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Knowledge - Key to Success
6th edition

THE BOOK OF ABSTRACTS

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ABSTRACTS OF

PRESENTATIONS

HUMANITIES
SCIENCES

THE INFLUENCE OF MACROECONOMIC FACTORS ON FINANCIAL MARKETS

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A few words about the author(s):

Ph.D. student.

Abstract:

An economy is a feedback system. The demand for goods produced in the economy is reported by enterprises, households, the state and foreign markets. Interest rates affect the amount of demand for goods, therefore the financial sector and the real economy interact. Price and wage adjustments allow production to be restored to its potential size. An important role in this process is also played by monetary and fiscal policies, which in turn also affects inflation and unemployment.

The basic macroeconomic variables in the literature on the subject most often include the unemployment rate, the value of turnover (import and export) in foreign trade, the dynamics of production and consumption, inflation, changes in GDP, money supply, interest rates and foreign exchange rates.

Keywords:

macroeconomic variables, economy, GDP

EU MIGRATION POLICIES AND SECURITIZATION OF MIGRATION

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A few words about the author(s):

Sahil Mammadov is a Ph.D. student at UJK. He is doing his research in EU Migration Policy.

Abstract:

The Article focuses on the background of the migration, the securitization of migration and how it has impacted the EU as a whole. Firstly, the Article is going to emphasize on the dynamics of securitization of Migration and how it has effected the EU and its policies since 1990. In the same topic few examples which is help to understand the fear and the link between migration, terrorism, and security will be discussed. Then Article would focus on explaining the migration within the framework of security which includes, but not limited to, military, economic, environmental, social and political security. The explanation and the relationship between these different securities is based on the concept presented by Copenhagen School. Further in the same topic the three distinct units of Securitization will also be elaborated. Last but not the least the three main issues of securitization of migration namely Internal security, identity and welfare state will be briefly explained.

Keywords:

EU migration policy, security, securitization, Copenhagen School

INFLUENCE OF COGNITIVE TRAINING WITH VIDEO GAMES ON ATTENTION ABILITY

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A few words about the author(s):

Young student from Cracow. I have interest in the field of cognitive science, video games, art, sport. In the future i would like to continue my andventure with science and possibly share my experience with other people.

Abstract:

Continually gaining popularity modern video games – type of software intended to educational and entertainment purposes – are used by people in many ways, also in extending one's own cognitive functionality. Nowadays, also in scientific environment, games started showing themselves as a valuable tool having influence on development of cognitive processes. Studies mainly focus on human contact with this type of software as well as its long term effects and influence on some of the human cognitive abilities such as ability to make choices, reacting, attention control, or capturing relevant information from perceptual field. This presentation includes information contained in the selected articles and studies in the context of human interaction with video game environment. At last the hypothesis will be considered whether cognitive training based on computer game software could improve human attention skills.

Keywords:

attention, cognitive training, video games, span, cognitive abilities

DISSOCIATIVE IDENTITY DISORDER – CHARACTERISTICS AND POSSIBLE THERAPIES

Monika Sarnat

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A few words about the author(s):

I am fascinated by human brain and its cognitive abilities that is why I decided to study cognitive science. In the future I want to work in the field of neuroscience and share my knowledge and experience with others.

Abstract:

Dissociative identity disorder previously called multiple personality disorder is considered a relatively new phenomenon since only at the end of the 1970s did interest regarding people who had alternative personalities significantly grow. Currently, this condition is diagnosed in 5% of patients in certain clinics showing the increasing awareness of this disorder. This presentation is going to focus on the disorder itself and its manifestations. It will also present the most popular etiologic models to represent the process that stands behind the creation of alternative personalities. Moreover, specific cases of people with dissociative identity disorder will be presented as well as possibilities of therapy which unfortunately are incredibly time-consuming and hard to carry out but can reduce the intensity of symptoms and in some cases fully cure the person suffering from this disorder.

Keywords:

dissociative identity disorder, multiple personality disorder, DID, alternative personalities

INTERPERSONAL RELATIONSHIPS IN PEOPLE WITH DARK TRIAD PERSONALITY TRAITS

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A few words about the author(s):

Psychology student, Jan Kochanowski University in Kielce.

Abstract:

Development of correctly functioning interpersonal relationships depends to a large extent on social competences of an individual. Without doubt, empathy, mutual understanding, willingness to help, and ability to solve problems arising in a group are the skills which help establish satisfying relations. However, there are socially unacceptable traits, such as Machiavellianism, narcissism and psychopathy which form a dark triad personality. This paper is focused on problems in building correctly functioning interpersonal relationships in people exhibiting dark triad personality traits.

Keywords:

interpersonal relationships, dark triad

HUMANITARIAN CRISIS IN VENEZUELA

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A few words about the author(s):

Ph.D. student at Faculty of Social Science, University of Wroclaw. I am interested in international crises and conflicts.

Abstract:

Humanitarian crises occur quite frequently in different parts of the world. They have a different range, size, have different effects, and have a different course in each case. Sometimes the state is not able to deal with such a crisis and control its consequences on its own. Venezuela is in this situation today. The humanitarian crisis in this country is the result of the economic crisis first, and then the social crisis. The bad economic situation in Venezuela, as well as negligence on the part of the rulers, led to the deterioration of the situation of citizens. Today, the vast majority of society lives in poverty. There is no access to basic medications, and there is a lack of protective vaccines for most diseases. This led to a migration crisis. The Venezuelan authorities do not see the problem and do not help their citizens. Moreover, Maduro does not want to accept humanitarian aid from some countries because he believes that they do not want to help, but only through the help they provide, they want to achieve their political goals. The situation in Venezuela continues to be dire despite humanitarian efforts by international humanitarian organizations. The main purpose of the presentation is to present whether it is possible to improve the living conditions of Venezuela's inhabitants in the near future.

Keywords:

Venezuela, humanitarian crisis, humanitarian aid

PLAGIARISM IN THE FASHION INDUSTRY

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Ph.D. student and Assistant at the Department of Intellectual Property Law, Public Economic Law and Labor Law.

Abstract:

The clothing industry is a dynamically developing industry that experiences an increase in sales year by year. Currently, this industry, according to the Fashion United website, is valued at around US $ 3 trillion and accounts for no less than 2% of the world's gross domestic product (GDP). In addition, fashion houses provide jobs for an average of 100 million people worldwide, and are still one of the largest employers in the United States.

Designs created by fashion designers deserve effective legal protection. However, ensuring effective protection of such products is not an easy task. First of all, the cyclical nature of the process of their creation should be taken into account. Fashion is characterized by an exceptionally fast changes and numerous modifications. Designers often decide to protect their projects under the copyright regime, because protection is free of charge, formalities and is available from the moment the work is created.

The main danger that threatens the creative freedom of designers is the phenomenon of copying someone else's designs and marking them as one's own. In fashion, it often happens that even highly valued creators looking for inspiration. Unfortunately, sometimes this inspiration takes the form of plagiarism. Plagiarism means "appropriating the authorship of someone else's work by disseminating it under your own name".

Keywords:

fashion industry, plagiarism, copying

"THE LITTLE PRINCE" IN VARIOUS TRANSLATIONS

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A few words about the author(s):

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

Abstract:

“The Little Prince” by Antoine de Saint-Exupéry has been translated into more than 300 languages or dialects and sold over 140 million copies, which makes it one of the best-selling and most translated books ever published. Therefore, this novella belongs to the classics of world literature.

Most of us are familiar with the famous quotes from "The Little Prince" and know the content and interpretation of this writing. Few, however, know that there are as many as 18 Polish translations of this work, and additionally - translations into Polish dialects. The texts of translations may differ greatly not only in style, but also in the word choice, the degree of fidelity to the original text or references to current social or political phenomena. In order to become a conscious reader, it is preferable not to limit yourself to one translation, and if possible, also read the original or a translation into another language. This allows you to get a broader perspective and form an informed opinion about the piece.

The purpose of this presentation is to explore the various translations of "The Little Prince", to compare them and to draw attention to how the translation influences the overtone of the literary work.

Keywords:

“The Little Prince”, translation

SUPERNATURAL KNOWLEDGE IS THE KEY TO SUCCESS

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A few words about the author(s):

My name is Dariusz Średnicki. I am a second-year student at the University of Bialystok.

Abstract:

The aim of the article is to discuss the issues related to the philosophy of supernaturalism. I will discuss various theories in the literature regarding approaches to dispute, answering the question whether there is a possibility that supernatural knowledge may be the key to success. In particular, the arguments for and against particular views on this subject were analyzed. The main purpose of the article is to describe alternative forms of knowledge perception. The achievement of the assumed goal was possible thanks to the use of the method of analyzing literary sources in relation to the supernatural. All considerations are set within a philosophical framework.

Keywords:

supernatural, clairvoyant, key to success

INCLUSIVE EDUCATION – ARE WE READY FOR IT?

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A few words about the author(s):

Student of The Maria Grzegorzewska University, in the field of Special Education, focused on early intervention for child development.

Abstract:

Inclusive education identifies children and students with special educational needs as the subject of interest. People with SEN are a diverse group of people requiring an individualized approach to education: adapting working conditions and methods, as well as other forms of assistance - especially from psychological and pedagogical counseling centers. According to the Education System Act, all these children and students have the right to use all forms of education, including public kindergartens and schools. This brings a lot of challenges, both for teachers and parents of these children or students.

Keywords:

inclusive education, educational problems

ABSTRACTS OF

POSTERS

HUMANITIES

SCIENCES

MOTIVATION AND SENSE OF COHERENCE AND PRO-ENVIRONMENTAL BEHAVIOUR IN ADOLESCENTS AND YOUNG ADULTS

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A few words about the author(s):

Sabina Barszcz is pursuing a doctoral degree in the psychology graduate program at the University of Wroclaw. She is working on subjects related to pro-ecological attitudes and the role of praise in pro-environmental behavior change.

Abstract:

Environmental degradation is a serious, interdisciplinary problem which solution depends on the cooperation of scientists from various fields of science. Psychology is also increasingly involved in this issue. One of the important issues taken up by researchers is the psychological determinants of nature-friendly behavior.

The aim of the present study was to examine if and what connection exists between the types of regulations (amotivation, extrinsic motivation, introjection, identification, integration, intrinsic motivation) with the accordance to the Self-Determined Theory, sense of coherence and frequency of pro-environmental behaviour in young people.

I conducted an online questionnaire survey and the target group consisted of adolescents and young adults from Poland (N=261), 15-30 years old. I used three questionnaires – The Motivation Toward the Environment Scale (MTES), The Sense of Coherence Questionnaire (SOC-29) and, my method to investigate the frequency of pro-environmental behavior.

The results indicated that there are relationships between types of behavioral regulation and general sense of coherence and the frequency of pro-environmental behavior. The higher the introjection, identification, integration, intrinsic motivation, and general sense of coherence, the more frequent the pro-environmental behavior. In contrast, amotivation and intrinsic regulation are significantly negatively associated with the frequency of pro-environmental behavior in young people.

Keywords:

pro-environmental behavior, motivation, sense of coherence

PACKAGING AS A PERSUASIVE OR MANIPULATIVE MESSAGE – SOCIETY'S PERCEPTION OF THE ROLE OF PACKAGING

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A few words about the author(s):

I am a student at Poznań University Of Business and Economics (PUEB). I am interested in areas related to quality of products, packaging and marketing. Studying have shown me that quality is not only about adherence to standards.

Abstract:

The purpose of the research is to verify the perception of the role of product packaging by the society. The research method was a survey questionnaire in which 150 people participated. For the purpose of this research, the sample was not representative.

Does the packaging manipulate the consumer or does it have the power of persuasion? Is the consumer aware of the methods used and what is his perception? How far is manipulation from persuasion in packaging designs? Are marketing measures always necessary? These questions were crucial in my research.

I checked the general perception of packaging in the opinion of the respondents and their purchasing experience. My expected result was that consumers consider packaging to be a means of manipulation.

Keywords:

packaging, product packaging, marketing, packaging designs, manipulation, persuasion

POLISH SCOUTING AND GUIDING ASSOCIATION AND 4CS

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A few words about the author(s):

Student of pedagogy at The Maria Grzegorzewska University in Warsaw and a scout with seven years of experience.

Abstract:

The 21st century is a new era of development. Technologies change quickly. People can work at any place and with coworkers from all around the world. It is not enough to know something - now you have to know how to cooperate and get new information. These are two of four competencies of the future - but the Polish educational system in large part is not ready for it. What is the role of the Polish Scouting and Guiding Association in the process of gaining these skills? And what can be reproduced in the educational system?

Keywords:

scouting, competencies of future

OPINIONS UPON SECULAR POWER IN PAPAL LETTERS FROM THE SO CALLED COLLECTIO HISPANA

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A few words about the author(s):

Rev. Michał Ludewicz is a Th.D. candidate at the Faculty of Theology of The John Paul II Catholic University of Lublin.

Abstract:

The so called Colletio Hispana is a collection of letters written by the Bishops of Rome in Late Antiquity. It contains pontifical epistles to various recipients. Among them were emperors, nobles and bishops. The collection begins with letters written by Pope Damasus (+384) and runns up to epistles authored by Pope Gregory the Great (+604). The letters from the collection are mostly concerned with various ecclestiastical problems. However opinions on secular matters can also be found there. The aim of the poster is to explore the attitudes that the popes presented toward secular power. The above-mentioned goal was achieved using the descriptive method. At the beginning, references to the sources of power were indicated. Popes shared the view that power comes from God. Then, the expectations of the bishops of Rome towards the secular authorities were described. Popes expected Christian emperors to be involved in defending the orthodox faith against heresies. The third part is concerned with presenting the attitude of the Church towards individuals who wanted to became priests after being involved in secular administration. It should be noted that the Church was restrained in admitting people who previously held secular authority to the clergy. The presented poster shows the complexity of the relationship between the Church community and representatives of the secular authorities.

Keywords:

papal letters, Collectio Hispana, secular power, emperors

INTERSLAVIC AS A PAN-SLAVIC AUXILIARY LANGUAGE

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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:

Interslavic is a pan-Slavic auxiliary language. Its purpose is to facilitate communication between representatives of different Slavic nations, as well as to allow people who do not know any Slavic language to communicate with Slavs by being understandable to most, if not all Slavic speakers without them having to learn the language themselves.

Keywords:

Interslavic language, auxiliary language, pan-Slavic

INDIVIDUAL ATTITUDE TO THE PENITENT IN THE PENITENTIAL PRACTICE OF LATE ANTIQUITY, BASED ON SELECTED EXAMPLES FROM PENITENTIAL BOOKS (LIBRI POENITENTIALES)

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A few words about the author(s):

Wojciech Witowski, born in 1988, M.A. in theology (2014), from 2017 Ph.D. student (theology) and student (classical philology) at The John Paul II Catholic University of Lublin.

Abstract:

The penitential books (libri poenitentiales), which were the main source of presentation, began to appear in late antiquity (from the 6th century). They first arose in the Irish and British Churche, and later also in the Gallic, Italian and Spanish communities. Penitentials are called a "tariff penance" source because they contain penances imposed on individual penitents during confession. The analysis of penitential canons, which was carried out during the preparation of the speech, showed that the penalties imposed were different, depending on the committed sin and who confessed. The penitential books attitude an individual approach to the penitent – the type of penance imposed depended on the age, sex, state of life (clergy, secular), marital status (single, spouse, widower), profession and the circumstances of the sin. This differentiation was shown in the presentation on selected examples. The books of penance provide a lot of information about the life of Christians in late antiquity and early medieval times and can be material for further in-depth scientific research.

Keywords:

penance, penitential books (libri poenitentiales), late antiquity, Christianity

INTERNET HATE SPEECH – HOW TO STUDY IT? WORK ON THE PREPARATION OF THE ATTITUDES TOWARDS HATE SPEECH QUESTIONNAIRE

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A few words about the author(s):

Henryk Piotr Żyto s a fifth-year student of psychology at the Institute of Psychology, University of Wroclaw. As part of his master's thesis, he became interested in the subject of hate speech on the Internet.

Abstract:

Internet heckling is an example of deviant behavior in the area of verbal aggression. Its presence on the Internet is constantly growing, taking various forms (e.g., name-calling, deprecation). This social problem leads to various negative consequences (e.g. discrimination, negative emotions). Young people are more lenient towards messages inciting discrimination or violence if they are masked in some way This raises an important distinction between overt and direct hate speech, which is easily visible, and covert hate speech, which is more camouflaged. It seems that in order to counteract this negative phenomenon, it is necessary to use a tool that will allow to recognize and describe it effectively.

I undertook an attempt to prepare the Attitude Toward Hate Speech Questionnaire. The tool is intended to allow the determination of attitudes towards overt and covert heckling in adolescents in middle and late adolescence (15 - 20 years of age). Accordingly, nineteen items were first generated from which competent judges (N=4) were selected using the content validity method. The procedure used made it possible to develop a questionnaire of ten items. They are in the form of short stories consisting of a description of a situation and a comment on it. The respondent's task is to answer 6 questions placed immediately after each story.

In the future, author will also focus on further psychometric evaluation of the questionnaire.

Keywords:

hate speach, verbal agression, adolescents, young adults

ABSTRACTS OF

PRESENTATIONS

MEDICAL SCIENCES

ADDICTION TO MEDICATIONS IN THE ELDERLY POPULATION

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A few words about the author(s):

The student of the third year of nursing in PWSTE Jarosław, actively participate in the academic circle called ,,Promotorzy zdrowia".

Abstract:

Addiction to medications in the elderly population:

Addiction to medications consists in taking more and more drugs to obtain the desired effect. This increases the risk of medications overdose and adverse medications reactions, leading to intoxication and death. A person loses contact with reality, there is a fear of discontinuing the medications or not taking it.

The main goal and research problems:

The main goal of the research was to identify the stages of medicament addiction development in the elderly and the methods of its treatment.

1. Research problems:

a) What medications are most often used by the elderly?
b) What are the risk factors for addiction?
c) Which medications are most harmful to seniors?

2. General hypotheses:

a) The most common medications used by the elderly include sleeping pills, sedatives and painkillers.
b) Factors of addiction development are: chronic pain, sleep disturbances, cognitive disorders, withdrawal from family and social contacts, dry mouth and dehydration, unusual tiredness or agitation.
c) Drugs that are particularly dangerous for seniors include opioids, benzodiazepines, psychotropic drugs and anticoagulants, antidiabetic drugs and non-steroidal anti-inflammatory drugs.

Keywords:

addiction, medication, elderly people

REVIEW: THE ROLE OF UBB IN TUMOUR PROGRESSION

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A few words about the author(s):

Alicja Kosińska is currently a technician in Department of Clinical Pathomorphology, Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Torun. She obtained her Master Degree in Medical Biotechnology in 2021 from Collegium Medicum.

Abstract:

Ubiquitin B (UBB) is a protein found in all eukaryotic cells tested. It binds covalently to the lysine residue of proteins in process called ubiquitination. After a single ubiquitin molecule is bound to the target protein, ligases start to attach additional ubiquitin molecules. Polyubiquitin chain can be recognized by proteasomes and signalizes them to degrade the tagged protein. Ubiquitin B takes part in the DNA damage response and cell cycle regulation. Due to involvement in so many cellular processes, UBB is considered as a crucial factor in promotion and progression of the carcinogenesis.

In our review, we conducted a broad search on the online bibliographic databases EMBASE and PubMed. Previous studies have suggested that deregulated expression of UBB may be associated witch cancer patients' survival. Assays were performed on lung cancer cell lines and tissues and cervical cancer cell lines. Significant changes in expression of UBB were reported in all of the above studies. Furthermore, according to the study of non-small cell lung cancer (NSCLC), expression of UBB varied in different tumor stages.

Detection of abnormal expression level of UBB may be useful in prognosis prediction for patients with various cancer types. Moreover, due to its impact on the proliferation and radiosensitivity of cancer cells, targeting UBB might become a potential approach for cancer treatment. Further studies are required to accurately identify its possible clinical utility.

Keywords:

Ubiquitin B, cancer, prognostic biomarkers

LOCAL TRAVEL PLANNING ASPECTS TAKING INTO ACCOUNT THE RISK OF COVID-19 PANDEMIC

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A few words about the author(s):

Paulina Kozioł is a student of the 1st year of MA studies of Tourism and Recreation at the Siedlce University of Natural Sciences and Humanities.

Abstract:

The aim of the study was to analyze the factors influencing local travel planning during the COVID-19 pandemic. The study uses the diagnostic survey method. The research tool was an original questionnaire which was used to survey 106 respondents. The Statistica 13.0 PL program was applied for statistical calculations. Arithmetic means were determined, and the significance of differences was calculated using the Student's t-test and the Pearson's Chi-square test for the confidence interval $p < 0.05$. The obtained results show that the means of transport of choice was a passenger car. During trips, tourists most appreciated the companionship of their partner, family and friends. When planning their trips, women would mainly choose several day trips, with the male respondents preferring one-day trips. Nearly all the study subjects organized local trips independently. More than half of them reported that when traveling locally they were interested in both natural and cultural values.

Keywords:

local travel, planning, COVID-19 pandemic, tourism, leisure time

HYPERTENSION IN THE ELDERLY

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A few words about the author(s):

The student of third year of nursing in PWSTE Jarosław, actively participate in the academic circle called "Promotorzy Zdrowia".

Abstract:

In my presentation I would like to include information about hypertension, which affects people elderly. From epidemiology to value classification. He will provide information on the specificity of hypertension at the older age as well as on its causes and methods of treatment.

Keywords:

hypertension, elderly people, treatment

ALCOHOL DEPENDENCE IN THE ELDERLY

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A few words about the author(s):

The student of the third year of nursing in PWSTE Jarosław, actively participate in the academic circle called "Promotorzy zdrowia".

Abstract:

In my presentation I would like to include information about alcohol dependence in the elderly. I will show the types of alcohol addiction, symptoms, treatment and nurse participation in the whole process. I will also present the factors of addiction development and the demages caused by alcohol addiction.

Keywords:

alcohol, dependence, elderly people, health

CURRENT AND NEWEST PHARMACOTHERAPY OF PARKINSON'S DISEASE

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A few words about the author(s):

4th year student, pharmacy, CMUJ.

Abstract:

In my presentation, I would like to tell you about the current drugs used in the treatment of Parkinson's disease that we know well and about drugs that could be introduced into treatment in the future.

Keywords:

Parkinson's disease, neurodegenerative disease

THE IMPORTANCE OF PROBIOTIC AND PREBIOTIC SUPPLEMENTATION IN THE TREATMENT OF SCHIZOPHRENIA

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

Abstract:

Schizophrenia is a severe and chronic mental disorder characterized by variable clinical course, affecting approximately 1% of general population. Genetic susceptibility, dysregulation of dopaminergic and glutamatergic neurotransmission, increased levels of proinflammatory cytokines or disturbances of the gut-microbiome-brain axis (GUMBA) has been defined as possible factors predispose to developing schizophrenia. The relationship between the gut microbiota (GM) and the nervous system may be an important mechanism in the pathophysiology of mental disorders (including schizophrenia). GM communication with central nervous system is mediated by various neuronal, metabolic, immunological and endocrine pathways.

Multiple microbiome alterations were observed in patients with schizophrenia, compared to healthy controls. These findings contributed to clinical trials supporting the schizophrenia treatment by manipulating the microbiome through pro-/prebiotic supplementation. Probiotics are preparations containing live microorganisms cultures that are used for gastrointestinal disorders and also have an anti-inflammatory effect. In turn, prebiotics are non-digestible ingredients of food, which stimulate the growth of bacteria beneficial to the host. The main aim of this study was to present the current knowledge and some therapeutic effects of pro/prebiotics supplementation in patients with schizophrenia.

Keywords:

schizophrenia, gut microbiota, prebiotic, probiotic

KNOWLEDGE OD MEDICAL AND NON-MEDICAL STUDENTS ABOUT VACCINES AGAINTS THE VIURUS SARS-COV-2

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Student Research Association at the Department of Physiotherapy, Chair of Physiotherapy, School of Health Sciences in Katowice, Medical University of Silesia in Katowice

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A few words about the author(s):

We are physiotherapy students at the Medical University of Silesia. This academic year we have decided to join a research group. We see our future as both office practice in physiotherapy and a scientific path with potential future Ph.D. programs.

Abstract:

INTRODUCTION: Only 42.7% of the world population is fully vaccinated. This does not give herd immunity. In Poland the number stands at 53.8%. In the age rate 18 - 30, which corresponds to our respondents age, there are only a little bit over 5 million people who have been vaccinated.

AIM: The aim was to evaluate the level of knowledge of students about vaccines against the virus SARS-CoV-2. Our research hypothesis is: Is there any correspondence between knowledge and percentage of people fully vaccinated?

MATERIALS AND METHOD: The study covered a group of 184 students, including 21 questions about students themselves and their knowledge about vaccines. Information was subjected to a statistical analysis and χ^2 distribution.

RESULTS AND CONCLUSIONS: 85/90 of students of medical faculties were vaccinated, while in the group of students of other faculties - 88/94. Based on gathered data, the relationship between major and vaccination status is irrelevant.

Keywords:

vaccine, COVID-19, students, knowledge

INFLUENCE OF MEDIATORS SECRETED BY MESENCHYMAL STEM CELLS ON THE SENSITIVITY OF PROSTATE CANCER CELLS TO CISPLATIN

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A few words about the author(s):

We conduct basic research on the influence of factors secreted in the tumor microenvironment on cancer cells of the genitourinary system.

Abstract:

Despite intensive investigation, the influence of adipose-derived stem cells (ASCs) on cancer cells remains unclear. Molecules synthesized by ASCs may be involved in the development of anticancer agents resistance such as cisplatin.

Human adipose-derived stem cells (ASC52telo) were used to explore the impact of secreted factors on the prostate cancer cell line (DU145). For this purpose, we used conditioned media (ASCS-CM). MTT test was used to measure inhibitory concentration and cell viability. Cell proliferation was assessed using BrdU test. Apoptotic cells were visualized using CellEvent Caspase-3/7 Green test.

Inhibitory concentrations IC10, IC50, and IC90 of cisplatin against DU145 were 1.14μM, 7.14μM, and 67.36μM. ASCS-CM cultures increased DU145 proliferation after 48h by 11% and decreased after 72h by 9%, furthermore ASCS-CM increased DU145 viability respectively by 11%, and 42% compared to control. Incubation DU145 with ASC-CM reduced sensitivity to cisplatin at concentration corresponding to IC10 by 30% and corresponding to IC50 by 16%.

Obtained results indicate that the factors synthesized by ASCs interact with cancer cells by increasing their viability and proliferation. It has been shown that ASCS-CM affects cancer cells' sensitivity to cisplatin.

Keywords:

prostate cancer, stem cells, cancer microenvironment

THE IMPORTANCE OF HYPERBARIC OXYGEN IN THE REGENERATION OF THE NERVOUS SYSTEM

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A few words about the author(s):

Biologist, neurobiologist. Ph.D. student in Health Sciences.

Abstract:

Hyperbaric oxygen therapy (HBOT – Hyperbaric Oxygen Therapy) is a modern, effective and non- invasive method of therapy used in the treatment of neurological diseases. The therapy uses hyperbaric chamber, which enables the tissues to be effectively saturated with oxygen, administered under increased preassure. HBOT supports the treatment of neurological diseases, contributes to the regeneration of the nervous system and reduces inflammatory, chronic and traumatic ailments. Hyperbaric oxygen therapy has a positive effect and can be a supportive method of treating diseases of the central and peripheral nervous system. It is a valued treatment method in patients after stroke, because by supplying oxygen to more brain cells, it reduces cerebral edema (brain swelling) and allows the formation of new stem cells, regenerating the metabolism of nerve tissues. Oxygen therapy is also successfully used in patients with Alzheimer's and Parkinson's diseases. Oxygen therapy enables the stimulation of cell metabolism, improves their functionality, improves tissue regeneration and accelerates wound healing. In Parkinson's disease, it increases the level of oxygen in plasma, lymph, erythrocytes and the cerebrospinal fluid. It reduces the frequency of resting tremors, has a positive effect on changes in the patient's stiffness.

Keywords:

hyperbaric oxygen therapy, nervous system regeneration, neurological diseases

CIRCADIAN DISTURBANCES IN MELATONIN SECRETION AS A CANCER PREDICTOR

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A few words about the author(s):

I am a Ph.D. student at Ludwik Rydygier Collegium Medicum in Bydgoszcz, Faculty of Medicine.

Abstract:

Many factors can contribute to changes in the circadian rhythm. The most important factor regulating the body's biological clock is light. Melatonin, on the other hand, is the "hormone of darkness", and its daily production depends on the time of day and year, age and gender. Its highest blood levels occur at night and the lowest during the day. Melatonin exhibits pleiotropic functions. It is an endogenous antioxidant that determines the removal of reactive oxygen and nitrogen species and affects the activity of antioxidant enzymes. It improves the quality of sleep and has a neuroprotective effect. Literature data indicate its influence on the immune, digestive and blood systems as well as on neoplastic processes. Shift and night work, which disrupts the functions of the biological clock and disrupts the circadian rhythm, significantly changes the physiological functions of the body and has a huge impact on the levels of melatonin in the blood. The opinion that abnormal melatonin levels can be classified as a potential cancer factor is spreading more and more often. The mechanism of the anti-carcinogenic effect of this hormone is due to the significant antioxidant activity, induction of apoptosis and inhibition of angiogenesis. Literature data indicate a relationship between disturbed melatonin secretion and an increased risk of certain cancers, however, wider epidemiological studies are needed to answer the question: can shift work be carcinogenic?

Keywords:

circadian rhythm, cancer, melatonin, shift work

THE IMPORTANCE OF VITAMIN D IN PATIENTS WITH NEUROENDOCRINE NEOPLASMS

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Abstract:

Vitamin D is a fat-soluble vitamin that has a number of functions in the body. In addition to the classic role in maintaining the calcium-phosphate balance and bone mineralization, it regulates the functioning of the nervous, endocrine, immune and muscular systems. Regardless of calcium homeostasis, it can act in the body's defense, inflammation, immunity and carcinogenic processes. Vitamin D deficiency in patients with gastrointestinal-pancreatic neuroendocrine neoplasms is associated with the tumor itself, pathophysiology of the disease, systemic therapy, or abdominal surgery (resections). Diet, side effects of therapy or clinical symptoms, such as diarrhea, may have a significant impact on the synthesis and absorption of vitamins. These factors increase the risk of excretion of fat-soluble vitamins, and consequently cause their deficiency. Few reports indicate vitamin D deficiency in patients with GEP-NET, which may be associated with a high degree of malignancy of the tumor and its progression.

Keywords:

diet, neuroendocrine tumors, vitamin D

THE INFLUENCE OF NUTRITION ON HEALTH

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A few words about the author(s):

My name is Ewelina Kamińska. I am a student of the Wałbrzych University of Management and Entrepreneurship. My presentation is about the impact of nutrition on health because I am interested in leading a healthy lifestyle and motivating other people.

Abstract:

Healthy eating is a very important role in human life. The saying "you are what you eat" accurately shows the influence of food and fluid intake on the human body. The foundation of healthy eating is knowing what to eat.

The relationship between proper nutrition and health and well-being is a big one. That is why it is so important to pay attention to the choices we make at the grocery shelves. Avoiding palm fat, glucose syrup and other ingredients that are harmful to the human body is quite a challenge these days. Knowing the unhealthy ingredients in foods and skillfully rejecting such foods is key.

Although more and more people are becoming interested in healthy food and following the rules of proper nutrition, failure to follow the latter is often the cause of premature death. The percentage of deaths from diseases of civilisation, caused by inadequate nutrition, is highest in economically developed countries, where most rich people with free access to food live.

People are also affected by illnesses resulting from eating disorders, which involve compulsive behaviors in the area of eating. People who live in permanent stress, after traumatic experiences, lonely, with low self-esteem, suffering from depression are most exposed to eating disorders.

In conclusion, knowledge about healthy eating and the willingness to implement proper eating habits is one of the most important elements of a happy, healthy and long life, it is just a pity that still many are not aware of it.

Keywords:

nutrition, health, disease, diet

PHYSICAL ACTIVITY OF STUDENTS DURING THE COVID 19 PANDEMIC

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A few words about the author(s):

We are students from University of Rzeszów and we belongs to Student Scientific Organisation of Travelers.

Abstract:

Physical activity is an integral part of a healthy lifestyle. It is a broadly understood concept, it is especially related to physical effort, as well as to various physical activities performed voluntarily of their own free will. The purpose of physical activity is primarily to improve one's own well-being, but also to prevent the occurrence of many diseases.

The article focuses on presenting and characterizing physical activity undertaken by students mainly of the University of Rzeszów in the field of Physical Education and Tourism and Recreation, as well as on determining the level of physical activity during the prevailing Covid 19 pandemic. Taking into account the prevailing situation related to the pandemic, any physical activity is clearly limited, but looking at the results obtained, it can be said that the level of physical activity of students is relatively high. Taking into account the diversity of origins of respondents, their attitude to undertaking physical activity and their achieved general level of physical activity, this allowed to draw appropriate conclusions.

Keywords:

health, physical activity, Covid-19

DAPAGLIFLOZIN – REPRESENTATIVE OF A NEW GROUP OF DRUGS USED IN HEART FAILURE TREATMENT

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A few words about the author(s):

Julia Ruszkiewicz – 5th-year student of medicine at the Collegium Medicum im. Ludwika Rydygiera w Bydgoszczy UMK w Toruniu.

Abstract:

Heart failure is a complex of typical symptoms such as: dyspnoea, swollen legs, reduce exercise tolerance, which can be accompanied by widening of the jugular veins and crackling noise over the lungs. The reasons of this are disturbances in structure or functioning of the heart, which cause increased stoke volume or increased heart pressure accompanying both rest and effort. Due to the frequency of this illness appearance, new methods of treatment are still searched. Dapagliflozin is a medicament originally registered for treating type two diabetes. It has recently become a part of the group of new drugs used in heart failure treatment- inhibitors of the type 2 sodium-glucose cotransporter. It is characterized by high safety profile and effectiveness. Therefore it is recommended to use SGLT2 inhibitors to prevent deaths caused by HF, cardiovascular causes. It is also recommended in case of worsening of kidney functioning in patients with type 2 diabetes in combination with cardiovascular illness or cardiovascular risk factors or with chronic kidney disease.

Keywords:

dapagliflozin, heart failure, SGLT2 inhibitors

THE IMPORTANCE OF PHYSIOTHERAPY AS OUTDOOR PHYSICAL ACTIVITY IN THE FIGHT AGAINST COVID-19 VARIANTS

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A few words about the author(s):

Master of physiotherapist.

Abstract:

Teodor Adhanom Ghebreyesus, WHO Director-General, highlighted the importance of physical activity among the recommendations for the pandemic. Adults should exercise for 30 minutes a day, and the children an hour a day. Researtch shows that exercise can affect the body's immune system. Various studies show that a pandemic and related lifestyle changes often worsen mental health. The study was conducted as part of the International project ,,IRG on COVID and exercise" and 65 people took part in it. Most of the respondents in all age groups, exept for the 11-21 age group, declared that they always feel better after physical activity. According to a study by the New York Times, physical activity forces the body to perform certain types of exercise. The natural terrain is move varied than the floor of a treadmill or gym, with slopes and bumps. This means you can burn more calories by running, walking or cycling outdoors. An inseparable element of the lanscape is The forest- a place where many of us spend their free time during family walks, picking mushrooms and berries, forest baths or bushcrafting. They are a place of active sports (e.g. running, cycling), bird watching and many other activites that cannot be mentioned. It is also worth emphasizing that contact with nature is a key factor in iproving and restoring mental balance.

Keywords:

physiotherapy, physical activity, researtch,natural

A SURVEY OF PATIENTS' OPINIONS AND PREFERENCES ON THE USE OF E-PRESCRIPTIONS IN POLAND

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A few words about the author(s):

Natalia Wrzosek – A graduate of pharmacy at the Medical University of Gdańsk. Currently, a doctoral student focusing in her research on e-tools in the Polish health care system.

Abstract:

E-prescription is already used in many countries. Officially, from 8 January 2020 e-prescribing has been obligated in Poland. Physicians' and pharmacists' opinions on e-prescribing have been widely researched and reported in the literature. In contrast, patients' perception has, to date, received little attention. For this reason, the aim of this study was to find the features and functionalities of e-prescribing that are desired by the public and influence the positive evaluation of this tool, according to patient opinion. In order to obtain data, a questionnaire was completed by 456 randomly selected adults. The obtained results indicated that only eight people (1.8%) did not know what e-prescription is. Of the remaining 448 individuals, 72.1% prefer e-prescription because it is more convenient for them. Most patients (62.1%) also recognize that e-prescribing makes it easier to purchase medications on behalf of another patient. Based on the study, it can be concluded that e-prescription is well evaluated by Polish patients. A large percentage of respondents were positive about obtaining prescriptions for continued treatment, without a personal doctor visit. Therefore, it is reasonable to maintain the possibility of such contact with a physician. The most popular, and preferred, method of receiving e-prescriptions is via SMS. However, it is necessary to offer different options for obtaining prescriptions, to meet the needs of different population.

Keywords:

e-prescription, e-health, pharmacy

ABSTRACTS OF

POSTERS

MEDICAL SCIENCES

MICROGLIA RESPONSE TO FLUORIDE EXPOSURE - A LITERATURE REVIEW

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A few words about the author(s):

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: Microglia plays a key role in the inflammatory processes in the CNS. Exposure to many environmental factors, and toxins, activates the microglia, leading to the development of inflammatory response. Such a factor may be fluoride, which penetrates the blood-brain barrier, resulting in the dysfunction of central nervous system (CNS).

Aim: The aim of this study was to review the latest research on the effect of fluoride on microglia.

Methods: The literature review was prepared by searching for scientific reports in the PubMed database. Ten publications in the topic were found and analysed.

Results: Fluoride activates microglia by increasing the production of reactive oxygen and nitrogen species (ROS and RNS). This is due to the JNK-activated induction of NADPH oxidase and inducible nitric oxide synthase (iNOS). Moreover, ROS generation and lipid peroxidation were even stronger when exposed to aluminum fluoride.

Also, the activation of MAPK / p38 and ERK, translocation of NF-κB to the cell nucleus, and increased production of pro-inflammatory cytokines TNF-α, IL-6, and IL-1β after F- exposure were noticed. It has been shown that fluoride-exposed microglia negatively influences memory-related hippocampal cells (decreased expression of NDMAR2B). Interestingly, exercise reduces fluoride-induced microglia activation in the hippocampus.

Conclusions: Exposure to fluoride may activate microglia and lead to the development of neuroinflammation.

Keywords:

fluoride, microglia, neurotoxicity, neuroinflammation

CONNECTION BETWEEN GUT FLORA AND NERVOUS SYSTEM. IMPORTANCE OF GUT – BRAIN AXIS

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A few words about the author(s):

We study biotechnology at the UMCS in Lublin. We are interested in microbiology, genetics and human physiology. We like looking for new experiences, which let us broaden our knowledge.

Abstract:

The microbiome in the digestive system is the aggregate of microorganisms. Its composition is not constant and changes with age. The number of microorganisms is estimated to be approximately 10 to the power of 14, and it can weight even up to 2 kg. Bacteria living in the digestive system perform many functions. They have a positive effect on human health by supporting digestion and developing immune cells that fight harmful pathogens and toxin. Human microbiota can also influence the nervous system. The interaction between the digestive system and the nervous system is called the gut – brain axis and acts as a communication pathway between the two systems. It is a two-way interaction in which the gut microbiota is an important regulatory factor. The imbalance of the gut flora negatively affects brain functions, causing changes in the stress response which in turn leads to the development of a disease. A thorough understanding of this interdependence will play an important role in the prevention of neurological diseases and can even help reduce the risk of getting sick.

Keywords:

gut microbiota, gut-brain axis, bacteria, nervous system

THE DEVELOPMENT OF NEUROINFLAMMATION AFTER EXPOSURE TO LEAD – LITERATURE REVIEW

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A few words about the author(s):

We are students of the medical faculty at the Pomeranian Medical University and we belong to the student research club at the biochemistry department.

Abstract:

INTRODUCTION: Lead is a highly toxic element. Once it enters the bloodstream, it binds to red blood cells and is then distributed to the body's soft tissues. Its ability to replace calcium ions allows it to cross the blood-brain barrier and accumulate in the central nervous system, where it induces signaling pathways involved in neuroinflammation.

AIM: The aim of the study was to review the literature on the relationship between exposure to lead and the development of neuroinflammation.

METHODS: The literature review was prepared by searching for scientific reports in Scopus and Medline databases. Ten scientific reports were found were analyzed.

RESULTS: Exposure to lead reduces the cell's glutathione reserves, thereby exposing the cell to reactive oxygen species (ROS). Also, NADPH oxidase (NOX) activated by lead ions promotes the accumulation of ROS in the brain. Pro-inflammatory cytokines secreted by microglia in response to lead ions activate proapoptotic pathways by activating NF-kB, AP-1 protein, JNK N-terminal kinase, and MAPK. In addition, the microglial inflammatory response is believed to be activated by the innate immune response of TLR-4 receptors, leading to signal transduction by the MyD88 gene into the intracellular pathway.

CONCLUSIONS: Environmental exposure to lead contributes to the development of neuroinflammation.

Keywords:

lead, neuroinflammation

PROTEIN TRANSPORTERS IN DRUG TOXICITY STUDIES- IN SILICO METHODS

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A few words about the author(s):

Employees and Ph.D. students of CM UMK in Bydgoszcz.

Abstract:

Pharmaceutical safety is a rapidly developing area of pharmacy that aims to assess the potential risks associated with improperly conducted pharmacotherapy. Safety assessment is a crucial part of bringing a new drug to market, as well as for drugs already in use that are being tested for new indications.

According to the literature, one of the most commonly used drugs off-label in everyday clinical practice is Paroxetine, belonging to the SSRI group (Selective Serotonin Retake Inhibitors). The lack of registration of this drug for a number of conditions is due to the fact that there is not sufficient of papers devoted to explanation of the paroxetine mechanism of action on specific targets. For this reason, the main issue of this work is the presentation of data related to the description of paroxetine activities tested at the molecular level based on the collected crystallographic data. The way paroxetine binds to the active site of selected receptors, which affects the way the drug interacts, is graphically presented. Using available software (ProTox II and AdmetSAR), paroxetine was assessed by comparing its safety with other drugs from the same class of drugs.

The tests conducted were confirmed by literature data, proving the effectiveness of in silico methods in the first step of drug safety testing.

Keywords:

in silico methods, toxicity

EXAMINATION OF THE NEED FOR ADDITIONAL PHARMACEUTICAL SERVICES AND SELECTED ELEMENTS OF PHARMACEUTICAL CARE IN POLAND – A PILOT STUDY

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A graduate of pharmacy at the Medical University of Gdańsk. Currently a Ph.D. student. In his research work, he focuses on e-tools in healthcare.

Abstract:

Due to new regulations, implemented in 2021, pharmacists were given wider permissions to provide additional pharmaceutical services, some diagnostic tests, as well as other healthcare services. This study aimed to assess the level of the patients' need for additional pharmaceutical services and selected elements of pharmaceutical care accessible in community pharmacies in Poland. In addition, respondents were also asked to provide a valuation of the described services. Moreover, the study aimed to assess the level of respondents' knowledge about pharmaceutical care, as well as their needs and level of satisfaction related to the service of dispensing medicinal products.

The study used an anonymous online questionnaire as a tool to obtain the records of 145 patients. No more than half of the respondents think that they receive satisfactory information about medicines from the pharmacy's professional staff. However, nearly 60% of respondents admit that they feel the need to analyze their drugs for interactions. Many patients are unfamiliar with the term "pharmaceutical care". Most of the study group would like to use the blood pressure measurement service along with the interpretation of the result, a Medical Use Review, and instructions on how to use the inhaler. The respondents valued the presented services low, often indicating that they should be free of charge.

Keywords:

pharmaceutical care, pharmaceutical services, pharmaceutical law, community pharmacy

ABSTRACTS OF

PRESENTATIONS

TECHNICAL AND NATURAL SCIENCES

INNOVATIVE ACTIVITIES IN THE AGROBUSINESS SECTOR

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A few words about the author(s):

Finished bachelor in 02/2021, nowadays student of Master degree. My thesis is about wheat breeding for Puccinia spp. resistance. I am member of Agrobusiness Research Group where we I working with "Ancient Grain", "Gardena" and "Nova Grass".

Abstract:

„Ancient Grain" about developing a cultivation technology and introducing to the market primary forms of wheat: 'Spring dwarf' and 'Persian'. Both of wheat haven't been put under any breeding processes and they conatain higher amount of phosphorus, magnesium, zinc, and fiber than common wheat. In addition, they are a source of exogenous amino acids, including phenylalanine, isoleucine or leucine.

„Gardena" is new polish variety of potatoe. That form is resistant for Phythophtora infestans – the causer of the most important potatoes disease. Conventional farmers need to spray fungicides 7–8 times. Thanks to using our variety, there is no need for usage of chemical. In favourable condition for pathogen it is possible to fight with disease using only organic ways. All of those characteristics allow planting our variety in organic farming providing rich harvest.

The last but not least is „Nova Grass", venture about Perennial Ryegrass which has been inhabited by endophytes. Fungus endosymbionts improve the plant's ability to tolerate drought and pathogens. Modified Ryegrass seemed to be ideal forms for sowing on meadows and pastures, especially with increasing drought frequencies. They are also ideal for city green squers where water retention is very low because of ubiquitous concrete.

To sum up, all ideas were invented to develop: eco-friendly agriculture and interdisciplinary research combining science with practice.

Keywords:

"Ancient Grain", "Gardena", "Nova Grass", eco-farming, innovations

INFLUENCE OF THE S2P2 PROTEASE ON THE FUNCTIONING AND STRUCTURE OF CHLOROPLASTS IN ARABIDOPSIS THALIANA

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A few words about the author(s):

Ph.D. student at the Department of Plant Physiology.

Abstract:

Intramembrane proteases are a specific class of proteolytic enzymes that exhibit their proteolytic activity within biological membranes. These enzymes are thought to play an important role in regulating the expression of certain genes by releasing transcription factors from membranes anchored therein. One of the representatives of intramembrane proteases is the S2P2 protease located in A. thaliana chloroplasts. A very little is known about the function of this protease. This protein accumulates in the leaves during a dark and – probably – contributes to the plant's resistance to cold. To provide more information on the physiological significance of the S2P2 protease, comparative phenotypic analysis was carried out using the homozygous A. thaliana insertion mutant line, characterized by the presence of T-DNA insertion within the S2P2 gene (At1g05140). Using the modified BBCH scale, the course of A. thaliana's main development phases in the wild-type plants and S2P2 mutants were compared. Comparative analyzes (wild type vs S2P2 mutant) of chloroplast dye content and functional state of photosystem II were also carried out. The ultrastructure of chloroplasts in mutants was altered compared with that of wild-type plants.

Keywords:

Arabidopsis, S2P2, intramembrane proteases, RIP

THE USE OF MACHINE LEARNING FOR ASSESSMENT OF THE CURRENT AND FUTURE CREDIBILITY AND SOLVENCY OF BUSINESS ENTITIES BASED ON LARGE, DISTRIBUTED DATA SOURCES

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A few words about the author(s):

The project was carried out by Data Science Team from KG. The team consists mainly of specialists with at least 7 years of experience in creating, validating and monitoring predictive models. They created a lot of models for KG.

Abstract:

The implemented project concerned the development of a product innovation in the form of a payment scoring service based on various databases owned by KG, its business partners as well as on the basis of publicly available data. This service is characterised by predictability of the financial situation assessment, comprehensiveness of the offered service and comparability of scoring. The payment credibility scoring service was created on the basis of using the machine learning method, original method of data selection from databases and algorithms, which on the basis of data predict the future solvency of contractors.

Kaczmarski Group Sp. jawna carried out research and development works in 2 stages. In the first part of the works, assumptions to risk assessment models have been defined and data from publicly available and own collections of information has been acquired and studied. Then, from the raw information, the features for the models were created. In the second part of the works, predictive models were created.

Ultimately, this service is designed to provide clients with both information about the current financial status of analysed entities and about the most probable payment attitudes of a given company predicted on the basis of historical traces of its activity, i.e. payment delays. The service offered by the Kaczmarski Group will support companies in creating long and short-term business strategies characterised by increased precision and efficiency.

Keywords:

machine learning, payment credibility scoring, prediction model

THERMAL ADMITTANCE SPECTROSCOPY – A NICHE TECHNIQUE FOR CHARACTERIZATION OF DEFECTS IN SEMICONDUCTORS

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A few words about the author(s):

Adrian Kaim obtained his B.Sc. degree in Quantum Engineering in January 2021 at WUST (Wrocław), where he is continuing his studies at M.Sc. level. His interests are photovoltaics and semiconductor characterization by electrical methods.

Abstract:

We live in a world of rapid technological advancements. Every year we become more and more dependent on electronics, that in great extent are based on semiconductors. Simultaneously, global energy consumption also increases. To minimize energy production's impact on the environment, ever more frequently we turn to renewable energy sources, which (especially photovoltaics) are also highly dependent on semiconductors.

Thermal Admittance Spectroscopy, also known as Impedance Spectroscopy, is an useful technique, that among its other applications (including studies of metal corrosion, electrochemical and bio-fuel cells, and even living cells) allows for characterization of majority carrier traps in semiconductors by measuring complex admittance (impedance) under AC excitation. Resulting spectra is to be analyzed with the use of so-called Arrhenius plot, giving signatures of traps present in the test sample.

The presentation will cover theoretical and technical basis of the thermal admittance spectroscopy technique.

Keywords:

thermal admittance spectroscopy, Impedance spectroscopy, majority carrier trap states, semiconductors

THE INFLUENCE OF HERBICIDES ON THE VIABILITY OF ENTOMOPATHOGENIC FUNGI ISOLATED FROM SOIL

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We are the team from the Institute of Microbiology, Biotechnology and Immunology, University of Łódź.

Abstract:

Entomopathogenic fungi are a large group of soil microorganisms which are responsible for the regulation of the arthropod population in the natural environment. Due to their ability to parasitize insects, they are often used as bioinsecticides to combat plant pests. Herbicides are chemicals used to eliminate or reduce the growth of undesirable plants such as weeds and invasive species. However, excessive use of herbicidal products is associated with adverse effects on non-target organisms, including plants, insects or microorganisms.

The aim of the research was to check whether the herbicides 2,4-dichlorophenoxyacetic acid and dicamba, affect the viability of entomopathogenic fungi isolated from the soil. The tolerance on selected herbicides have been tested on five fungal strains: M3, M6b, M11-1, M12 and M12-a.

The tested soil isolates of entomopathogenic fungi showed a similar range of tolerance for both herbicides used. For strains M3, M11-1 and M12a, the decrease in viability to about 50% was determined at a concentration of 0.03 mg/mL, while in the case of strains M6b and M12a, such a decrease in viability was determined at a concentration of 0.06 mg/mL. The M3 strain turned out to be the most sensitive to the effects of the tested herbicides.

To sum up, herbicides used in excess, remaining in the natural environment, may pose a threat to the microflora inhabiting them.

This work was supported by Polish Nacional Science Centre, grant no. UMO-2016/23/B/NZ9/00840.

Keywords:

entomopathogenic fungi, herbicides, viability

EFFECT OF POST-CULTURE EXTRACTS OF METARHIZIUM BRUNNEUM ON THE VIABILITY OF FILAMENTOUS FUNGI

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A few words about the author(s):

We are the team from the Institute of Microbiology, Biotechnology, and Immunology, University of Łódź.

Abstract:

Metarhizium brunneum is an entomopathogenic fungus regulating the population of arthropods in the natural environment. To perform its function, it has created a number of adaptations, including secretion of enzymes or secondary metabolites. Fungi of the genus Metarhizium are known to produce destruxins – secondary metabolites that cause paralysis and disturbance of the immune system of pests.

The aim of the research was to check whether post-culture extracts of Metarhizium brunneum (standardized on destruxin A (dtxA)) affect the viability of Aspergillus nidulans, Trichoderma harzianum KKP 534 and Trichoderma reesei.

Post-culture extracts of the M. brunneum strain had a positive effect on the viability of the tested filamentous fungi. In A. nidulans and T. reesei, a twofold increase in viability was observed with the addition of a post-culture extract with a dtxA concentration of 1.8 µg/ml, while in T. harzianum for a dose of 3 µg/ml. For the highest concentration of the studied post-culture extract, the viability of A. nidulans increased tenfold, and T. reesei almost ninefold.

In conclusion, post-culture extracts of M. brunneum with a known dtxA content increase the viability of the tested filamentous fungi. The obtained results suggest that the studied species may have a positive influence on each other in the natural environment.

This work was supported by Polish Nacional Science Centre, grant no. UMO-2016/23/B/NZ9/00840.

Keywords:

Metarhizium brunneum, entomopathogenic fungi, viability

CdO/MgO SUPERLATTICES AS WINDOW LAYERS FOR PHOTOVOLTAIC APPLICATIONS

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A few words about the author(s):

The main author is a student of Quantum Engineering at Wrocław University of Science and Technology. His main scientific interests include photovoltaics, semiconductor physics and material engineering.

Abstract:

The need of improvement of low carbon power generation sources such as solar cells has been brought to attention together with climate crisis. Thin film solar cells consists of several layers, i.a. absorber, buffer or window layer, and there seem to be a room for development in each one of them. A window layer is a film that let through photons and collect light-generated carriers. Several oxides such as ITO, IZO or AZO are commonly used as window layers and are called transparent conducting oxides.

Pure cadmium oxide is an n-type semiconductor with high free electron concentration and electron mobility that results in remarkable conductivity. That feature is required for a material to be a window layer. However, the band gap of CdO totals 2.3 eV at room temperature (RT), which makes it impossible to transport photons from a significant part of visible spectrum towards the absorber layer.

We decided to use MgO with a band gap of 7.8 eV (at RT) to shift the absorption edge of CdO towards higher energies. It appears that homogenous CdMgO alloy is challenging to fabricate and that is why we propose using a quasi-alloy: a short-period CdO/MgO superlattice (SL) of nanometric thickness grown by plasma assisted molecular beam epitaxy. Using this method we can strictly control composition of the material, and therefore its properties. In this work, we present results of fundamental optical and structural studies of such SLs manufactured on diversely orientated Al_2O_3 substrates.

Keywords:

superlattice, transparent conducting oxide, absorbance, Raman spectroscopy

POSTBIOTICS – AN EFFECTIVE THERAPEUTIC AGENT IN CHRONIC KIDNEY DISEASE?

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A few words about the author(s):

A student at the Wrocław University of Environmental and Life Sciences, Faculty of Biology and Animal Science. Currently, as part of my master's thesis, I am developing a preparation for dogs and cats suffering from chronic kidney disease (CKD).

Abstract:

Chronic kidney disease (CKD) is a common health problem in both humans and cats. It is estimated that it affects 13.4% of the human population and as much as 30-50% of cats over 15 years of age. CKD is a condition that develops slowly and is characterised by progressive loss of kidney function. It has been shown that one of the key factors contributing to the progression of CKD is the altered composition and metabolic activity of the gut microbiota (dysbiosis).

Given this, the use of microbiome modulating therapies has become an attractive strategy for the treatment of CKD. Despite numerous studies confirming the clinical efficacy of probiotics in various disorders (including CKD), there are reports questioning their safety, especially in immunocompromised patients or leaky gut. For this reason, increasing attention is being focused on postbiotics - preparations from non-living microorganisms and/or their components that positively affect the body.

Postbiotics are characterised by a pleiotropic effect. Due to their immunomodulatory and antioxidant properties, they improve dysbiosis in CKD. They can act both locally (in the gut) and in distant organs (e.g. kidneys) inhibiting their fibrosis, reducing inflammation and having a protective effect on podocytes. Some of them are also able to induce autophagy or modulate blood pressure, which may be helpful in CKD therapy.

Further studies on their mechanism of action and efficacy in CKD are needed.

Keywords:

CKD, postbiotics, dysbiosis, gut microbiota

SMART SERVICE DESIGNER – TELCO SERVICE ACTIVATION IN A JUST FEW MINUTES

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A few words about the author(s):

A graduate of the Faculty of Electronics at the Warsaw University of Technology, long-term employee of Suntech S.A., an expert in the field of Operations Support Systems.

Abstract:

The presentation will refer to Smart Service Designer, an innovative IT system developed under the project "Smart Service Designer – an innovative IT system for the activation of telecommunications services based on algorithms for dynamic analysis of the service catalog" implemented under the program: Smart Growth Operational Program 2014-2020.

The system enables full automation of the service delivery process, which is a significant innovation in relation to the systems used so far by telecommunications operators, which are based on manual modeling of business processes.

Smart Service Designer reduces the time of launching a telecommunications service from a few days (or even a week) to several minutes, lowers operating costs and eliminates typical problems associated with the process of providing services in a traditional way, e.g. the need to perform regressive tests with each modification of the process.

Despite the very short time since Smart Service Designer was launched, the solution has already been successfully implemented, among others, at one of the three largest telecommunications operators in Singapore. The sale and effective implementation of the Polish solution on the extremely competitive Singapore market constitutes the product's innovation and high functional values.

Keywords:

service delivery, service fulfillment, telecommunications, order management

STRUCTURAL, OPTICAL AND ELECTRICAL PROPERTIES OF ZnO/ZnCdO STRUCTURES GROWTH ON SI SUBSTRATES BY MBE METHOD

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A few words about the author(s):

Radosław Szymon is a student of Quantum Engineering at Wroclaw University of Science and Technology since 2017. He investigates wide bandgap III-V and II-VI compound semiconductors properties with numerical as well as experimental methods.

Abstract:

In this work ZnO/ZnCdO structures and their structural, optical and electrical properties were investigated. ZnO is a wide bandgap semiconductor that is candidate for applications in optoelectronic. Its energy gap about 3.4 eV at room temperature may be decreased by doping with cadmium, that makes devices based on this material great for work in range of green light. However, that makes a challenge due to lattice mismatch between wurtzite structure of ZnO and rock salt of CdO so techniques of growth of ZnO/ZnCdO layers must be studied.

This work focuses on results of Raman spectroscopy and deep level transient spectroscopy (DLTS) which provide the basis for determination of properties of thin films of ZnO/ZnCdO grown on Si substrates by molecular beam epitaxy. Especially, Raman spectra include a source of information about phonon excitation in structures and deliver information about structural properties such as strain in structure and crystallography, Whereas DLTS method is the way to describe electrical properties and defects in material.

Keywords:

ZnO, ZnCdO, Raman spectroscopy, DLTS

DIROFILARIA REPENS – A NEW THREAT TO DOGS IN POLAND

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A few words about the author(s):

A student at the University of Warsaw, Faculty of Biology. Currently I am doing my master thesis in the department of 'Eco-epidemiology of Parasitic Diseases' where I focus on dirofilariosis and babesiosis in dogs.

Abstract:

Dirofilaria repens is a nematode that has significantly increased its range in the last decade, appearing in new countries in Central and NE Europe (including Poland). The parasite is transmitted by several species of mosquitoes and attacks mainly domestic and wild canids causing subcutaneous dirofilariasis. Humans can also become accidental hosts. Dirofilariosis in dogs is usually asymptomatic and difficult to detect, which poses a problem for veterinarians. In the case of dirofilariosis, no clear-cut treatment protocol has been established yet, although some drugs have been shown to be effective against these filarial nematodes.

Keywords:

Dirofilaria repens, dirofilariosis

SPECSIL – SELF-ADHESIVE TAPES BASED ON SILICONE ADHESIVES WITH INCREASED THERMAL RESISTANCE

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A few words about the author(s):

The research team consists of specialists in the preparation, modification and characterization of self-adhesive materials and silicon fillers. You can read more about the team and the project on the website www.specsil.zut.edu.pl.

Abstract:

SPECSIL tapes are materials developed as part of research in the project from the Lider program No. LIDER/9/0028 /L-11/19/NCBR/2020 financed by the National Center for Research and Development. The aim of the project is to develop the manufacturing technology of silicone pressure-sensitive adhesives (Si-PSA) for special applications. The addition of silicas fillers such as halloysite or silica allows to obtain relatively high thermal resistance adhesive tapes (up to 300°C). New Si-PSA characterized by the thermal resistance could find many applications e.g. thermo resistance Si-PSA in heavy industry and automotive industry as the connecting strips for operating at elevated temperature; in heat engineering – for covering installations and fireplaces, in thermal printing technology; aerospace bonding solar battery on board satellites and space stations or household to attach elements exposed to elevated temperatures. Innovative Si-PSA will be made on the basis of commercial silicone resin. The project is particularly focused on the physical modification of commercial silicone pressure-sensitive resin with cross-linking compounds, silicon fillers (including those modified according to one of the stages) and adhesion promoters. The effect of crosslinking temperature will be determined. The technology for obtaining self-adhesive products with increased thermal resistance will be developed.

Keywords:

silicone pressure-sensitive adhesives, Specsil, thermal resistance, silicon fillers, adhesion

SYNTHESIS OF NEW INDOLE DIMERS WITH TRIAZOLE RING

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A few words about the author(s):

Our research group is focused on the modification of natural origins compounds, mainly alkaloids with potential terapeutic effect.

Abstract:

Six new indole derivatives with triazole rings were obtained. The four synthesized compounds were indole dimers linked by two 1,2,3-triazole rings and the other two compounds are combined of two different derivatives of indole linked by one 1,2,3-triazole ring. All new dimmers were obtained by CuACC procedure and characterized by spectral methods.

Keywords:

indole, click chemistry, dimers, indole-3-carbinol, gramine

NATURAL METHODS OF SUPPORTING IMMUNITY

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A few words about the author(s):

She is passionate about human health in its entirety. In the era of the coronavirus pandemic, he is looking for natural ways to strengthen human immunity. A healthy body also affects the beauty and appearance of the skin of people of all ages.

Abstract:

The way we live today is critical to building our resilience. Technical progress, increasing pace of life, human diet can hardly be considered correct. The consequence of this is the decreased immunity of the organism. Taking care of the immune system guarantees the strength to fight infection. Genetic conditions, age and gender influence the functioning of the immune system. However, there are many factors that we can influence, such as exercise, stress, sleep, and diet. By leading a healthy lifestyle, we minimize the critical incidence of infection. Good health condition has a beneficial effect on immunity, respiratory system, circulatory system, endocrine system and lipid metabolism. The intestines are one of the priority organs of the immune system, the condition of which is directly influenced by humans. However, we cannot control the function of the thymus and bone marrow, where immune-competent cells are produced.

The development of civilization reduces human immunity. Food is genetically modified, little natural supported with additives and devoid of nutritional properties, reduces immunity.

Keywords:

strengthening immunity, healthy lifestyle, intestines

ACCUMULATION HEAT RECOVERY SYSTEM IN ROOM VENTILATION

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A few words about the author(s):

Gdańsk University of Technology is first among technical universities in the IDUB competition. Morad is modern and innovative company involved in design, introduction, and distribution of aluminum and glass systems for the construction sector.

Abstract:

Residential buildings are obliged to meet increasing energy efficiency standards. The document WT2021 defines the value of the annual consumption of non-renewable energy needed for heating, ventilation, and air conditioning. This indicator for new buildings should not exceed 70 kWh/(m^2·year). At the same time proper ventilation is necessary. Unfortunately, this process wastes very large amounts of energy needed to heat low-temperature outdoor air to indoor temperature. For this reason, heat recovery systems are indispensable. The aim of this study is to check the efficiency of the accumulation heat recovery system through experimental research. A commercially available heat recovery system for indoor ventilation was tested during its operation. The temperature and velocity of the air were measured and the heat flowrates transferred to the outside air were determined. The research shows that the system allows increasing the supply air temperature by 3 K to 12 K. The total heat flowrates exchanged between reach up to 400 W, with an average air velocity of approx. 0.4 m/s.

The presented work is part of the project no.POIR.01.01.01-00-1004/20 entitled „Research and development works of a energy-efficient room comfort improvement kit” implemented under Measure 1.1 R&D projects of enterprises Sub-measure 1.1.1 Industrial research and development carried out by the enterprises of the Smart Growth Operational Programme 2014-2020 co-financed by the European Regional Development Fund.

Keywords:

heat recovery, accumulative heat exchangers, ventilation

A QUANTITATIVE STUDY OF MANNITOL AND SORBITOL IN LEAVES OF FOUR CULTIVATED COTONEASTER SPECIES

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A few words about the author(s):

Ph.D. students in pharmaceutical and life sciences, research is focused on the use of plants in acne and the adaptation of plants to grow in heavy metal contaminated areas.

Abstract:

In several studies a correlation between increase of metabolites (including sugars) and abiotic stress tolerance has been proved. Harmful highly reactive chemicals formed from O_2 are produced under abiotic stress. These reactive oxygen species (ROS) can lead to a battery of stress symptoms plants that include chlorosis, disturbances in mineral nutrition and carbohydrate metabolism, osmotic stress, structural and functional disorder in the photosynthetic apparatus, and may strongly reduce biomass production. Mannitol and sorbitol are common sugar alcohols which occur naturally in miscellaneous plant species. Under stress conditions, sorbitol and mannitol can act as osmolytes to maintain leaf cell turgor. Mannitol has also been known as an antioxidant agent protecting against ROS. Leaves of four Cotoneaster species (C. hissaricus, C. nebrodensis, C. hsingshangensis, C. roseus) were collected in the Maria Curie-Skłodowska University (UMCS) Botanical Garden in Lublin. The levels of sorbitol as well as mannitol were determined using Colorimetric Assay Kit. The analysis of sugars showed that the highest amount of mannitol occurred in C. hissaricus, whereas the lowest in C. roseus, as compared to the control plants. Sorbitol occurred most abundantly in C. roseus. These results suggest that analysed sugars may play a role in the adaptation of these plants to growth under drought stress, which was the case during the collecting leaves for analyses.

Keywords:

sorbitol, mannitol, Cotoneaster, Rosaceae

AN EXPERIMENTAL FORM OF RESEARCH-INSPECTION OF BEACH SANDS DEPOSITED AROUND INLAND RESERVOIRS

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A few words about the author(s):

Mgr Sebastian Kuś – Ph.D. student at the Doctoral School of the University of Silesia. Director of the Cultural and Sports Center in Jaworzno. Dr hab. Iwona Jelonek – research associate at the Institute of Earth Sciences of the University of Silesia.

Abstract:

Injuries on the human body occur as a result of a break in the continuity of the skin or, in more severe cases, the underlying tissues. Injuries of this type are quite common on beaches near bodies of water but in most cases they are minor cuts, bruises or abrasions. Injuries to beach-goers while using sandy areas are usually caused by mechanical trauma such as contact between an unprotected body and glass, small sharp wooden, metal or plastic objects. The type of wounds are mostly classified as cuts and punctures or lacerations.

It is the responsibility of the operator of recreational and bathing facilities not only to maintain the water quality according to the Act but also to maintain the sandy beaches that may be present. The sand on the beach without any solid elements guarantees full safety to the users of these complexes.

In many cases it is very difficult for beach administrators to assess sand contamination by just observing the beach surface, and frequent machine cleaning of large areas is very costly.

In order to meet the demand for monitoring the cleanliness of beach sands, an experimental method for optical assessment of the solids content in sands was developed. The method involves taking samples of sands in designated squares and analyzing them optically using a reflected light microscope. As a result of this study, the site administrator receives information about the percentage of individual components found in the sands of the beach under study.

Keywords:

recreational reservoirs, beach, human hazards, sand pollution

CHARACTERISTICS OF CHROMOSOMAL ABERRATIONS

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A few words about the author(s):

Student of biotechnology at Maria Curie-Skłodowska University.

Abstract:

The present thesis is a review article about chromosomal aberrations. Chromosomal aberrations are a type of chromosomal mutation where changes occur in the structure or number of chromosomes. Numerical anomalies include aneuploidy and polyploidy, which result from abnormal distribution of chromosomes during cell division. Majority of them is fatal. Exceptions may be: Down's syndrome, Edwards syndrome, Patau's syndrome, Klinefelter's syndrome or Turner syndrome. Changes in the structure of chromosomes are aberrations that arise as a result of fractures and then joining segments in a different order. Balanced structural aberrations do not cause loss or increase in the amount of genetic material. Unbalanced structural aberrations lead to a loss or excess of genetic material. Examples of structural aberrations are: Cri Du Chat syndrome, Prader-Willi syndrome, Angelman syndrome, chronic myeloid leukemia. There are also post-radiation aberrations that arise at a specific point in chromosomes as a result of direct or indirect action of ionizing radiation.

Keywords:

chromosomal aberrations, mutation, chromosomes

CLICK CHEMISTRY AS A TOOL FOR THE SYNTHESIS OF NEW CAFFEINE DERIVATIVES

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A few words about the author(s):

Our research group from the Faculty of Chemistry is focused on the modification of natural origins compounds, mainly alkaloids.

Abstract:

Caffeine is one of the most popular substances globally, but its stimulating effect is one of the many properties it has. This article briefly describes the caffeine and phthalimide molecules and shows the click chemistry methodology of synthesis new caffeine analogs bering phthalimide moieties.

Keywords:

caffeine, phthalimide, click chemistry, triazoles

MODELING OF THE POLYMERIZATION OF FOUR MONOMERS

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A few words about the author(s):

Filip Rękas is a student at Rzeszów University of Technology.

Abstract:

Polymerization is the process by which many monomer molecules join together by chemical reactions. The composition of the resulting polymer can vary depending on the reaction substrates used. When the polymerization process is carried out in the presence of two, three, four types of monomers, the reasulting polymer is called copolymer, terpolymer and caterpolymer respectively.

The above types of polymers can be obtained by step-growth polyaddition processes. The addition process begins with a chemical reaction of two functional groups belonging to the reacting monomer molecules to form a chemical bond between them. A dimer is formed. The functional groups of the resulting dimer can react with a new monomer molecule or other dimer molecule to form a trimer or tetramer. Further polyaddition reactions lead to the formation of molecules characterized by a high degree of polymerization - macromolecules.

In this study, the process of four-component polymerization was investigated. For this purpose, a model and an algorithm of the process were proposed. Next, the simulations based on the algorithm were performed. The influence of different values of reaction rate constants on the distribution of mers in the polymer chains in batch and semibatch process were studied. Moreover, the influence of these factors on the values of the following parameters was analyzed: number-average degree of polymerization, weight-average degree of polymerization and the dispersion index.

Keywords:

modeling of polymerization, Monte Carlo method

ABSTRACTS OF

POSTERS

TECHNICAL AND NATURAL SCIENCES

METHOD OF REVIEWING THE LITERATURE ON THE MANAGEMENT OF THE DESIGN PROCESS IN HISTORIC BUILDINGS

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A few words about the author(s):

Author is Ph.D. student in Cracow University of Technology in Faculty of Architecture. The area of author's interests is design process within historic buildings.

Abstract:

Architectural design of historic buildings regarding changes in their form, function or structure is a complex process due to numerous conditions relating to its valuable historical heritage. In addition, numerous actors play an important role in the design process. In the conference presentation, the author attempts to define the modern state of scientific knowledge on various aspects of managing the design process in historic buildings. To achieve the goal it has been assumed to divide the review research into 3 stages. In the first step, the most valuable databases will be selected for further analysis (e.g. science direct, scopus, web of science). Secondly, an appropriate set of keywords will be chosen. These keywords, proposed during the preliminary research, will become the basis for advanced database searches. In the third step, the principle of composing groups of keywords will be proposed. The use of these groups will allow to collect the maximum set of scientific articles related to the main topic of dissertation. These three steps will enable further systematization of the collected literature. In this process, the articles concerning simultaneously the design process in architecture, changes to historic buildings, and the management of the design process will play a key role in further research. Above method is to become a solid foundation for further research concerning the design process in historical buildings and its management.

Keywords:

method of reviewing the literature on the management of the design process in historic buildings

SYNTHETIC LETHALITY OF MELANOMA CELLS INDUCED BY HOMOLOGOUS RECOMBINATION REPAIR PROTEINS INHIBITION

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A few words about the author(s):

I am 4th year Ph.D. student working under the supervision of Prof. dr hab. Tomasz Śliwiński and Prof. dr hab. Tomasz Skorski. My Ph.D. research focuses on exploiting genetic concepts such as synthetic lethality to identify new approaches to treating cancer.

Abstract:

One of the hallmarks of cancer cells is their genetic instability which might lead to increased generation of mutations in their genomes. For that reason, there is an increased risk that loss of function mutations will arise in genes whose products are a part of mechanisms crucial for cell survival, e.g. DNA repair systems. Targeting DSB repair mechanisms with specific inhibitors could potentially sensitize cancer cells to the toxic effect of DSBs.Unique features of tumours that can be exploited by targeted therapies are a key focus of current cancer research. One such approach is known as synthetic lethality screening, which involves searching for genetic interactions of two mutations whereby the presence of either mutation alone has no effect on cell viability but the combination of the two mutations results in cell death. PARP1 exerts an important impact on DSB repair as it binds to both single- and double- strand breaks. PARP1 inhibitors might be highly effective drugs triggering synthetic lethality in patients whose tumors have germline or somatic defects in DNA repair genes. We hypothesized that PARP1-dependent synthetic lethality could be induced in melanoma cells displaying downregulation of DSB repair genes. We observed that PARP1 inhibitor BMN sensitized melanomas with reduced expression of DNA ligase 4 (LIG4) to an alkylating agent dacarbazine (DTIC) treatment in vitro, while normal melanocytes remained intact.

Keywords:

synthetic lethality, anticancer therapy, PARP inhibitors, DNA repair, melanoma

TISSUE CULTURES AS A WAY OF PRESERVING PLANT SPECIES

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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:

Plant tissue cultures grown under sterile conditions are a common technique used in laboratories to maintain plants species. Wide variety of conditions such as sterile culture environment, an appropriate culture medium, and incubation conditions are key elements for ensuring the plants' lush growth and keeping their tissues in a perfect condition for future applications. The material introduced in this way can be stored for a long time and constitute a gene bank or successively multiplied to increase the number of copies which can be intended for trade or be returned to natural habitats in order to restore endangered species. Plants in those cultures due to their incredibly fast grow rate can be a source of spontaneous mutation or those genetic changes can be caused by aimed genetic manipulation what create a great field of research on plants' genes.

Keywords:

plants, in vitro, tissue cultures, species

NANOPARTICLES VS BACTERIA – HOW DO THEY TOLERATE EACH OTHER?

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The authors conduct research in the field of broadly understood biology at the Institute of Biology (WULS-SGGW). Particular interests relate to nanobiotechnology and its more detailed components – various types of nanoparticles.

Abstract:

Nowadays, bacterial resistance is one of the most popular threats. What is more, bacteria become more and more resistant due to features which are easily moved between different individuals. Overuse of antibiotics, as well as unintended usage provide antibiotics to be insufficient. Finding new possibilities to cure bacterial infections are, therefore, crucial for health of human society. Many solutions are attributed to nanobiotechnology and nanoparticles on which that branch of science is based. However, if new antibacterial solutions were discovered, there would be a lot of features that must necessarily be considered. Each nanomaterial is characterized by a number of properties on which its functioning will depend, including size, stability, functionalization, surface charge, chemical composition. From bacterial side – the size, metabolic rate, type and species of bacteria are also characteristics that must be considered in order to select the agents manufactured accordingly. For that reason, combination of nanoparticles and bacteria cells is advanced issue requiring mutual consideration.

Keywords:

nanoparticles, bacteria, antibacterial solutions

ANTIBIOFILM PROPERTIES OF NANOPARTICLES

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Abstract:

Biofilm is a complex multicellular community created by variety of microorganisms. During creation of the structure, cells embedded within an extracellular polymeric matrix adhere to the surface. Such a form of biofilm enables microorganisms to live even in unfavorable living condition, so that they can survive in hostile environment due to impenetrable polymeric matrix. Many different factors influence the formation of biofilm – environment, species or surface properties. For that reason, formation process of biofilm is difficult to control. As long as biofilm is created on non-useful areas, it does not pose problem. The real threat begins, when that complex structure adheres to commonly used surfaces of products – to cups, tableware or medical devices like catheter. One of the effective solutions which is able to combat biofilm is nanobiotechnology. It is believed that small-sized nanoparticles are able to penetrate extracellular polymeric matrix and act on cells located inside. However, antibacterial and antibiofilm properties of nanoparticles depend on many characteristics that they have such as size, colloidal stability, surface functionalization etc. Taking into consideration lots of facts which are required to be examined, it is especially important to conduct studies that in the future will enable to produce effective agents to combat pathogenic biofilm structure.

Keywords:

biofilm, bacteria, nanoparticles

HYBRID SYSTEM BASED ON PLATINUM NANOSTRUCTURES AS AN EFFECTIVE ELECTROCATALYST FOR HYDRAZINE OXIDATION REACTION

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Abstract:

There is a group of substances that are highly toxic to humans and the environment. One of such substances is hydrazine. It belongs to the poisonous and carcinogenic compounds. However, hydrazine is an important compound in the chemical industry. It is widely used as a catalyst, emulsifier, corrosion inhibitor and antioxidant, reducing agent, pesticide, plant growth regulator and pharmaceutical. Therefore, the electrooxidation of hydrazine is a reaction of practical importance (fuel cells), and the detection of traces of hydrazine is very important in environmental and biological analysis.

The construction of hybrid systems in which nanoparticles of noble metals like platinum, are present, is of significant importance in electrocatalysis. As part of this research, a hybrid material was obtained based on platinum nanostructures, which was used as an effective electrocatalyst for the hydrazine oxidation reaction. It can be concluded that platinum nanoparticles significantly improve the electrocatalytic properties of hydrazine oxidation. All electrochemical tests during the conducted research were performed with the use of cyclic voltammetry.

The use of the said material as a catalyst during the electrooxidation of the toxic compound, which is hydrazine, may be of significant importance in the construction of chemical power sources like fuel cells or be used in the production of matrix for chemical sensors.

Keywords:

platinum nanoparticles, electrocatalyst, hydrazine oxidation

THE ANATOMY OF LANGUAGE

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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:

There are several areas of the brain that play a critical role in speech and language e.g. Broca's and Wernicke's areas. Damage to these areas can lead to many irreversible consequences.

Keywords:

language center, Broca's area, Wernicke's area

EFFECT OF MICROSTRUCTURE AND TEXTURE ON FORMABILITY OF Mg-Sn-BASED SHEETS

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Ph.D. in the field of Material Science and Engineering specialized in the light metal alloys (magnesium, aluminum and titanium). Author of 12 articles in peer-reviewed international journals with a high Impact Factor.

Abstract:

One of the main reasons of the limited usage of wrought Mg alloys in automotive or aerospace industries is their low ductility. Existing evidences in the literature show that Mg alloys formability can be controlled by microstructural and textural changes. The rolling process of Mg sheets results in the formation of a strong basal texture which limits their forming capability in further processing steps. Since the plasticity of Mg sheets is strongly affected by the basal texture intensity, it can be improved by its weakening. Moreover, it has been shown that grain refinement of Mg alloys can cause a significant enhancement of their formability which results from the increased activity of prismatic and pyramidal slip with lower grain sizes at the expense of basal slip dominating for coarse-grained Mg alloys. The weakening of basal texture as well as significant grain refinement can be obtained by introducing shear deformation during rolling process. Differential speed rolling (DSR) is a method that allows to introduce such shear deformation by a differentiation of rotation speed of rolls and thus, it has been adopted for plastic deformation of the analyzed Mg-Sn-based alloys. The essence of this work is to present the effect of microstructure and texture on formability of a newly developed Mg-Sn-based alloys processed by DSR method at different processing parameters.

Keywords:

Mg alloys, rolling, microstructure, texture, formability

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