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TABLE OF CONTENTS

HUMANITIES SCIENCES PRESENTATIONS

Mateusz Helminiak IS DIALECT TRENDY? A FEW WORDS ON GERMANISMS AND THE LANGUAGE USE OF YOUNG PEOPLE IN BYDGOSZCZ	09
Ewa Piorun A SOCIOLINGUISTIC PORTRAIT OF A CHINESE INTERNET USER IN THE YEARS 2021 – 2022: AN ANALYSIS OF INTERNET SLANG EXPRESSIONS	10
Karolina Worku NEW MEDIA, NEW AUDIENCES. HOW THE JOURNALIST – AUDIENCE RELATIONSHIP IS CHANGING IN THE DIGITAL ERA?	11
Martyna Błazińska THE PHENOMENON OF BURNOUT AMONG TEACHERS	12
Julia Chudzik, Łukasz Potyrała, Weronika Urbańska, Anastazja Adamska, Ewelina Suska THE IMPACT OF PARTICIPATION IN THE “GREEN HEALING” PROGRAM ON ATTENDEES	13
Ewa Ficek, Beata Duda MARKERS OF COMMUNITY IN SELECTED DISCOURSES OF MEMORY ABOUT THE WARSAW UPRISING. RESEARCH PROJECT	14
Marta Kazimierczak-Kołodziejczyk THE AUTHORITY IN A MOVING WORLD – TEACHER, STUDENT AND GENERATION Z.	15
Izabela Kordiak GREEN PROMISES, GREY PRACTICES: THE MISMATCH BEHIND ECO-MESSAGING	16
Kamil Kulas REDEFINING CORPORATE STRATEGY THROUGH ENVIRONMENTAL TRANSPARENCY	17
Katarzyna Kwaśniewska ALGORITHMIC RESPONSIBILITY AS THE FOURTH PILLAR OF CSR: THE RACI AI GOVERNANCE FRAMEWORK FOR PUBLIC TRUST INSTITUTIONS	18
Łukasz Potyrała, Weronika Urbańska, Julia Chudzik THE IMPACT OF PHYSICAL ACTIVITY ON THE QUALITY OF OFFICE WORK	19
Julia Chudzik, Weronika Urbańska, Łukasz Potyrała, Anastazja Adamska, Ewelina Suska EVALUATION OF THE ORGANIZATION OF THE “GREEN HEALING” PROGRAM	20
Joanna Zacharska SELECTED ISSUES OF SOCIAL PATHOLOGY AND PREVENTION – TERROSISS	21
Iwona Izdebska TYPES OF STOCK EXCHANGES IN THE GLOBAL ECONOMY	22



HUMANITIES SCIENCES POSTERS

Zuzanna Kędra THE HERO MYTH AND PUBLIC SECURITY – AN ANALYSIS OF UNIFORMED SERVICE CHARACTERS IN LITERATURE AND FILM	24
Sylwia Kołakowska DIVERSIFICATION OF A CURRENCY PORTFOLIO THROUGH COMPLEX NETWORK ANALYSIS	25
Kornelia Kordiak FROM CHANCE TO BREAKTHROUGH: THE ROLE OF RANDOM EVENTS IN LIFE TRANSFORMATION	26
Jakub Krawiec URBAN SURVEILLANCE SYSTEMS USING AI – EFFECTIVENESS AND LIMITATIONS IN ENSURING PUBLIC SAFETY	27
Barbara Krok DISINFORMATION AS A TOOL OF HYBRID WARFARE – CHALLENGES TO NATIONAL INTERNAL SECURITY	28
Gabriela Krzeczek NEGOTIATION TECHNIQUES – THE ART OF REACHING AGREEMENT	29
Weronika Kurnyta THE ROLE OF UNIFORMED SERVICES IN ENSURING INTERNAL SECURITY	30
Gabriela Rękas CYBERSECURITY IN THE ERA OF MOBILE BANKING: EMERGING THREATS AND DEFENSE STRATEGIES	31
Krzysztof Stączek AI AMONG US	32
Patrycja Telega GREENWASHING IN SUSTAINABLE FINANCE	33

MEDICAL SCIENCES PRESENTATIONS

Karolina Cieślińska, Katarzyna Dutkowska COMPARISON OF THE EFFECTS OF OCCLUSION TRAINING AND ENDURANCE TRAINING ON MUSCLE STRENGTH AND MASS IN WOMEN	35
Szymon Konczyński, Paulina Malon, Anna Bych RARE BUT SERIOUS – CORNEAL PERFORATION AS AN UNEXPECTED COMPLICATION OF BLEPHAROPLASTY	36
Katarzyna Kulik, Hanna Sakiewicz, Oliwia Goldsztejn INCIDENCE OF CLOSTRIDIUM TETANI INFECTIONS IN POLISH POPULATION – WHETHER WE SHOULD BE WORRIED?	37
Tomasz Ozimek HIF-2A INHIBITORS IN CLEAR CELL RENAL CELL CARCINOMA – NEW PERSPECTIVES IN TARGETED THERAPY	38
Klaudiusz Rogula, Dominika Sadlik, Krzysztof Świądrych TICKS AND BABESIOSIS – DO WE HAVE ANYTHING TO WORRY ABOUT?	39



Hanna Sakiewicz, Katarzyna Kulik, Dominika Sadlik ANALYSIS OF POTENTIAL RISK FACTORS OF VIRAL INFECTIONS IN BEAUTY SALONS	40
Ida Szataniak, Mateusz K. Holda, Jakub Batko, Agata Krawczyk-Ozóg ATRIAL TRICUSPID ANNULAR DISJUNCTION: A COMPREHENSIVE MORPHOMETRIC ANALYSIS ..	41
Damian Twardak, Paulina Antosik, Klaudia Bonowicz, Dominika Jerka, Dariusz Grzanka, Maciej Gagat PROGNOSTIC SIGNIFICANCE OF IL-6 AND RBP4 IN COLORECTAL CANCER: IN SILICO STUDY ON GENE EXPRESSION AND SURVIVAL OUTCOMES	42
Maja Ciecierska, Anna Czajkowska-Żelazko THE RELATIONSHIP BETWEEN BLOOD GROUP SYSTEMS AND SUSCEPTIBILITY TO INFECTIONS, WITH PARTICULAR REFERENCE TO SARS-COV-2	43
Aleksandra Florek CARCINOGENIC FACTORS IN THE LIVING AND WORKING ENVIRONMENT – NURSES IN CANCER PREVENTION	44
Weronika Grzesiak, Michał Kostro, Aleksandra Malinowska, Jakub Sadowski MODERN APPROACH TO COMPRESSION THERAPY IN VENOUS AND LYMPHATIC DISORDERS	45
Ewelina Kamińska PODIATRIC PROBLEMS	46
Krystian Kansik, Michalina Łosoń, Zofia Klich, Daria Kopaniszen, Samanta Ostrowska, Sylvia Otulak, Krystian Szczygiel QUALIFICATION FOR NEUROSURGICAL PROCEDURES IN THE MOST COMMON NEUROLOGICAL DISORDERS	47
Zofia Klich, Daria Kopaniszen, Krystian Szczygiel, Sylwia Otulak, Michalina Łosoń, Samanta Ostrowska, Krystian Kansik UNRAVELING ENDOMETRIOSIS: FROM RETROGRADE MENSTRUATION TO GENETIC, HORMONAL AND IMMUNE FACTORS	48
Daria Kopaniszen, Michalina Łosoń, Zofia Klich, Samanta Ostrowska, Sylwia Otulak, Krystian Szczygiel, Krystian Kansik WILSON’S DISEASE: GENETIC BASIS, CLINICAL MANIFESTATIONS, MODERN DIAGNOSTIC AND THERAPEUTIC APPROACHES	49
Michał Kostro, Weronika Grzesiak, Aleksandra Malinowska, Jakub Sadowski VASCULAR ACCESS IN CORONARY INTERVENTIONS: A REVIEW OF CURRENT CLINICAL PRACTICES AND COMPLICATIONS	50
Natalia Kubryń, Alicja Nowaczyk, Łukasz Fijałkowski IN SILICO EVALUATION OF THE PHARMACOKINETIC AND TOXICOLOGICAL PROPERTIES OF PROTAC COMPOUNDS WITH POTENTIAL APPLICATION IN NEURODEGENERATIVE DISEASES ...	51
Michalina Łosoń, Zofia Klich, Daria Kopaniszen, Samanta Ostrowska, Sylwia Otulak, Krystian Szczygiel, Krystian Kansik PREVENTION OF SEVERE RSV INFECTIONS IN INFANTS - THE CLINICAL IMPACT OF MATERNAL IMMUNIZATION AND CLINICAL CHALLENGES	52
Aleksandra Malinowska, Michał Kostro, Weronika Grzesiak, Jakub Sadowski HOSPITAL-ACQUIRED INFECTIONS: EPIDEMIOLOGY, RISK FACTORS, AND RESERVOIRS	53
Samanta Ostrowska, Sylwia Otulak, Michalina Łosoń, Zofia Klich, Daria Kopaniszen, Krystian Szczygiel, Krystian Kansik ARTIFICIAL INTELLIGENCE IN MEDICINE: THE KEY TO NEW OPPORTUNITIES	54



Sylvia Otulak, Michalina Łosoń, Krystian Szczygiel, Zofia Klich, Daria Kopaniszen, Samanta Ostrowska, Krystian Kansik	
CURRENT STATE OF KNOWLEDGE ABOUT ALPORT SYNDROME	55
Janina Rzeszot	
PHYSIOTHERAPY AS A POSITIVE WAY TO SPEND FREE TIME FOR OLDER PEOPLE	56
Krystian Szczygiel, Sylvia Otulak, Zofia Klich, Krystian Kansik, Samanta Ostrowska, Michalina Łosoń, Daria Kopaniszen	
HUMAN PAPILLOMAVIRUS (HPV) – EPIDEMIOLOGY, DIAGNOSIS, PREVENTION AND TREATMENT PROSPECTS	57
Marcelina Wojtanowska	
OBESITY AND MALNUTRITION IN CHILDREN – THE ROLE OF THE NURSE IN PREVENTION AND EARLY DETECTION OF NUTRITIONAL DISORDERS	58
Joanna Zych	
INSOMNIA AS A CIVILIZATIONAL DISEASE – A REVIEW OF PHARMACOLOGICAL AND NON-PHARMACOLOGICAL TREATMENT METHODS	59

MEDICAL SCIENCES POSTERS

Martyna Franecka	
DIASTASIS RECTI ABDOMINIS AND MOTOR DEVELOPMENT IN INFANTS	61
Justyna Spirczak-Mazepa	
ANDROGENETIC ALOPECIA (AGA): AN INTEGRATED APPROACH FROM DIAGNOSIS TO PSYCHOSOCIAL IMPACT	62

TECHNICAL AND NATURAL SCIENCES PRESENTATIONS

Wojciech Aniol	
ARTIFICIAL INTELLIGENCE AND THE FUTURE OF SCIENTIFIC DISCOVERY: PARTNER, TOOL, OR CHALLENGER?	64
Adrian Czerwiński	
CRYPTOSPORIDIOSIS AS A PUBLIC HEALTH THREAT – A COMMON CHALLENGE FOR MEDICINE AND VETERINARY MEDICINE	65
Klaudia Sowińska	
INATREQ™ ACTIVE – A NEW ACTIVE SUBSTANCE	66
Daria Sporinapti	
THE ROLE OF NUTRITION IN THE MANAGEMENT OF CARDIOVASCULAR DISEASES IN COMPANION ANIMALS: A REVIEW	67
Daria Sporinapti	
PATENT DUCTUS ARTERIOSUS (PDA): CURRENT SURGICAL TREATMENT OPTIONS AND APPROACHES – A LITERATURE REVIEW	68
Hubert Szczepanik	
GNSS SEISMOLOGY USING OBSERVATIONS FROM LOW-COST RECEIVERS	69
Weronika Szewczyk	
PARADOX AS THE LIMIT OF KNOWLEDGE: FROM CONTRADICTION TO STRUCTURE	70



Adrian Czerwiński DETECTING THE INVISIBLE ENEMY – MODERN DIAGNOSTIC METHODS FOR CRYPTOSPORIDIUM SPP.	71
Zuzanna Klekocińska AIR POLLUTION – ANALYSIS OF SURVEY RESULTS	72
Małgorzata Kowalczyk FOOT AND MOUTH DISEASE (FMD)	73
Amanda Leda, Patrycja Plócienniczak-Bywalska, Grzegorz Milczarek, Tomasz Rębiś ELECTROCHEMICAL DEPOSITION OF 3-METHOXYCATECHOL AND CATECHOL ONTO CARBON NANOTUBES FUNCTIONALIZED WITH 1-AMINOPYRENE FOR IMPROVED ELECTROCHEMICAL SENSING OF NADH	74
Aneta Lipkiewicz PROBIOTIC SUGAR-FREE ICE CREAM: THE SYNERGY OF FIBER AND XYLITOL	75
Wiktoria Muszak FELINE LEUKEMIA VIRUS	76
Karolina Pniaczek BRUCELLA SPP. – AN INTRACELLULAR SPECIALIST: A MICROBIOLOGICAL PORTRAIT OF THE PATHOGEN	77
Patryk Zając GENERATIVE ALGORITHMS IN MUSIC AND AMBIENT SOUND SYNTHESIS	78

TECHNICAL AND NATURAL SCIENCES POSTERS

Adrian Czerwiński CRYPTOSPORIDIUM PARVUM: CURRENT TREATMENTS, CONTROL STRATEGIES, AND THE FUTURE OF VACCINATION – INSIGHTS FROM HERDS IN CENTRAL POLAND	80
Amanda Leda, Patrycja Plócienniczak-Bywalska, Grzegorz Milczarek, Tomasz Rębiś ENZYMATIC GLUCOSE BIOSENSOR BASED ON GC/MWCNT/1-AP/3-MCAT/GDH	81
Gabriela Mądrzyk, Grażyna Majkowska-Skrobek, Zuzanna Drulis-Kawa CHARACTERIZATION OF A LYTIC WEBERVIRUS PHAGE ACTIVE AGAINST KLEBSIELLA PNEUMONIAE SEROTYPES K2 AND K13	82
Dominik Mech A COMPREHENSIVE EDUCATIONAL FRAMEWORK FOR STRATEGIC NOISE MAPPING	83
Wioletta Olechwirowicz FOREST FIRES – NATURAL PROCESS OR GROWING THREAT?	84
Michał Szurgociński, Dominika Wachura, Wiktoria Malinowska, Marlena Musik MICROENCAPSULATION OF VEGETABLE OILS	85
Patryk Zając AFFECTIVE COMPUTING IN GAMES: RECOGNIZING PLAYER EMOTIONS	86

ABSTRACTS OF
PRESENTATIONS



**HUMANITIES
SCIENCES**



IS DIALECT TRENDY? A FEW WORDS ON GERMANISMS AND THE LANGUAGE USE OF YOUNG PEOPLE IN BYDGOSZCZ

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A few words about the author(s):

A 2nd year master's student in Applied Linguistics (English-German). Actively engaged in academic and scientific life at his university (e.g. participant in conferences). Enthusiast of the German and English languages with a passion for teaching.

Abstract:

The contemporary language of young people is saturated with anglicisms, colloquialisms, abbreviations, and vulgarisms. At the same time, many older expressions and regionalisms are gradually becoming archaic or even falling into complete oblivion. In light of these changes, one may ask, if the dialect can still be considered "trendy" today, or is it merely a remnant of linguistic heritage?

This presentation explores the language use of young people in Bydgoszcz, focusing on Germanisms typical of the local dialect. The study aims to assess the level of awareness and actual usage of these terms in modern youth communication.

The research was conducted among first- and second-year students of Applied Linguistics (English-German) at Kazimierz Wielki University in Bydgoszcz. Participants were asked to explain selected Germanisms, indicate their source of familiarity, describe usage contexts, and provide other known examples.

The study's findings shed light on the linguistic awareness of young people in Bydgoszcz and explore whether elements of the local dialect – despite the passage of time and the influence of linguistic globalization – still play a role in their everyday speech or have become mere cultural curiosities. The presentation also highlights the potential of regional language varieties as markers of local identity and symbols of belonging.

Keywords:

Germanism; the language of young people; local Bydgoszcz dialect; youth language; regionalism



A SOCIOLINGUISTIC PORTRAIT OF A CHINESE INTERNET USER IN THE YEARS 2021 – 2022: AN ANALYSIS OF INTERNET SLANG EXPRESSIONS

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A few words about the author(s):

I am a doctoral student at the Faculty of Linguistics of Kazimierz Wielki University in Bydgoszcz, Poland and a researcher of Mandarin Chinese. My research interests include Mandarin phonetics, slang and Internet language.

Abstract:

The contemporary language of the Chinese Internet is a field of dynamic linguistic experimentation, in which slang serves not only as a means of communication but also as a tool for expression, identity formation, and linguistic commentary on present-day realities. Due to its transient nature and a wide array of creative forms it encompasses, slang remains a compelling object of linguistic inquiry. The study analyzes 158 slang expressions circulating in the Chinese online space during 2021–2022 – a period marked by pandemic-related tensions, social transformation, and generational shifts. The aim of the study is to construct a map of semantic categories and to draw a sociolinguistic portrait of the Chinese Internet user during the period in question. Each expression is analyzed according to six criteria: functional meaning, pragmatic function, emotional connotation, rhetorical style, linguistic convention, and social context. The semantic categories identified include: emotions, generational identity, relationships, aesthetics, the pandemic, and digital culture, among others. What emerges is a portrait of the Internet user as a socially conscious individual, tired of ongoing pressure and in search of meaning and connection in the digital realm.

Keywords:

Chinese slang; Internet language; semantic map; sociolect; sociolinguistics



NEW MEDIA, NEW AUDIENCES. HOW THE JOURNALIST – AUDIENCE RELATIONSHIP IS CHANGING IN THE DIGITAL ERA?

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A few words about the author(s):

Karolina Worku is a 2nd year journalism student at Cardinal Stefan Wyszyński University, interested in media-society relations, digital journalism, and how new technologies shape communication.

Abstract:

The development of new media has radically transformed the way audiences consume journalistic content. The traditional, one-way model of communication, controlled by editorial teams, has been replaced by an interactive system where users are both recipients and content creators. In the digital era, journalists must not only provide reliable information but also compete for audience attention with influencers, algorithms, and viral content. This paper analyzes how the journalist's role is evolving in the context of message personalization, instant feedback, and the growing expectations for transparency and engagement. The issue of trust-building in an environment dominated by disinformation and polarization will also be addressed. The main aim of the presentation is to explore whether today's audience is shaping journalism, or merely adapting to its changing forms.

Keywords:

digital journalism; media transformation; journalist – audience relationship; audience engagement



THE PHENOMENON OF BURNOUT AMONG TEACHERS

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A few words about the author(s):

A student of pedagogy and psychology, she wrote her bachelor's thesis on the phenomenon of burnout and presents selected research findings in her presentation. She is particularly interested in child and clinical psychology.

Abstract:

The presentation focuses on the phenomenon of teacher burnout. It outlines the main causes, symptoms, and consequences of this condition. Selected findings from original research conducted among teachers at various educational levels will be presented. Coping strategies and preventive measures will also be discussed.

Keywords:

teacher burnout; occupational stress; emotional exhaustion; job satisfaction; coping strategies



THE IMPACT OF PARTICIPATION IN THE “GREEN HEALING” PROGRAM ON ATTENDEES

**Julia Chudzik (1), Łukasz Potyrała (1)*, Weronika Urbańska (1),
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Julia Chudzik, Łukasz Potyrała, Weronika Urbańska, and Anastazja Adamska are students at the Poznań University of Economics and Business and members of the “Qualitas” SSC. Ewelina Suska is an expert in sustainable health, ecology and education.

Abstract:

This presentation explores the influence of the “Green Healing” program on participants of workshops and lectures organized by the Poznań City Greenery Authority. The analysis covers changes in knowledge, psychological and physical well-being, as well as the willingness to participate again and apply the acquired information. Attendees emphasized that the program was a valuable addition to their hospital stay and expressed interest in similar events outside the hospital context. The findings indicate that “Green Healing” effectively supports recovery, broadens knowledge, and is positively received by people with diverse professional backgrounds and health experiences.

Keywords:

recovery; well-being; knowledge; workshops; participants



MARKERS OF COMMUNITY IN SELECTED DISCOURSES OF MEMORY ABOUT THE WARSAW UPRISING. RESEARCH PROJECT

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A few words about the author(s):

Ewa Ficek – PhD, academic interests: discourse analysis, corpus linguistics, linguistics of memory. Beata Duda – PhD, academic interests: discourse analysis, corpus linguistics, digital humanities, linguistics of memory.

Abstract:

The presentation will provide a closer look at the research project focused on the characteristics of the text elements that appear in selected discourses of memory about the events of 1944 and that set the boundaries on the "Others", signalling the fact of belonging to the community of "The Ours" (1st person plural of verbs, personal and possessive pronouns such as we, our, terms of collectiveness, etc.). The project's research material consists of three sub-corpora: 1. reminiscent accounts from the Oral History Archive of the Warsaw Uprising Museum 2. the insurgent press (including the "Information Bulletin"), and 3. patriotic songs related to the independence uprising question. The linguistics of memory and linguistic micro-level-analysis (DIMEAN) constitute the theoretical and methodological background of our research; our considerations will also refer to the assumptions and findings of research trends focusing on the category of community.

The preliminary results of the analyses (quantitative and qualitative analyses) of the first sub-corpus, limited to the intratextual plane of discourse, indicate, among others, to the frequent occurrence of the above-mentioned markers within the threads concerning the reminiscencers' fighting past, their patriotic attitude, as well as the fight and war, which is associated with forming of a community identity (cf. the community of experiences, beliefs and memory).

Keywords:

Warsaw Uprising; reminiscent narratives; community; linguistics of memory; linguistic micro-level-analysis



THE AUTHORITY IN A MOVING WORLD – TEACHER, STUDENT AND GENERATION Z

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A few words about the author(s):

The author of the presentation has been studying since 2022 at the Faculty of Social Sciences at Jan Dlugosz University in Czestochowa. Her field of study is preschool and early childhood pedagogy.

Abstract:

Authority is one of the fundamental categories in the process of upbringing and education, fulfilling many roles in interpersonal relations. It is presence fosters the internalisation of values, the strengthening of identity and the formation of socially acceptable attitudes. This paper is a review and attempts to organise contemporary approaches to authority in relation to three perspectives: that of the teacher, that of the student and that of young people belonging to Generation Z.

The author draws attention to the transformations in the perception of the teacher's authority in the context of the transformed role of the school, changing models of communication and the redefinition of the position of the adult in relations with the student. She also discusses the role of authorities in the lives of children and young people, pointing to the importance of both direct personal role models (e.g. parents, educators), as well as indirect models present in the media space.

The author presents Albert Bandura's concept of social learning, according to which the observation of behavioural models is one of the key mechanisms for assimilating norms, attitudes and action patterns.

The paper also addresses the peculiarities of Generation Z, including its digital competences, its criticism of traditional structures and its increasing tendency to seek authority .

Keywords:

authority; role of authority; teacher; social learning theory; generation Z



GREEN PROMISES, GREY PRACTICES: THE MISMATCH BEHIND ECO-MESSAGING

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A few words about the author(s):

Kordiak is a 3rd year student of full-time general academic studies, majoring in management and production engineering at PUEB. She serves as the chairperson of the "Idea design&marketing" academic circle.

Abstract:

Greenwashing, defined as the manipulative communication of alleged environmental benefits of products or organisations, has intensified in response to mounting consumer and investor pressure for responsible business conduct (Delmas & Cuerel Burbano, 2011; Seele & Gatti, 2017). This presentation (i) explains the origins and salience of the phenomenon, (ii) distinguishes greenwashing from genuine green marketing, (iii) identifies prevailing corporate tactics, and (iv) discusses implications for stakeholders. The study relies on a narrative review of literature, EU legal acts, and NGO reports. Findings confirm that greenwashing is an umbrella term covering numerous misleading environmental claims, while EU and member-state regulations on organic production and ecolabelling emerge as pivotal countermeasures. The review also exposes an urgent research need: cataloguing specific pseudo-green practices, developing models of their mechanisms, and estimating their impact on corporate performance and societal welfare. Finally, it underscores the need for stronger oversight (especially mandatory, independent audits and harmonised reporting standards) to shrink the space for deceptive eco-messaging and foster an authentic green transition.

Keywords:

greenwashing; green marketing; eco-messaging; ESG reporting; sustainability



REDEFINING CORPORATE STRATEGY THROUGH ENVIRONMENTAL TRANSPARENCY

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A few words about the author(s):

I have just finished my sixth term of Business and Production Engineering at PUEB. My research focuses on Sustainability, ESG, the Aviation Industry, and International Quality Management and Business.

Abstract:

Environmental transparency is becoming a central pillar of modern corporate strategy. Clear and timely disclosure of environmental impacts enhances risk management, fosters better stakeholder relations, and supports sustainable long-term business performance. As regulatory frameworks such as the EU's Corporate Sustainability Reporting Directive (CSRD), the European Sustainability Reporting Standards (ESRS), and the U.S. SEC Climate Disclosure Rule take effect, organizations are increasingly required to report structured, credible information on their environmental performance.

Five key factors are driving this strategic shift: the growing role of ESG criteria in investment decisions, new regulatory requirements, rising expectations from stakeholders and consumers, the pursuit of competitive advantage, and the need for resilience in the face of environmental risks.

Transparency serves not only to meet compliance obligations but also to stimulate innovation, enhance governance, and improve access to sustainable finance. The aerospace sector offers a compelling example of how environmental reporting can become a strategic asset in industries with significant environmental footprints.

Integrating transparency into corporate strategy helps build trust, align with external expectations, and strengthen overall organizational performance.

Keywords:

ESG; CSR; sustainability; ESRS; reporting



ALGORITHMIC RESPONSIBILITY AS THE FOURTH PILLAR OF CSR: THE RACIAI GOVERNANCE FRAMEWORK FOR PUBLIC TRUST INSTITUTIONS

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Katarzyna Kwaśniewska is a PhD student at the University of Economics in Katowice researching ethical and organisational aspects of AI medical imaging, with emphasis on patient-centred communication of diagnostic results.

Abstract:

High-risk AI is redistributing accountability in hospitals, agencies and universities, while the classical CSR triad overlooks algorithmic hazards. A fourth pillar (algorithmic responsibility) is therefore proposed and operationalised through RACIAI, a matrix that assigns the roles Responsible, Accountable, Consulted and Informed to every phase of the AI life-cycle. Twenty-three semi-structured interviews in four Polish hospitals using diagnostic AI were analysed with Gioia coding, revealing five gaps: model opacity (92%), weak appeal pathways (78%), low digital skills (78%), absent stakeholder disclosure (65%) and responsibility drift (57%). Mapping these gaps onto the matrix yielded practical remedies (public model cards, AI clauses in consent forms, role-anchored incident tickets and annual multi-stakeholder audits) judged feasible by staff. The findings suggest that explicit role assignment can curb organisational risks missed by technical audits and turn the EU AI Act and ISO/IEC 42001 into daily practice. Further multi-sector studies are needed to verify long-term effects on safety, fairness and public trust.

Keywords:

algorithmic responsibility; AI governance; Corporate Social Responsibility; RACI-AI; EU AI Act



THE IMPACT OF PHYSICAL ACTIVITY ON THE QUALITY OF OFFICE WORK

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A few words about the author(s):

Julia Chudzik, Weronika Urbańska and Łukasz Potyrała are Poznań University of Economics and Business students and also members of Students Science Club „Qualitas”.

Abstract:

This article investigates how regular physical activity affects the quality of office work. A survey of 57 office employees found that those who exercise regularly are better at solving problems, making decisions, planning tasks, and meeting deadlines. Regular physical activity also boosts motivation and stress resilience at work. The study shows that both the frequency and duration of exercise matter – longer and more consistent activity brings the greatest benefits. These findings support the idea that integrating physical activity into daily routines not only improves health but also enhances job performance and satisfaction.

Keywords:

physical activity – in this case it is regular, planned and consciously undertaken; physically inactive – people that do not engage in physical activity



EVALUATION OF THE ORGANIZATION OF THE “GREEN HEALING” PROGRAM

**Julia Chudzik (1), Weronika Urbańska (1), Łukasz Potyrała (1)*,
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A few words about the author(s):

Julia Chudzik, Łukasz Potyrała, Weronika Urbańska, and Anastazja Adamska are students at the Poznań University of Economics and Business and members of the “Qualitas” SSC. Ewelina Suska is an expert in sustainable health, ecology and education.

Abstract:

This presentation focuses on the organizational assessment of the “Green Healing” program based on participant feedback. Key aspects analyzed include program duration, venue, delivery format, topic attractiveness, clarity of communication, and willingness to recommend the program to others. Participants appreciated both the organization and the engaging, clear format of the sessions. The program was recognized as valuable support in the recovery process, meeting the needs of various participant groups. The conclusions confirm that “Green Healing” represents a well-organized and effective model of patient support.

Keywords:

effective; assessment; feedback; valuable; model



SELECTED ISSUES OF SOCIAL PATHOLOGY AND PREVENTION – TERROSIS

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A few words about the author(s):

I am a 2nd year social work student. I chose this direction out of the need of my heart – I have always been accompanied by a desire to help others. Working with people gives me satisfaction and a sense of meaning.

Abstract:

The work deals with terrorism, its types, the scale of the phenomenon and the consequences of its collision with civilization.

Keywords:

terrorism; prevention; civilization; democracy; assimilation



TYPES OF STOCK EXCHANGES IN THE GLOBAL ECONOMY

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A few words about the author(s):

Student of Economics (Accounting and Taxation) at Jan Grodek State University in Sanok. Interested in practical aspects of finance and taxation.

Abstract:

The presentation explores the role and types of stock exchanges in the global economy. Stock exchanges are defined as institutions enabling trading in financial assets, including stocks, bonds, futures, commodities, and currencies. The history and evolution of exchanges, their main functions, and their impact on capital flows, globalization, and economic growth are discussed. The classification into securities, commodity, and derivatives exchanges is presented, along with examples of major global markets such as NYSE, LSE, and Warsaw Stock Exchange. The presentation also highlights the influence of technology, cryptocurrencies, and sustainability trends on the future development of stock markets, which increase transparency, efficiency, and accessibility of global financial systems.

Keywords:

stock exchange; global economy; financial markets; technology; cryptocurrencies

ABSTRACTS OF
POSTERS



**HUMANITIES
SCIENCES**



THE HERO MYTH AND PUBLIC SECURITY – AN ANALYSIS OF UNIFORMED SERVICE CHARACTERS IN LITERATURE AND FILM

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A few words about the author(s):

Graduate with a bachelor's degree, about to begin master's studies. Chairperson of the CUSTODIA scientific circle and member of the university senate.

Abstract:

This paper examines how literature and film portray uniformed officers and shape public perceptions of internal security. Through the lens of the "hero myth," media often presents police, military, and emergency services as idealized figures. The analysis focuses on how such portrayals influence societal trust, expectations toward security forces, and the understanding of public safety. Selected cultural examples highlight the gap between fictional narratives and real-world challenges faced by uniformed services.

Keywords:

hero myth; uniformed services; public security; media representation; literature and film



DIVERSIFICATION OF A CURRENCY PORTFOLIO THROUGH COMPLEX NETWORK ANALYSIS

Sylwia Kołakowska

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A few words about the author(s):

Sylwia Kołakowska – Asst. Prof. and Head of the Dept. of Management & Finance at the Inst. of Economics & Security Studies State Univ. of Małopolska. Combines statistical physics and economics, models complex financial networks, leads R&D projects.

Abstract:

Research investigates how tools from complex network analysis can enhance currency portfolio diversification. Based on daily data from 25 currencies over the period 2010–2024, we construct rolling dependency networks using linear correlations and tail dependence measures. Cluster structures, centrality metrics, and bridge nodes are used to develop the Network Diversification Score (NDS), introduced as a regulatory constraint in mean–variance portfolio optimization. The results show that NDS-augmented portfolios experience significantly lower tail losses while maintaining return profiles similar to traditional approaches. Additionally, a narrowing of network breadth emerges as a reliable early signal of declining diversification potential ahead of market regime shifts. These findings support the practical utility of network-based methods in currency risk management.

Keywords:

currency; MST; diversification; NDS



FROM CHANCE TO BREAKTHROUGH: THE ROLE OF RANDOM EVENTS IN LIFE TRANSFORMATION

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A few words about the author(s):

Kornelia Kordiak – educator and andragogue. She studies how childhood memories influence adult relationships, family roles, and communication, focusing on biographical learning and the creation of emotional micro-worlds within families.

Abstract:

In many lives, key transformations arise not from long-term planning but from seemingly random events – unexpected encounters, tentative decisions, or crisis situations. This article examines the mechanisms through which such unforeseen occurrences become pivotal moments leading to lasting personal, identity, or career transformations. Drawing on literature from narrative psychology, chaos theory in personal development (Valsiner, Kegan), and Planned Happenstance Theory (Krumboltz), a model of change initiated by chance events is presented. The role of individual traits (such as openness, reflectiveness, and psychological resilience) is emphasized as critical for leveraging chance as a developmental impulse. Case analyses illustrate that it is not the event itself but its interpretation and readiness to change that determine its transformative potential. The findings have implications for personal development and practices in education, psychotherapy, and career counseling, highlighting how randomness can be a crucial factor supporting self-realization and decision-making.

Keywords:

random events; life transformation; Planned Happenstance; personal development; psychological resilience



URBAN SURVEILLANCE SYSTEMS USING AI – EFFECTIVENESS AND LIMITATIONS IN ENSURING PUBLIC SAFETY

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A few words about the author(s):

Student of Internal Security at the Jan Grodek State University in Sanok.

Abstract:

The development of artificial intelligence (AI) technology significantly impacts the capabilities of public space surveillance systems. This paper discusses the application of AI in the analysis of footage from city cameras, with particular emphasis on threat detection, facial recognition, and automated incident response. Selected case studies of such systems implemented in European cities are presented, along with their influence on improving safety levels. The paper also addresses technological limitations, citizens' privacy concerns, legal frameworks, and the risk of misuse. The conclusion outlines directions for further development and provides recommendations for the responsible and transparent use of AI in the service of public safety.

Keywords:

artificial intelligence; public space surveillance; facial recognition; threat detection; privacy and legal regulations



DISINFORMATION AS A TOOL OF HYBRID WARFARE – CHALLENGES TO NATIONAL INTERNAL SECURITY

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A few words about the author(s):

Bachelor's student in internal security. Member of the internal security science club.

Abstract:

In the era of dynamic geopolitical and digital transformations, disinformation has become one of the key tools of influence within the framework of so-called hybrid warfare. The aim of this paper is to analyze disinformation as a threat to the internal security of the state. The mechanisms of spreading false information, their impact on society, the destabilization of state structures, and the erosion of public trust in institutions will be presented. The paper also showcases real examples of disinformation campaigns conducted in Central and Eastern Europe and proposes directions for counteracting this phenomenon, taking into account cooperation between state services, the media, and non-governmental organizations.

Keywords:

disinformation; internal security; hybrid warfare; information manipulation; public trust



NEGOTIATION TECHNIQUES – THE ART OF REACHING AGREEMENT

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A few words about the author(s):

Management student at the Krakow University of Economics and SAP Finance Analyst. Interested in ERP systems and their role in finance. Enthusiast of foreign languages and self-development.

Abstract:

The poster presents the concept of negotiation techniques. It explains what negotiation is, explores the three phases of negotiation, and provides examples of negotiation techniques. It also outlines the classification of negotiation techniques and shows best practices in the negotiation process.

Keywords:

negotiation; phases of negotiation; negotiation techniques; negotiation styles



THE ROLE OF UNIFORMED SERVICES IN ENSURING INTERNAL SECURITY

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A few words about the author(s):

I am interested in issues related to the protection of people and property. I am always eager to explore new topics. In my free time, I am interested in sport and social activities,

Abstract:

Uniformed services play a vital role in maintaining the internal security of a nation. They are responsible for safeguarding the sovereignty, territorial integrity, and internal stability of the country against threats such as terrorism, insurgency, communal violence, and natural disasters. Their presence and actions help uphold law and order, protect citizens, and support civil authorities during emergencies. Strengthening these services through training, coordination, and appropriate legal measures is essential for a secure and resilient nation.

Keywords:

security; help; nation



CYBERSECURITY IN THE ERA OF MOBILE BANKING: EMERGING THREATS AND DEFENSE STRATEGIES

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A few words about the author(s):

Student of Masters Degree in Finance and Accounting in Cracow University of Economics.

Abstract:

The rise of mobile banking has brought new cybersecurity risks that challenge both financial institutions and users. This poster highlights the evolving threat landscape and the need for modern, adaptive defense strategies.

It explores how banks are addressing security while maintaining user convenience, and emphasizes the importance of collaboration and digital awareness in building a resilient financial ecosystem.

Keywords:

cybersecurity; banking; mobile banking



AI AMONG US

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A few words about the author(s):

My name is Krzysztof Stączek. I am currently studying Internal Security in Sanok. I am interested in computer science and modern technologies. I am a member of the student scientific club "CUSTODIA." I actively participate in university life.

Abstract:

This poster provides an accessible overview of artificial intelligence – what it is, its benefits, and the challenges it brings. It highlights various fields where AI is already making an impact, including medicine, education, industry, finance, and the arts. Special attention is given to ethical, social, and data security issues, which become increasingly important as AI technology advances rapidly. The goal is not only to introduce the basics of AI but also to encourage thoughtful reflection on its responsible and conscious application across different sectors. Furthermore, the poster emphasizes the need for ongoing research and interdisciplinary collaboration to address the complex questions surrounding AI's development and its role in society.

Keywords:

AI; automation; robotics; chatbots; cybersecurity



GREENWASHING IN SUSTAINABLE FINANCE

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A few words about the author(s):

Student of the 1st year of master degree in Finance and Accounting at the University of Economics in Cracow.

Abstract:

Sustainable finance is a growing trend in global markets, with ESG criteria increasingly guiding investment decisions. However, the parallel rise of greenwashing (false or exaggerated claims about environmental benefits) poses serious risks to both investors and climate objectives. This study examines the scale, mechanisms, and consequences of greenwashing in products such as green bonds, ESG funds, and sustainability-linked loans. Based on literature review, industry reports, and selected case studies, key risk factors are identified: inconsistent ESG reporting, limited regulatory oversight, and misuse of eco-labels. Many companies exploit these gaps, presenting traditional investments as sustainable and misleading investors. The analysis also reviews regulatory tools like the EU Taxonomy and SFDR, noting their potential yet highlighting gaps in enforcement and reporting consistency. Findings emphasize the need for unified sustainability standards, stronger supervision, and greater investor awareness to protect sustainable finance credibility and effectiveness.

Keywords:

sustainable finance; greenwashing; ESG reporting; green bonds; financial regulation

ABSTRACTS OF
PRESENTATIONS



**MEDICAL
SCIENCES**



COMPARISON OF THE EFFECTS OF OCCLUSION TRAINING AND ENDURANCE TRAINING ON MUSCLE STRENGTH AND MASS IN WOMEN

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A few words about the author(s):

We are 4th year physiotherapy students at the University of Opole, Faculty of Health Sciences. We are interested in modern training methods and exercise physiology, and we develop our skills through research projects and scientific activities.

Abstract:

Nineteen women were enrolled in the study and randomly assigned to two comparison groups. Participants in the first group performed occlusion training using the Mad-Up Pro device. The exercises consisted of performing squats with pneumatic cuffs that, by regulating pressure, restricted blood flow, leading to intense muscle fatigue. The second group of women performed endurance training of comparable duration and intensity. The excitability of the quadriceps muscles was assessed using surface electromyography (EMG) with the MyoPlus2Pro device and a set of self-adhesive electrodes. Muscle strength was measured with a dynamometer, evaluating the strength of the lower limbs, with particular emphasis on the quadriceps muscle. The circumference of the lower limb at points P1, P2, U1, U2, K, G1, and G2 was measured with a tailor's tape in centimeters. Physical performance was assessed using a 6-minute walk test, during which heart rate, blood pressure, and blood oxygen saturation were recorded before and after the effort. The analysis results suggest that the use of occlusion training with the Mad-Up Pro device may positively influence the hypertrophy of the quadriceps muscle in women. This effect may be related to increased secretion of growth hormone, which supports tissue regeneration, improves muscle strength, and promotes the development of lean muscle mass without the risk of muscle structure damage.

Keywords:

physiotherapy; physical activity; occlusive training; sport



RARE BUT SERIOUS – CORNEAL PERFORATION AS AN UNEXPECTED COMPLICATION OF BLEPHAROPLASTY

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A few words about the author(s):

The authors are 4th and 5th year medical students – young, ambitious, and eager to learn, future doctors who are passionate about expanding their medical knowledge and sharing it with others.

Abstract:

INTRODUCTION: Corneal perforation is a structural disruption that can manifest as either microperforation or macroperforation. Eyelid plastic surgeries are among the most common procedures in ophthalmology and are generally safe, but like any surgical intervention, they carry certain risks of complications. In our case, a very rare complication of blepharoplasty occurred.

CASE REPORT: A 66-year-old female patient underwent blepharoplasty due to dermatochalasis that restricted her visual field. During the procedure, vessel coagulation with a cryoprobe caused a thermal injury to the cornea of the left eye. The thermal injury resulted in a full-thickness corneal perforation and a partial-thickness corneal defect. The patient was admitted to the Ophthalmology Department in the University Hospital in Bydgoszcz as an emergency case. An urgent procedure was performed, in which the corneal perforation was managed with an amniotic membrane patch, followed by the placement of an amniotic membrane sheet, secured with a continuous suture. The eye was protected with a contact lens. During hospitalization, antimicrobial prophylaxis was administered, and mydriasis was kept.

CONCLUSION: Corneal perforation is a rare but serious complication of blepharoplasty. Its prompt surgical management is crucial to prevent secondary complications, such as infections that may lead to endophthalmitis or visual deterioration.

Keywords:

Corneal perforation; blepharoplasty; ophthalmic surgical complications; eyelid surgery complications; thermal corneal damage



INCIDENCE OF CLOSTRIDIUM TETANI INFECTIONS IN POLISH POPULATION – WHETHER WE SHOULD BE WORRIED?

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A few words about the author(s):

Authors of this work are students attending 2nd year of medical faculty and 2nd year of biomedical faculty. We conduct a great deal of science work in Medical Microbiology Students Research Group supervised by Małgorzata Kozioł, PhD in microbiology.

Abstract:

Tetanus is a disease caused by *Clostridium tetani*, commonly found in soil. It has two key virulence factors: tetanolysin and tetanospasmin. There are different forms of the infection – local, generalized, cephalic and neonatal tetanus. Most common is the generalised which manifests in the beginning by sweating, irritability, headaches, later by muscle spasms, lockjaw, neck stiffness, seizure and others. DTP vaccine (diphtheria, tetanus, pertussis) and DTaP vaccine are currently used for the vaccination. CDC recommends that adults receive a booster vaccine every ten years. Worldwide in 1960 before vaccination incidence rate was 1,5/100k people. Currently the number of infections in Poland has decreased due to implementation of vaccines. In 2024 the infections rate was 0.021/100 000 people. In case of a suspected exposure to pathogen the patient receives tetanus antitoxin and antibiotic therapy. It is also important to hydrate the patient with intravenous electrolyte fluids and properly clean the wound. Tetanus can be easily prevented by vaccines but it is supposed to be repeated. That is why increasing number of anti-vaccination movement poses a great threat to public health. Due to this it is important to educate the society about the importance of the vaccines and keep the vaccines rates high. The aim of this analysis was to present and draw attention to the current epidemiological situation of infections caused by *C. tetani* in recent years in Poland.

Keywords:

vaccines; tetanus; antitoxin; tetanospasmin



HIF-2A INHIBITORS IN CLEAR CELL RENAL CELL CARCINOMA – NEW PERSPECTIVES IN TARGETED THERAPY

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A few words about the author(s):

I am a 3rd year medical student at UMK, interested in oncology and pathomorphology. Apart from studying, I am keen on walking in the park, feeding the ducks, and watching Formula 1.

Abstract:

Clear cell renal cell carcinoma (ccRCC) is the most common type of kidney cancer and is known for its resistance to conventional chemotherapy. It is commonly associated with inactivation of the VHL gene, leading to increased activity of HIF-2 α , a protein that promotes tumor growth, angiogenesis, and immune resistance. Belzutifan is a selective HIF-2 α inhibitor that directly targets this pathway and may become a promising therapeutic option. The aim of this presentation is to review recent clinical findings involving HIF-2 α inhibitors, both as monotherapy and in combination with immune checkpoint inhibitors (ICIs). Discussed studies and clinical trials show that targeting HIF-2 α may enhance therapeutic efficacy while maintaining a manageable safety profile. It indicates that belzutifan could play a key role in the future management of clear cell renal cell carcinoma.

Keywords:

clear cell renal cell carcinoma; HIF-2 α inhibitor; belzutifan; targeted therapy; kidney cancer



TICKS AND BABESIOSIS – DO WE HAVE ANYTHING TO WORRY ABOUT?

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A few words about the author(s):

Authors of this work are students attending 2nd year of medical faculty. We conduct a great deal of science work in Medical Microbiology Students Research Group supervised by Małgorzata Koziół, PhD in microbiology.

Abstract:

Babesiosis is a disease caused by protozoa of the *Babesia* spp., which are obligate intracellular parasites. The disease is most often transmitted by ticks of the *Ixodes* spp., much rarer but also possible infestation through blood or blood products. In Poland, domestic animals (mainly dogs) and rodents and ruminants are most often infected, in humans infestations are much rarer, but it is worth paying attention to specific groups e.g. foresters or a possible severe course immunocompromised. Human babesiosis (HB) manifests itself in a non-specific way: initially, general malaise and fatigue, and then fever, chills, sweats, muscle and joint pain appear. In the diagnostic process mostly used microscopic examination of a blood smear (one of the cheapest methods) and molecular or serological methods. Despite the relatively rare occurrence of HB in the Polish population, it is worth paying attention to this zoonosis in the context of tick bites and unspecific symptoms in humans. The aim of this analysis was to present the current epidemiological situation of *Babesia* spp. infestations in Poland in recent years and the challenges related to the diagnosis of this disease entity.

Keywords:

infestation; zoonosis; *Ixodes* spp.



ANALYSIS OF POTENTIAL RISK FACTORS OF VIRAL INFECTIONS IN BEAUTY SALONS

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A few words about the author(s):

Authors of this work are students attending 2nd year of medical faculty. We conduct a great deal of science work in Medical Microbiology Students Research Group supervised by Małgorzata Koziół, PhD in microbiology.

Abstract:

Beauty salons are an environment with a heightened risk of transmitting various pathogens. This is due to direct contact with the skin, mucous membranes, tissue disruptions and blood products. Viruses such as hepatitis: HBV, HCV and HIV, which are spread through the blood, but as well HPV and HSV, which are spread through direct contact are among the most common pathogens. Infections most often occur during procedures such as manicures and pedicures, but less frequently mesotherapy, and permanent makeup, because of proper interview before the procedure. These procedures pose a direct threat to health as they can cause severe and systemic infections. Therefore, adherence to aseptic techniques (e.g. using sterile equipment, gloves), proper sterilization process, and qualified personnel are crucial. The aim of this analysis was to highlight the importance of sterilization and client safety in preventing infections with the aforementioned viruses.

Keywords:

viruses; manicure; sterilization; disinfection



ATRIAL TRICUSPID ANNULAR DISJUNCTION: A COMPREHENSIVE MORPHOMETRIC ANALYSIS

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A few words about the author(s):

All authors are members of the HEART UJ CM research group, led by Prof. Mateusz K. Holda. Ida Szataniak is a 4th year medical student at the University of Jan Długosz (UJD).

Abstract:

OBJECTIVE: This study investigates atrial tricuspid annular disjunction (a-TAD) in a large cohort of autopsied human hearts.

METHODS: We examined 212 adult autopsied human hearts (18.9% females, 47.4±17.1 years) without known cardiovascular diseases. A-TAD was defined as a spatial displacement (≥ 2 mm) of the leaflet hinge line towards the right atrium. We provided a detailed morphometric characteristic (disjunction height) and histological examination of a-TAD.

RESULTS: A-TADs were observed in 15.6% of studied hearts and were typically sectional disjunctions, not exceeding one leaflet (84.8%). The mural leaflet was the most common site (10.4% of mural leaflets with a-TAD). The mean height of a-TAD was 3.4 ± 0.8 mm with no differences between leaflets (mural: 2.9 ± 0.8 mm; superior: 3.7 ± 1.3 mm; inferior: 3.1 ± 0.7 mm, $p=0.141$). The microscopic structure showed separation shifted toward the right atrial side, filled with connective tissue and covered by an extended valve annulus. Logistic regression revealed significant association with body mass index (OR=1.146 [1.039-1.263], $p=0.006$). In eight hearts with a-TAD, atrial mitral annular disjunction was found. 28.8% of right atrioventricular valves were quadricuspid. Occurrence of a-TAD was similar in both valve types (15.9% vs 14.8%, $p=0.835$).

CONCLUSIONS: A-TAD was observed in ~16% of cases, typically localized and restricted to a single leaflet.

Keywords:

tricuspid valve; tricuspid annulus; tricuspid annular disjunction



PROGNOSTIC SIGNIFICANCE OF IL-6 AND RBP4 IN COLORECTAL CANCER: IN SILICO STUDY ON GENE EXPRESSION AND SURVIVAL OUTCOMES

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A few words about the author(s):

I work at the Department of Histology and Embryology, Collegium Medicum in Bydgoszcz. I hold a Master's degree in Molecular Diagnostics and focus on cell culture and related research applications.

Abstract:

Colorectal cancer (CRC) is one of the leading causes of cancer-related mortality worldwide, with patient outcomes strongly influenced by tumor heterogeneity and the limited availability of robust prognostic biomarkers. Pro-inflammatory mediators, such as interleukin-6 (IL 6) and metabolic regulators like retinol-binding protein 4 (RBP4) have been implicated in tumor progression; however, their prognostic relevance in CRC remains insufficiently characterized. Therefore we performed a bioinformatic analysis of TCGA data to compare mRNA expression in colorectal tumors and adjacent normal tissues.

Transcriptomic analysis revealed significantly higher IL 6 mRNA expression in CRC tissues compared to adjacent normal tissues ($p < 0.0001$). In the case of RBP4, a similar trend of elevated expression was observed in tumor samples, although the difference did not reach statistical significance ($p = 0.0746$). Elevated expression of both IL 6 and RBP4 was associated with poorer overall survival; however, statistical significance was observed only for RBP4 (HR = 1.570, 95% CI: 1.040–2.371, $p = 0.0443$), whereas IL 6 showed a borderline association (HR = 1.477, 95% CI: 0.9878–2.210, $p = 0.0542$).

These findings suggest RBP4 as a prognostic biomarker in CRC, while IL-6 warrants further study due to its expression pattern and borderline prognostic value. This study highlights the importance of bioinformatics in identifying molecular targets for CRC stratification.

Keywords:

Colorectal Cancer; RBP4; IL-6



THE RELATIONSHIP BETWEEN BLOOD GROUP SYSTEMS AND SUSCEPTIBILITY TO INFECTIONS, WITH PARTICULAR REFERENCE TO SARS-COV-2

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Maja Ciecierska is a 5th year student of Medical Analytics and a master's student of the Department of Hematological Diagnostics. Anna Czajkowska-Żelazko – assistant at the Department of Hematological Diagnostics.

Abstract:

COVID-19 infectious disease, which first appeared in December 2019, is caused by a new coronavirus, SARS-CoV-2. Due to its asymptomatic transmission and high infectivity, SARS-CoV-2 has spread globally in just one year. COVID-19 can be asymptomatic as well as lead to severe and critical symptoms such as hypoxia, dyspnea, multi-organ failure and acute respiratory distress syndrome. Along with comorbidities such as cardiovascular disease and diabetes, the risk of serious complications, which can even lead to death, increases. Because of such risks, efforts have been made to learn as much as possible about the new coronavirus, and attempts have been made to find biological markers that could help predict susceptibility to infection and classify patients into risk groups for disease severity. One such marker may also be ABO blood group. There are numerous scientific reports confirming the correlation between blood groups and susceptibility to infections with various pathogens, for example *Helicobacter pylori*, human immunodeficiency virus (HIV), and hepatitis B virus. In the case of SARS-CoV-2 infection, numerous studies have been conducted demonstrating the relationship between individual ABO phenotypes and susceptibility to infection and the course of COVID-19. This paper reviews the latest literature data on the risk of developing and the severity of COVID-19 depending on ABO blood group phenotype.

Keywords:

SARS-COV-2; COVID-19; ABO blood group



CARCINOGENIC FACTORS IN THE LIVING AND WORKING ENVIRONMENT – NURSES IN CANCER PREVENTION

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A few words about the author(s):

Graduate of the State University in Sanok.

Abstract:

Carcinogenic factors present in the living and working environment play a significant role in the development of cancer. The most common include tobacco smoke, UV radiation, certain chemicals, and occupational exposure, including in healthcare settings. Through direct patient contact, nurses have a real impact on health education, promoting a healthy lifestyle, and supporting preventive measures. The aim of this presentation is to emphasize the importance of nurses in reducing the risk of cancer through hazard identification, educational activities, and interdisciplinary collaboration.

Keywords:

carcinogens; carcinogenesis; prevention; nurse; health education



MODERN APPROACH TO COMPRESSION THERAPY IN VENOUS AND LYMPHATIC DISORDERS

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A few words about the author(s):

All the authors are medical students at the Faculty of Medicine, University of Opole, Opole, Poland.

Abstract:

Compression therapy remains a vital, noninvasive treatment for venous insufficiency and lymphedema, applying graduated external pressure to enhance venous return and lymphatic flow. By reducing vessel diameter and transmural pressure, compression garments and multilayer bandages improve calf muscle pump function, decrease capillary filtration, and facilitate interstitial fluid reabsorption.

Clinical studies demonstrate up to a 40% reduction in limb volume and notable improvements in skin trophicity after just four weeks of consistent use. Indications include prevention of deep vein thrombosis, management of chronic venous disease (CEAP C2–C6), post-thrombotic syndrome, or varicose veins in pregnancy, and postoperative edema. Low-stretch (inelastic) bandages offer high working pressures during ambulation, while elastic stockings maintain stable resting pressures; combining materials in multi-layer systems or adjustable Velcro wraps ensures both comfort and efficacy.

Compression stockings provide standardized pressure gradients, and intermittent pneumatic compression devices further benefit immobile or high-risk patients. Optimal outcomes depend on selecting the correct compression class (e.g., German RAL 1–4 or French Asqual 1-3), fitting to individual limb morphology, and ensuring patient adherence through education and follow-up. Consistent application across all stages of chronic venous disease alleviates symptoms, promotes healing, and slows disease progression.

Keywords:

venous insufficiency; Lymphedema; graduated compression; multilayer bandaging; pneumatic compression



PODIATRIC PROBLEMS

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A few words about the author(s):

I am Ewelina Kaminska. I am an engineer. I am currently studying pedagogy. However, I am also a cosmetic service technician by passion and education. Although I do not work in the profession, I like to share the knowledge I have gained in this field.

Abstract:

The presentation is devoted to the most common podiatric problems with which patients turn to podiatrists or clients to beauticians. Special attention is given to the practical aspects of identifying, assessing the problem and supporting prevention and treatment in the cosmetic or medical office. The most common ailments will be discussed, such as tinea pedis and onychomycosis, ingrown toenails, viral warts, corns, cracked heels, excessive foot sweating, and onycholysis. Suggestions for effective methods and care to improve the comfort and aesthetics of the feet will be presented. Despite the fact that most of the time during the year we use full footwear and do not expose our feet, it is worth taking care of them always, not only in the summer. Failure to properly approach this subject can result in the acquisition of podiatric problems, which are often difficult to eliminate.

Keywords:

podiatry; foot diseases; feet; podiatrist; medicine



QUALIFICATION FOR NEUROSURGICAL PROCEDURES IN THE MOST COMMON NEUROLOGICAL DISORDERS

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A few words about the author(s):

A group of medical students in neurology and neurosurgery focuses on early detection and management of neurological disorders. They emphasize timely assessment and referrals to improve triage and support treatment planning for brain disorders.

Abstract:

With growing access to healthcare and rising demand for specialized care, the number of patients requiring neurosurgical evaluation is steadily increasing. Efficient qualification for neurosurgical treatment depends on early clinical assessment, including neurological examination and neuroimaging (CT, MRI), supported by auxiliary tests such as EEG, EMG, and biopsies. Diagnostic procedures aim to identify structural lesions of the nervous system and spine that require surgical intervention. Particular focus is placed on progressive neurological deficits, seizures, intracranial pressure symptoms, and red flags indicating urgent conditions. The etiology of the most common neurosurgical pathologies includes congenital, degenerative, vascular, and neoplastic disorders. Proper patient triage minimizes unnecessary referrals, improves the allocation of specialized resources, and ensures timely therapeutic decision-making. Indications for surgery include treatment-resistant epilepsy, primary and metastatic brain tumors, spinal cord compression, and vascular malformations. Timely rehabilitation and coordinated care between neurology and neurosurgery teams are essential for successful outcomes. The use of standardized diagnostic and referral pathways enhances system effectiveness and improves the quality of patient care.

Keywords:

neurosurgery; neuroimaging; tumors; rehabilitation; epilepsy



UNRAVELING ENDOMETRIOSIS: FROM RETROGRADE MENSTRUATION TO GENETIC, HORMONAL AND IMMUNE FACTORS

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A few words about the author(s):

Medical students interested in various causes of endometriosis. In this presentation we would like to establish why endometriosis is such a complicated disease with average time for diagnosis takes up to 7-10 years.

Abstract:

Endometriosis is a complex and poorly understood disease, defined by the presence of endometrium-like tissue outside the uterus. Identifying its causes is crucial for effective prevention and treatment. To this date several mechanisms have been proposed.

The retrograde menstruation theory (Sampson's theory) suggests that menstrual blood flows backward through the fallopian tubes into the peritoneal cavity, allowing endometrial cells to implant. Lesion development is supported by angiogenesis, promoted by peritoneal macrophages producing vascular endothelial growth factor (VEGF).

Immune dysregulation and inflammation also play central roles. Proinflammatory pathways may inhibit apoptosis, allowing ectopic cells to persist. Macrophages, neutrophils, NK cells, dendritic cells, and T cells contribute to lesion formation and maintenance.

Twin studies estimate heritability at up to 50%. Genome-wide association studies have identified five loci linked to endometriosis risk, involving genes in sex steroid hormone pathways. Additional pathways include MAP kinase signaling, interleukin-1A, WNT signaling, and steroid metabolism.

Endometriosis is considered steroid-dependent. Altered expression and epigenetic regulation of the progesterone receptor (PR) have been observed in both eutopic endometrium and lesions.

Although progress has been made in understanding endometriosis, further research is needed to establish more effective, targeted treatments.

Keywords:

endometriosis; hormones, genetics, immunology



WILSON'S DISEASE: GENETIC BASIS, CLINICAL MANIFESTATIONS, MODERN DIAGNOSTIC AND THERAPEUTIC APPROACHES

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A few words about the author(s):

A group of medical students with a deep passion for internal medicine. Driven by enthusiasm and a commitment to learning, they aim not only to broaden our own knowledge but also to inspire and inform others through their scientific work.

Abstract:

Wilson's disease (WD) is a rare autosomal recessive disorder characterized by impaired copper metabolism due to pathogenic variants in the ATP7B gene, encoding a hepatocellular copper-transporting ATPase.

The resulting copper accumulation predominantly affects hepatic and neurological tissues, leading to a broad spectrum of clinical manifestations. Hepatic presentations range from asymptomatic biochemical abnormalities to acute liver failure, while neurological involvement may include movement disorders such as tremor, dysarthria, and ataxia. Psychiatric symptoms, including mood disturbances and personality changes, further complicate the clinical picture.

Diagnostic evaluation integrates serum ceruloplasmin concentration, serum and urinary copper quantification, slit-lamp examination for Kayser-Fleischer rings, and confirmatory genetic testing.

The main treatment method is copper chelation using agents like penicillamine. Additionally, zinc can be used as an adjunct or maintenance treatment to inhibit intestinal copper absorption. A low-copper diet may also be recommended, especially in the early stages of treatment, to support pharmacological copper reduction. In cases of end-stage liver disease, liver transplantation remains the definitive treatment. Early recognition and intervention are crucial to improve clinical outcomes and patient quality of life.

Keywords:

Wilson's disease; copper metabolism disorder; ATP7B gene mutation



VASCULAR ACCESS IN CORONARY INTERVENTIONS: A REVIEW OF CURRENT CLINICAL PRACTICES AND COMPLICATIONS

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A few words about the author(s):

All the authors are medical students at the Faculty of Medicine, University of Opole, Opole, Poland.

Abstract:

Selecting the most appropriate vascular entry point is crucial for safe and effective coronary procedures. This narrative review outlines the transition from surgical brachial cut-downs to today's percutaneous femoral and radial approaches, emphasizing clinical impact and complication profiles.

Judkins' 1967 femoral technique revolutionized angiography, and Kiemeneij's 1993 radial method further refined practice. By 2016, radial access comprised about 84% of UK cases, owing to reduced bleeding and mortality in acute coronary syndromes. Radial complications—arterial occlusion (~5%), spasm (~5%), minor hematoma (<5%)—are notably lower than femoral-site events.

Femoral access remains indispensable for "large-bore" interventions (eg, TAVI) but carries higher risks: hematoma (1–12%), pseudoaneurysm (1–6%), retroperitoneal hemorrhage (0.2–0.9%). Ultrasound-guided femoral puncture significantly decreases these complications.

Current evidence supports radial entry for routine diagnostics and therapies, while proficiency in femoral techniques is vital for complex cases. Tailoring access strategy to each patient optimizes outcomes.

Keywords:

vascular access; Percutaneous Coronary Intervention Radial vs. Femoral Approach; complication rates; ultrasound guidance



IN SILICO EVALUATION OF THE PHARMACOKINETIC AND TOXICOLOGICAL PROPERTIES OF PROTAC COMPOUNDS WITH POTENTIAL APPLICATION IN NEURODEGENERATIVE DISEASES

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A few words about the author(s):

I am a PhD student at the Doctoral School of Medical and Health Sciences. My doctoral research focuses on the application of PROTACs (Proteolysis Targeting Chimeras).

Abstract:

Neurodegenerative diseases such as Alzheimer's, Parkinson's, and ALS pose an increasing medical and societal burden, with few effective therapies available. Conventional treatments targeting pathogenic proteins often lack efficacy and selectivity. PROTACs (Proteolysis Targeting Chimeras) offer a promising alternative by inducing selective degradation of disease-related proteins through the ubiquitin–proteasome system.

This project aims to apply in silico methods to identify PROTAC degraders targeting proteins involved in neurodegenerative disease mechanisms. Advanced computational techniques will be used, including molecular docking, molecular dynamics simulations, conformational analysis, and ligand–protein interaction profiling, to identify efficient bifunctional molecules.

Additionally, compounds will be evaluated for pharmacokinetic properties (ADME) and toxicity using specialized bioinformatic tools. Parameters such as physicochemical profiles, bioavailability, blood–brain barrier (BBB) permeability, and toxicity will be analyzed to prioritize the most promising candidates for further biological validation.

The project supports the development of novel therapeutic strategies using targeted protein degradation and reflects current trends in precision medicine and computer-aided drug design for next-generation therapeutics.

Keywords:

PROTAC; toxicology; in silico



PREVENTION OF SEVERE RSV INFECTIONS IN INFANTS – THE CLINICAL IMPACT OF MATERNAL IMMUNIZATION AND CLINICAL CHALLENGES

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A few words about the author(s):

A group of medical students interested in pediatrics focuses on the prevention of infectious diseases in early life. They emphasize the importance of vaccinating newborns and children as a key strategy to protect the health of the youngest patients.

Abstract:

Respiratory syncytial virus (RSV) remains a leading cause of lower respiratory tract infections and hospitalizations in infants, particularly in the first months of life. The clinical management of RSV in newborns is challenging due to the lack of specific antiviral therapies and the immature immune systems of affected patients. Severe cases may result in bronchiolitis, pneumonia, hypoxia, and death in preterm infants and those with comorbidities.

Despite supportive care being the cornerstone of treatment, prevention has become a key focus in reducing RSV-related morbidity. Recent advances have introduced promising prophylactic strategies. Maternal vaccination during pregnancy offers passive immunization, protecting neonates during their most vulnerable early months. Monoclonal antibodies such as nirsevimab or palivizumab provide immediate and effective protection for up to five months with a single dose. Additionally, pediatric RSV vaccines are under development to offer long-term immunity in older infants and children.

Together, these approaches represent a paradigm shift in RSV prevention. However, challenges remain, including optimal implementation strategies, public awareness, and equitable access. Addressing these barriers is crucial for reducing the global burden of RSV in infancy.

Keywords:

RSV; maternal vaccination; monoclonal antibodies; infection prevention; respiratory infections



HOSPITAL-ACQUIRED INFECTIONS: EPIDEMIOLOGY, RISK FACTORS, AND RESERVOIRS

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A few words about the author(s):

All the authors are medical students at the Faculty of Medicine, University of Opole, Opole, Poland.

Abstract:

Hospital-acquired infections (HAIs) remain a significant challenge for modern healthcare, affecting approximately 5% of hospitalized patients in Poland and contributing to nearly 3% of in-hospital deaths annually.

This study reviews current definitions and surveillance standards, and examines the main host-related, microorganism-related, and hospital-environmental risk factors that facilitate pathogen transmission. Host factors include underlying diseases, comorbidities, age extremes, and nutritional status. Microbial factors focus on antibiotic resistance mechanisms, notably Gram-negative rods and methicillin-resistant *Staphylococcus aureus* (MRSA).

Environmental contributors encompass invasive procedures, prolonged hospitalization, and hygiene practices related to equipment sterilization, hand hygiene, and facility design. The role of patient-care zones as reservoirs for bacteria, viruses, and fungi is discussed, emphasizing the need for coordinated infection prevention teams with specialized staff.

Recommendations highlight rigorous surveillance, targeted antimicrobial stewardship, and infrastructural improvements to reduce HAI incidence and improve patient outcomes.

Keywords:

Hospital-Acquired Infection (HAI); Epidemiology; Risk Factors; Antibiotic Resistance; Infection Reservoirs



ARTIFICIAL INTELLIGENCE IN MEDICINE: THE KEY TO NEW OPPORTUNITIES

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A few words about the author(s):

We are medical students passionate about how emerging technologies and programming are transforming diagnostics and treatment. During our clinical rotations, we see firsthand how innovation is reshaping healthcare and improving patient outcomes.

Abstract:

The aim of this study is to review current knowledge on the impact of technological developments, with particular emphasis on artificial intelligence (AI), on contemporary educational and therapeutic strategies. Based on an analysis of the literature available in the PubMed, Elsevier, and Google Scholar databases, a review of publications on the use of AI in the education of future specialists and its application in clinical practice is conducted. Particular attention is paid to the role of AI in improving diagnostic processes, therapy planning, and assessing treatment effectiveness. The paper highlights the potential of AI in transforming contemporary models of education and healthcare, while also highlighting potential obstacles related to its implementation.

Keywords:

Artificial Intelligence; medicine; technology; application in medicine



CURRENT STATE OF KNOWLEDGE ABOUT ALPORT SYNDROME

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A few words about the author(s):

Sylwia Otulak and others – 5th year medical students. A group of students interested in the pathogenesis of rare diseases in nephrology.

Abstract:

The aim of this paper is to summarize the current state of knowledge on Alport syndrome. A systematic literature review was conducted using PubMed, Elsevier, and Google Scholar databases, focusing on materials, methods, and main conclusions of the analyzed publications. Alport syndrome is a hereditary nephropathy caused by mutations in the COL4A3, COL4A4, and COL4A5 genes, which encode type IV collagen chains – the main component of the glomerular basement membrane. The disease manifests as progressive renal damage, hematuria, proteinuria, and hearing and vision abnormalities. Depending on the type of mutation and inheritance pattern (X-linked, autosomal dominant, or recessive), the clinical course varies – from isolated hematuria to rapid progression to end-stage renal disease. In recent years, molecular diagnostics have advanced significantly, enabling early diagnosis and identification of carriers in genetically predisposed families. Along with the development of imaging techniques, biopsy, and genotyping, the pathogenic mechanisms underlying the disease are increasingly understood. This review focuses on the latest scientific reports regarding the pathophysiology, clinical presentation, and diagnostic possibilities in Alport syndrome.

Keywords:

Alport syndrome; COL4A3; COL4A4; COL4A5; chronic kidney disease



PHYSIOTHERAPY AS A POSITIVE WAY TO SPEND FREE TIME FOR OLDER PEOPLE

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A few words about the author(s):

Master Phisioterapy Janina Rzeszot.

Abstract:

One of the main physiotherapy treatments for older adults is restoring or maintaining functional autonomy in daily activities. Recent research on mild cognitive impairment has shown that physical exercise is effective in preventing age-related cognitive decline in older adults. Descriptive information from selected articles is used to present the most relevant aspects. Physiotherapy can improve functional capacity, prevent falls, and alleviate pain in older adults in nursing homes. Although the intervention protocols of exercise games and measures of the effectiveness of the intervention were varied, the evidence gathered showed, that exercise game interventions improved physical and cognitive function in older adults.

However, it is unclear whether the exercise game-based intervention in preventing falls in older people is better than conventional physiotherapy, and the mechanism of influence of exercise games the ability to maintain balance in older people is still unclear.

Keywords:

physiotherapy; physical exercises; exercise games



HUMAN PAPILLOMAVIRUS (HPV) – EPIDEMIOLOGY, DIAGNOSIS, PREVENTION AND TREATMENT PROSPECTS

Krystian Szczygiel*, Sylwia Otulak, Zofia Klich, Krystian Kansik, Samanta Ostrowska, Michalina Łosoń, Daria Kopaniszen

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A few words about the author(s):

Krystian Szczygiel and others – 5th year medical students. A group of students interested in the pathogenesis of diseases caused by viruses, methods of their treatment, and broadly understood prevention.

Abstract:

Human papillomavirus (HPV) is one of the most common sexually transmitted pathogens, playing a key role in the development of cervical cancer, anogenital malignancies, and some head and neck cancers. In recent years, molecular diagnostics have advanced rapidly—PCR-based tests detecting HPV DNA, mRNA, or oncoproteins show high sensitivity and specificity and are increasingly replacing cytology in cervical cancer screening in many countries. There is growing interest in the role of HPV in the etiology of oral and oropharyngeal cancers, indicating the need to expand preventive programs. Prophylactic vaccines (bivalent, quadrivalent, and nonavalent) demonstrate nearly 100% efficacy when administered before sexual debut. Intensive research is underway on therapeutic vaccines and antiviral agents. Despite significant progress, low access to vaccination and screening remains a challenge in many regions. However, the current state of knowledge allows for an optimistic outlook on further reducing the global burden of HPV-related diseases and highlights the urgent need for intensified education and public health policy efforts. This review focuses on the latest data on HPV epidemiology, diagnostics, treatment, and prevention.

Keywords:

Human papilloma virus; HPV; Cervical cancer; Vaccines



OBESITY AND MALNUTRITION IN CHILDREN – THE ROLE OF THE NURSE IN PREVENTION AND EARLY DETECTION OF NUTRITIONAL DISORDERS

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A few words about the author(s):

The author is a nursing graduate and an active member of the Student Scientific Association of Nurses at the Jan Grodek State University in Sanok. She is involved in research, with a particular emphasis on pediatrics.

Abstract:

Nutritional disorders such as obesity and malnutrition represent a significant public health challenge among children in Poland and worldwide. Although they differ in etiology, both conditions pose serious health risks and negatively affect a child's physical, psychological, and social development. Nurses, as part of the therapeutic team and key figures in preventive care, play a crucial role in identifying risk factors, providing health education, and supporting families in promoting healthy lifestyles.

The aim of the presentation is to outline the current epidemiological situation regarding childhood obesity and malnutrition, highlight the nurse's role in identifying nutritional imbalances, and discuss effective preventive strategies according to current scientific research.

The findings highlight the need for integrated interdisciplinary efforts and a stronger role for nurses in the early detection and prevention of nutritional disorders in children.

Keywords:

childhood obesity; malnutrition; pediatric nursing; prevention



INSOMNIA AS A CIVILIZATIONAL DISEASE – A REVIEW OF PHARMACOLOGICAL AND NON-PHARMACOLOGICAL TREATMENT METHODS

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A few words about the author(s):

My name is Joanna Zych. I am a dietetics student at the University of Rzeszów. My scientific interests are mainly directed towards health psychology, sleep disorders, and the impact of lifestyle and nutrition on sleep quality and mental health.

Abstract:

Insomnia is one of the most common sleep disorders, which the World Health Organization recognizes as a public health problem. It is estimated that chronic insomnia affects 10 to 30% of adults, and its prevalence is steadily increasing due to the fast pace of life, stress, screen overuse, and disruptions to the circadian rhythm. In the long term, it can lead to serious health consequences such as mood disorders, decreased immunity, and increased risk of cardiovascular diseases and type 2 diabetes.

The objective of the work is to discuss contemporary methods of treating insomnia – both pharmacological (including benzodiazepines, Z-drugs, melatonin, antidepressants) and non-pharmacological (sleep hygiene, relaxation techniques, lifestyle changes, diet, CBT-I – cognitive behavioral therapy for insomnia). Particular attention is given to the role of nutritionists and other health specialists in a multifaceted approach to the problem.

The work also points to the need for educating society on insomnia prevention and promoting healthy sleep habits as part of daily health prevention. The conclusions indicate that effective treatment requires individualization of the approach and collaboration of an interdisciplinary team: doctor, dietitian, psychologist, and pharmacist.

Keywords:

insomnia; pharmacological treatment; non-pharmacological treatment; sleep hygiene; lifestyle modification

ABSTRACTS OF **POSTERS**



**MEDICAL
SCIENCES**



DIASTASIS RECTI ABDOMINIS AND MOTOR DEVELOPMENT IN INFANTS

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A few words about the author(s):

Lecturer at the University of Opole, physiotherapist. Her research focuses on functional diagnostics, physiotherapy in child development and sensory integration in infants.

Abstract:

Motor development in infants constitutes the foundation of their early physical and cognitive development. Early diagnosis enables the detection of abnormalities and the correction of potential psychomotor delays. Diastasis recti abdominis (DRA) in infants may affect trunk stability and postural control, as well as limit movement efficiency and delay the acquisition of fundamental motor skills.

The objective of the study was to assess the relationship between the presence of DRA in infants and the results of the Alberta Infant Motor Scale (AIMS). Consent was obtained from the Thematic Committee for Ethics in Scientific Research of Physiotherapists (No. 15/52 dated June 29, 2022).

The study included 123 children who were referred by a physician for early physiotherapeutic intervention. Each child was evaluated using AIMS. Test results were classified as normal (5th percentile and above) and as low (< 5th percentile). Statistical analysis was conducted using the χ^2 test and Cramér's V coefficient to assess the strength of association. Children with DRA significantly more frequently achieved low AIMS test scores compared to children without DRA ($p = 0.0001$; $\chi^2 = 15.039$). The strength of association assessed by Cramér's V coefficient was 0.35, indicating a moderate association between the presence of DRA and low motor test scores. The results suggest that DRA may be a risk factor for motor developmental delays, which should be considered in clinical practice and further research.

Keywords:

diastasis recti abdominis; DRA; motor development; infants; Alberta Infant Motor Scale



ANDROGENETIC ALOPECIA (AGA): AN INTEGRATED APPROACH FROM DIAGNOSIS TO PSYCHOSOCIAL IMPACT

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A few words about the author(s):

A Master's degree student in Institute of Health, focusing on holistic approaches to patient care in chronic skin and skin appendages conditions.

Abstract:

Androgenetic alopecia (AGA) is the most common cause of progressive hair loss, affecting up to 80% of men and 50% of women during their lifetime. Though not life-threatening, its psychosocial impact (including reduced self-esteem, anxiety, and depression) is significant and often underestimated. This poster presents a holistic care model for AGA, integrating precise diagnosis with an understanding of its psychosocial burden to create comprehensive therapeutic strategies.

This work synthesizes knowledge on AGA's pathogenesis, diagnosis, and treatment. Pathogenesis involves a genetic predisposition where dihydrotestosterone (DHT) leads to the progressive miniaturization of hair follicles. Trichoscopy is highlighted as the non-invasive diagnostic standard, allowing for the identification of key features like hair shaft diameter heterogeneity. A comprehensive spectrum of treatments is also reviewed, from topical and oral therapies (Minoxidil, 5- α -reductase inhibitors) and procedural treatments (PRP, LLLT) to surgical interventions.

Keywords:

androgenetic alopecia; AGA; trichoscopy; dihydrotestosterone (DHT); psychodermatology

ABSTRACTS OF
PRESENTATIONS



**TECHNICAL AND
NATURAL SCIENCES**



ARTIFICIAL INTELLIGENCE AND THE FUTURE OF SCIENTIFIC DISCOVERY: PARTNER, TOOL, OR CHALLENGER?

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A few words about the author(s):

Wojciech Anioł is a computer science student at Poznań University of Technology with a strong interest in artificial intelligence and software engineering.

Abstract:

This speech explores the transformative role of artificial intelligence in accelerating scientific research, from hypothesis generation and data analysis to drug discovery and climate modeling. It will examine how AI is reshaping traditional methodologies, enabling automation at unprecedented scales, and raising philosophical questions about the nature of scientific creativity and agency. The talk will also address the ethical and epistemological challenges of relying on AI in science (such as interpretability, bias, and reproducibility) and what it means when machines begin to make discoveries that humans struggle to explain.

Keywords:

AI; discovery; science



CRYPTOSPORIDIOSIS AS A PUBLIC HEALTH THREAT – A COMMON CHALLENGE FOR MEDICINE AND VETERINARY MEDICINE

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A few words about the author(s):

I am a DVM. My main interest is problems in dairy herd management. I am currently doing my internship.

Abstract:

Cryptosporidiosis is a cosmopolitan parasitic disease of significant zoonotic importance, caused by opportunistic protozoa of the genus *Cryptosporidium*. The key role in transmission and pathogenicity is played by the species *C. parvum* and *C. hominis*. The name “cryptosporidiosis” comes from the Greek and means “hidden spore,” which aptly reflects the atypical localization of the parasite – intracellular, but outside the cytoplasm. The most common result of infection is chronic diarrhea, which can lead to dehydration and cachexia, especially in immunocompromised patients and oncology patients. In calves, cryptosporidiosis is one of the main causes of neonatal diarrhea, leading to growth disorders, dehydration and, in extreme cases, death. Importantly, a very low dose of oocysts is sufficient to cause an infestation. A new hope in prophylaxis is MSD's Bovilis Cryptium® subunit vaccine, recently approved in the EU, which targets the gp40 glycoprotein. It enables the transfer of antibodies into colostrum, providing newborn calves with protection. The implementation of such prophylaxis fits perfectly with the One Health concept, indicating the need for close cooperation between human and veterinary medicine in the prevention of zoonotic diseases. Reducing the presence of the pathogen in the animal environment translates into a lower risk of transmission to humans, improved animal welfare and thus greater food safety and public health.

Keywords:

cryptosporidiosis; veterinary medicine; neonatal diarrhea; calves; one health



INATREQ™ ACTIVE – A NEW ACTIVE SUBSTANCE

Klaudia Sowińska

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A few words about the author(s):

I am Klaudia, an Agriculture student at the University of Warmia and Mazury in Olsztyn. I work as a lab technician at a dairy plant, gaining experience in food quality.

Abstract:

Inatreq™ Active is a modern active substance from the picolinamide group, used in cereal protection against fungal diseases. Its mode of action involves inhibiting fungal mitochondrial respiration by blocking electron transfer in complex III of the respiratory chain. This leads to a reduction in ATP production (the primary source of cellular energy) which in turn stops pathogen growth and infection development.

Inatreq™ Active is characterized by a broad spectrum of activity (effective against diseases such as septoria leaf blotch and brown rust), long-lasting efficacy (up to 6 weeks), and crop safety, as it does not cause phytotoxicity. It is derived from natural sources, making it a sustainable solution in plant protection. It is used, among others, in the fungicide Queen, where it is supported by the innovative i-Q4™ formulation technology, which enhances efficacy and rainfastness.

Keywords:

formulation; Inatreq Active; active substance



THE ROLE OF NUTRITION IN THE MANAGEMENT OF CARDIOVASCULAR DISEASES IN COMPANION ANIMALS: A REVIEW

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A few words about the author(s):

A certified veterinary technician and a final-year veterinary student, soon to become a veterinarian. My main interests lie in small animal internal medicine, with a particular passion for canine and feline cardiology.

Abstract:

The aim of this review is to analyze the role of nutrition in the management of cardiovascular diseases (CVD) in dogs and cats. The paper presents current knowledge on dietary strategies supporting treatment of conditions such as dilated cardiomyopathy, valvular disorders, and heart failure. Key dietary components (sodium, taurine, L-carnitine, omega-3 fatty acids) are discussed in terms of their physiological roles and clinical relevance. The review also addresses the impact of fiber and protein bioavailability on cardiac function. Literature sources were critically analyzed to highlight nutritional interventions that may alleviate symptoms, enhance pharmacotherapy, and improve quality of life. This work emphasizes the importance of individualized dietary plans and regular monitoring in veterinary cardiology.

Keywords:

veterinary nutrition; heart failure management; veterinary cardiology



PATENT DUCTUS ARTERIOSUS (PDA): CURRENT SURGICAL TREATMENT OPTIONS AND APPROACHES – A LITERATURE REVIEW

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A few words about the author(s):

A certified veterinary technician and a final-year veterinary student, soon to become a veterinarian. My main interests lie in small animal internal medicine, with a particular passion for canine and feline cardiology.

Abstract:

Patent ductus arteriosus (PDA) is one of the most common congenital heart defects in dogs, involving persistent left-to-right blood flow between the aorta and pulmonary artery. If left untreated, it may lead to pulmonary overcirculation, heart enlargement, and heart failure. Surgical ligation and transcatheter occlusion are the mainstay treatments. Early diagnosis via auscultation and echocardiography is essential for prognosis. Treatment choice depends on ductus size, morphology, and available expertise. In contrast to reversed PDA, classic PDA is well suited for interventional closure. This review highlights current surgical options and stresses the importance of early intervention to improve long-term outcomes.

Keywords:

veterinary cardiology; patent ductus arteriosus; surgical treatment



GNSS SEISMOLOGY USING OBSERVATIONS FROM LOW-COST RECEIVERS

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A few words about the author(s):

Hubert Szczepanik, MSc Eng. in Geodesy and Cartography. Fellow in the NCN SHENG-3 project “Exploring the potential of mass-market high-precision GNSS for geoscience applications (MAGIC).” Student Brand Ambassador at UWM in Olsztyn.

Abstract:

In an era of growing demand for affordable and accessible ground motion monitoring, low-cost GNSS receivers gain increasing importance. This study examines whether such receivers, combined with absolute data processing methods like VADASE, enable detection of millimeter-level dynamic displacements.

The presentation focuses on modern applications of GNSS technology in seismological research. It introduces innovative use of high-rate GNSS observations from low-cost receivers. Traditional vibration sensors, such as seismometers and accelerometers, are often expensive, difficult to scale, and provide only relative displacement data. This study evaluates the potential of affordable GNSS devices for detecting microtremors and dynamic ground motion.

Advanced GNSS data processing techniques are presented, including RTK, PPP, and direct methods such as VADASE, the Phase Residual Method, and the Signal Processing Method. A shake table was used to simulate seismic events, allowing direct comparison of results from a geodetic-grade Trimble Alloy receiver and a low-cost Septentrio unit. Results clearly show that low-cost receivers, with appropriate algorithms, can reach performance comparable to professional seismological systems. The findings support the development of low-cost, distributed seismic monitoring networks, especially where conventional systems are financially or logistically infeasible.

Keywords:

GNSS seismology; low-cost GNSS receivers; high-rate GNSS observations; seismic displacement detection; VADASE



PARADOX AS THE LIMIT OF KNOWLEDGE: FROM CONTRADICTION TO STRUCTURE

Weronika Szewczyk

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A few words about the author(s):

Weronika Szewczyk – mathematician and cognitive scientist affiliated with Maria Curie-Skłodowska University in Lublin, where she strives to combine philosophical knowledge and knowledge about cognition with mathematics and logic.

Abstract:

Since ancient times, mathematical paradoxes have served as both intellectual challenges and epistemological mirrors. They reveal points of tension between intuition and formalism, understanding and description, and thought and structure. Throughout the history of mathematics, it was paradoxes that marked turning points by revealing contradictions that indicated the need for a deeper restructuring of the conceptual framework.

Classic paradoxes, such as Russell's paradox, have led to fundamental changes in our understanding of sets, functions, and numbers. Paradoxes of infinity, such as Hilbert's Hotel and Galileo's Bijections, revealed the incompatibility of classical number intuition with the reality of infinite sets. This required the introduction of the concepts of cardinality and non-finite orders.

This paper will trace the role of selected paradoxes in expanding the boundaries of mathematical knowledge. Additionally, it will demonstrate how paradoxes expose the limits of existing systems and provoke the creation of new tools, such as non-finite induction and axiomatic systems stronger than Peano arithmetic.

Thus, paradox becomes a signpost – a moment when cognition transcends itself, moving from contradiction to structure. Mathematics develops not despite paradoxes but thanks to them – as the art of thinking at the frontier.

Keywords:

paradox; intuition; mathematics development; infinity



DETECTING THE INVISIBLE ENEMY – MODERN DIAGNOSTIC METHODS FOR CRYPTOSPORIDIUM SPP.

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A few words about the author(s):

I am a veterinary doctor currently undergoing an internship. My main area of interest is herd health management in cattle, with a focus on disease prevention and improving production outcomes through evidence-based practices.

Abstract:

Cryptosporidium spp. are protozoan parasites with significant veterinary and public health relevance. Due to their small size and environmental resistance, detection can be challenging. This presentation reviews current diagnostic approaches, including immunochromatographic rapid tests, PCR techniques, and microscopic staining methods. Emphasis is placed on practical applications in field conditions and the importance of early detection for effective outbreak control and herd health management.

Keywords:

diarrhea; neonatal cattle; diagnostic; herd health management; one health



AIR POLLUTION – ANALYSIS OF SURVEY RESULTS

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A few words about the author(s):

My name is Zuzanna Klekocińska. I am a 4th year student of early childhood and preschool education. I want to show my future students how important it is to take care of the environment, which is why I chose this topic for my presentation.

Abstract:

Air pollution is one of the most serious health and environmental challenges faced by modern cities. The aim of this study was to assess the impact of air quality on the health of residents and the local climate, as well as to evaluate the level of public awareness in this area. The research was conducted through a survey involving 50 respondents, including both closed and open-ended questions along with a demographic section.

The results show that 71% of participants experience negative health effects related to air pollution, such as coughing, headaches, or allergies. Although 58% of respondents positively assess the air quality in their surroundings, as many as 42% indicate average or poor air quality, and more than half report the occurrence of smog alerts in their area. The open responses also revealed specific observations of environmental changes and proposed solutions - such as the need to develop public transportation, green urban spaces, and modernize heating systems.

The high willingness of residents to engage in pro-environmental actions (100% declare activity or willingness) demonstrates strong potential for involving local communities in anti-smog policies. At the same time, the lack of clearly positive assessments of local authorities' actions highlights the need for improved communication and tangible, systemic efforts. The study's findings may serve as a starting point for shaping effective and sustainable strategies to improve air quality.

Keywords:

air pollution; smog; health



FOOT AND MOUTH DISEASE (FMD)

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A few words about the author(s):

My name is Małgorzata. I graduated with a bachelor's degree in Veterinary Analytics from the University of Life Sciences in Lublin, where I am currently continuing my studies at the master's level.

Abstract:

Foot-and-Mouth Disease (FMD) is a highly infectious disease affecting cloven-hoofed livestock worldwide. It primarily infects cattle, pigs, sheep, goats, and some wild ruminants. The causative agent is the FMDV virus from the Picornaviridae family, known for its high genetic variability and multiple serotypes, complicating vaccine development.

FMD spreads rapidly via direct contact, contaminated equipment, humans, vehicles, animal products, and airborne transmission up to 60 km. Clinical signs include fever, loss of appetite, excessive salivation, and painful blisters in the mouth and on the feet, leading to lameness and reduced productivity.

Though harmless to humans, FMD severely impacts national economies and international trade. In FMD-free countries, outbreaks trigger emergency measures like preventive culling, quarantines, export bans, and costly sanitation. The 2001 UK outbreak caused losses over £8 billion.

This presentation reviews the virus's biology, clinical symptoms, diagnostics, control strategies, and global status. It highlights the importance of veterinary surveillance, international cooperation, and biosecurity in maintaining FMD-free status, alongside economic and legal consequences.

Keywords:

cloven-hoofed animals; virus; infectious disease



ELECTROCHEMICAL DEPOSITION OF 3-METHOXYCATECHOL AND CATECHOL ONTO CARBON NANOTUBES FUNCTIONALIZED WITH 1-AMINOPYRENE FOR IMPROVED ELECTROCHEMICAL SENSING OF NADH

Amanda Leda*, Patrycja Płócienniczak-Bywalska, Grzegorz Milczarek, Tomasz Rębiś

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A few words about the author(s):

Amanda Leda, Patrycja Płócienniczak-Bywalska, Grzegorz Milczarek, and Tomasz Rębiś are researchers at Poznan University of Technology, specializing in analytical electrochemistry.

Abstract:

This work introduces a novel electrochemical platform for sensitive NADH detection, utilizing multi-walled carbon nanotubes (MWCNTs) functionalized with 1-aminopyrene (1-AP) and catechol derivatives. The electrode modification involves a two-step process: non-covalent π - π stacking of 1-AP onto MWCNTs, followed by the electrochemical assembly of catechol (Cat) or 3-methoxycatechol (3-MCat). This approach maintains the nanotubes' electronic integrity while incorporating redox-active groups via Michael addition. The resulting GC/MWCNT/1-AP/Cat electrode achieves NADH detection at a low applied potential (+0.1 V) with a detection limit of 1.98 μ M. FT-IR characterization confirmed successful catechol incorporation, and the electrodes exhibited reversible quinone/hydroquinone redox behavior along with excellent electron transfer capabilities. These characteristics enable precise analyte quantification, highlighting the platform's suitability for clinical and food industry applications. The straightforward in situ electrode fabrication and flexibility toward various enzymatic modifications emphasize its promise as a multifunctional biosensing tool.

Keywords:

1-aminopyren; multi-walled carbon nanotubes; catechol; 3-methoxycatechol; NADH sensor



PROBIOTIC SUGAR-FREE ICE CREAM: THE SYNERGY OF FIBER AND XYLITOL

Aneta Lipkiewicz

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A few words about the author(s):

PhD candidate at the Warsaw University of Life Sciences (SGGW), specializing in analytical, microbiological, and physicochemical research. Focus areas include cellulose nanofibers (NFC) for specialized uses and functional food. Funded by NCBR project.

Abstract:

The growing demand for healthy, low-glycemic desserts inspired the development of innovative probiotic ice cream without added sugar, enriched with prebiotic fiber (inulin + beta-glucans) and xylitol, based on the traditional Lubranieckie ice cream recipe. The study aimed to evaluate microbiological stability, sensory properties, and rheological characteristics during 60-day storage at -25°C . Methods included microbiological analysis (PetriFilm Lactic Acid Bacteria, PN-ISO 15214:2002), sensory evaluation (30-person panel, 9-point scale), and rheological testing (rheometer). Results showed that *Lactobacillus casei* maintained viability at $7.5 \log \text{CFU/g}$, while ice cream with fiber and xylitol achieved a sensory score of 8.2/9, outperforming control samples (6.8/9). Prebiotic fiber enhanced microbiological stability and texture, while xylitol improved sweetness perception. The product remained microbiologically and sensory stable for 60 days, positioning it as an attractive “clean label” functional dessert for diabetics, children, and health-conscious consumers, contributing to innovation in the food industry.

Keywords:

probiotic ice cream; sugar-free; prebiotic fiber; xylitol; functional food



FELINE LEUKEMIA VIRUS

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A few words about the author(s):

I study veterinary analytics at the University of Life Sciences in Lublin.

Abstract:

Feline leukemia virus (FeLV) is a retrovirus that affects domestic cats and poses a significant threat to feline health worldwide. The virus is transmitted mainly through saliva, nasal secretions and close contact between cats. FeLV can cause a wide range of clinical manifestations, including immunosuppression, anemia, and various types of cancers, particularly lymphoma and leukemia. The virus has several forms, but only FeLV-A can be spread between cats. It is also the most common type. Infected cats may develop other mutant forms of the primary FeLV-A subtype, as well as FeLV-B, FeLV-C or FeLV-T. The FeLV-B subtype increases the frequency of neoplastic diseases; FeLV-C causes severe anemia as a consequence; FeLV-T leads to lymphoid depletion and immunodeficiency. Diagnostic methods include: serological tests (ELISA); molecular methods (PCR) or immunofluorescence test. The virus is susceptible to disinfectants and detergents. There is no definitive cure for FeLV, but supportive care, antiviral therapies and vaccinations, or monitoring of sick cats can improve quality of life and lifetime and prevent the spread of the virus.

Keywords:

FeLV; cats; virus; leukemia



BRUCELLA SPP. – AN INTRACELLULAR SPECIALIST: A MICROBIOLOGICAL PORTRAIT OF THE PATHOGEN

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A few words about the author(s):

My name is Karolina Pniaczek, I graduated with a bachelor's degree in veterinary analytics from the University of Life Sciences in Lublin.

Abstract:

The aim of this presentation is to describe the microbiological adaptive mechanisms of *Brucella* spp. that enable its effective survival and replication within host cells. *Brucella* is a Gram-negative, non-motile, facultative intracellular pathogen responsible for brucellosis – a zoonotic disease with a chronic course. This bacterium possesses a range of unique features, including an atypical lipopolysaccharide structure that is poorly recognized by Toll-like receptors (TLRs), allowing it to evade the immune response. A key role in pathogenesis is played by the Type IV secretion system, which enables the injection of effector proteins into the host cell cytoplasm and the formation of the so-called *Brucella*-containing vacuole (BCV). These mechanisms allow the bacterium to replicate within the endoplasmic reticulum. A better understanding of these processes forms the basis for developing more effective diagnostic, therapeutic, and preventive strategies against brucellosis.

Keywords:

Brucella spp.; brucellosis; BCV



GENERATIVE ALGORITHMS IN MUSIC AND AMBIENT SOUND SYNTHESIS

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A few words about the author(s):

Eng. Patryk Zając - a graduate of engineering computer science at the Nicolaus Copernicus University in Torun. Currently a student of Computer Games Informatics at Jagiellonian University in Cracow. In free time he works on his own games.

Abstract:

Generative music algorithms and ambient environmental sound synthesis represent a new paradigm for creating interactive soundtracks in games and VR applications. Unlike static loops, RNNs (LSTM/GRU) and attention-based models (Transformers) generate composition fragments “on the fly,” preserving motifs and adapting the piece’s structure to real-time scene parameters such as action tempo or gameplay mood. Procedural ambient synthesis, employing granular synthesis and physical resonator models, enables unique, dynamic soundscapes that respond to player position and events in the virtual world, significantly enhancing immersion. Integration with leading audio engines (FMOD and Wwise) is achieved via dedicated DSP/Source plugins that accept control parameters (tempo, key, intensity) in real time and output the generated audio stream, easily embedded in Unity or Unreal Engine. This presentation reviews RNN and Transformer methods for adaptive soundtrack composition, procedural ambient synthesis techniques, and offers practical implementation examples along with an analysis of the advantages and limitations of these solutions in video games.

Keywords:

generative music algorithms; computer games; adaptive soundtrack; recurrent neural networks (RNN); transformers

ABSTRACTS OF **POSTERS**



**TECHNICAL AND
NATURAL SCIENCES**



CRYPTOSPORIDIUM PARVUM: CURRENT TREATMENTS, CONTROL STRATEGIES, AND THE FUTURE OF VACCINATION – INSIGHTS FROM HERDS IN CENTRAL POLAND

Adrian Czerwiński

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A few words about the author(s):

I am a veterinary doctor currently undergoing an internship. My main area of interest is herd health management in cattle, with a focus on disease prevention and improving production outcomes through evidence-based practices.

Abstract:

Cryptosporidium parvum is a zoonotic protozoan parasite that poses a significant threat to both veterinary and public health. This study investigates therapeutic and preventive strategies applied in 20 cattle farms in central Poland. Using rapid immunochromatographic tests and structured surveys, both pharmacological and non-pharmacological methods were assessed. The findings highlight the dominant use of high-quality colostrum administration, age group separation, and internal biosecurity practices. However, limitations in external biosecurity and inconsistent protective measures suggest the need for unified guidelines. The increasing interest in maternal vaccination reflects the growing trend toward integrated “One Health” prevention approaches.

Keywords:

cryptosporidiosis; cattle; herd management; one health; diarrhea



ENZYMATIC GLUCOSE BIOSENSOR BASED ON GC/MWCNT/1-AP/3-MCAT/GDH

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A few words about the author(s):

Amanda Leda, Patrycja Płócienniczak-Bywalska, Grzegorz Milczarek, and Tomasz Rębiś are researchers at Poznan University of Technology, specializing in analytical electrochemistry.

Abstract:

The study employed a glassy carbon (GC) electrode functionalized with multi-walled carbon nanotubes (MWCNTs), 1-aminopyrene (1-AP), 3-methoxycatechol (3-MCat), and glucose dehydrogenase from **Pseudomonas** sp. (GDH). The efficient immobilization of the enzyme facilitated precise and reliable glucose quantification over a broad concentration range using two amperometric methods (double-step amperometry and chronoamperometry). This capability underscores the sensor's strong potential for accurate glucose monitoring in model solutions. The findings indicate that this platform effectively addresses critical challenges in both medical diagnostics and industrial applications. It is ideally suited for portable, point-of-care glucose monitoring as well as for real-time glucose detection in biotechnological processes and food quality control. Moreover, the straightforward in situ fabrication of the highly electroactive electrode paves the way for innovative biosensors based on oxidized polycyclic aromatic hydrocarbons and catechol derivatives, expanding the scope of electrochemical sensing technologies.

Keywords:

1-aminopyrene; multi-walled carbon nanotubes; 3-methoxycatechol; quinone transition; glucose dehydrogenase biosensor



CHARACTERIZATION OF A LYTIC WEBERVIRUS PHAGE ACTIVE AGAINST KLEBSIELLA PNEUMONIAE SEROTYPES K2 AND K13

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A few words about the author(s):

Gabriela Mądrzyk, MSc in Microbiology, focuses on phage-derived proteins for therapeutic applications. Dr hab. Grażyna Majkowska-Skrobek and Prof. dr hab. Zuzanna Drulis-Kawa specialize in phage biology and alternative antimicrobial strategies.

Abstract:

Klebsiella pneumoniae poses a serious public health threat due to the increasing prevalence of strains resistant to multiple classes of available antibiotics. Moreover, the emergence of hypercapsulated and hypervirulent strains, particularly those belonging to serotype K2, enables these bacteria to efficiently evade innate immune responses. The development of alternative therapeutic strategies (such as bacteriophage therapy or the application of bacterial enzymes, including depolymerases) has become a promising direction of current research.

This study characterized a newly isolated bacteriophage specific to *K. pneumoniae* strain CIP 52.145 of the K2 capsular type. The phage exhibited a broad host range: in addition to the original host, it was capable of infecting other *K. pneumoniae* strains of the K2/KL2 type, as well as strains belonging to the K13/KL13 capsular locus. This was confirmed through spot assays and bacterial growth kinetics in the presence of phage. Genomic sequence analysis and TEM enabled classification of the phage within the Webervirus genus of the Drexelviriidae family and the siphovirus morphotype. A putative depolymerase gene identified in the phage genome showed high similarity to enzymes with confirmed activity against *K. pneumoniae* serotype K2.

Given the epidemiological significance of *K. pneumoniae* K2 strains, the newly isolated phage and its encoded depolymerase represent promising candidates for further development.

Keywords:

Klebsiella pneumoniae; Bacteriophage; Phage therapy; Depolymerase



A COMPREHENSIVE EDUCATIONAL FRAMEWORK FOR STRATEGIC NOISE MAPPING

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A few words about the author(s):

Dominik Mech is a student of the Maritime University in Szczecin, specializing in multimedia programming. His academic interests include new and emerging technologies like entity-component-system programming in game development and signal analysis.

Abstract:

Strategic noise maps are critical tools for urban planning and public health, mandated by EU and national law. However, a significant gap exists in the academic literature - existing documentation, such as the S. Shilton 'Guidance Note', is primarily an operational guide for practitioners, leaving a need for comprehensive framework aimed at learning and research audience. This work aims to explain basic concepts and main workflow, like data classification (e.g. L_{den} , L_{night}), of creating a strategic noise map. Furthermore, it integrates emerging trends that appear thanks to research and development of AI, machine learning and IoT devices, like dynamic real-time noise maps and data supplementation. By providing a clear, end-to-end overview, this framework is intended to make the complex process of noise mapping more accessible for students and researchers new to the field.

Keywords:

strategic noise mapping; acoustic maps; educational framework; IoT; AI



FOREST FIRES – NATURAL PROCESS OR GROWING THREAT?

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A few words about the author(s):

I am a forestry student, fascinated by what happens in the forest - from natural processes to human influence. I am interested in nature not only from the scientific side, but above all as a space for living and coexisting.

Abstract:

Forest fires play an important role in shaping forest ecosystems as a natural part of their life cycle. In many forest types, especially boreal and dry coniferous forests, fire promotes regeneration, maintenance of biodiversity and reduction of accumulated biomass. However, recent decades have seen an increase in the frequency, intensity and extent of fires, which is of increasing concern. Climate change, such as prolonged droughts, rising temperatures and extreme weather events, combined with human activities (habitat fragmentation, inappropriate forest management, deliberate burning), are destabilising natural fire cycles. As a result, fires increasingly threaten not only forests, but also people, infrastructure and the economy. The aim of this paper is to review the current knowledge on the role of fires in forest ecosystems and to analyse whether the current phenomena can still be considered natural or whether we are dealing with a new, anthropogenic threat. It will also discuss examples of preventive measures and challenges facing forestry and environmental policy.

Keywords:

forest fires; climate change; environmental protection



MICROENCAPSULATION OF VEGETABLE OILS

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A few words about the author(s):

Members of the Student Scientific Circle of the League for Nature Conservation, who actively participate in the research, under the supervision of the associate of Marlena Musik, PhD.

Abstract:

Microencapsulation is a widely applied technique designed to create a protective barrier between a core substance and a surrounding shell material. This barrier effectively reduces undesirable chemical or physical interactions, while simultaneously preserving the core's biological activity, functional properties, and physicochemical stability. Due to its versatility and effectiveness, microencapsulation has been extensively utilized and commercialized, particularly in the encapsulation of marine oils, vegetable oils, and essential oils. A wide range of encapsulation techniques are used. These include, but are not limited to, emulsification, spray drying, coaxial electrospraying, freeze drying, coacervation, in situ polymerization, extrusion, supercritical fluid processing, and fluidized-bed coating. The selection of a suitable encapsulation technique and wall material is determined by several factors, including the physicochemical characteristics of the core material, the desired release profile, the target application, and the specific processing conditions. An optimal encapsulation system must therefore be tailored to meet both the functional requirements of the core substance and the environmental demands of the intended end use.

Keywords:

microencapsulatio; vegetable oils



AFFECTIVE COMPUTING IN GAMES: RECOGNIZING PLAYER EMOTIONS

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A few words about the author(s):

Eng. Patryk Zając – a graduate of engineering computer science at the Nicolaus Copernicus University in Torun. Currently a student of Computer Games Informatics at Jagiellonian University in Cracow. In free time he works on his own games.

Abstract:

Affective computing is an emerging field in game development that focuses on recognizing and responding to the player's emotional states. Traditional game systems adapt to user input and performance, but affective systems go further by analyzing facial expressions, vocal signals, and biometric data such as galvanic skin response (GSR) and heart rate to estimate emotional engagement, stress, or frustration. These signals are then used to dynamically adjust game difficulty or narrative progression, aiming to maintain player immersion and emotional flow. Key applications include affect-driven storytelling and real-time difficulty balancing based on detected emotions. However, this approach raises significant ethical and privacy concerns, especially regarding the handling of sensitive biometric data and the potential for biased emotion recognition models. This poster presents a review of current techniques in affect detection, examples of adaptive systems in games, and an overview of challenges related to fairness, transparency, and user consent in emotion-aware game design.

Keywords:

affective computing; computer games; adaptive gameplay; DDA; emotion recognition



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