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Proceedings of the International Sopot Youth Conference 2025: Where the World is Heading

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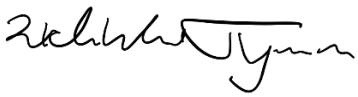
FOREWORD

For decades, attempts to assess human impact on natural environment have been undertaken, and they have involved various approaches, means and tools. In order to secure the sustainable use of the planet we must fully understand the processes which govern the environment and thus its functioning, including knowledge of the impacts of human activities on the natural environment.

We need to strive for a predicted planetary system where society understands and can respond to changing conditions. We want an accessible planet with open and equitable access to data, information and technology and innovation, an inspiring and engaging environment where society understands and values it in relation to human well-being and sustainable development.

With the International Sopot Youth Conference, we provide a platform for interdisciplinary and multidisciplinary discussions and exchange of information across all scientific disciplines. We are confident that this annual opportunity is a step forward to create a generation of researchers, who think and work in terms of sustainable science.



Tymon Zielinski

Chairman of the Sopot Science Association

AGENDA

23 May 2025

9:00 **Conference start**

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How nature inspires the aviation industry: the wake energy retrieval.

9:45 – 10:00 **Monika Zielienkiewicz et al., University of Gdansk, Poland**
Is the cure for Neuroblastoma growing in the Baltic Sea?

10:00 – 10:15 **Aleksandar Stanojković, National Marine Fisheries Research Institute – NMFRI, Poland; Palacký University Olomouc, Czech Republic**
Painting the speciation continuum of microorganisms.

10:15 – 10:30 **Maja Kuźnik, Dominika Saniewska, University of Gdansk, Poland**
From Beak to feather: Mercury intake and elimination in Antarctic Shags (Leucocarbo bransfieldensis).

Session 1.2
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Evaluation of Methods for Formaldehyde Measurement in Industrial Emissions.

9:45 – 10:00 **Claudia Franchina et al., Università degli Studi di Milano-Bicocca, Italy**
Odors from Industrial Processes: A Monitoring Approach Using Electronic Noses.

10:00 – 10:15 **Martina Gianotti et al., Università degli Studi di Milano-Bicocca, Italy**
Preliminary evaluation of experimental set-up to validate methods for quantification and classification of biogenic CO2 in stack emissions.

10:15 – 10:30 **Kinga Papuga et al., University of Gdansk, Poland**
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11:30 – 11:45 Karolina Adamska, University of Warmia and Mazury in Olsztyn, Poland
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11:15 – 11:30 Jurand Sobiecki, Emilia Walaszek, Katarzyna Syguda, et al., Fahrenheit Universities, Poland
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11:30 – 11:45 Jurand Sobiecki, Klaudia Tusińska, Marianna Szczepaniak, et al., Fahrenheit Universities, Poland
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Multisensory learning in virtual and augmented environments.

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14:15 – 14:30 **Zuzanna Chlebicka, University of Warmia and Mazury in Olsztyn, Poland**
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14:45 – 15:15 **Ewa Rutkowska, University of Warmia and Mazury in Olsztyn, Poland**
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15:45 – 16:00 **Announcements of winners**

16:00 **Closing of the conference**

ORAL PRESENTATION ABSTRACTS

Between Protection and Persecution: Legal Challenges in Wolf Conservation Amidst Policy Shifts and Poaching in Poland and the EU

Zuzanna Chlebicka

University of Warmia and Mazury in Olsztyn, ul. Michała Oczapowskiego 2, 10-719 Olsztyn, Poland

The conservation of the grey wolf (Canis lupus) in Europe has become a focal point of legal and political discourse, particularly following recent changes in policy. On December 3, 2024, the Standing Committee of the Bern Convention approved the European Union's proposal to downgrade the wolf's status from "strictly protected" to "protected." This change officially came into effect on March 7, 2025. Aimed at providing greater flexibility in managing wolf populations, the decision has sparked considerable controversy among conservationists and legal experts.

This presentation will analyze the legal implications of the EU's policy shift, its impact on the Habitats Directive, and its potential influence on national conservation efforts. It will also examine the effectiveness of existing legal frameworks in combating poaching and ensuring a favorable conservation status for wolf populations. The discussion will highlight the tensions between EU-level decisions and national strategies, emphasizing the need for coherent and harmonized legal approaches to wildlife protection.

Criminal Ornithology

Ewa Rutkowska

University of Warmia and Mazury in Olsztyn, ul. Michała Oczapowskiego 2, 10-719 Olsztyn, Poland

This paper focuses on an attempt to define "green criminology," which is gaining new significance in contemporary times. An inseparable element of this phenomenon is ecological harm, often associated in doctrine with the term "victimless crime." The current understanding of this issue justifies a redefinition, which the author will attempt to undertake. Various interpretations of ecological harm will be presented. Green criminology concentrates on acts such as poaching and the trade of protected species. These pathological acts cause imbalances in the numbers of natural animal populations. The impact of criminal activities on bird populations is studied by criminal ornithology. This field of science comprises criminal symptomatology and criminological prevention. One of the many threats is hunting, where lead bullets are used, causing poisoning not only of a single organism but also of the subsequent food chain. Scavengers also fall victim. Lead also causes environmental contamination and numerous neurological problems in living organisms. It also permanently damages the internal organs of animals. In Poland, the problem has been recognized, as evidenced by the introduction of a complete ban on the use of lead ammunition by the Polish Hunting Association. The paper will combine the achievements of penal and biological sciences, approaching the issue in an interdisciplinary manner.

Emotions and values as predictors of latent profiles of beliefs about Artificial General Intelligence (AGI) among high school students

Oliwia Kosecka, Stanisław Czerwiński, Paweł Atroszko

University of Gdansk, Jana Bażyńskiego 8, 80-309, Gdansk, Poland

As AI becomes increasingly central to most life domains, understanding people's attitudes toward it and their predictors is crucial. Previous research has shown that people have mixed feelings about AI and that beliefs about AI are associated with specific attitudes towards it and traits. Typically, experienced emotions and values play an important role in formulating attitudes and behaviors. This study examined how adolescents view artificial general intelligence (AGI) and its development, and how their emotions and values predict those views. A total of 658 high school students participated in the study. A latent profile analysis was conducted based on two variables: the belief that AI will achieve a level of human thinking and the belief that emotions will guide it. The results identified four profiles: (i) "AGI Scientists," who believe that AI will reach human-level thinking and be guided by emotions (16.3%); (ii) "AGI Functionalists," who believe that AI will reach the level of human thinking but will not be guided by emotions (14.4%); (iii) "AGI Skeptics," who believe that AI will neither achieve the level of human thinking nor be guided by emotions (20.2%); and (iv) "AGI Realists," who are more balanced and uncertain on both counts (49.1%). These profiles showed differences in terms of values of tradition and benevolence, as well as emotions of guilt, sadness, and affection. The results suggest that emotions and values may contribute to shaping attitudes toward AI.

Evaluation of Methods for Formaldehyde Measurement in Industrial Emissions

A.M. Cefali[1,2], C. Franchina[1,2], M. Gianotti[1,2], S. Ficocelli[1], L. Ferrero[2], E. Bolzacchini[2] and D. Cipriano[1]

[1] RSE – Ricerca sul Sistema Energetico, Milano, Italy

[2] University of Milano-Bicocca, Milano, Italy, Italy

Formaldehyde is a widely present pollutant in both indoor and outdoor air. Due to its high reactivity and carcinogenic nature, it poses serious health risks and measurement challenges. In fact, the International Agency for Research on Cancer (IARC) has classified formaldehyde as a Group 1 human carcinogen. As a result, countries like Italy have lowered emission limits to 5 mg/Nm^3. This highlights the urgent need for accurate and reliable monitoring systems.

To address this, the European Committee for Standardization (CEN) created the working group TC 264 WG 40, which in 2021 published the standard CEN/TS 17638:2021. This document outlines reference methods for measuring formaldehyde in emissions from stationary sources. In this study, formaldehyde measurement techniques were evaluated through Proficiency Tests (PTs) using the 'LOOP' test bench.

LOOP is a unique facility in Italy that simulates industrial emission conditions using synthetic gases.

Different measurement methods were tested, particular focus was given to Method C (acetylacetone with photometric detection) and Method D (DNPH with HPLC analysis), both described in the CEN standard. Method C showed excellent temporal repeatability, while Method D required careful derivatization for consistent results. Interferents like SO_2 significantly affected accuracy when Milli-Q water was used as the sampling solution, causing underestimations of 35–80%. However, an acidified solution (H_2SO_4 0.01 M) reduced errors to 5–30%.

These results support the development of improved protocols and confirm the importance of PTs in validating reliable emission monitoring systems for regulatory and environmental protection.

Feminism and Women's Rights: Progress, Challenges, and the Road Ahead

Paulina Smolak

Ateneum Academy in Gdansk, 3 Maja 25a, 80-802 Gdansk, Poland

The presentation showcases the evolution and current state of feminism and women's rights in the world. It begins with a definition of feminism and a discussion of its history through four major waves, ranging from suffrage movements to contemporary digital activism. In my presentation, I highlighted the relatively small but global progress in areas such as education, health, legal protection and political representation, while also pointing to the inequalities that still persist in women's lives. I paid particular attention to contemporary challenges, such as gender-based violence, economic inequalities and new threats emerging in the digital space. I also discussed the role of online activism as a tool in the fight for women's rights and a source of new threats. In conclusion, the presentation identifies the most important priorities for the future, highlighting the importance of intersectionality, reproductive rights and climate justice. The conclusion includes concrete actions that everyone can take to support feminist values and build a more equal world.

From Beak to feather: Mercury intake and elimination in Antarctic Shags (*Leucocarbo bransfieldensis*)

Maja Kuźnik, Dominika Saniewska

Faculty of Oceanography and Geography, University of Gdansk, al. Marszałka Piłsudskiego 46, 81-378 Gdynia, Poland

Mercury (Hg) is a global pollutant with severe neurotoxic and mutagenic effects, particularly in its methylated form (MeHg), which exhibits high bioaccumulation and biomagnification potential in marine food webs. Despite its remoteness, Antarctica is not exempt from Hg contamination, as atmospheric deposition transports pollutants from lower latitudes. The Antarctic shag (Leucocarbo bransfieldensis) - a top predator in the polar marine ecosystem, serves as a key bioindicator for monitoring environmental contamination. However, little is known about the MeHg cycle in the Antarctic region and how top predators, such as L. bransfieldensis, cope with elevated Hg concentrations. The aim of this study was to identify and analyze mechanisms of mercury uptake and elimination in the Antarctic shags in their natural environment, focusing on MeHg bioaccumulation in biological matrices. Samples were obtained during bird banding and included naturally regurgitated material, feathers and feces. The research included an analysis of total mercury, its fractions and methylmercury. The results revealed significant differences in mercury levels between the type of samples. Mercury concentrations in food samples varied significantly, suggesting differences in mercury bioavailability within the local food web. Mercury levels in feces were lower than in feathers but higher than in food samples, indicating that some mercury is excreted through feces. The highest mercury concentration was observed in feathers, highlighting their role as a primary route of mercury elimination through molting. The results will contribute to a better understanding of mercury cycling in Antarctica, given the ongoing climate changes and their impact on polar ecosystems.

Gut Microbiome and Personality

Emilia Walaszek[1], Katarzyna Michta[2], Katarzyna Syguda[1], Wiktoria Manowska[1], Julia Kwoczek[1] & Jurand Sobiecki[1]

[1] University of Gdansk, Jana Bażyńskiego 8, 80-309, Gdansk, Poland

[2] Medical University of Gdansk, ul. Marii Skłodowskiej-Curie 3a, 80-210, Gdansk, Poland

Recent research suggests that the gut microbiome may be linked not only to physical and mental health but also to stable psychological traits. This presentation provides an overview of emerging evidence on the associations between gut-related processes—such as microbial diversity, inflammation, and neurochemical signaling—and dimensions of personality. Building on this foundation, we present results from a survey study examining the relationships between personality traits and self-reported gut microbiome-related habits and symptoms (e.g., dietary patterns, digestion, and probiotic use). The aim was to explore whether certain personality profiles are associated with behaviors and bodily experiences that may reflect or influence gut microbiota composition. Preliminary findings highlight potential patterns and lay the groundwork for future interdisciplinary studies that integrate psychometric and biological data. Implications for personalized health and behavior-based interventions are discussed.

How nature inspires the aviation industry: the wake energy retrieval

Hubert Górski

The State University of Applied Sciences in Chełm, ul. Pocztowa 54, 22-100, Chełm, Poland

In the world of ever-increasing environmental awareness (and airline companies seeking for every possible way to save some money) there is a growing demand for new solutions that may reduce fuel consumption in air transport. That's where birds like geese come in, or rather fly in, in entire flocks, because the way they fly together gave the engineers from Airbus an idea to turn something considered rather undesirable into a new way to save fuel. It turns out that an airplane flying in a certain position in the wake turbulence created behind another plane may benefit from an updraft, which helps it stay in the air and leads to fuel savings. The tests have proven that this method can reduce fuel usage up to ten percent.

We will find out how wake turbulence is created, why is it considered a flaw and how exactly can it help airplanes burn less fuel and what are the real possibilities to use this method in commercial flights on a larger scale.

Is the cure for Neuroblastoma growing in the Baltic Sea?

M. Zielenkiewicz[1], H. Mazur-Marzec[2], G. Węgrzyn[1], Ł. Grabowski [1]

[1] Department of Molecular Biology, Faculty of Biology, University of Gdansk, Wita Stwosza 59, 80-309 Gdansk, Poland

[2] Department of Marine Biotechnology, University of Gdansk, Al. Marszałka Piłsudskiego 46, 81-378 Gdynia, Poland

Neuroblastoma (NBL) is one of the most frequent and deadly children cancer. Only 30% of cases diagnosed in the third and fourth stage are curable. The current treatment is ineffective due to the young age of patients and late diagnosis.

For this reason, new treatment strategies are being sought. Cyanobacteria are a rich source of compounds that may have anticancer potential. Their metabolomes are rich in bioactive compounds, and some of them show cytotoxic effects on cancer cells.

A study was designed to identify the metabolites of two species of Cyanobacteria with anticancer properties against NBL – Nostoc edaphicum (CCNP 1411) and Pseudanabaena cf. galeata (CCNP 1313). It was conducted on NBL cell line (SH-SY5Y) and children fibroblasts cell line (HDFc) as a model of healthy cells. The entire process of identifying compounds with anticancer potential was carried out – from the isolation of whole cyanobacterial metabolomes, through their subdivision into smaller groups of compounds, to the isolation and identification of single compound with therapeutic potential. Cytotoxicity was verified by MTT assay at each stage of research.

Fractions containing metabolomes of the cyanobacterial species tested showed 43,7 - 90,2% decrease in viability of NBL cells. After subdivision of the effective fractions, some of them reduced cell survival by 62,2 - 89,4%, some of which had no cytotoxic effect on healthy cells. Then single compounds were isolated and those with anticancer properties were identified.

The studies allowed the identification of compounds with potential for new therapy against NBL. Despite the promising results, further studies are required to evaluate their core mechanisms of action and their effects in vivo using an animal model of NBL.

Mental Health as a Global Priority: The Next Pandemic?

Karolina Adamska

University of Warmia and Mazury in Olsztyn, ul. Michała Oczapowskiego 2, 10-719 Olsztyn, Poland

In recent years, mental health has emerged as a key issue in the global health agenda. The COVID-19 pandemic exposed the vulnerability of individuals and societies to psychological distress on an unprecedented scale. According to the World Health Organization, by 2030 depression is expected to become one of the leading causes of disability worldwide.

This presentation examines mental health as a potential "next global health crisis" — not in terms of a viral outbreak, but as a systemic emergency with pandemic-like consequences. It focuses on three critical areas: 1) global disparities in access to psychological care, 2) the impact of digital technologies and social media on the mental health of young people, and 3) the failure of many healthcare systems to prioritize mental well-being.

The aim is to advocate for a new paradigm in mental health policy — one that integrates medicine, education, social policy, and technology. In the face of growing psychological challenges, treating individual symptoms is no longer sufficient; we must build resilient communities capable of preventing loneliness, chronic stress, and burnout. Will mental health finally become a real priority — or remain a rhetorical placeholder in political discourse?

Multisensory learning in virtual and augmented environments

Weronika Menka[1], Marek Szmeichel[2]

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[2] Ateneum Academy in Gdansk, 3 Maja 25a, 80-802 Gdansk, Poland

Immersive technologies such as VR and AR are proliferating across the learning areas. This material explores how multi-sensory learning experiences can improve memory, engagement, and comprehension. Basing on research from neuroscience and analytical psychology, the presentation will explore the design of learning experiences that leverage sound, movement, and spatial immersion as critical to learning process. It will also address the potential for cognitive overload along with emotional and affective challenges.

Odors from Industrial Processes: A Monitoring Approach Using Electronic Noses

Claudia Franchina[1,2], Amedeo Manuel Cefalì[2], Martina Gianotti[1,2], Salvatore Ficocelli[2], Simona Pascariello[3], Luca Piangerelli[3], Luca Ferrero[1], Ezio Bolzacchini[1] and Domenico Cipriano[2]

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[2] RSE-Ricerca sul Sistema Energetico, Via Rubattino 54, 20134 Milan, Italy

[3] Arpa Lombardia, Piazza dell'Ospedale Maggiore, 3, 20161 Milan, Italy

The perceived odor causing olfactory nuisance results from the interaction of volatile substances with the human olfactory system, a complex issue linked to industrial emissions that may impact health.

An odor monitoring campaign was conducted in collaboration with ARPA Lombardia, installing two electronic noses (WT1 - Ellona, Tolosa, Francia; MSEM 3200 - Sensigent, Baldwin Park, California) at the receptor site for continuous odor detection. The monitored company processes metals through cold stamping and thermal treatments, using mineral oils. Chimney emissions were sampled following the UNI EN 13725:2022 and analyzed using GC/MS, detecting the presence of VOCs, sulphides, ketones, and alcohols, some of which are potentially irritating. Dynamic olfactometry quantified the odor impact at 6896 ouE/m^3, in accordance with EN13725:2022 and then the e-Noses were calibrated through a training process.

The data analysis revealed two main peaks in VOC concentration on weekdays, with values ranging between 0.02 ppm and 0.036 ppm in the morning (08:30-10:00) and between 0.032 ppm and 0.074 ppm in the evening (19:00-20:00). During the weekend, with reduced industrial activity, concentrations were minimal. The WT1 sensor detected significant H_2S concentrations, with minimum values between 10:30 and 13:30 (0.002 - 0.006 ppm) and a notable increase between 18:00 and 21:00 (0.025 - 0.036 ppm). The e-Noses successfully identified industrial odor emissions, showing that weak (251-500 ouE/m^3) and moderate odors (501-1000 ouE/m^3) remain more constant throughout the day and night. In contrast, intense (1001-2000 ouE/m^3) and very strong odors (>2000 ouE/m^3) occur mainly in the evening and nighttime, suggesting that industrial nighttime operations may generate more persistent emissions.

Painting the speciation continuum of microorganisms

Aleksandar Stanojković[1,2]

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Despite the global biodiversity and crucial role of bacteria in various ecosystems, our understanding of the genetic mechanisms driving ecological adaptation and species emergence (speciation) remains limited. I studied patterns of speciation in free-living soil cyanobacterium Microcoleus on a local and global scale by searching for genome-wide hallmarks of differentiation and divergence. I sequenced over 210 genomes from cultured strains and herbarium specimens. First, I found at least 12 distinct species at different points along a continuum of divergence in the global collection of Microcoleus, with up to four coexisting at the same sampling site. Second, the speciation of Microcoleus species was likely governed by adaptation to novel, yet unexplored microniches in soil systems. I applied the reverse ecology approach to identify genes involved in the adaptation, which uncovered strong signatures of positive selection on genes involved in stress response and biosynthesis of secondary metabolites. Overall, these results provide a deeper understanding of the genetic diversity that underlies ongoing speciation in soil cyanobacterium and elucidates mechanisms contributing to the rise of new cyanobacterial species.

Pathways Between Gut Microbiome and Well-Being: Systematic Review and Meta-Analysis on Inflammation and Depression

Iwona Ulenberg, Martyna Szyperska, Wiktoria Stickel, & Jurand Sobiecki

University of Gdansk, Jana Bażyńskiego 8, 80-309, Gdansk, Poland

The gut microbiome has been increasingly recognized for its potential to influence human health and behavior through several biological pathways, including inflammation. This presentation focuses on one such pathway by systematically reviewing and meta-analyzing the association between inflammatory markers and depressive symptoms. Conducted following PRISMA guidelines, the review synthesizes data from diverse studies to evaluate the strength, consistency, and potential directionality of the inflammation–depression link. Key inflammatory markers such as cytokines are examined in relation to mood, with attention to methodological variation and population differences. Findings are discussed in terms of their implications for biopsychosocial models of depression and future research on integrative mental health interventions.

Preliminary evaluation of experimental set-up to validate methods for quantification and classification of biogenic CO2 in stack emissions

Martina Gianotti[1,2], Amedeo Manuel Cefalì[2], Claudia Franchina[1,2], Salvatore Ficocelli[2], Luca Ferrero[1], Ezio Bolzacchini[1], Domenico Cipriano[2]

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This study aims to develop an experimental setup for generating reference samples to validate methods for quantifying and classifying biogenic and fossil CO_2 in industrial stack emissions. Accurate classification and quantification of CO_2 as biogenic or fossil-based are essential for emissions monitoring and policy enforcement since the European Union's Emission Trading System distinguishes them in regulations, recognizing their different life cycle assessment (LCA) and impact. This distinction is essential at the legislation level for benefiting from incentives and carbon tax reductions. Chemically, the difference is based on the 14C signature they have. If 14C is present, the CO2 molecule is considered recent and thus biogenic; if 14C is absent, the molecule is considered aged and therefore fossil derived.

Being able to generate synthetic atmospheres with known concentrations of pollutants allows the execution of proficiency tests useful to validate new methods. Validation campaigns were conducted using the facility test bench LOOP by RSE S.p.A. in Milano. Once the facility was validated, it has been necessary to implement an experimental set-up to generate reference samples to reduce the relative error associated with the uncertainty of the presence of biogenic CO_2 or fossil CO_2 in the reference standard sample. The reference samples are generated using certified cylinders with 100% fossil composition and 100% biogenic composition and mass flow controllers to quantify the gas that goes throw the sampling solution.

Uniform protocol at national level would help to ensure equal treatment for all parties involved – citizens and industries – promoting fairness, transparency, and reliability in the evaluation process.

Self-esteem-related attentional bias among people at risk of work addiction.

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Compulsive overworking, or work addiction, is increasingly recognised as a behavioural addiction, distinct from work engagement. Research suggests that this phenomenon is associated with various negative outcomes and is driven by complex psychological mechanisms. Low self-esteem seems crucial as it may play a dual role, potentially as a risk factor and a consequence. Initially, individuals may develop work addiction as a coping strategy for low self-esteem, using excessive work to validate their self-worth. However, over time, this reliance can undermine self-esteem, exacerbating life conflicts and fostering a sense of lost control. Cognitive mechanisms, such as attentional bias, may further reinforce work addiction, and they are still understudied.

This study aimed to examine attentional bias towards self-esteem-related stimuli among 116 participants using the Bergen Work Addiction Scale, the Rosenberg Self-Esteem Scale, and a modified dot-probe task. Repeated measures ANOVA revealed a significant attentional bias towards self-esteem-related stimuli at exposure times of 16.7 ms, 650 ms, and 1,500 ms among work-addicted individuals. Comparisons with non-addicted participants also demonstrated significant differences.

These findings highlight the intricate relationship between work addiction and self-esteem, underscoring the need for further research to better understand these mechanisms and inform targeted interventions addressing the self-esteem vulnerabilities underlying work addiction.

Songs as Carriers of Information and Dictactic Tools – Then and Now

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Since the dawn of human civilisation, songs have been significant bearers of knowledge and tools for cultural transmission. These were oral records of history, customs, and ideals prior to the widespread use of writing. Melodies enabled societies to ensure that essential knowledge would pass from one generation to the next. Among the examples are lullabies, through which parents provided early knowledge and emotional comfort to their children; ballads that recounted stories of love and loss; sea shanties that inspired and united sailors; and chansons de geste that honoured heroic acts. Apart from offering amusement, these songs educated, conserved identity, and fostered emotional literacy. Although music in the contemporary era is still entertaining, songs are increasingly relevant in both formal and informal schooling. Teachers and academics understand the emotional and intellectual advantages of music in education. Songs today teach foreign languages, historical truths, and scientific or mathematical concepts. Their mnemonic significance aids memory retention, and their rhythmic and lyrical quality inspires involvement and active participation. Programs like Flocabulary or websites like YouTube reveal how music improves comprehension and motivation for students of all ages. This presentation looks at how the didactic goal of the song has evolved across time and between civilisations. It presents a contrast between the song's role in oral tradition and its relevance in contemporary education. Through specific historical and modern examples, the research emphasises the song's lasting impact as both a cultural artefact and an instructional instrument.

Stress Relief Initiative: Distress in Academia

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Academic environments are increasingly recognized as high-stress contexts, contributing to elevated levels of psychological distress among students and university staff. The Stress Relief Initiative: Distress in Academia, developed within the SEA-EU alliance, addresses this issue through a pilot intervention aimed at promoting physiological and psychological recovery. The project centers on the creation of a dedicated relaxation space equipped with a massage chair to facilitate autonomic regulation and reduce somatic stress symptoms. This is complemented by guided outdoor group cycling sessions, which combine moderate physical activity with social connectedness—factors known to buffer stress and improve well-being. In addition to presenting the design and rationale of the intervention, the project includes a review of current data on stress in academia and its potential contributors, including academic pressure, social isolation, and lifestyle factors. Grounded in psychophysiological and behavioral science, the initiative seeks to evaluate the feasibility and perceived impact of scalable stress-reduction strategies in academic settings while fostering international collaboration across SEA-EU institutions.

Synbiotic Intervention for Better Relaxation and Cognitive Performance

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Recent advances in gut–brain axis research highlight the gut microbiome as a key factor influencing mental well-being, emotional regulation, and social functioning. This interdisciplinary project builds on previous initiatives conducted within the initiative called Biological Foundations of Well-Being Centre, extending the scope of prior SEA-EU and Fahrenheit Universities-funded collaborations. The planned study investigates the effects of a 7-week synbiotic intervention—combining selected probiotic strains with prebiotics—on cognitive performance, relaxation, body composition, and self-reported well-being. Using a placebo-controlled design, the study integrates neurophysiological, cognitive, and physical (body composition analysis) measurements. Relaxation is assessed during massage chair sessions, while cognitive engagement is tested through tasks requiring sustained attention and rapid decision-making. The project aims to determine whether daily synbiotic supplementation enhances neurocognitive functioning and physiological recovery more effectively than a placebo. This integrative approach captures multidimensional outcomes across neural, behavioral, and somatic domains, offering novel insights into the psychophysiological benefits of gut microbiota modulation. In the long term, findings may inform the development of scalable, evidence-based interventions to support mental and physical health.

The Environmental Impact of Casinos

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When most of us hear the word casino, we usually think of a place of entertainment, where people play various games of chance to have a good time. Beyond being entertainment venues, casinos contribute significantly to a country's GDP, as they generate massive revenues and pay substantial taxes to the state.

However, apart from these benefits, there are also negative aspects. One of the most important is the environmental impact they cause. Waste of water, electricity, food, land, and other resources are among the many problems created by these casino giants. In fact, even online casinos are not as harmless as one might initially think in terms of their environmental footprint.

In my presentation, we will examine these environmental effects, showcase eco-friendly examples from around the world, and suggest some ways to reduce such waste. Casinos are now an integral part of modern urban society, and for this reason, they should be based on an ecological model that contributes positively to our planet.

The Evolution of Western Perception of Asian Media

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This paper explores how Western audiences' perception of Japanese and Korean cinema has evolved over time, particularly focusing on film. It analyses the shift from stereotypical representations in the 20th century to the global popularity of Asian cultural exports such as Korean dramas, Japanese anime, and Chinese cinema. The study draws on media analysis, audience reception studies, and cross-cultural comparisons to trace the transformation in perception. The findings suggest that globalisation, digital platforms, and cultural hybridity have been key in reshaping Western attitudes toward Asian media. This evolution reflects broader changes in global cultural dynamics and challenges traditional East-West media hierarchies.

The occurrence of human pharmaceuticals in macrobenthic organisms of Antarctica (Admiralty Bay, South Shetland Islands)

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This Pharmaceuticals, commonly known as drugs, are biologically active compounds used in order to achieve therapeutic or healing effects in humans and animals. They can function in low concentrations (doses) and are designed to interact with specific physiological pathways in target organisms. Drugs are split into different groups, based on their properties and usage - antibiotics, painkillers, anti-inflammatory drugs, steroids and opioids. Over the past decades, a continuous rise in worldwide production and consumption of pharmaceuticals has been observed. While their application has considerably improved human health, it has also resulted in increased permeation into the environment, posing threat to many natural systems, including marine ecosystems. As such, they have been designated as emerging contaminants. The effects of drugs on the marine environment depends not only on their properties and concentrations, but also the environmental parameters (e.g. temperature, salinity) - now subject to variation due to ongoing global climate change. Polar ecosystems, such as Antarctica, are especially vulnerable to anthropogenic disturbances, including pollution. It is therefore of importance to properly assess the extent of danger drugs may pose to those areas, considered isolated from the human impact. This study aimed at measuring the concentration of different pharmaceuticals in macrobenthic biota of Admiralty Bay, Antarctica (King George Island, South Shetland Islands). Out of 22 target analytes, two residue compounds (carbamazepine and caffeine) were detected in benthic algae and invertebrates. Both compounds occurred almost exclusively in brown and red macroalgae, highlighting their potential for uptake and accumulation of CBZ and CAF in the Antarctic marine environment.

The Relationship Between Religiosity and Authoritarianism and Social Dominance Orientation: Systematic Reviews and Meta-Analyses

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Religiosity plays a significant role in shaping individuals' social and political attitudes. This presentation outlines the findings of two systematic reviews and meta-analyses investigating the relationship between religiosity and two key ideological constructs: right-wing authoritarianism (RWA) and social dominance orientation (SDO). The work was conducted following PRISMA guidelines to ensure transparency and methodological rigor. Drawing on diverse literature, the analyses explore how religiosity relates to preferences for obedience, conformity, and group-based hierarchies. Attention is given to potential moderating variables, including religious affiliation and gender. The presentation will highlight overarching trends, identify areas of divergence in the literature, and discuss theoretical implications for understanding how religious beliefs relate to authoritarian and dominance-oriented worldviews. Directions for future research and methodological considerations in this area will also be addressed.

The Rise of Fast Cosmetics: Cost of Beauty – Trends, Impact, and Future

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In today's market, brands capitalize on consumers' environmental concerns, projecting an eco-friendly image while often failing genuine sustainability standards. Greenwashing misleads consumers, creating an illusion of environmental responsibility without real action. Labels and product descriptions manipulate perceptions, disguising the truth. Misleading ingredient claims were analyzed alongside official company statements to uncover deceptive practices.

Influencers contribute to this deception, portraying beauty products as miracle solutions while concealing harsh realities. The modeling industry perpetuates unreachable beauty ideals through Photoshop, fueling unrealistic consumer expectations. This cycle—models, brands, influencers—shapes attitudes toward beauty. A survey assessed the impact of industry influencers on product choices.

Animal testing remains widespread in cosmetics and pharmaceuticals, raising ethical concerns. The distress inflicted on animals highlights the urgent need for humane alternatives. Research verified unethical aspects of cosmetic animal testing through certified sources. Increased transparency and stricter regulations are vital to address deceptive sustainability claims and ongoing testing practices.

Consumer awareness is rising, with greater accessibility and variety. As sustainability, ethics, and beauty standards gain importance, the industry moves toward eco-friendly practices and authentic ideals. Emerging alternatives—refillable packaging, sustainably sourced ingredients—were examined for viability. Responsible business practices will define the industry's future, balancing trendiness with ethics. Ultimately, the true cost of beauty reflects financial expense and the values that shape the sector.

Too Valuable to Lose: Management Framework for the Green Crab Fishery in Portugal

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In Portugal, the European green crab (Carcinus maenas) fishery has become increasingly important since the mid-20th century, with crabs sold as seafood and fishing bait. However, baseline information on this fishery is still lacking, and fishers claim current regulations are outdated. I developed an interdisciplinary study to analyze the biological characteristics of C. maenas (reproduction and population dynamics), the socio-economic and fishery exploitation status and gear technological issues (selectivity). The socio-economic task revealed that, despite the importance of the crab fishery, the number of fishers has been decreasing over the last decades due to the low value of crabs and regulatory hurdles, leading to the economic unsustainability of the fishery. The biological task showed that spawning occurs almost year-round, with two spawning peaks. Additionally, it was found that the size at which 50% of individuals reach sexual maturity is around 30 mm carapace width for both sexes — a value 20 mm below the minimum landing size enforced in Portugal. The fishery task revealed the use of two fishing gears in the estuarine crab fishery: box traps and drop nets. Daily crab catches varied by gear, system, and month, with the highest catches observed in box traps during the warmest months. Both gears had low bycatch, which was mainly discarded. Selectivity studies indicated that the commonly used mesh sizes effectively reduced undersized specimens while optimizing catch rates, with more than 90% of the crabs caught being larger than the size at maturity. The baseline information gathered in this project will support the development of regulations and management measures for estuarine crab fisheries aiming a sustainable crab exploitation.

Understanding Extreme Decisions: Women Facing Violence and Social Pressure

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This presentation explores why some women commit acts of homicide, often under extreme conditions like domestic violence, emotional trauma, or untreated mental illness. While rare, such cases are deeply complex and frequently linked to social, economic, and systemic pressures. As gender roles shift, women face new challenges in balancing family and work, often without adequate support. Cultural narratives—like Why Women Kill—offer insight into these motives and reflect broader issues like gender inequality and violence against women. The talk highlights solutions such as emotional education, mental health support, and fostering empathy to prevent such crises.

Underwater Detonations - A Whale of an Issue for Marine Mammals

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For marine mammals, sound is the basis of their everyday life. Its usage includes not only their key aspects of survival, like foraging, but also enables the communication and benchforming between different individuals. Hovewer some forms of sound waves may present undesirable effects. One of the more noticeable ones come from underwater detonations of explosive charges, which manifest itself in impairment of performed activities at best and fatal accidents at worst. And two notable cases are especially evident of it. One of which is the detonation of 42 british ground mines located in MPA Fehrman Belt (August 28th-31th 2019), which is a significant foraging habitat for harbour porpoises in the area of western Baltic Sea. The other case is from Silver Strand Training Complex (San Diego, California), where military maneuvers were carried out on March 4th 2011. Both of the cases mentioned were resulted in casualties in marine mammals. Those which survived mentioned procedures suffered from internal haemorrhages, displacement of auditory ossicles, presence of parasites in Eustauchian's tube, bronchitis and other forms of pathology, which may result in death. Those cases clearly show the need for mitigation measures, in order to prevent next unprecedented accidents. They can be divided for a form of adjusted explosive substances (special detonation primers and black powder), repellents (pingers, bubble curtains) and highly specialized units (Marine Mammal Observers). With those precautions taken, we can expect a higher chance of avoiding senseless casualties in marine mammals, when using explosives underwater.

When the Sharks Leave: Tracking ecosystem collapse through apex predators

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In the era of accelerating climate change and growing human impact on marine ecosystems, it's becoming more important than ever to find reliable indicators of ocean health. Sharks, as apex predators, play a vital role in maintaining balance within marine trophic networks. By regulating the abundance of species at lower trophic levels, they help shape the overall structure and functioning of marine ecosystems. Because of that, changes in shark behavior, numbers or distribution can be early signs that something's going wrong in the environment.

Here, I examine the idea of using sharks as bioindicators of marine ecosystem health in the context of climate change. Rising ocean temperatures, acidification, and habitat loss- especially the decline of coral reefs - are already affecting where sharks live, how they feed, and how they reproduce. Examples from the Pacific, Caribbean, and Indo-Pacific regions suggest that when shark populations drop, reef health often declines too, and more opportunistic species start to dominate.

Thinking about sharks in this way could help improve how we monitor environmental changes and plan conservation strategies. As ocean ecosystems continue to face pressure, understanding the role of top predators like sharks might be key to protecting marine biodiversity.

Where the teaching of classical languages is heading

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The place of dead languages in modern curricula is often questioned, particularly regarding their relevance in today's world. In Western educational systems, Ancient Greek and Latin are the most commonly taught dead languages (Haugan, 2021: 34). These languages have traditionally been taught in many countries around the world, not only at the university level—particularly in classical studies departments—but also in secondary education and, less frequently, in primary schools. This essay will focus on the teaching of Ancient Greek and Latin in Anglo-Saxon countries, as well as in France and Germany, where the longest traditions of classical language instruction are found. The essay will also examine the teaching of Ancient Greek and Latin in Greece and Cyprus, where the official language, Greek, is a direct continuation of Ancient Greek. Overall, the essay will present the historical development, current curricula, and teaching methodologies of Ancient Greek and Latin in the aforementioned countries.

POSTER PRESENTATION ABSTRACTS

Analysis of the allelic distribution of the c.451T>C (p. Cys151Arg) and c.626C>T (p. Pro209Leu) mutations in the BAG3 gene in patients with type 6 myofibrillar myopathy

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Myofibrillar myopathies (MFMs) are rare inherited muscle diseases characterized by the breakdown of myofibrils and the accumulation of abnormal protein aggregates. One of the more severe forms of MFM is MFM6, the pathogenesis of which is linked to a P209L mutation in the BAG3 gene, which encodes a protein involved in the regulation of muscle protein stability. To date, approximately 30 cases of MFM6 have been identified worldwide. In this study, we analyzed the allelic distribution of the 451T>C and 626C>T mutations in the BAG3 gene in MFM6 patients, using two diagnostic methods: next-generation sequencing (NGS) and restriction fragment length polymorphism (RFLP-PCR). The obtained results enable the creation of a transgenic mouse model of MFM6 disease to study the pathogenesis of the disease and enable the development of new therapies.

Antitumor Potential of Cyanopeptolins Produced by Nostoc edaphicum CCNP1411 Against Neuroblastoma SH-SY5Y Cells

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Neuroblastoma is a cancer responsible for 15% of pediatric oncology-related deaths. It is characterized by rapid growth and metastasis, which makes its treatment a significant therapeutic challenge. Therefore, new biologically active compounds are being sought that would exhibit antitumor activity while showing no toxicity toward healthy cells. Therefore, the aim of this study is to determine the anticancer potential of cyanopeptolins from the Nostoc edaphicum CCNP1411 strain on the viability of neuroblastoma cells and to identify the type of cell death they induce. Cyanopeptolins are cyclic peptides produced by Cyanobacteria, known primarily for their protease-inhibitory activity, which may be relevant in limiting tumor development. Cell viability following incubation with cyanopeptolins was evaluated using the MTT method. Cyanopeptolins exhibited significant cytotoxic activity against neuroblastoma cells, reducing their viability by 50% after 24 hours of incubation at a concentration of 100 µg/mL. Further planned analyses will determine the mechanism of cell death induced by cyanopeptolins, as well as identify the lowest concentration that effectively eliminates neuroblastoma cells.

Beyond Breakouts – A Multidisciplinary Approach to Acne

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Acne vulgaris is a very common skin problem that affects both teenagers and adults. While hormones, genetics, and bacteria play a big role in its development, the way we treat acne and its wider effects are just as important. Treating acne usually involves creams, gels, or oral medications, but even with many options available, managing it can be difficult - both financially and emotionally. Because acne is often long-lasting, with slow improvements and recurring breakouts, many people feel frustrated, lose confidence, and in some cases, even experience depression. Another major concern is the overuse of antibiotics for acne, especially in mild cases. Using antibiotics too much or for too long may not treat acne but can lead to antibiotic resistance instead, making bacteria harder to treat in the future. Because of this, a balanced approach to acne treatment is crucial - one that focuses not just on clearing the skin but also on patient safety, mental well-being, and overall quality of life.

Biological Basis of Well-being Centre by SciClub

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The Biological Basis of Well-Being Centre (BBWC), initiated by SciClub at the University of Gdańsk, exemplifies how student-driven, interdisciplinary collaboration can translate scientific research into meaningful, community-oriented health interventions. This poster presents two award-winning initiatives developed under the BBWC umbrella. The Stress Relief Initiative, funded by the SEA-EU Alliance, integrates guided massage chair sessions and group cycling activities to promote evidence-based stress management and foster a culture of well-being on campus. The Champions of Collaboration project, supported by Fahrenheit Universities, combines a systematic review of inflammatory markers and depression with a survey exploring the relationship between gut microbiome-related habits and psychosocial functioning. Together, these projects demonstrate a model for scalable, low-cost, science-informed interventions addressing mental and physical health in academic settings. The poster also highlights the role of student engagement in Live Libraries organization, workshops, and health-promotion events, advocating for the integration of well-being as a core value across European higher education institutions.

Characteristics of selected environmental bacteriophages infecting Salmonella enterica serovars

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The increasing resistance of bacteria to antibiotics poses a serious threat to human and animal health. It is estimated that each year, they are responsible for the deaths of over a million people globally. Salmonella enterica, a Gram-negative bacteria, is one of the leading causes of gastrointestinal infections globally. Improper use of antibiotics has led to the development of various resistance mechanisms, prompting the search for alternative treatments, such as phage therapy.

In this study, a lytic bacteriophage specific to S. enterica was isolated and characterized. Its stability under different physicochemical conditions such as high and low temperature and pH was tested, and electron microscopy was used to determine its morphology. The host range was evaluated on 100 S. enterica strains.

The phage remained stable in the temperature range from -20℃ to 62℃, as well as within the pH range of 4 to 12. Of the 100 examined strains, the phage lysed 45%, of which 84.4% were Enteritidis serovars, 8.9% were Typhimurium, 4.4% were Infantis, and 2.2% were Derby serovars. The highest EOP values (EOP $\geq$ 0.5) were recorded for 73.3% of the serovars.

These findings suggest that the isolated bacteriophage may serve as a promising alternative to antibiotics in combating salmonellosis. Further research is needed to evaluate its safety and efficacy in vivo. This phage could potentially become part of future strategies to control resistant Salmonella outbreaks.

Characterization of the newly isolated bacteriophage 4.1. targeting Salmonella spp.

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Salmonella spp. are among the most common pathogens responsible for zoonotic diseases, causing gastroenteritis in both humans and animals. Nontyphoidal Salmonella serotypes, which are widespread in industrial poultry farming, contribute to significant economic losses and pose a serious threat to public health. Traditional methods for bacterial elimination, including the use of antibiotics, are becoming increasingly ineffective and simultaneously contribute to the emergence of antibiotic-resistant bacterial strains. Therefore, there is an urgent need to develop alternative and selective methods for pathogen control.

The aim of this study was the isolation and preliminary characterization of bacteriophage 4.1., isolated from urban sewage, capable of infecting and lysing Salmonella cells. Its physicochemical properties were evaluated, including stability across a wide range of pH values and temperatures, as well as its host range and efficiency of plating (EOP).

Bacteriophage 4.1. demonstrated high stability in the pH range of 4–12 and thermal stability up to 60°C. The host range included selected strains from 100 Salmonella enterica serotypes. The strongest lytic activity was observed against strains most frequently associated with salmonellosis outbreaks in poultry farming environments. EOP analysis revealed high lytic efficiency against the majority of susceptible strains.

The results suggest that bacteriophage 4.1. has therapeutic potential as a component of phage-based preparations intended for the prevention and treatment of Salmonella infections in livestock. Further research, including genomic analysis and in vivo testing, is necessary to fully assess its potential for use in phage therapy.

Characterization of three newly isolated bacteriophages as a potential therapeutic options against multi-drug resistant uropathogenic Escherichia coli (UPEC) strains

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Urinary tract infections (UTIs) are one of the most common community-acquired and nosocomial infections. The main causative agent of UTIs are uropathogenic Escherichia coli (UPEC). UPEC possess structural and secreted virulence factors that contribute to their capacity to colonize the human body. Currently, the production of new antibiotics has been limited due to the rapidly increasing rate of bacterial resistance. For this reason, alternative methods are increasingly being sought to combat infections caused by multidrug-resistant pathogens.

Bacteriophage-based therapy can be an alternative form of treating UTIs caused by UPEC. However, this type of treatment approach requires isolating and characterizing many different bacterial viruses. Newly isolated phages infecting UPEC strains, named vB_EcoS_10-1, vB_EcoP_10-2 and vB_EcoS_57-3, have been characterized. Two of them, vB_EcoS_10-1 and vB_EcoS_57-3, have been classified as members of Drexlerviridae family (Sipho-type morphology), according to electron microscopy characterization of the virions. In contrast,

vB_EcoP_10-2 has a much shorter tail (Podo-type morphology) and that's why it was assigned to the Autographiviridae family. Bioinformatic analysis of genomes of newly isolated viruses suggested that these phages are free of toxins and other virulence factors. Moreover, they possess a broad host range and show resistance to various external factors. Therefore, we conclude that these phages should be considered a lytic because they quickly adsorb to the bacterial cells, effectively destroy cultures of sensitive host bacteria, have a short latent period, and burst size range from about 30 to over 100.

Our results indicated that three studied bacteriophages are potential candidates for phage therapy against UPEC.

Clouded: Art as Emotional Resilience in an Era of Climate Anxiety and Urban Disconnection

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The accelerating pace of climate change, rapid urbanization, and an increasing sense of environmental and societal instability are fueling a new wave of emotional and psychological challenges. Disorders such as eco-anxiety, depression, and existential dread are emerging as direct or indirect responses to our transforming world. We try to explore the growing intersection between global ecological crises and individual mental health, particularly focusing on how these large-scale changes intensify feelings of disconnection, uncertainty, and fear. Amidst this climate of distress, art—whether visual, performative, or participatory—offers a powerful means of processing, expressing, and healing. Artistic practice creates space for reflection, resilience, and shared meaning-making, often reaching beyond language to access deeper emotional registers. All forms of Art is know to mitigate emotional suffering, reconnect individuals with nature, and cultivate collective hope. Art is not only a mirror of our times but also a potential tool for psychological adaptation and cultural transformation in the face of ongoing global disruption.

Electronic cigarettes as a phenomenon among the public and a new environmental threat

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Traditional cigarettes have long been popular—first in cultural rituals, later as a social status symbol. Over time they became widely available, but associations like elegance or individualism still persist in popular culture.

Electronic cigarettes, while lacking the same status, serve a similar social function. Containing nicotine, they reduce stress and facilitate socializing (e.g., in clubs or bars). Smoking together often becomes a pretext for conversation and bonding. Unlike traditional cigarettes, e-cigarettes don't leave a lingering smell on users or their surroundings.

However, their rising popularity brings challenges. Besides health risks, they significantly harm the environment. Single-use e-cigarettes, often improperly discarded, pose serious hazards due to their plastic and battery content. Traditional cigarette waste—especially butts—is also environmentally damaging, containing toxic substances like arsenic, heavy metals, phenols, and polycyclic hydrocarbons. These are frequently littered on streets, pavements, and beaches.

This presentation will explore why e-cigarettes are popular, their environmental impact, and ways to reduce related waste. It also touches on traditional cigarette litter. The project is grounded in academic research and includes a survey on public perceptions of smoking and smokers, covering various age groups—from youth to older adults. I believe this combined approach highlights both the environmental dangers and the public's awareness of cigarette-related waste.

Energy Drinks and Cardiovascular Risk: A Growing Public Health Concern

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Energy drinks have gained widespread popularity, particularly among adolescents and young adults, due to their perceived ability to enhance alertness and physical performance. However, growing evidence highlights significant health risks associated with their consumption. This poster presents an overview of the injurious effects of energy drinks, with particular focus on cardiovascular health. High concentrations of caffeine, combined with other stimulants such as taurine and guarana, can lead to adverse cardiac events including hypertension, arrhythmias, and, in severe cases, sudden cardiac arrest. Emphasis is placed on the need for increased public awareness, regulatory measures, and further research to mitigate the health risks posed by these beverages.

Fast Fashion - Clothing Consumerism

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The purpose of our poster is to analyze consumer awareness of the environmental and social impacts of fast fashion. The fast fashion industry has significantly reshaped consumer habits, encouraging constant wardrobe renewal through rapidly changing micro-trends. This results in excessive clothing production and consumption, creating a false sense of necessity while disregarding sustainability.

The environmental impact is severe: producing a single pair of jeans requires 10,000 liters of water, annual textile waste reaches 92 million tons, and microplastic pollution from synthetic fabrics contaminates oceans, affecting marine life and human diets.

Addressing these issues requires adopting sustainable shopping habits, such as choosing higher-quality garments, supporting eco-conscious brands, repairing and recycling clothing, and utilizing second-hand fashion. Small yet conscious choices can contribute to reducing the negative environmental effects of fast fashion. By raising awareness and promoting responsible consumption, we aim to foster a more sustainable approach to fashion, minimizing waste and environmental harm.

The survey we conducted tested what knowledge people of different age categories have about their knowledge of concepts such as sustainable fashion, ethical clothing brands. It also checked whether consumers know how they can support the slow fashion trend and how they take such actions.

Human footprints beneath the waves

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This study investigates the impact of human activity on the ecological condition of the Baltic Sea, with a particular focus on marine litter, especially microplastics and pollution from ghost fishing gear. The research explores three main areas: the origins of pollution, levels of public awareness across age groups, and the effectiveness of current mitigation strategies. Methods included a review of scientific literature and environmental reports, field monitoring of waste presence on Baltic beaches and waters, and a public awareness survey. The survey examined how attitudes and behaviors toward plastic pollution vary by age, revealing that while younger populations show higher awareness and willingness to change habits, overall behavioral change remains limited. Microplastics, originating from synthetic clothing, tire wear, degraded plastics, and cosmetic residues, have become pervasive in the marine ecosystem. These particles are ingested by marine life, entering the food chain and posing potential health risks to humans. Research shows that microplastics have been found in tap water, seafood, salt, and even human placentas, underscoring the urgency of the problem. Despite increasing public concern, current remediation efforts remain insufficient. Land-based sources and inadequate waste management continue to drive pollution levels. The study highlights the need for stronger public education, improved recycling systems, bans on harmful products, and cross-border cleanup initiatives to protect the Baltic Sea's biodiversity and human health.

Mercury in non-commercial fish from the lagoons of the southern Baltic Sea

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As a result of intensive human activity, particularly in the second half of the 20th century, vast amounts of chemical elements have been extracted from the Earth's natural deposits. Some of these elements serve no beneficial function in living organisms and are toxic. Ideally, they would not be present in the natural environment. However, reality is different - and always will be - as these elements naturally occur on our planet and have additionally been introduced into ecosystems through industrial activities. There are also elements essential for the proper development of plant and animal organisms. However, at excessive concentrations, they can become highly toxic. Regulations introduced in many European countries at the turn of the 20th and 21st centuries have significantly reduced emissions of toxic elements from anthropogenic sources. Nevertheless, their concentrations in the natural environment have not decreased proportionally. Understanding the pathways and circulation of these elements in marine ecosystems is crucial, as fish and seafood are among the primary sources of human exposure. While numerous scientific studies have focused on measuring toxic element concentrations (e.g., Hg, Pb, Cd, Zn, Cu, As, Se) in sediments and commercially significant fish species, data on their transfer through individual links in the trophic network - particularly among small, non-commercial fish - remain scarce. The aim of this study is to determine the role of small, non-commercial fish species in the trophic transfer of toxic elements within the marine food web, with a particular focus on lagoon ecosystems in the southern Baltic Sea. The Puck Lagoon has been selected as the study area.

Microtrends as a piece of the ripple effect in the ecological disater'

Iga Nowakowska

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This poster presents an analysis of the phenomenon of microtrends - short-lived trends promoted in online spaces that contribute to perpetuating patterns of over-consumption. Although often seen as a harmless pop culture phenomenon, microtrends have real environmental impacts, including by generating waste (including electro-waste), fuelling the fast fashion industry and increasing CO_2 emissions.

As part of my research among young Internet users, I investigated not only their shopping choices, but also their environmental awareness related to waste disposal, buying second-hand items and paying attention to the material of the item.

The presentation of the poster is aimed at raising environmental awareness and taking a critical look at content that promotes the constant need to own. The findings reveal the scale of the problem and point to the need to educate young users about responsible consumption.

Multiple peripheral primordia in the otolith of herring (Clupea harengus) larva

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Otoliths play a crucial role in reconstructing the life history of fish, as their microscopic structure preserves valuable information about both the individual and its environment. These calcified structures, located in the inner ear, grow incrementally, enabling researchers to analyze past environmental conditions, growth rates, and migration patterns. However, various factors—both internal, such as genetic mutations and physiological stress, and external, including temperature fluctuations, pollution, and habitat degradation—can lead to structural anomalies in otoliths. Such irregularities may manifest as deformations in shape, asymmetry between paired otoliths, or alterations in chemical composition and microstructure. In this study,we report a unique structural anomaly observed in the sagitta otolith of a Atlantic herring (Clupea harengus) larva collected from the Polish part of the Vistula Lagoon - a crucial spawning and nursery area of the species. The anomaly, characterized by multiple peripheral primordia, has not been previously documented in Baltic herring larvae. Given the ecological importance of this region, identifying and analyzing otolith deformations may provide insights into potential environmental stressors affecting larval development. To our knowledge, this is the first reported instance of this particular anomaly in Baltic herring, highlighting its significance for future research on developmental abnormalities in fish populations.

Narratives of Division: How Contemporary Far-Right Propaganda Shapes Democratic Decline

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This poster explores the resurgence of far-right propaganda in the 21st century and its impact on marginalized communities and democratic institutions. Drawing from historical parallels with early 20th-century fascist movements, we analyse current global trends- particularly in Europe and North America- where rhetorical strategies once confined to the fringes are now mainstream. Through media analysis and political speech mapping, we demonstrate how misinformation and fear-based narratives not only deepen societal divisions but also erode trust in democratic processes. This work calls for urgent civic literacy initiatives and re-evaluation of public communication strategies to counteract the subtle normalization of authoritarian ideologies, tactics of ""divide and conquer"", preying on our prejudices and identity politics.

Siphonophorae diversity in the Gulf Stream off the Florida Coast

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Siphonophores (Siphonophorae) are gelatinous, colonial organisms, composed of morphologically different zooids. Traditional net-sampling methods often damage the colony, leading to disintegration into individual zooids. Additionally, preserving the sample can further damage the specimens, making proper identification difficult. As a result, not much good quality data regarding Siphonophorae diversity and distribution is available.

To overcome these difficulties, in this research, an innovative method of studying Siphonophorae diversity is being proposed, applied in the Gulf Stream waters, off the Florida Coast. Within the last six years, amateur scuba divers participated in multiple drift night dives, photographing the observed siphonophores. Additionally, fragments of colonies were sampled and preserved in ethanol for further molecular analysis – barcoding 16S rRNA gene.

The morphological identification, supported by molecular data, allowed for the distinction of 21 species, from which seven have never been recorded in the study area. Another seven species have been known to appear in the NE Gulf of Mexico waters, but have not been recorded off the Florida Coast. Most of the new observations were of larger, physonect species. On the other hand, the applied method resulted in underestimating the smaller siphonophores (Calycophorae) diversity. Moreover, underwater photography allowed for the documentation of new trophic relationships between siphonophores and other marine organisms, justifying the broader application of this method in marine biodiversity research.

Specific silencing of mutant allele of BAG3 gene allele with siRNA rescues cell phenotype observed in myofibrillar myopathy type 6 patient cells

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Myofibrillar myopathies (MFM) are ultrarare group of diseases inherited by an autosomal dominant or recessive approach which depends on type of disease. These diseases are characterized by accumulation of z-disk proteins in aggregates. One of the most progressive and lethal types of MFM is type six, which is caused by the p.P209L (c.626C>T) mutation in the BAG3 gene. Mutation in this gene causes very severe subtype of disease, causing reduction of autophagy throughout enclosure of CASA proteins in aggregates, as BAG3 is co-chaperone protein responsible for various functions, such as autophagy. Therefore, aggregates formation leads to muscle disintegration which causes muscle weakness, rigid spine and scoliosis. The intense progression of this MFM subtype and early onset results in premature death of patients. Currently there is no therapy available that would be able to save patients or even efficiently improve their lifetime. The only possible treatment for patients include alleviation of symptoms such as muscle pain. Here we treated fibroblasts with bortezomib in order to induce phenotype (BAG3 protein aggregates formation) observed in MFM6 muscle cells. Further, with use of fluorescent microscopy, we proved that siRNA specific for mutant BAG3 allele is sufficient in reducing aggregated proteins, also it was seen that amount of BAG3 protein in insoluble fraction (aggregates) during western blot, was reduced compared to untreated cells. Another feature is that siRNA binds specifically to mutant allele without interfering WT-protein which was proven by qPCR. Together this results prove that specific silencing of mutated allele with siRNA is sufficient for reduction of phenotype observed in MFM6 cells, without negative effect on WT-BAG3.

SSRI and SNRI drugs in the treatment of MPS III - cellular and molecular analysis

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Mucopolysaccharidoses (MPS) are a group of genetically determined storage diseases caused by mutations in genes encoding hydrolases responsible for the degradation of glycosaminoglycans (GAGs). Reduced or complete loss of enzyme activity leads to the accumulation of GAGs in lysosomes, disrupting cell function and damaging tissues and organs. There are currently 12 types of MPS, classified based on the type of GAG accumulated and the deficiency of a specific enzyme.

In MPS type III, the subject of the present study, neurological symptoms predominate with relatively mild somatic changes.

So far, no fully effective causal therapies have been developed, so it is important to develop symptomatic treatments that can improve the quality of life of patients and their families. Particularly challenging is the development of effective therapies for neuronopathic forms, where the blood-brain barrier significantly limits the ability to deliver drugs to the central nervous system.

The aim of the present study was to evaluate and compare the effects of two drugs with proven efficacy on the central nervous system - escitalopram (a selective serotonin reuptake inhibitor, SSRI) and venlafaxine (a serotonin-norepinephrine reuptake inhibitor, SNRI) - on molecular and ultrastructural parameters related to the pathogenesis of Sanfilippo disease. The study was conducted in a cellular model, using skin fibroblasts from MPS III patients.

The results indicate potential differences in the effects of the two drugs and their possible beneficial effects on patients' cells. These data may provide a starting point for further research into the use of neurotransmission modulating drugs in the symptomatic treatment of lysosomal diseases such as MPS III.

The effect of genistein on apoptotic pathways in a cellular model of Huntington's disease

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Huntington's disease (HD) is an inherited neurodegenerative disorder caused by a large expansion of the polyQ region in the gene encoding huntingtin. Although the exact function of this protein is unclear, its mutated form disrupts many molecular pathways. This leads to progressive motor, cognitive, and psychiatric symptoms, ultimately resulting in neuronal cell death. For now, there is no cure for HD, and available treatments are aimed at managing symptoms. Modern therapeutic strategies focus on eliminating mutant huntingtin aggregates and silencing the expression of the mutated gene but challenges include the blood–brain barrier and difficulties correcting this mutation with gene-editing tools. Because one of the main problem in HD is neuronal death, in our study, we looked at how genistein can modulate apoptosis. Genistein is known for its ability to stimulate autophagy. Mouse studies also showed that genistein improves memory and enhances motor function. Due to its small molecular size, it can also cross the blood–brain barrier. Transcriptomic analysis showed disregulation apoptosis proces in patient cells. We observed changes in the expression of 1,069 genes (upregulation in 31 genes, downregulation in 7, and cell line-dependent in 979). These genes are mainly linked to the execution phase of apoptosis and p53 and TNF pathways. Using western blotting, an automated protein detection system, coverslip immunofluorescence, and a caspase-3 activity assay kit, we analyzed the structure of the apoptosome and some apoptosis markers (cytochrome c, pRPA, and caspase-3). The results showed that genistein modulates the levels of these proteins and structure, but Its effects are cell line - dependent and can either increase or decrease the levels of these molecules.

The Environmental Cost of Artificial Intelligence

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The rapid advancement of artificial intelligence has transformed industries, reshaped economies, and revolutionized how we interact with technology. However, behind AI's impressive capabilities lies an often overlooked issue - its significant energy consumption and environmental impact. AI models require vast computational power, leading to an increasing demand for electricity. Studies indicate that a single ChatGPT query consumes approximately ten times more energy than a standard Google search. As AI continues to evolve, its growing energy needs pose serious challenges in the fight against climate change. OpenAI's CEO has even suggested building nuclear power plants near AI research centers to sustain the industry's expanding energy demands. In my poster, I will explore the ecological footprint of AI, analyzing the energy consumption of large-scale machine learning models and their contribution to carbon emissions. Understanding the environmental costs of AI is crucial as we move forward in an era where technology and ecological responsibility must go hand in hand.

The Ethical and Economic Impact of AI-Generated Art

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AI-generated art starts the debate about the ownership of the created work. Many artist around the world protest their usage in generating those images. AI uses already created art pieces to generate new ones without getting the artists' permission or giving them any credits. AI companies also use the artists' work to train AI models. There is no clear law protecting artists from this, leading to legal battles over copyright. Selling AI-generated images, music, and books are becoming more common. For now content made by AI can be distinguished from human-made one, but in a few years if not months time they will not, raising the questions whether further into the future people will need artists, graphic designers, comics artists and other creative positions. This topic has been widely discussed in news articles, expert opinions, and artist communities, showing that most creators believe AI-generated art should be clearly labeled and that stricter laws are needed to protect their work to ensure fair treatment of human artists and ethical use of AI tools. The poster will show an analysis of newspaper articles and expert opinions.

The future of AI

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Artificial intelligence (AI) is developing at a rapid pace, transforming nearly every aspect of life – from medicine and education to industry, art, and public administration. In the coming years, we can expect even more advanced AI models that will not only assist us in everyday tasks but also contribute to the automation of work, the optimization of business processes, and the acceleration of technological progress. At the same time, this development brings significant challenges – ethical, social, and legal. How can we balance innovation with safety and the responsible use of AI? This is a key question, and its answer will determine the future shape of this technology and its impact on society.

The Impact of Artificial Intelligence on the Labor Market

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The development of artificial intelligence represents one of the greatest challenges and, at the same time, one of the most significant phenomena transforming the modern labor market. Advancing automation and the implementation of advanced algorithms are causing many sectors of the economy to undergo changes, leading to the emergence of both new professional opportunities and threats related to job loss. Companies are increasingly using AI to optimize processes, which raises questions about the future of employment and how workers can adapt to the new reality. This paper attempts to address key questions concerning the impact of AI on the labor market. In particular, it will examine whether the development of artificial intelligence will lead to mass job reductions or become a catalyst for the emergence of new professions and specializations. The analysis will identify industries and occupations most at risk of automation, as well as those likely to benefit from the growth of AI and become crucial in the future. Special emphasis will be placed on the role of education and the development of digital skills, work efficiency, the improvement of service quality, and the support of workers in their daily tasks. The aim of this analysis is not only to diagnose the current situation but also to present future perspectives and scenarios. In the face of ongoing digitization and dynamic technological changes, it is essential to understand the mechanisms governing the impact of artificial intelligence on the labor market and to consciously shape strategies that will fully harness its potential while minimizing negative effects on society and the economy.

The impact of human activity on bird populations in Poland

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Human activity is increasingly affecting the environment in Poland, and birds are one of the groups that particularly suffer. Urbanization, agriculture, pollution or changes in the landscape all affect the number of birds and their species diversity.

I decided to look at exactly what effects these changes are having, and to look for ways that can help protect our bird populations.

The analysis used data from bird monitoring conducted by wildlife organizations in Poland, such as the All-Poland Society for the Protection of Birds, as well as the results of local field surveys over the past 20 years. I examined how bird numbers changed in agricultural areas, in cities and in more natural habitats. A key element was to compare "urban" birds (e.g., sparrows, pigeons) with those that need more wild places, such as meadows or forests.

It turned out that urbanization even favors some species - especially those that do well in human environments. But on the other hand, many birds, especially those associated with rural areas, are disappearing at an alarming rate. The reason? Increasingly intensive agriculture, the disappearance of traditional grasslands and too much chemicalization.

If we don't act, these negative trends can only get worse. Therefore, it is important to protect natural habitats, plant more greenery in cities and reduce the use of chemicals in agriculture. All this will help not only the birds, but also the entire environment in which we live.

The Impact of Vitamin D3 on Cognitive Function and Neuroinflammation in a Sporadic Alzheimer's Disease Model

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As the world population ages, dementia is becoming one of the leading causes of death worldwide. Alzheimer's disease (AD), the most common form of neurodegenerative dementia, is marked by the presence of intracellular neurofibrillary tangles and extracellular β-amyloid (Aβ) plaques. Patients experience a progressive decline in memory and cognitive abilities, eventually leading to a complete loss of intellectual and physical independence. Current therapeutic strategies are limited to symptomatic relief, with no effect on disease progression. Epidemiological studies have linked low serum levels of VITD3 with an increased risk of AD and cognitive decline. Although the underlying mechanisms remain unclear, vitamin D3 is believed to exert neuroprotective, antioxidant, and anti-inflammatory effects. Our study was aimed to investigate the effects of VITD3 on ICV-STZ induced sporadic Alzheimer's disease. We demonstrate that VITD3 treatment can significantly affect markers of cognitive functions and peripheral levels of inflammation.

The Negative Effects of Smartphone Use on Children Under 10: Exploring Sensory Play and Creative Alternatives

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The increasing prevalence of smartphones in the lives of children under 10 has raised concerns about their impact on development. This study aims to explore the negative effects of excessive smartphone use and propose healthier alternatives through sensory and creative play. The key research questions include identifying the negative consequences of excessive screen time and exploring alternative activities that can promote healthy development.

The study is based on an analysis of scientific literature on the impact of screen exposure on children's development and a review of research highlighting the of sensory and physical activities in education. The research tools include case studies and observations of children's behaviors in various environments.

The results indicate that excessive smartphone use leads to attention problems, sleep disruptions, and delays in social development. On the other hand, sensory toys, creative activities, and physical exercises have a positive effect on motor skills, cognitive abilities, and social skills, while also mitigating the negative impact of excessive technology use.

Reducing screen time and promoting sensory and physical play can contribute to a more balanced and healthy development in children. Practical suggestions for parents and caregivers regarding limiting smartphone use and incorporating alternative activities can support this process.

Topical Application of Hsp90 Inhibitor 17-AAG Reduces Skin Inflammation in a Mouse Model of Atopic Dermatitis

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Heat shock protein 90 (Hsp90) has been implicated in the regulation of inflammatory responses and is emerging as a promising therapeutic target for various chronic inflammatory skin disorders, such as autoimmune blistering diseases and psoriasis. In this study, we evaluated the effects of topically applied 17-AAG (17-allylamino-demethoxygeldanamycin), an Hsp90 inhibitor, in a mouse model of atopic dermatitis (AD) induced by 2,4-dinitrochlorobenzene (DNCB). AD is a prevalent chronic skin condition marked by intense pruritus and recurring eczematous lesions. Treatment with 17-AAG significantly alleviated clinical symptoms, as assessed by the modified SCORAD index, without inducing local or systemic toxicity in the mice. The treatment also reduced epidermal thickening, decreased serum histamine levels, and lowered the expression of key inflammatory markers, including thymic stromal lymphopoietin (TSLP), IL-5, and IL-6 in the skin. In vitro studies demonstrated that 17-AAG inhibited the proliferation of activated human keratinocytes, accompanied by a reduction in IL-6 secretion, down-regulation of IL-33 expression, and suppression of STAT-1/6 signaling pathways. These findings suggest that topical treatment with the Hsp90 inhibitor 17-AAG could offer a promising approach for managing atopic dermatitis and potentially other inflammatory skin conditions.

Vanishing Voices: Language Loss and the Fight for Cultural Identity

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As globalisation continues to spread dominant languages worldwide, thousands of minority languages are facing extinction. This poster explores the causes and consequences of language loss, focusing on its impact on cultural identity, heritage, and collective memory. Drawing on examples such as Welsh, Latin, Kashubian, and Māori, it examines both endangered and revitalised languages to highlight the social, political, and historical forces behind this phenomenon. The poster also presents successful revitalisation efforts — particularly in New Zealand's Māori language movement — to show that language decline is not inevitable. Preserving linguistic diversity is vital not only for communication but also for maintaining the world's rich cultural tapestry and unique ways of seeing the world.


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