosynthesis was analyzed using the real-time quantitative PCR.

Results obtained in this study confirmed that RMF significantly increases expression of all analyzed gens, especial gens from I cellulose synthase operon. The highest expression was obtained after 12 h of exposure in 5 Hz. The increased expression was correlated with the amount of obtained BC. The physicochemical properties od BC obtained after RMF exposure was similar to non-exposure control. It was concluded that the use of the RMF may provide a novel technique for improve BC biogenesis and may be used in multiple biotechnological applications.

Keywords:

bacterial cellulose, Komagataeibacter xylinus, genes expression, rotating magnetic field

ABSTRACTS OF

POSTERS

MEDICAL SCIENCES

INFLUENCE OF HYPOXIA ON IRISIN LEVEL IN HL-1 CELLS – PRELIMINARY REPORT

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A few words about the author(s):

My name is Maciej Grzeszczuk. I am a physiotherapist and a PhD student in the Department of Histology and Embryology. I carry out research on the influence of irisin on the course of myocardial infarction.

Abstract:

INTRODUCTION: Cardiac metabolism disorders play a key role in many diseases. The heart is an organ with an extremely high energy consumption. In myocardial infarction (MI), cardiomyocyte metabolism is regulated, inter alia, by the biogenesis of mitochondria and changes in them under the influence of various proteins. This changes enable to maintain energy homeostasis. Evaluation of the proteins level involved in this regulation may be useful in assessing the condition of patients after MI. Irisin (Ir) is one of the proteins that may be involved in this regulation. Ir is a recently identified myokine that is produced and secreted by skeletal muscle fibres after exercise. The High level of Ir has also been observed in cardiomyocytes. The aim of the study was to determine the changes in cardiomyocyte Ir level under hypoxic conditions.

MATERIALS AND METHODS: HL-1 mouse cardiomyocyte cell line was cultured for 24h under standard conditions (as a control) and under hypoxia. Hypoxic conditions were obtained using a live chamber of confocal microscope, in which it is possible to maintain constant reduced oxygen levels.

The experiment was repeated three times. Cells were collected and the detection of the Ir levels were performed using Western-blot and immunofluorescence.

RESULTS: The level of Ir was compared in cells after culturing in standard and hypoxic conditions. Different levels of Ir were observed in cells which were cultured under normoxic and hypoxic conditions.

Keywords:

Irisin, HL-1 cells, hypoxia

COVID-19 RECOVERY – THE CONNECTIONS BETWEEN PERSISTENT OLFACTORY DISORDERS AND SMOKING

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Students of the Faculty of Medicine, members of the scientific association at the Department of Biochemistry at the Pomeranian Medical University in Szczecin.

Abstract:

INTRODUCTION: The appearance of SARS-CoV-2 caused the outbreak of the largest epidemic of the 21st century. COVID-19, a disease caused by SARS-CoV-2 infection, is characterized by a variable clinical picture in terms of duration, symptoms and complications. Among others symptoms associated with COVID-19 are changed taste and smell. Lifestyle factors influence the course and prognosis of many diseases, but it is not known whether they have an influence on the persistence of post-COVID-19 taste and smell disorders.

AIM: The aim of the study was to assess the prevalence of the problem of post-infection dysfunction of taste and/or smell in COVID-19 and its relationship with the patient's lifestyle.

METHODS: A survey among people that had been infected with SARS-CoV-2 (n = 62), including questions about lifestyle and olfactory and taste perception.

RESULTS: Among the respondents, olfactory disturbances during COVID-19 occurred in 71%, while in 27.4% the symptoms persisted after recovery. Taste disturbances, both during infection and post-COVID-19, appeared less frequently, respectively in 61.3% and 19.4% of the respondents. 68% of non-smokers lost their sense of smell and/or taste, while the proportion of smokers was 62.5%. Persistence of olfactory dysfunction was observed among 13% of smokers and 18% of non-smokers.

CONCLUSIONS: Smoking appears not to affect the occurrence and persistence of smell and/or taste disturbances. More studies are required to confirm it.

Keywords:

SARS-CoV-2, smoking

PROSTATE CANCER – DIAGNOSIS AND TREATMENT OF PATIENTS WITH PROSTATE CANCER

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A few words about the author(s):

I am a student of the Faculty of Medicine at the University of Opole. I am a member of the Scientific Study Group of Urology. After starting my career, I want to associate myself with this specialization.

Abstract:

Prostate cancer is the most common malignant cancer in men in Europe. Modern diagnostic tools enable the early detection of prostate cancer and the implementation of effective therapeutic tactics. General practitioners play an important role in identifying patients with prostate cancer. The majority of cases detected early are due to referral by the family doctor to a specialist. Many men diagnosed with prostate cancer will die with it, but not because of it. The vast majority of patients have a known prostate cancer that is no higher than local. The relative 5-year survival rate for these men is almost 100%. In this context, the importance of early detection of prostate cancer, of carrying out preventive examinations on this direction of men in the general practitioner's practice should be stressed.

Keywords:

prostate cancer, urology

NAAT AS A COVID-19 DIAGNOSTIC TOOL

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A few words about the author(s):

Lab worker of Clinical Medicine Center Dimedical in Lodz.

Abstract:

The development of molecular biology allows for the creation of fast and sensitive methods used in laboratory diagnostics. During the COVID-19 pandemic in accourance with recomendations of World Health Organisation (WHO) molecular tests should be used to confirm an infection caused by SARS-CoV-2 (Sever Acute Respiratory Syndrom Coronavirus 2). NAAT (Nucleic Acid Amplification Testing) allows the detection the genetic material of the virus. NAAT include such technique as RT-PCR and RT-LAMP. RT-PCR is used to confirm of virus RNA in sample taken from patients even before symptomps appear. RT-PCR is the gold standard in diagnosis of COVID-19 due to its high sensivity and specificity. RT-LAMP (Reverse Transcriptase Loop-Mediated isothermal Amplification) is test which also allows to detect genetic material of the virus. It is faster, more efficient and more specific test than RT-PCR but with lower sensitivity.

Keywords:

NAAT, RT-PCR, RT-LAMP, molecular diagnostics

MOVEMENT ACTIVITY IN THE FIGHT AGAINST JOINT DISEASES IN PHYSIOTHERAPY FOR PEOPLE OF ALL AGES

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A few words about the author(s):

Phyzioterapeut.

Abstract:

Rheumatic diseases are included in the Musculaskeletal Helth Needs Map, which includes analyzes for the following disease subgroups: infection-related arthropias, multi-inflammatory arthritis, connective tissue diseases, muscle diseases, (inflammatory and non- inflamatory), joint diseases, bone mineralization and structure disorders, other diseases of bone and cartilage, other diseases of the musculoskeletal system and conenective tissue, diseases of the spine. The maps estimated the number of patients per 560,000 suffering from diseases included in the subgrup ,,systemic diseases of connective tissue". Rheumatic heart disease is the most common acquired disease in people under 25 and mainly affects children and adolescents in high and middle income countries, with 288,348 people wordwide being affected each year. It accounts for 2% of deaths from cardiovascular disease, dhe most common cause of death in the world. The disease occurs in sub-Saharan Africa, the Middle East, Central and South Asia, the South Pacyfic, and among immigrants and the elderly. In high-income countries, especially among indigenous peoples. There is no cure for rheumatological heart disease, and damage to the heart valves is permament. Treatment with antibiotics for a long time. Regular activity has been shown to help prevent and manage non-communicable diseases (NCDs). The WHO Global Action Plan for Physical Activity 2018-2030: ,,More Active People for a Healthy".

Keywords:

mouvmont activity, rheumatic diseases, Global Action Plan for Physical Activity

SLEEP IN ATHLETES WITH DISABILITIES – A PRELIMINARY STUDY

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A few words about the author(s):

Members of students research group, Natalia Sokulska is a student of physiotheraphy, Jakub Jędrzejczyk personal training and sports nutrition.

Abstract:

INTRODUCTION: The main goal of this study was to assess sleep disorders and sleep hygiene knowledge in athletes with disabilities.

MATERIALS AND METHODS: A sample of 53 athletes with disabilities volunteered to complete a survey including the following questionnaires: 1) The Pittsburgh Sleep Quality Index (PSQI) assessing sleep quality over the last month, 2) Cambridge Hopkins Restless Leg syndrome (CH-RLSq) diagnosing restless leg syndrome (RLS), 3) Sleep Beliefs Scale (SBS) analysing sleep hygiene knowledge.

RESULTS: Sleep disturbances occurred in 47% of athletes with disabilities (PSQI score: 5.6 ± 3.1). The average sleep duration was 7:05 ± 0:55 (h: min), and the sleep latency was 26 ± 19 min. Significant statistical differences were observed between national-level and international-level athletes in the PSQI score (7.0 ± 3.4 vs 4.8 ± 2.6, respectively; p =0.034) and sleep latency (34 ± 22 vs 21 ± 15, respectively; p =0.045). A high risk of RLS was observed in 30% of the respondents. The sleep hygiene knowledge assessed by the SBS scale was inadequate for the whole sample (SBS score: 10.86 ± 2.78; 54.3% correct answers).

CONCLUSIONS: Athletes with disabilities suffer from sleep disorders, but at the same time, they have poor sleep hygiene knowledge. Considering that sleep is crucial for sports regeneration, the occurrence of injuries and sports performance, it is necessary to support and educate athletes within the sleep field.

Keywords:

mental health, sleep hygiene, sleep beliefs, restless legs syndrome, sleep quality

EXPOSURE TO LEAD AND THE ACTIVITY OF MMP-2 AND MMP-9 IN RATS INTESTINES

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A few words about the author(s):

We are members of the Biochemistry Student Research Club at the Pomeranian Medical University in Szczecin.

Abstract:

INTRODUCTION: Lead is a highly toxic element that interferes with the immune system. Through complex mechanisms, it has the ability to induce inflammation. The intestinal barrier is a structure that separates the intestinal lumen from the internal environment of the organism, disturbances in its tightness are often caused by inflammatory bowel diseases. Extracellular matrix metalloproteinases (MMPs) as endopeptidases whose function is to regulate inflammatory processes and participate in the remodeling of extracellular matrix components, are one of the markers of intestinal barrier integrity. Their increased activity may be the cause of increased permeability of this barrier. Moreover, increased expression of MMP-2 and MMP-9 is observed in patients with active collitis ulcerosa.

AIM: To study the activity of metalloproteinases MMP-2 and MMP-9 in the structures of the digestive system of rats exposed to lead.

METHODS: Zymographic analysis was used to assess the activity of metalloproteinases MMP-9 and MMP-2 in the duodenum, small intestine, and large intestine of rats exposed to 0.1% lead acetate in drinking water (2 months).

RESULTS: Metalloproteinases in individual tissue preparations (duodenum, jejunum, large intestine) showed different activity. Increased MMP-9 activity was observed in each of the analyzed tissues after Pb exposure.

CONCLUSIONS: Exposure to lead can disrupt the integrity of the intestinal barrier due to increased matrix metalloproteinases activity.

Keywords:

MMP-2, MMP-9, lead

HAND THERAPY IN CEREBRAL PALSY

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A few words about the author(s):

My name is Dominika Wójcik. I am a 4th year student of physiotherapy. I am interested in urogynecological physiotherapy and paediatrics.

Abstract:

Cerebral palsy is a set of various disorders related to the motor organ, posture and work of the entire nervous system. In Poland, this problem affects about 17 million people. Hand therapy plays a key role in returning to motor independence. In the poster you will learn how to recognize cerebral palsy, types, symptoms and treatment options. I will also present therapy methods that will be helpful for people with this condition, such as: CIMT, kinesiology taping, infant occupational therapy, NDT-Bobath, the Ester Cotton method and hand therapy through self-care exercises. We cannot cure this disease, but we can help in everyday life.

Keywords:

cerebral palsy, hand therapy, physiotherapy

JUMPER'S KNEE

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A few words about the author(s):

My name is Dominika Wójcik. I am a 4th year student of physiotherapy. I am interested in urogynecological physiotherapy and paediatrics.

Abstract:

Jumper's knee, as the name suggests, is a disease that occurs most often in people practicing sports, in which jumping is frequent (basketball, volleyball, handball), but also in people who practice jogging. The disease develops as a result of frequently repeated overloads of the extension apparatus, which lead to microtraumas of the patellar ligament. Playing sports, whether at the professional or amateur level, requires proper preparation of the body for effort, a reasonable selection of training loads, as well as complementary training and rest. In the poster, you will learn how to recognize a jumper's knee, causes, symptoms, prevention and treatment. I will also give you some exercises to help heal this injury and recover faster.

Keywords:

Jumper's knee, physiotherapy, treatment

CANCER STEM CELLS AND THE EVOLUTION OF DRUG RESISTANCE

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A few words about the author(s):

PhD student at the Faculty of Biochemistry, Biophysics and Biotechnology at Jagiellonian University. Works in the Department of Cell Biology.

Abstract:

Studies have shown that cancer stem cells (CSCs) play a significant role in tumor resistance to anti-cancer therapies, including chemotherapy and radiotherapy. According to some studies, some of them may show an increased invasive potential, which constitutes a serious clinical challenge. While the direct involvement of neoplastic stem cells in the metastatic cascade remains controversial, their participation in developing (microevolution) cancer drug resistance seems to be well documented. Based on the knowledge on this subject, CSCs can selectively survive chemotherapeutic cycles. This is due to their relatively low proliferative activity, taking the niches difficult to access by pharmacological agents and the high activity of drug removal systems. Because of that and their ability to evolve into specialized phenotypes, tumors recur, often in a much more invasive form. In addition, the postulated heterogeneity of the CSC population within tumors creates the fundamental possibility for selective expansion and, consequently, for the microevolution of tumors.

Keywords:

cancer, drug resistance, stem cells, prostate, microevolution

ARTIFICIAL LIGHT AT NIGHT AND PROSTATE CANCER RISK

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A few words about the author(s):

We are a group of students from Medical University of Lublin. Our scientific interests concern many aspects of medicine, particularly we are interested in fields such as oncology, epidemiology and endocrinology.

Abstract:

INTRODUCTION AND PURPOSE: Light is one of the defining features of life on the Earth, allowing certain biological processes to be subordinated to its presence and absence. With the introduction of artificial light, the human natural biological clock was dysregulated. Apart from that, the studies showed a connection between exposure to artificial light at night (ALAN) and carcinogenesis. The aim of preparing this poster was to present currently available knowledge in the online database PubMed about the Association Between Artificial Light at Night and Prostate Cancer Risk.

BRIEF DESCRIPTION OF THE STATE OF KNOWLEDGE: Our work covers clinical and population-based control studies which indicate the ALAN exposure can lead to increased incidence of prostate cancer by disruption of circadian rhythms in several mechanisms involving suppression of melatonin production, dysregulation of sleep–activity pattern and disruption of circadian genes.

CONCLUSIONS: The work supports an assumption that prostate cancer incidence is a consequence of ALAN exposure. Further studies should clarify the relationship between ALAN exposure and other types of cancer. Besides, ALAN exposure levels should be measured more precisely than by satellite pictures analysis to reliably conduct studies proving the relation between ALAN exposure and risk of cancer development.

Keywords:

circadian rhythm, artificial light, prostate cancer

HYPERBARIC OXYGEN THERAPY AS A POTENTIAL METHOD OF TREATING DEPRESSIVE DISORDERS IN PATIENTS WITH WOUNDS

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A few words about the author(s):

In their research work, the authors search for markers of mental disorders.

Abstract:

Depression is the most common mental disorder that affects approximately 300 million people worldwide. Due to the high cost of treating depression and the insufficient effectiveness of standard antidepressant treatment, new methods of treating this disease are being sought. Last research reports that hyperbaric oxygen therapy (HBOT) have antidepressant potential. The use of 100% oxygen under increased pressure leads to a several-fold increase in tissue oxygenation compared to respiration under normal atmospheric pressure. The effect of this is to stimulate healing and repair the tissues. The aim of the study was to assess the effect of HBOT treatment on depressive symptoms. We conducted a study of 20 participants treated with HBOT for venous ulcers or diabetic foot syndrome, 20 participants hospitalized for depressive disorders, and 20 healthy volunteers. All participants in the first two groups were assessed by the depression subscale of the Hospital Anxiety and Depression Questionnaire (HAD-D) and defined as a score ≥11. After 4-6 weeks, the HAMD scale decreased was observed in both groups, and was lower in HBOT subjects who obtained the greatest benefit from wounds care. Our findings suggested that HBOT ameliorated the depression in patients with venous ulcers and diabetic foot. HBOT gave similar results as in the group of participants undergoing standard treatment for depression. These results also indicate the future use of HBOT in the treatment of depression.

Keywords:

hyperbaric oxygen therapy, Depression, wounds

ABSTRACTS OF

PRESENTATIONS

TECHNICAL AND NATURAL SCIENCES

EXPERIMENTAL RESEARCHES OF THE LABELS CUTTING PROCESS USED IN PACKAGING IN THE FOOD INDUSTRY USING AN ULTRAVIOLET LASER

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A few words about the author(s):

Research and teaching staff from the Koszalin University of Technology and industry.

Abstract:

This work presents UV laser processing as a novel technique for the fabrication of labels made from polypropylene multilayer foil by IML technology. Currently, on production lines, labels are shaped by mechanical cutting or laser cutting, taking into account the phenomenon of hot ablation. These technologies cause many problems, such as burr formation on the cut edges of the labels, rapid tool wear, or the formation of heat-affected zones. For this purpose, the laser system was built. Next, it was determined how individual process settings affect the technological quality of the IML label and whether and what interaction occurs between individual process settings. Development of the relationship between cutting parameters and product quality as well as process efficiency and energy consumption allow for forecasting the product quality after the process for given process implementation conditions or determining the required cutting process implementation conditions in terms of the required product quality.

Keywords:

UV laser, cold ablation, polypropylene multilayer foil, cutting

USE OF BEE POLLEN AS A COSMETIC RAW MATERIAL – EVALUATION OF ORGANOLEPTIC PROPERTIES OF A MOISTURISING SERUM WITH BEE POLLEN

Justyna Ciećko (1)*, Adrianna Romańska (2), Barbara Topyła, Anna Teter, Monika Kędzierska-Matysek, Marek Kowalczyk

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A few words about the author(s):

Adrianna Romańska, Justyna Ciećko: We are students of the master's studies in the field of biocosmetology at the University of Life Sciences in Lublin. Our scientific interests include the properties of cosmetic raw materials of natural origin.

Abstract:

Bee pollen is characterised by its health-promoting effects, due to the high content of minerals, vitamins, enzymes and phenolic compounds. The complex composition contributes to its antioxidant potential, anti-aging and nutritional effects, making pollen a valuable cosmetic raw material. The aim of this study was to characterise pollen as a cosmetic ingredient and assess the organoleptic properties of a moisturising serum with bee pollen.

The cosmetic base consisted of rose hydrolate, aloe extract, hyaluronic acid and vegetable glycerine. The moisturising serum was prepared in four variants, containing pollen in concentrations of 0, 1, 2, 4%. Each variant was evaluated in terms of organoleptic characteristics by a group of 35 people, using the scaling method. Additionally, the pH was evaluated for each sample.

The pH value of the tested cosmetics was in the range of 4.25-4.53 and increased with increasing pollen concentration, reaching significantly higher values for concentrations of 2 and 4%. Organoleptic evaluation, indicated that the optimal concentration of pollen was 1%. This variant was rated best in terms of smoothing and moisturising the skin, and also had the highest overall quality. The addition of pollen in a higher concentration negatively affected the quality of the cosmetic.

Bee pollen may improves the moisturising and smoothing properties of cosmetics, however too high a concentration of bee pollen may reduce the sensory appeal of cosmetic formulations.

Keywords:

bee pollen, cosmetics, moisturising serum, organoleptic properties

MODIFICATION OF BIOPOLYMERS BASED ON FIBRILLAR PROTEINS USING THE ALKALIZATION PROCESS

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A few words about the author(s):

Authors are part of the same research group from Institute of Polymer and Dye Technology (Lodz University of Technology). They focus on biodegredable and biosourced materials and additives, concerned about the growth of ecological awarness.

Abstract:

Current studies show a steady growth in research, production and information concerning bioplastics. "Bioplastics" is a collective term for polymeric materials that meet at least one of the following criteria: materials obtained wholly or partially with renewable raw materials (plastics of plant origin) and materials that are compostable. The purpose of this paper is to show the modification of biopolymers by alkalization process. The result of this procedure was an increase in the number of functional groups on the surface of the polymer as a result of breakage the hydrogen bonds. The paper below presents the effect of sodium hydroxide, on the properties of a biopolymer synthesised from fibrillar protein. The alkaline solution was introduced into the composition in the amount of 5 parts. wt. with concentrations 0.1M; 0.5M; 1M. The following research methods were used to determine changes taking place in the modified biopolymer: FTIR, determination of mechanical properties, measurement of equilibrium swelling, determination of resistance to thermo-oxidative aging and biodegradation.

From the obtained results, it can be concluded that as the concentration of the used base is increased, mechanical properties increase and the cross-link density increases.

Biocomposites made with fibrillar protein and modified by the alkalization process can be used in the future as disposable materials or can undergo further modifications.

Keywords:

biopolymers, collagen, casein, alkalization, biodegradation

THE INFLUENCE OF TEMPERATURE ON STABILITY OF AQUEOUS SUSPENSIONS OF POLYETHYLENEIMINE AND SEPIOLITE

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A few words about the author(s):

Ewelina Godek – PhD student at the PhD School of Quantitative and Natural Sciences at UMCS. Elżbieta Grządka – assistant professor. Interests include the physicochemistry of the dispersed systems, as well as the stability of the colloidal systems.

Abstract:

The aim of the work was to investigate the influence of temperature on stability of the dispersed suspensions of polyethyleneimine (PEI) and sepiolite (SPT). The measurements were made using the spectrophotometric method (UV-Vis) at three temperatures: 15, 25 and 35^{o}C. The stabilization mechanism was determined on the basis of the adsorption measurements. An additional method used to determine stability of colloidal systems was the measurement of the zeta potential.

The adsorption measurements show that PEI adsorbs very well on the SPT surface, and the adsorption plateau sets quickly. It is also important that with the increase of temperature, an increase of the amount of the polymer adsorption on the clay mineral surface is observed. Stability measurements show that at room temperature, the aqueous suspension of SPT without the addition of PEI is completely unstable. The addition of a macromolecular compound to the system changes the situation drastically. Stability of the SPT suspension increases with the increase of the concentration of PEI, which is caused by the effective adsorption of PEI on the SPT surface. This is due to the fact that with increasing temperature, the conformation of polymer chains is more extensive and the adsorption layer is thicker, which translates into an increase of the amount of polymer adsorption on the clay mineral surface, which in turn increases stability of the system.

Keywords:

polyethyleneimine, sepiolite, stability, adsorption, temperature

RESEARCH ON THE MECHANICAL PROPERTIES OF HIGH-ENTROPY ALLOYS TITANIUM BASED

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A few words about the author(s):

PhD student in Faculty of New Technology and Chemistry, Military University of Technology.

Abstract:

The microhardness tests carried out in this study by the Vickers method of the high-entropy alloy TiCoCrFeMn showed the variability of this parameter in the range of 1000-1600HV. In order to eliminate the influence of this effect, known as ISE (Indentation Size Effect), empirical models (Meyer's law, PSR, MPSR, Hays-Kendall) were used to determine the true hardness. In addition, the microhardness measurements also allowed to determine the fracture toughness factor KIc, which is a measure of the brittleness of the material. The observed clear correlation of the Meyer coefficient with the Young's modulus became the basis for the development of a proprietary model for determining the Young's modulus E, based on microhardness measurements using the Vickers method. It was found that the value of the modulus of elasticity for the tested high-entropy alloys is about 260GPa and is comparable to that determined from the KIc calculations and nanoindentation tests. Classical strength tests based on a compressive strength test have shown that, the material cracs brittle at temperatures up to 600°C and at 700°C, clear plastic deformation effects were observed. It was found that the hardness and the stress intensity factor KIc, strongly depend on the homogenization time carried out at 1000°C for up to 1000h, and the observed changes, may be the effect of reduction of oxides in the presence of cobalt, causing the phenomenon of hydrogen embrittlement.

Keywords:

high-entropy alloys, hardness, fracture toughness, Young modulus, compressive strength test

MODERN HYBRID THERMOPLASTIC MATERIALS FOR PASSIVE FIRE PROTECTION WITH A DETECTION SYSTEM

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A few words about the author(s):

MSc. Mateusz Kosyl, a graduate of the Szczecin University of Technology, Chief technologist at Intuseal Sp. z o.o.

Abstract:

Passive fire protection is one of the security systems commonly used in buildings. Like any type of system of this type, these security measures must be controlled in accordance with the law. To facilitate periodic inspections, RFID technology can be successfully applied. In this work, the thermal behavior of the manufactured intumescent materials suitable for passive fire protection was examined, when tested in accordance with the method included in the PN-EN 1366-3:2010 standard, and the thermal resistance of protections without shutters and with markers was analyzed. The results obtained in the study showed the expected thermal behavior of intumescent materials that filled the entire space of protections blocking the spread of fire and smoke. The assumed fire resistance of EI240 was achieved. Moreover, it was observed that the use of RFID markers did not adversely affect the obtained fire resistance of the new composites.

Keywords:

fire, passive, RFID, termoplastic, hybrid

COMPOSITE MATERIALS BASED OF BIOPOLIAMIDES AND NANOCELLULOSE FOR APPLICATIONS IN BIOETHANOL FUEL SYSTEMS – INFLUENCE OF CONDITIONING ON THE STRUCTURE AND THERMOMECHANICAL PROPERTIES

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A few words about the author(s):

Kinga Krużel – second degree student of the Cracow University of Technology, Chemical Technology, engaged in research in the field of biocomposites, including the influence of surface modification and bioethanol on their thermomechanical properties.

Abstract:

In this research paper, attention was paid to the problem of the destructive effect of bioethanol on the fuel lines of combustion engine systems made of polyamides (PA). The conditioning of modern composite materials based on bioPA1010 with cellulose nanocrystals (CNC), subjected to surface modification by esterification, was carried out in order to study the influence of water and ethanol absorption on their structure and thermomechanical properties. Analysis of the PA crystal structure in conditioned composites showed a decrease in the X-ray diffraction intensity, indicating a reduction in the crystallinity of all samples. The dynamic-mechanical tests showed a significant influence of the type of nanocellulose surface modification on the properties of dry and conditioned composites in hot, cold water and ethanol. In the case of dry composites, the highest increase in the value of E 'conservation modules in the entire temperature range compared to pure PA1010 was observed for the PA / CNC-BA2% sample, containing CNC esterified with butyric anhydride, which introduced non-polar alkyl chains on the filler surface. After conditioning in hot water, the highest E 'value was shown for the sample with unmodified CNC, and for cold water and ethanol - again PA / CNC-BA2%. Research on the conditioning of modern biomaterials indicate potential opportunities for application in fuel systems using bioethanol, which also has a positive impact on the natural environment.

Keywords:

Polyamide1010, CNC, bioethanol, fuel systems, conditioning

FPGA ACCELERATOR FOR COMPUTATIONAL FLUID DYNAMICS

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A few words about the author(s):

The author is a senior engineer in the company OKANE sp.j. responsible for the Computational Fluid Dynamics part of the project in which the hardware CFD accelerator is created.

Abstract:

NASA in its document “CFD Vision 2030 Study: A Path to Revolutionary Computational Aerosciences” indicates the main challenges in the development of CFD methods such as the development of high-order methods, development of computing hardware, reliable mesh generation, and scalability of massively parallel machines. Our R&D project is a response to these challenges, moreover, we want to shift the accepted paradigm that accurate CFD computations are achievable only on powerful computing clusters containing hundreds or even thousands of general-purpose processors such as CPUs or GPUs.

Our technology is based on three pillars. First is the algorithm that solves Navier-Stokes equations in the framework of modal high-order Discontinuous Galerkin method (DG). Each part of the algorithm was optimized for efficient computations in the dedicated chip.

Second is the application-specific integrated circuit (ASIC) designed for one task – quick solving Navier-Stokes equations in the framework of the DG method. Each of its parts was tuned to efficiently perform the computations of the given algorithm.

Third is hyper-scalability – the ability to create systems with thousands of chips with a linear speedup factor.

Keywords:

CFD, FPGA, accelerator

APPLICATION OF HERBAL EXTRACTS OBTAINED BY THE SUPERCRITICAL CARBON DIOXIDE (CO2) EXTRACTION METHOD FOR NATURAL ICE CREAM

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A few words about the author(s):

Aneta Lipkiewicz – Ph.D. student at the Warsaw University of Life Sciences - the Institute of Wood and Furniture Sciences at the Warsaw University of Life Sciences. My research area is innovative and ecological applications of plant products.

Abstract:

The growing consumer awareness and the large herb market in Poland encourage the search of alternative ways of using herbal plants. Herbal extracts acquisition using the SFE method and using them for natural ice cream fits perfectly into the new trend of organic and health-promoting food. Thanks to SFE extraction, it is possible to obtain many valuable raw materials which are not available by other instrumental techniques. The conducted research was aimed at obtaining highly efficient extracts of thyme, sage and lemon balm as an addition to natural ice cream. The results of this study showed the optimal conditions for the preparation of herbs before the SFE extraction process. An important parameter enabling the extraction of all valuable compounds from the plant is the extraction time. Extending the extraction time resulted in two-fold increase in the extraction efficiency for each of the tested herbs. The composition of the obtained extracts was identified by GC / MS technique.

Gratefully acknowledge the funding by National Centre of Research and Development, grant number POIR.01.01.01-00-0675/17 and POIR.01.01.01-00-0933/18.

Keywords:

Supercritical Extraction, herbs, natural ice cream, pro-health properties, GC-MS

THE VICARIOUS NUCLEOPHILIC SUBSTITUTION (VNS) AS THE REACTION TO SYNTHES OF NITRO-/HALO-PORPHYRIN DERIVATIVES AND THE USE OF THE PRODUCTS IN PHOTODYNAMIC ANTICANCER THERAPY

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A few words about the author(s):

Marta Pajerczak is PhD Candidate studied in Warsaw University of Technology.

Abstract:

Nucleophilic Surrogate Substitution (VNS) is a type of aromatic nucleophilic substitution. The reaction of nitro/halo-5,10,15,20-tetraaryl porphyrins chelates (ZnII) with carboanions is described. The obtained products were characterized using 1H NMR, UV-Vis, MS methods.

Keywords:

vicarious nucleophilic substitution, porphyrins, photodynamic theraphy

APPLICATION OF ELECTROCHEMICAL METHODS TO REMOVE DRUG RESIDUES FROM WATER

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A few words about the author(s):

First-year graduate student in chemical business at the Faculty of Chemistry at the University of Gdańsk. Member of the scientific circle of the chemical business.

Abstract:

Pharmaceuticals belong to the group of substances showing biological activity, which are used for therapeutic purposes. However, only a part of the administered drug is capable of biotransformation, the rest is not transformed and is eliminated from the body.

Due to the low level of removal of complex contaminants, traditional cleaning methods are not effective enough. An alternative for them can be electrolysis, which, thanks to the flow of electricity, allows the generation of electrons on the surface of the electrodes responsible for obtaining very good results of the process.

Keywords:

pharmaceuticals, drug removal, electrolysis

KEEP YOUR BUSINESS SAFE – BASIC ASPECTS OF CYBERSECURITY

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A few words about the author(s):

My name is Łukasz Pietraszek and I am an engineer of a computer science, currently continuing my education at the Warsaw University of Technology. The main area of my interests is the Blockchain technology and cybersecurity.

Abstract:

The modern world requires entrepreneurs to take care of every detail in cybersecurity. The company's existence in the Internet ecosystem depends on continuous and cyclical work, which requires, above all, great independence among employees and staff. There are two types of defence against various types of cybercrime: agent systems and network-type systems. In addition, a key aspect for any company is a well-structured security policy, which precisely defines the rules by which the organization manages and shares its information resources. It is important for the entrepreneur to know how to create such a document - what aspects have to be included and what not. Another issue to consider is password policy, i.e. how to create strong passwords, how often they should be changed and who has the access to specific areas in the company. Moreover, it is also necessary to mention the rules for dealing with files, the distinction between public and confidential information, which are additionally divided according to the personal and inter-employee scope. Examples of cyber-attacks, such as social engineering and phishing, are also discussed to accurately illustrate how attackers usually operate and to prepare users for potential defence against them. Final elements discussed are cloud-based activities and outsourcing to show how to implement this type of solutions in the company, presenting their advantages and disadvantages.

Keywords:

cybersecurity, security policy, public-private key, password policy, phishing

BACTERIAL CELLULOSE AS A ALTERNATIVE MEDIUM FOR PLANT IN VITRO TISSUE CULTURES

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A few words about the author(s):

Paweł Półtorak is a third-year student of Biotechnology on West Pomeranian University of Technology In Szczecin. I am interested in microbiology world, so I am doing research linked with this world. I joined to science club named “Bioreaktor”.

Abstract:

The in vitro culture is a technique that offer the unlimited potential for modification and multiplication of different species of plants. However, the slow growth of some species, and the cost of the minerals and the gelling agent (agar) used in the culture media, can limit it is application. Bacterial cellulose (BC) is a biopolymer produced by bacteria with several advantages over vegetal cellulose, such as purity, high surface area, high flexibility and tensile strength, high water-holding capacity (over 100 times of it is own weight). Due to these characteristics, it can be suggested that BC may serve as a substitute for the medium in plant in vitro culture.

The aim of this study was optimization and application of an alternative medium for plant in vitro culture based on the BC.

In the first step, the method of BC-based medium preparation was optimized. In the next stage, the BC-based medium was used for the cultivation of five different species of plants. The cultivation was carried out in sterile conditions with lighting and temperature adequate for in vitro culture.

The result obtained in this experiment showed that the plants grew on the BC-based medium were characterized with longer roots and higher turgor compare to plants obtained in the classic agar medium. Similar results were obtained for all tested plant species.

The BC-based medium may be a new, cheaper and ecological alternative to the classic medium currently used in plant in vitro culture.

Keywords:

agriculture, bacterial cellulose, seedling, Gluconobacter xylinus, in vitro culture

ELECTROCHEMICAL IMMUNOSENSOR BASED ON GRAPHENE NANOCOMPOSITE FOR SELECTIVE THYROID HORMONE DETERMINATION

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A few words about the author(s):

Marta Romaniec, graduated in 2021 in Biotechnology with specialization in food technology. Student of Pharmaceutical Biotechnology at Wroclaw University of Science and Technology. She also completed postgraduate studies in the field of Trichology.

Abstract:

An innovative, specific electrochemical immunosensor using laccase to determination of thyroid hormone (free triiodothyronine, FT3). The Fe3O4/graphene nanocomposite-modified GC electrode served as the basis for the biosensor, what provided semi-conductive properties. It was linked with -OH and -CO groups, the antibody Anti-PDIA3, which had a high affinity for FT3 and laccase, which was responsible for catalyzing FT3's redox reaction. Utilizing FT-IR and the cyclic voltammetry approach, the electrode modification process was examined based on the response of peak current following alterations. Using differential pulse voltammetry, all of the produced immunosensor's functional characteristics were examined. Results showed that the immunosensor responded sensitively to FT3 in a wide range of concentrations (10–200 μM), with detection limit 27 nM and limit of quantification equal 45.9 nM. Additionally, the developed immunosensor had excellent recovery results when used to detect FT3 in synthetic serum samples as it was very selective despite the presence of ascorbic acid, tyrosine and levothyroxine in the samples. The developed immunosensor also demonstrated remarkable stability and has potential use in future diagnostic procedures for medicine.

Keywords:

immunosensor, thyroid hormone, antibody, nanomaterial, laccase

PREPARATION AND CHARACTERIZATION OF BACTERIAL CELLULOSE-BASED TABLETS AS A CARRIER FOR AN ORAL ANTIBIOTIC DELIVERY SYSTEM

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A few words about the author(s):

Klaudia Snopek, 3rd year student of biotechnology at the West Pomeranian University of Technology and Dr. Anna Żywicka working at the Department of Microbiology and Biotechnology at West Pomeranian University of Technology in Szczecin.

Abstract:

Bacterial cellulose (BC) is a biopolymer produced by non-pathogenic bacteria Komagataeibacter xylinus that occur naturally in the environment. BC is completely biocompatible, which means that it is non-toxic to human cells and in contact with the skin. The ease of obtaining it encourages research on its use in various fields of science, including medicine or pharmacy. The use of BC as an excipient in tablets may help in situations where the use of others substances (e.g. sucrose, glucose) is limited in some disease entities. The aim of the study was to prepare, characterize and evaluate tablets based on BC as a carrier for the oral delivery of antibiotics. Using a standard tablet press 200 mg tablets were prepared with the addition of amoxicillin in three variants: 10, 20 and 30 mg of amoxicillin. Physicochemical properties of the tablets, such as strength, solubility, and chemical stability were assessed. The drug release rate was estimated in simulated gastric juice and bile salts during 4 hour incubation at 36° C. Samples were taken every hour to assess the amount of released antibiotic. The results were compared to the tablets prepared using other substances e.g starch as a carrier. Tablets based on BC showed the best physicochemical properties and the lowest antibiotic released rate, compared to the other substances tested. Potentially BC can be used in the oral drug delivery system, especially in cases where a long and stable release of the active substance is required

Keywords:

antibiotic, bacterial cellulose, tablets, oral delivery system

REWARD SYSTEM AND DEPRESSIVE DISORDERS

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A few words about the author(s):

Is fascinated by the brain and trying to understand how it's working in pathophysiological conditions. Her aim is also to make people aware of psychiatric disorders and normalize them in social understanding.

Abstract:

According to the WHO, depressive disorders affect more than 5 % of the adult population, and treatment is not successful in all cases. In the pathophysiology of depressive disorders, the significant role of serotonin is often indicated. The level of serotonin increases in synaptic clefts after taking the most frequently used antidepressant drugs – selective serotonin reuptake inhibitors (SSRI). However, the reward system and dopamine are often excluded in this context, because of their connection with addictions. Research conducted on people and animal models indicates that the reward system is not working properly in the group showing depressive features compared to the healthy control group. The key role in these changes is played by chronic stress which brings the morphological and functional changes in the reward system structures, such as the ventral tegmental area (VTA), nucleus accumbens (NAc), and prefrontal cortex (PFC). Dopaminergic neurons are activated not only by the reward stimuluses (value coding) but also by the aversive ones (salience coding). When acute stressor leads to the activation of VTA dopaminergic neurons, chronic stress can lead to excessive activation of GABAergic neurons in VTA and rostromedial tegmental nucleus (RMTg). In my speech, I'll focus on particular reward system structures and alterations in them resulting from stress conditions and depression.

Keywords:

reward system, brain, dopamine, depression, stress

ACETONITRILE N-OXIDE VERSUS BENZONITRILE N-OXIDE AS TAC IN [3+2] CYCLOADDITION WITH CONJUGATED NITROALKENES

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A few words about the author(s):

Chemistry is my passion since the middle school. I love being a scientist and my goal is to invent something that would help people in a daily life.

Abstract:

The [3+2] cycloaddition mechanism was first introduced in 1960 by Huisgen. Those reactions are a wide range of efficient and relatively simple methods of obtaining heterocyclic compounds. They provide an easy, one-step synthesis of five-membered heterocyclic compounds. Mechanism and stereo-, regio-chemistry of [3+2] cycloaddition, have been very well developed so far. N-oxides of nitriles, due to the an ease way of synthesis from many precursors, i.e. nitroalkanes, aldoximes and chloroximes, are very often used for the preparation of isoxazoline rings, which are a group of compounds with high biological activity. Isoxazolines can be used as precursors to many chemical reactions. Moreover, they exhibit pharmacological properties, mainly against bacteria and viruses. They can also be used as anti-inflammatory or analgesic agents.

Keywords:

[3+2] cycloaddition, nitrile oxides, nitroalkenes, TAC

CATABOLISM OF PURINES AND PYRIMIDINES

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A few words about the author(s):

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Abstract:

Purines are heterocyclic compounds forming aromatic rings, composed of concentrated pyrimidine and imidazole rings. They are the basis for the synthesis of many derivative compounds, such as nitrogen bases (adenine and guanine), which build nucleotides that are part of DNA and RNA. Purines are also part of NADH, Coenzyme A, caffeine and uric acid. Purine derivatives are nitrogen compounds commonly found in nature. In humans, the final product of purine catabolism is uric acid, it is a very slightly toxic compound, but its production requires a lot of energy. It's important property is that it easily precipitates from water in the form of crystals, which allows water to be recovered and reused. Uric acid is excreted by uricotelic animals, which have limited access to water and must use water sparingly. Animals that do not need to conserve water are more likely to excrete nitrogen compounds in the form of ammonia or urea from the body. These compounds are more toxic than uric acid, but animals that excrete them are less likely to lack water and can remove them from the body in a diluted form.

Keywords:

metabolism, uric acid, nitrogen, bases

REGULATION OF MUSCLE TONE AND BODY POSTURE

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Abstract:

Skeletal muscles, even at rest, show a state of slight tension (this state is called muscle tone). This condition is a moderate isometric contraction, which means that the muscle does not change its length. Due to the presence of receptors in muscles, tendons and joints, which are an element of the sense of orientation of the body position, muscle tone can be regulated under the strict control of the central nervous system. Proprioreceptors in muscles called neuromuscular spindles, provide the central nervous system with information about the current length of a muscle and about the change in this length over a period of time. This mechanism is called the gamma loop and is responsible for maintaining the tone. Another proprioreceptor is the Golgi tendon organ, which informs about the strength of contraction expressed by the state of tendon tension.

Keywords:

proprioreceptors, gamma loop, contraction

APOPTOSIS AND NECROSIS

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Abstract:

Apoptosis and necrosis are physiological processes inside the body and make the two types of cell death. Apoptosis is a natural, controlled process, very important for the maintenance of the body's normal functions, as it results in the elimination of damaged or worn-out cells. An important element ensuring the effectiveness of the process are enzymes from the group of serine proteases - caspases, the activation of which primarily leads to a number of processes and ultimately cell death. Necrosis, on the other hand, is a process with a similar effect, but with some differences. One of them is the occurrence of an inflammatory process that is spread over a certain number of cells.

Keywords:

caspases, cell death, inflammatory process

CONCEPT OF AN INNOVATIVE PLASMA SYSTEM FOR HOLE-CUTTING IN LINEAR PROFILES

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Tomasz Gustowski, Waldemar Kurek and Krystian Samsonik represent the AGICO company, operating in the steel construction industry. Rafał Grzejda is an assistant professor at the West Pomeranian University of Technology in Szczecin.

Abstract:

The concept of a plasma system for the simultaneous cutting of holes in one pass is introduced. The system is intended for the processing of long linear profiles used in engineering steel structures. It enables cutting on opposite walls of channel sections or hollow sections in one plane and in two mutually perpendicular directions. The system is part of an innovative technological line for automatic plasma cutting, circular saw cutting and welding with use of welding robots.

Keywords:

linear profiles, plasma arc cutting, plasma system, simultaneous cutting in one pass

THE EFFECT OF LOW ZEARALENONE DIET CONCENTRATION ON CHANGES IN ACTIVITY OF ASPARTATE AMINOTRANSFERASE AND ALANINE AMINOTRANSFERASE IN GILTS' SMALL INTESTINAL LYMPHOID TISSUE

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A few words about the author(s):

5th year student of veterinary medicine at University of Warmia nad Mazury.

Abstract:

Zearalenone (ZEN) is mycotoxin found globally, able to activate estrogen receptors. First barrier ZEN encounters in organism is alimentary tract lymphoid tissue (GALT). Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are strongly linked with mitochondrial metabolism and respiratory chain. The aim of research was to evaluate influence of 5, 10 and 15 µg/kg bw ZEN doses on AST and ALT activity in gilts' small intestinal GALT. Samples of ileum were taken on 14, 28 and 42 day of exposition, and enzymes activity was measured using spectrophotometer. Obtained results showed decrease in AST activity. ALT activity, initially declining in 5 µg group, showed rise in groups treated with 10 and 15 µg. Exposure to ZEN affects on changes in activity of AST and ALT in gilts' GALT. This action can stimulate inflammatory response and affect transport through mitochondrial membrane and metabolic changes in immune cells.

Keywords:

zearalenone, gilts, GALT, ALT, AST

METHODS OF WORKING WITH THE PATIENT IN A ZOOPHYSIOTHERAPEUTIC PRACTICE

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A few words about the author(s):

PhD student, scientific interests: Functional anatomy of dogs, biomechanics of dogs, rehabilitation of sports dogs, motor preparation of sports dogs.

Abstract:

The presentation presents the basics of working with the dog in a zoophysiotherapeutic practice. The focus was on techniques for learning new behaviors in dogs, as well as the role and problems of motivation in the rehabilitation process. The advantages and disadvantages of the applied methods of patient work were shown. The aim of the presentation was also to show the importance of reward placement in connection with the correct posture during the training.

Keywords:

zoophysiotherapy, handling dogs, directing, forming, Do as I Do

GEOGRAPHICAL NAMES IN BOTANICAL NOMENCLATURE

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A few words about the author(s):

Mikołaj Maj – student of Adam Mickiewicz University in Poznań. Interested in the exact sciences (biology and chemistry) and humanities (linguistics), getting the best of both worlds.

Abstract:

Due to the diversity of flora depending on the geographic location and other factors, e.g. culture, the naming of plants is different in each language.

In this work, I will focus on the problem of naming plants, based on the binomial nomenclature and the method of implementing a species epithet using an element denoting a geographical name or origin. The results of policonfrontative phytonym studies in English, German, French, Russian and Polish will be presented in terms of obtaining answers to the following questions:

- to what extent is the structure of the genre epithet in the analyzed languages consistent with the international binomial nomenclature - Latinized name?

- are there any noticeable nomenclature tendencies in particular language groups (Slavic languages: Polish and Russian, Germanic: English and German and Romance: French and Latin)?

Keywords:

botanical nomenclature, phytonyms, differences in languages

BENEFITS RESULTING FROM THE USE OF TENSILE STRUCTURES AND THEIR IMPORTANCE FOR THE FUTURE OF ARCHITECTURE

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A few words about the author(s):

Ewa Michniak, student of Cracow University of Technology; Faculty of Architecture; “Young Urban Planning” Science Club.

Abstract:

Tensile structures are currently the fastest growing type of long-span steel structures. They enable the construction of buildings attractive in terms of their architectural form, meeting modern technological requirements. They belong to structures with a very favorable economic factor. Tensile structures are used in stadiums, swimming pools and large sports facilities. With this type of steel constructions we can design roof covers with a span of 400 meters without intermediate supports. Additionally, thanks to it, it is possible to create spatial objects, and thus increase the functionality and offer flexibility in the adaptation of the building. With the development of technology, many innovative tools for analysis of composition have been created, enabling safe constructions to be designed with the most sophisticated and complex shapes, in order to meet the expectations placed on newly designed objects.

Keywords:

tensile structures, steel construction, architecture

IMPACT OF ADAPTATION OF THE STRUCTURE AND PRINCIPLES OF ORGANISMS ON THE DESIGN OF PUBLIC SPACES. THE APPLICATION OF BIONIC ENGINEERING IN ARCHITECTURE IN A SUSTAINABLE ENVIRONMENT WITH EXAMPLES OF GLOBAL BUILDINGS

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A few words about the author(s):

I am currently a fifth-year student. I belong to a study circle, whose theme is urban design. During my studies I took courses in Autocad and Revit programs. I gained a good knowledge of drawing, creating plans and 3D visualization.

Abstract:

Bionics is an interdisciplinary science that studies the structure and principles of organisms and their adaptation in the construction of technical devices or architecture, among others. It tries to learn about and use the processes that control the operation of organisms in various branches of technology, including automation, mechanics and construction.

To mimic nature, biomimetic architecture learns from it forms, shapes, structures, processes, strategies or mechanisms that can be applied to the contemporary design of homes and public buildings.

Designing buildings that imitate the methods used by nature seems to be invaluable to the functioning of the world in the future. Bionics in architecture is looking for ways to create energy-efficient buildings that use lightweight construction as well as highly durable construction.

For creating the buildings of the future with biological solutions, it is important to use the right scale. Buildings can be compared to the functioning of a single organism, while cities can be compared to a complex ecosystem. At the architectural scale, not only such issues as the form and structure itself are important, but also the materials used, thermal comfort, power supply, waste management and water.

Keywords:

bionics, architecture, sustainable environment

TESTING RESULTS OF VARIOUS MATERIALS ON A SCREEN WITH A GEARLESS EXCITER

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A few words about the author(s):

Paweł Pater MSc. Mechanical Engineering – Bydgoszcz University of Technology, specializing in machine and device design. Since 2012, the president of the design and production company GOSTER Sp. z o.o. Engineer, inventor, owner of several patents.

Abstract:

The presentation is to shows the results of the research under the NCBR Smart Growth Operational Program project carried out to develop a screen model using a new concept of vibrator construction. The research focused on increasing service life of bearings by improving lubrication and optimizing heat dissipation. The concept of the screen driven by the new vibrator was developed and the optimal working parameters based on experiments were selected, on which the optimization of the screening method for various types of waste was carried out, taking into account difficult-to-screen waste, focusing on the measurements of effectiveness, efficiency, acceleration and blocking of the screening media. Based on the research, an innovative screen was developed, with a machine settings table for specific screened materials. Four patent applications were submitted (two patents granted, two applications pending).

Keywords:

gearless exciter, recycling screen, screen

CARE FOR CHICKS OF BIRDS OF PREY IN THEIR FIRST DAYS OF LIFE

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A few words about the author(s):

Veterinary medicine student, qualified falconer, volunteer at rehabilitation centres for wild birds, breeding centres for birds of prey and exotic animals clinics.

Abstract:

Birds of prey are a specific group of birds that feed exclusively on meat. Chicks require special care and specialized knowledge of how to take care of them. The presentation shows the rearing of birds of prey from the egg to obtaining a set of feathers. It introduces incubation, checking the eggs, hatching, care for chicks after hatching, feeding, envinronment and description of types of imprinting. There is also given information about rearing of eagles and vultures. The presentation was created in consultation with four breeders and based on practice in two breeding centers. Individual examples of the daily growth of the peregrine falcon (falco peregrinus), saker falcon (falco cherrug), Harris hawk (parabuteo unicinctus) and goshawk (accipiter gentilis albidus and accipiter gentilis buteoides) included.

Keywords:

birds of prey, breeding, rehabilitation

LORAWAN COMMUNICATION PROTOCOL USED IN STRATOSPHERIC BALOONS

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A few words about the author(s):

4nd year automation and robotics students belonging to the scientific circle of CosmoPK on Cracow Univeristy of Technology. Interested in programming microcontrollers.

Abstract:

The possibility of wireless communication in the present world is crucial for many aspects, not only social, but also industrial and scientific. With the development of the IoT, many readable protocols have been developed small data packets. One such communication protocol is LoraWAN, which uses Lora radio modulation. LoraWAN is used, among others, for real-time data transmission from stratospheric balloons. An unquestionable advantage is the huge transmission distance. With appropriate weather conditions, it is possible to reach distances of several hundred kilometers.

Keywords:

communication protocol, radio communication protocol, stratospheric balloons

THIN-LAYER CHROMATOGRAPHY AND EFFECT-DIRECTED ANALYSIS OF SCHISANDRA CHINENSIS FRUIT AND SUPPLEMENTS EXTRACTS

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A few words about the author(s):

I am a PhD student in department of Chromatogrpahy at Faculty of Chemistry of Maria Curie Skłodowska University in Lublin. My research focuses on the search for active compounds in plants of the Schisandra family by TLC-DB.

Abstract:

Nowadays, natural methods of medical treatment and supplementation are gaining more and more interest all other the world. Especially popular is Traditional Chinese Medicine (TCM), which has been a standard practice in China for millennia and now in Europe is becoming more and more approved as an alternative medicine. TCM relies on the treatment and prevention of diseases, among others, with the use of preparations obtained from plants. Schisandra chinensis is used in Chinese medicine as a remedy for many diseases and ailments. The active substances of the plant show antioxidant, anti-cancer and anti-inflammatory properties. Thin layer chromatography (TLC) is a useful tool for the analysis of various biological compounds, because it provides a simple separation and convenient visualization of many samples in parallel in the relatively short time. A screening analysis (AS, thymol, NP-PEG) and TLC-direct bioautography (TLC-DB) for acetylcholinesterase and lipase inhibition as well as TLC-DB against B. subtilis were performed for S. chinensis fruits and supplements. Both TLC screening and effect-directed analysis (EDA) of the samples revealed components with biological activities.

Keywords:

Schisandra chinensis, TLC-direct bioautography, effect-directed analysis, Traditional Chinese Medicine

AMPHIBIOUS ARCHITECTURE AS A RESPONSE TO CLIMATE CHANGES

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A few words about the author(s):

Patryk Włodarczyk student of the Faculty of Architecture at the Cracow University of Technology. Member of the Young Urban Planning Science Club.

Abstract:

Amphibious architecture is an alternative flood strategy that allows it to float on the surface of rising floodwater, rather than being flooded. From the ground floor, the amphibians look like ordinary buildings, they only differ in their foundations.

Amphibious construction solutions are based on many marine and bridge technologies, which, combined with traditional architecture and construction, give a well-functioning effect.

In the face of climate change, amphibious architecture is an endeavor to investigate effective ways of protecting against floods. Vigorous foundation upgrades have the potential to help communities avoid displacement by reducing the time and cost of home upgrades.

Amphibious architecture is a still developing field of architecture. Thanks to the amphibious architecture, man is able to live in harmony with nature without significantly disturbing the natural environment.

Keywords:

amphibious, architecture, climate changes

APPLICATION OF CONVOLUTIONAL NETWORKS FOR IMAGE ANALYSIS

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A few words about the author(s):

A student of the Krakow University of Technology, interested in the topic of artificial intelligence.

Abstract:

For many years, we have been observing an increase in the amount of data that requires analysis. One of the popular information carriers are photos, which with the current parameters of photographic cameras are characterized by high resolution, thanks to which it is possible to see many details. At the same time, their large size, such as 4096 x 2160, significantly affects the execution time of the algorithms that operate on them and the amount of memory needed for their storage. The presented algorithm of convolutional neural networks allows to reduce the size of the image, while maintaining its details, allowing for the process of object recognition.

Keywords:

deep learning, machine learning, artificial intelligence, convolutional networks

HABSAT – EXPERIMENTAL PLATFORM FOR EXPLORING THE STRATOSPHERE

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A few words about the author(s):

A student of computer science at the Cracow University of Technology.

Abstract:

This presentation presents a proposal for the HABSat, (High Altitude Ballon Satellite) science project. HABSat is an experimental platform for conducting scientific research in the stratosphere. The solution is opare of low-cost and readily available components, so the design will allow easier and faster implementation of scientific experiments in the stratosphere.

Keywords:

stratosphere, cubesat, experiments, stm32, image analysis

ESTERS OF NATURAL ORIGIN: SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY

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A few words about the author(s):

Members of the Student Scientific Circle of the League for Nature Conservation, who actively participate in the research, under the Associate of Scientific Dr. Marlena Musik and Dr. Edyta Kucharska.

Abstract:

Eugenol is the major constituent of clove oil, which exhibits pharmacological effects. Eugenol has antioxidant and anti-inflammatory properties, in addition to analgesic and local anesthetic activity. This compound is a very promising candidate for valuable applications, and the synthesis of new esters derivative based on the pharmacological effects of eugenol could be many beneficial. The aim of the study was synthesis and characterization of eugenol esters. Identification of the obtained esters was based on gas chromatography (GC), gas chromatography coupled with mass spectrometry (GC-MS) and infrared spectroscopy (FTIR/ATR), while the octanol/water partition coefficient (shake-flask method) was tested to determine the lipophilicity of these compounds.

Keywords:

eugenol, new esters of eugenol, log P

ABSTRACTS OF

POSTERS

TECHNICAL AND NATURAL SCIENCES

EFFECT OF DOCETAXEL-RESISTANCE ON THE REACTIVITY OF PROSTATE CANCER CELLS TO METFORMIN

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A few words about the author(s):

I am young scientist, currently PhD student with experience based on prostate cancer and metformin.

Abstract:

Metronomic approach for cancer treatment represents a promising strategy for the chemotherapy of drug-resistant tumors, because it can reduce the effective doses and adverse effects of chemotherapeutics. In particular, metabolic blockers reduce energy supply for multi-drug resistance systems, thus increasing tumor cells' reactivity to chemotherapeutics. Metformin is an anti-diabetic drug that blocks mitochondrial respiration, interferes with ATP production and with proliferation of cancer cells. However, the effect of drug-resistance of prostate cancer cells on their reactivity to metformin has not yet been evaluated. Here, we analyzed short-term cytotoxic effects of metformin on the phenotype of human prostate cancer PC-3 and DU145 cells and their docetaxel (DCX) resistant lineages. We concentrated on their DCX-resistance pattern and compared their phenotype. Metformin increased the sensitivity of drug-resistant PC-3 and DU145 cells to DCX, but PC-3_DCX20 cells displayed reduced sensitivity to combined metformin/DCX treatment in contrast to DU145_DCX20. This effect was accompanied by changes in structure of actin cytoskeleton, followed by the up regulation of connexin 43 (Cx43).These data indicate that reactivity of drug-resistant prostate cancer cells to metformin may depend on the compensatory effects. These may vary within different cell lines and can be associated either with phenotypic shifts (epithelial-mesenchymal transition) or metabolic profile of cells.

Keywords:

prostate cancer, cancer resistance, metformin, Cx43, epithelial-mesenchymal transition

CORAL REEF BLEACHING AS A GLOBAL PROBLEM

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A few words about the author(s):

Student of biotechnology, passionate about the animate world, from microorganisms ending with ecological connection between entire ecosystems. With a particular predilection for botany and molecular biology.

Abstract:

Coral reefs are ecosystems made up of limestone coral skeletons that have been growing for over thousands of years. They are found in shallow and well-sunny salty waters of tropical and subtropical regions. Coral reefs occupy an area of less than 0.1% of the bottom of the seas and oceans, but about 25% of all marine species depend on them in different ways. The majority of these ecosystems funcion within the limits of their upper temperature tolerance, which makes them extremely sensitive to sea temperature increases, which are more and more common nowadays. Due to global warming, we may encounter more and more common phenomena of reef bleaching on a global scale, which in turn carries the risk of irreversible reef dieback and disturbance of the food networks. Moreover, coral reefs are of enormous importance for human communities, either directly as a habitat for animals that are a source of food or as a tourist attraction, as well as indirectly as natural breakwaters, reducing the energy and height of sea waves, which could cause flooding coastal areas that are often inhabited by people. According to scientists, about 500 million people depend, directly or indirectly, on reefs. So the fading process can have significant global impacts.

Keywords:

coral reef bleaching, global warming, zooxanthellae, corals

THE THEORY OF NEW URBANISM AS A METHOD OF CREATING AND SUPPLEMENTING THE URBAN FABRIC OF MODERN CITIES

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2nd degree student of Architecture at the Cracow University of Technology; the member of the "Young Urban Planning" Science Club.

Abstract:

New urbanism theory implies a return to the old understanding of urbanity. It is supposed to be a community and the space serving to satisfy the economic and social needs of the inhabitants. New urbanism rejects the uncontrolled expansion of cities. Instead, it assumes a return to historical formed cities with a central square and quarter buildings that depart from it. Aspects such as aesthetics, comfort and the level of safety of residents are also important. The aim of "New Urbanism" is, above all, to care for the well-being of the users of the created space. Its assumptions are based, inter alia, on calming the city traffic, creating buildings conducive to establishing contacts, for example in a quarter, and also on respecting the local landscape and nature. Undoubtedly, it can be said that the idea that dates back to the mid-twentieth century is the most up-to-date and may constitute criteria for the development of modern cities.

Keywords:

urban, architecture, city, new urbanism, design

THE BIOTECHNOLOGICAL POTENTIAL OF PSYCHROPHILES

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Abstract:

The present thesis is a review article about psychrophiles and their biotechnological potential. Psychrophiles are microorganisms able to live in low temperatures - they are assumed to be able to grow even at 0°C. These microorganisms have developed a number of adaptations to extremely low temperatures, e.g. the appropriate structure of the lipid bilayer or the ability to produce specific proteins. In addition, psychrophilic enzymes have many molecular and kinetic adaptations that make it possible to catalyze metabolic reactions at low temperatures. In biotechnology, the utilization of the unique properties of psychrophiles is useful in the treatment of contaminated environments or the elimination of toxic compounds in cold climates.

Keywords:

psychrophiles, biotechnology

EFFECT OF POLYMORPHISMS IN EXON 8 OF THE PPARGC1A GENE ON MILK PRODUCTION TRAITS IN CATTLE

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A few words about the author(s):

The authors of the abstract are associated with the West Pomeranian University of Technology in Szczecin and are engaged in research into identification of the most important SNPs that could be used for the selection of marker assisted dairy cattle.

Abstract:

The efficiency of milk synthesis can be improved by taking advantage of the accumulated knowledge of the transcriptional and posttranscriptional regulation of genes coding for proteins involved in the synthesis of fat, protein, and lactose in the mammary gland. This can be achieved by combining genetic improvements with good management, which includes improving the nutritional availability of the basic compounds used by the mammary gland to produce milk.

PPAR (peroxisome proliferator-activated receptor) is a family of peroxisome proliferator-activated receptors responsible for the regulation of glucose and lipid metabolism, insulin sensitivity, inflammatory processes, immune response as well as cell proliferation and differentiation. There are three PPAR isoforms encoded by different genes and performing different functions. Peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PPARGC1A) plays a key role in energy regulation. PPARGC1A acts as an activator of nuclear receptors and transcription factors and influences the expression of genes involved in oxidative metabolism, adipogenesis and gluconeogenesis.

The objective of this study was to investigate associations between genotypes of polymorphisms in exon 8 of the PPARGC1A gene and milk production traits in dairy cattle. The obtained results may contribute to the state of knowledge regarding the identification of the most important SNPs that could be used for the selection of marker assisted dairy cattle.

Keywords:

PPARGC1A, lactation, single nucleotide polymorphisms, Polish Holstein-Friesian cattle

OXIDATION AND ELECTROPHILIC SUBSTITUTION REACTIONS IN THE 2,7-DIADAMANTYLPYRENE SYSTEM

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A few words about the author(s):

Aleksandra Olszacka is a an undergraduate student who is conducting a research under the supervision of Dr Anna Wrona-Piotrowicz. The research is financed thanks to Student Research Grants programme at the University of Lodz.

Abstract:

Pyrene and its derivatives are stable fluorophores, often used in optoelectronics due to their unique photophysical properties. These include long fluorescence lifetimes and high fluorescence yields. These compounds exhibit fluorescence both in the solid state and in solutions. Their fluorescence often depends on the environment surrounding the fluorophore. In recent years, pyrene systems with bulky substituents at positions 2 and 7, which affect fluorescence, especially in the solid state, have been obtained and described. They cause Aggregation Induced Emission Enhancement by changing the π-π interactions between molecules (π-π stacking) while reducing the quenching effect. During our project some unknown 2,7-diadamantylpyrene derivatives were synthetized using five different methods. Functionalization of pyrene-adamantane system was performed by electrophilic substitution and oxidation. One of obtained systems exhibits high fluorescence meanwhile in others the fluorescence deteriorated. Conducted studies allow to expand the knowledge about the new group of pyrene derivatives exhibiting luminescent properties with potential application in optoelectronics.

Keywords:

pyrene, organic synthesis, fluorescence

ANALYSIS OF THE POTENTIAL TOXICITY OF DETONATION NANODIAMONDS AND THEIR STABILITY IN AQUEOUS SOLUTIONS

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A few words about the author(s):

Nanotechnology engineer, currently a 2nd degree student of biotechnology at the Lodz University of Technology. I like to look for new solutions and exchange experiences. Besides studying, I am also a dance trainer.

Abstract:

The work covers a literature review on carbon nanoparticles and their toxicity. As part of the work, nanodiamonds (ND) solutions in water and phosphate-buffered saline (PBS) of various concentrations and the number of sonication cycles were examined for their size and stability using the dynamic light scattering method, whereas to assess the morphology of nanoparticles scanning electron microscopy was used. Human endothelial cells and mouse fibroblasts were selected for biological studies and tested for survival and cytotoxicity.

The analysis of the DLS results showed that in the PBS solution the size of the ND reaches the values of about 1000 nm regardless of the number of sonication cycles, while in the aqueous solutions differences in size are visible, and the smallest nanoparticles were obtained for 30 cycles. Based on biological studies, it was found that the presence of ND influences survival, reducing it, and cytotoxicity, increasing its value.

Keywords:

nanoparticles, nanodiamonds, cytotoxicity, human cells endothelium, mouse fibroblasts

HEAT LOSS THROUGH WINDOWS - IS IT POSSIBLE TO CONVERT IT TO ELECTRICITY?

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A few words about the author(s):

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Abstract:

Wireless sensor networks are important components of Internet of Things (IoT) applications. In modern buildings equipped with increasingly sophisticated automation installations and Building Management Systems (BMS), information extracted from the building's distributed measurement systems is essential for the proper functioning of all automation system components responsible for the safety and comfort of the occupants, as well as for the optimal operation of HVAC equipment.

For numerous facilities, conventional hard-wired installations of building automation systems are often difficult or impossible to implement. In most cases, wireless, battery-powered systems can be the solution. Unfortunately, their use is associated with a number of limitations, including the need for cyclic battery replacement. This paper presents an unconventional way of harvesting waste thermal energy to power wireless sensor platforms used as part of building automation systems.

Keywords:

energy harvesting, wireless, sensor network, window, smart buildings

EFFECT OF TITANIUM CONTENT OF AL-TI COATINGS APPLIED BY LOW-PRESSURE COLD SPRAY METHOD ON THE ANISOTROPHY OF COANTING

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This work is an achievement of the R.Haimann Academic Circle of Materials Science. Marcin Wisniewski represents the circle as a student, while Mateusz Dziubek and Malgorzata Rutkowska-Gorczyca supervised the research.

Abstract:

Metallic coatings applied with metal powders, can be obtained by many techniques. At the same time, among the methods known so far, a spray called dynamic cold gas spraying, shorter as Cold Spray, stands out significantly. Coatings formed using a mixture of powders can be classified as composite coatings. The process of applying the powder is strictly directed, due to the use of a de laval nozzle, hence the purpose of the study was to verify the occurrence of anisotropy by comparing transverse and longitudinal surfaces.

In this study, two sample surfaces were compared to study the microstructure and properties of Al-Ti composite coatings, applied to an aluminum alloy substrate, using the Cold Spray low-pressure spraying technique with additional titanium compactness. The applied layers were imaged by scanning electron microscopy, and hardness tests were carried out using the Vickers method. It was found that as the Ti content increases, the coating's anisotropy relationship persists, changing it’s properties accordingly. Ti particles strongly deform Al particles, which begin to act as a matrix. The doping of Ti powder causes a significant increase in microhardness and reduces the differences in hardness measurements between surfaces. It was also observed that too much of the new powder causes porosity in the microstructure. The coatings are characterized by a dense and durable structure with continuous adhesion to the substrate, with few defects in the microstructure.

Keywords:

Cold Spray, anisotropy, microhardness, microstructure

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