

PROCEEDINGS OF THE INTERNATIONAL SOPOT YOUTH CONFERENCE 2026



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Proceedings of the International Sopot Youth Conference 2026: Where the World is Heading

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Tymon Zielinski,	SSA/IO PAN, Poland

FOREWORD

Planetary challenges, including those related to the environmental change, are ‘increasingly stronger, forcing humans to act on a global scale, in order to manage complex processes that govern the Earth’s systems. We need to provide comprehensive knowledge of why and how the ecosystems change and to what extent human activities influence the changes and the overall functioning of the Earth environment.

Therefore, it is an intrinsic value to build a sustainably managed planet with inclusive society. This can be secured through open access to all data, information, technology as well as innovation. Such approach leads to create societies, who are able to make informed decisions, and fosters international cooperation across all societal sectors.

By promoting general awareness, based on critical thinking, education, and engagement, we encourage societies to actively contribute to the creation of the foundations for sustainable management of the planet to secure positive change at present and for future generations.

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

8:15 – 8:55	Registration	
9:00 – 9:05	Welcome by <i>Monika Kedra</i>, IO PAN Deputy Director and <i>Tymon Zielinski</i>, IO PAN/SSA Chair	Hall A
9:05 – 10:00	Invited session on Youth Ocean Leadership Advocacy Timberlyn Duncan, North Carolina State University, USA People, Place, and Oceans: An integrated approach to communicating and conducting research Veronica Rotman, University of Auckland, New Zealand From Research to Reels: Communicating Science for Real-World Impact Hadeer Elkhoully, CIHEAM Bari, Italy Blue Economy, Science Communication, and Youth Leadership in Action: Insights from Egypt, Africa, and Beyond	Hall A
10:00 – 11:00	PRESENTATION SLOT 1	
	Session 1.1 Session Chair: <i>Aleksandra Koroza</i>, SSA/IOPAN	Hall A
10:00 – 10:15	Kaluharage Prasadi Gayangika De Silva et al., IO PAN Foraminiferal record and paleoenvironmental changes over the last 5000 years in the Gulf of Gdańsk, southeastern Baltic Sea	
10:15 – 10:30	Hepert W., et al., University of Hamburg, Germany The memory of Arctic Sea ice: a question of scale.	
10:30 – 10:45	Falah Mirza Hanif Al, et al., Universitas Gadjah Mada, Indonesia Reconstructing Environmental Change in Pariaman Mangroves Through Diatom-Based Indices	
10:45 – 11:00	Asto Wahyuaaji Purnomo, et al., Universitas Gadjah Mada, Indonesia Reconstructing Mangrove Dynamics Through Diatom Records: Evidence from Northern Central Java.	
	Session 1.2 Session Chair: <i>Natalia Skierzynska</i>, SSA/IOPAN	Hall B
10:00 – 10:15	Kosecka Oliwia, University of Gdansk, Poland Pain as a Predictor for Alcohol Consumption Escalation in Current Drinkers: A Longitudinal Cohort Study.	
10:15 – 10:30	Skoczko Michal, University of Gdansk, Poland Vulnerable student profiles: the interaction between studying related psychological characteristics, emotional affect, and study addiction with moderating effect of perceived university support.	
10:30 – 10:45	Targus W. and Wichrowska N., et al., University of Gdansk, Poland Lifestyle Patterns as Indicators of Psychosocial Risk: A Latent Profile Analysis of Gastrointestinal and Behavioral Factors.	

10:45 – 11:00 **Wawrzyniak Z, Bieleninik L., University of Gdansk, Poland**
The role of emotion regulation in alcohol craving.

11:00 – 11:15 **Break**

11:15 – 12:15 **PRESENTATION SLOT 2**

Session 2.1

Hall A

Session Chair: Dominik Krzyminski, IOPAN

11:15 – 11:30 **Kwoczek J., et al., University of Gdansk, Poland**
Examining the Roles of Religious Affiliation and Gender in the Relationship Between Religiosity, Authoritarianism, and Social Dominance Orientation: A Systematic Review and Meta-Analysis.

11:30 – 11:45 **Opala A., et al., University of Gdansk, Poland**
Understanding Burnout in Sport: Associations with Big Five Personality Traits, Imagery Ability, and Perfectionism.

11:45 – 12:00 **Zdolska Magdalena, University of Gdansk, Poland**
Attitudes Toward Domestic Violence: Gender Differences and Order Effects in Questionnaire Administration.

12:00 – 12:15 **Waszak Jan, University of Gdansk, Poland**
Water in Purification Rituals as an Example of the Religious Use of Natural Resources.

Session 2.2

Hall B

Session Chair: Amandine Willems, Océanide SA

11:15 – 11:30 **Gorski Hubert, The State University of Applied Sciences in Chelm, Poland**
Noise reduction methods in modern aircraft engines.

11:30 – 11:45 **Walaszek E., et al., University of Gdansk, Poland**
Investigating Empathic Behaviour in Immersive Virtual Reality: A Study of Prosocial Decision-Making in Medical Students.

11:45 – 12:00 **Waszak Julia, University of Gdansk, Poland**
Graph Neural Networks as a Model for a Relational World: Why the Future of AI is Graph-Based.

12:00 – 12:15 **Ramawati B., et al., Research Center for Population, National Research and Innovation Agency (BRIN), Indonesia**
The Future of Conservation Beyond Formal Conservation Areas: Lessons from Community Practices in Sea Turtle Protection.

12:15 – 12:30 **Break**

12:30 – 13:15 **PRESENTATION SLOT 3**

Session 3.1

Hall A

Session chair: Timberlyn Duncan, North Carolina State University

12:30 – 13:15 **1 minute poster presentations**

	Session 3.2	Hall B
	<i>Session Chair: Wirginia Hepert, University of Hamburg</i>	
12:30 – 12:45	Scibior J. and Wisniewska N., University of Gdansk, Poland Different adaptation to myophily, fly pollination, in two species of <i>Veratrum</i> .	
12:45 – 13:00	Banaszyk L., et al., University of Gdansk, Poland Trace metals have major consequences: thallium limits the functional integrity of the dune pioneer <i>Carex arenaria</i> .	
13:00 – 13:15	Faiz Zahran and Puti Sri Komala, Universitas Andalas, Indonesia Drowning in Nutrients: The Impact of Uncontrolled Aquaculture Expansion on the Trophic Status of Lake Maninjau.	
13:15 – 14:00	Networking lunch	Hall A
14:00 – 15:00	PRESENTATION SLOT 4	
	Session 4.1	Hall A
	<i>Session Chair: Danuschka Devendra, SSA/IOPAN</i>	
14:00 – 14:15	Falkowska Justyna, IOPAN, Poland The potential of environmental DNA for monitoring ecosystems in Arctic fjords.	
14:15 – 14:30	Gajda M., et al., IOPAN, Poland Southern Baltic Sea nematode monitoring: morphotaxonomy vs multiplex barcoding and metabarcoding.	
14:30 – 14:45	Morales Luna Hadrys, IOPAN, Poland Filter feeders in polar regions.	
14:45 – 15:00	Monteiro J. N. et al., Centro de Ciências do Mar do Algarve, Portugal Reproductive biology of the Fiddler crab <i>Afruca tangeri</i> in South Coast of Portugal.	
	Session 4.2	Hall B
	<i>Session Chair: Izabela Kotynska-Zielinska, TWH/SSA</i>	
14:00 – 14:15	Fraczyk K., et al., Ateneum Academy in Gdansk, Poland When Technology Meets Curiosity: The Next Generation of Education	
14:15 – 14:30	Klimsiak S., et al., Ateneum Academy in Gdansk, Poland Where the World Is Heading in Terms of the Literacy Crisis	
14:30 – 14:45	Streich D., et al., University of Gdansk, Poland/University Claude Bernard, France Emotional intelligence training program for adolescents involved in intensive training centers – a replication study on a polish group of table tennis players.	
14:45 – 15:00	Richert A. and Tuchlinska R., Ateneum Academy in Gdansk, Poland Neurodidactics in teaching and learning processes: teachers' awareness of neurodidactics and their training needs in teaching and learning processes.	
15:00 – 15:15	Break	

15:15 – 16:45 PRESENTATION SLOT 5

Session 5.1

Hall A

Session Chair: Jan Jakub Sliwinski, SSA/IOPAN

- 15:15 – 15:30 Bona Natalia, University of Gdansk, Poland**
Where the light is heading? ALAN (Artificial Light At Night) in coastal and marine environments.
- 15:30 – 15:45 Moreno Bernabe, IOPAN, Poland**
Struggle for existence of high-Arctic marine lithophiles assessed by means of underwater macrophotography.
- 15:45 – 16:00 Losi N., et al., University of Milano Bicocca, Italy**
From Europe to Arctic: tracking shifts in Aerosol Chemistry across the AREX2024–GAIA C.
- 16:00 – 16:15 Iwan Agustina, Institute of Marine and Coastal Research (IIMyC), Argentina**
Socio-environmental dynamics of bycatch: perspectives, practices, and emotions in Argentine fisheries.
- 16:15 – 16:30 Janto A., et al., Technical University in Zvolen, Slovakia**
Arctic and Alpine Lakes as Sentinels of Environmental Change.

Session 5.2

Hall B

Session Chair: Karolina Pierzynowska, University of Gdansk

- 15:15 – 15:30 Banaszak R., et al., University of Gdansk, Poland**
When Transport Fails: Defective Mitophagy in Mucopolysaccharidosis-Plus Syndrome as a New Layer of Disease Mechanism.
- 15:30 – 15:45 Jeleniewska W., et al., University of Gdansk, Poland**
Exploring Selective Anticancer Properties of Baltic Cyanobacterial Metabolites in Neuroblastoma.
- 15:45 – 16:00 Malcher M., et al., University of Gdansk, Poland**
Gut-Brain Axis Interaction With Digital Overstimulation Factors: A Prospective, Randomized Controlled Trial (RCT) on the Effect of Postbiotic Akkermansia muciniphila Akk11 in Young Women.
- 16:00 – 16:15 Malinowska K., et al., University of Gdansk, Poland**
Biological characterization and antibacterial potential of bacteriophage 4.1 against Salmonella enterica.
- 16:15 – 16:30 Szabelewska A., et al., University of Gdansk, Poland**
Antibiotics from the Baltic – Antibacterial activity of the KUCC C4 (Pseudanabaenaceae) cyanobacterial strain, towards drug-resistant Streptococci.

16:30 – 17:00 Networking break

Hall A

17:00 Announcements of winners and closing of the conference

Hall A

KEYNOTE PRESENTATION ABSTRACTS:
Invited session on Youth Ocean Leadership Advocacy

People, Place, and Oceans: An integrated approach to communicating and conducting research

Timberlyn Duncan

North Carolina State University, USA

Climate change is increasingly reshaping coastal and marine environments, yet public support for mitigation and adaptation efforts remains uneven across vulnerable coastal communities. Addressing these challenges requires not only scientific research, but also an integrated approach to communicating marine and coastal science in ways that are socially, culturally, and community centered. Effective research and communication strategies must bridge environmental science with lived experiences, local knowledge, and community narratives to better understand how people perceive and respond to climate hazards.

My research examines the extent to which place attachment and connection to land, combined with climate hazard awareness and risk perception, influence coastal residents' willingness to support climate mitigation initiatives. This presentation highlights the importance of integrating social science constructs into marine and coastal research communication to foster more equitable and effective mitigation strategies. Through case studies and community stories, I will also examine how histories of marginalization, cultural discrimination, and inequitable policy responses in minority coastal communities have contributed to inadequate mitigation efforts and disproportionate vulnerability to coastal hazards. By centering community voices and interdisciplinary communication, this work emphasizes the need for inclusive approaches that strengthen both scientific understanding and community resilience in the face of accelerating climate change.

Blue Economy, Science Communication, and Youth Leadership in Action: Insights from Egypt, Africa, and Beyond

Hadeer Elkhoully

CIHEAM Bari, Italy

The blue economy is rapidly evolving across Egypt, Africa, and the wider global context, requiring not only scientific innovation but also effective communication and inclusive leadership to translate knowledge into real-world impact. This talk explores how science communication can bridge the gap between marine research, policy, and society, making complex ocean and food systems issues more accessible and actionable. It also highlights the growing role of youth leadership in shaping sustainable blue economy development across Africa and beyond through digital engagement, storytelling, and interdisciplinary collaboration. Drawing on practical examples from ocean communication and emerging science platforms, the session showcases how young scientists and communicators can turn research into action and contribute to more sustainable and inclusive ocean futures.

From Research to Reels: Communicating Science for Real-World Impact

Veronica Rotman

University of Auckland, New Zealand

Scientific research has never been more important – yet public trust, misinformation, and digital noise make communicating science increasingly challenging. In this talk, marine scientist and science communicator Veronica Rotman explores how students and early-career researchers can move beyond traditional academic communication to make their work accessible, engaging, and impactful in the real world. Using NZ Ocean News as a case study, the session will examine how to translate complex ocean science and environmental policy into short-form digital content that reaches broad audiences without sacrificing accuracy or nuance. The talk will cover practical strategies for storytelling, framing, audience engagement, and building trust online, while reflecting on the growing role scientists play in shaping public understanding and decision-making.

ORAL PRESENTATION ABSTRACTS

The Future of Conservation Beyond Formal Conservation Areas: Lessons from Community Practices in Sea Turtle Protection

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Biodiversity conservation still relies heavily on formal conservation area approaches, while areas outside them, including the nesting habitats of protected species such as sea turtles, receive relatively less attention. This paper examines how community-based sea turtle conservation practices can effectively operate outside formal conservation areas, using a case study from Torombia Village, Buton Island. Employing a qualitative approach in the form of in-depth interviews and thematic analysis with social-ecological systems framework, this study shows that the dynamics of conservation practices are formed through the interaction of local knowledge, social norms (both formal and informal), economic incentives, institutional interventions, and ecological conditions. During the period of 2013 and 2016, the Forest Management Unit program provided incentives to landowners to protect sea turtle eggs. Meanwhile, the communities developed adaptive practices by not claiming ownership of the sea turtles and their eggs, while applying informal norms that protect nesting female turtles. Conservation success increased with the support of formal institution, however, these practices persisted because they were supported by the land tenure systems and local norms, even without strict oversight from formal authorities. These findings affirm that areas outside formal conservation zones have strategic potential as spaces for community-based conservation. Therefore, strengthening local capacity, recognizing community management rights, and integrating traditional knowledge with adaptive institutional support are necessary.

Keywords: community-based conservation, sea turtles, beyond conservation areas, social-ecological system, Buton Island

When Transport Fails: Defective Mitophagy in Mucopolysaccharidosis-Plus Syndrome as a New Layer of Disease Mechanism

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Mucopolysaccharidoses-Plus Syndrome (MPSPS) is a rare genetic disease caused by mutations in the VPS33A gene, classified as a lysosomal storage disease. These mutations disturb how cells transport and recycle different molecules, leading to progressive symptoms affecting many organs. Patients experience developmental delay, skeletal abnormalities, enlarged organs, and heart problems. Although the buildup of glycosaminoglycans is a key feature of MPSPS, problems with mitochondria, the structures responsible for energy production may also play an important role, as mitochondrial condition depends highly on vesicular trafficking. However, the process responsible for removing damaged mitochondria, called mitophagy, has not been well studied in MPSPS. Genistein and ambroxol were selected as potential therapeutics, based on their reported positive effects on autophagy processes in other lysosomal storage diseases, to evaluate their impact on the observed cellular changes in MPSPS.

The aim of this study was to examine possible changes in mitochondrial and mitophagy processes in MPSPS. The experiments were performed on patient-derived fibroblasts with MPSPS. Fluorescence microscopy was used to observe the shape and general condition of mitochondria. In addition, selected proteins related to mitophagy and autophagy were analyzed using Western blot. Genistein and ambroxol were used to test if observed changes could be reversed.

Understanding these processes may not only improve knowledge about MPSPS, but could also be relevant for other diseases linked to mitochondrial problems, including neurodegenerative and other lysosomal storage diseases. This work also points to potential compounds that could be used to correct defects in cellular transport and improve autophagy.

Trace metals have major consequences: thallium limits the functional integrity of the dune pioneer Carex arenaria

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The *Carex arenaria* plant is an important pioneer species that plays a vital role in forming and stabilising sand dunes. However, increased environmental pollution with trace elements such as thallium (Tl), one of the most dangerous heavy metals, can have adverse effects on this species. This study aimed to analyse the multilevel effects of thallium (Tl) on in vitro *Carex arenaria* seedlings.

Cultivated in vitro *Carex arenaria* seedlings were treated for two weeks with thallium (I) sulphate at concentrations of 0, 10, 50 and 100 µM. The effects of thallium exposure were analysed by studying the plant's morphological, anatomical, physiological and biochemical features. Even at the lowest concentration, thallium resulted in strong growth inhibition, reducing root and shoot growth and causing visible necrosis symptoms in the plants. Anatomical studies revealed extreme tissue disorganisation due to changes in cortical cells in the root and mesophyll in the leaf. Additionally, electrolytic leakage increased, indicating membrane disruption, particularly at high Tl concentrations. Biochemical analyses indicated a potential modulation of the antioxidant defence system, suggesting changes in the status of oxidative stress across treatments.

Thus, the present data indicate the extreme sensitivity of the studied plant to thallium contamination, even in small amounts. Based on these findings, increasing thallium-contamination of sea-coastal environments is expected to negatively affect the ecological success of *C. arenaria* and dunes stability.

WHERE THE LIGHT IS HEADING? ALAN (Artificial Light At Night) in coastal and marine environment.

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Light has always been a key determinant of various biological ‘clocks’. Artificial light allows humans to live independently of circadian rhythms, performing activities 24 hours a day. The presence of Artificial Light At Night (ALAN) in the environment comes with a tangible impact, making ALAN a considerable pollutant of emerging concern. Far from affecting human health alone, ALAN causes understudied effects on the ecosystems. Light is a key factor in the process of photosynthesis and, therefore, has significant effects on the functioning of trophic chains. The latter is especially noticeable in aquatic ecosystems, where light determines the diel vertical migrations of zooplankton and other groups of organisms.

Artificial light in coastal and marine environments comes from three main sources. The first is land – most of the largest agglomerations in the world - significant sources of artificial light pollution - are located by the sea. In addition to the ALAN coming from urban infrastructure, there is a hard-to-measure and dynamic source of light coming from ships entering ports and traversing the oceans. Lastly, there is the open-sea infrastructure (platforms, windfarms etc.), a developing branch of marine infrastructure whose impact on the environment is not yet fully known.

This presentation has two purposes. First, we will review what is known about ALAN and its impacts. Second, building on that knowledge, we will point out the understudied areas, and highlight how further investigation of them may contribute to protection of the marine environment.

Reconstructing Environmental Change in Pariaman Mangroves Through Diatom-Based Indices

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The mangrove ecosystem in Pariaman plays a critical role in enhancing coastal resilience against abrasion and tsunami hazards, while also supporting ecotourism activities that require continuous environmental monitoring. This study aims to assess changes in environmental quality within the mangrove ecosystem using diatom-based indices. Diatoms are key primary producers in aquatic ecosystems and serve as reliable bioindicators due to their sensitivity to environmental changes. Sediment cores were collected vertically using a russian corer, with subsampling at 10 cm intervals. Samples were processed through acid digestion using HCl and 10% H₂O₂ before analysis. The application of multiple diatom indices reveals that only three indices provide consistent information throughout the sediment profile. The Generic Diatom Index (IDG) and Specific Pollution Sensitivity Index (IPS) indicate that the mangrove ecosystem remains predominantly in a meso-eutrophic state. In contrast, the Trophic Diatom Index (TDI) captures more dynamic fluctuations between meso-eutrophic and eutrophic conditions. The presence of taxa such as *Navicula rostellata* and *Staurosira elliptica* indicates eutrophication. These findings demonstrate that paleoecological approaches using diatom indices can effectively reconstruct past environmental conditions in mangrove ecosystems. Moreover, this study highlights the potential of diatom-based indices as a valuable reference for developing region-specific bioindicator datasets in tropical coastal environments.

Reconstructing Mangrove Dynamics Through Diatom Records: Evidence from Northern Central Java

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Mangrove ecosystems along the northern coast of Central Java are increasingly threatened by climate change and rapid mangrove degradation. The loss of mangrove cover has contributed to severe coastal abrasion, prolonged tidal flooding, and the submergence of several coastal villages. This study applies a paleoecological approach to reconstruct environmental dynamics within mangrove ecosystems using diatom assemblages preserved in sediment records. Diatoms serve as sensitive bioindicators of environmental change due to their ecological specificity and siliceous cell walls, which enable long-term preservation in sediments. Sediment cores were collected from mangrove areas in Brebes, Pemalang, Pekalongan, and Demak at varying depths at each site. Samples were processed using HCl and 10% H₂O₂ digestion, and analyzed at 10 cm intervals. The results reveal a dominance of benthic diatom groups, indicating shallow-water conditions with low to moderate hydrodynamic energy. Environmental dynamics vary across locations: Brebes and Demak show signs of ecological disturbance, while Pemalang and Pekalongan reflect relatively stable ecosystem development. The dominance of marine species such as *Tryblionella granulata* and *Rhizosolenia bergonii* characterizes disturbance phases. In contrast, stable or recovering conditions are marked by freshwater taxa, including *Nitzschia palea* and *Melosira varians*. These findings suggest that mangrove ecosystems along the northern coast of Central Java evolve dynamically through complex interactions among fluvial, marine, and anthropogenic processes. This study confirms that a paleoecological approach provides a robust framework for understanding long-term coastal ecosystem trajectories and resilience.

The potential of environmental DNA for monitoring ecosystems in Arctic fjords

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DNA isolated from environmental samples is an important source of information about past and present biodiversity. For this reason, environmental DNA (eDNA) analysis has become an integral part of biodiversity and environmental research in its own right in recent decades. In addition, eDNA can reflect the biodiversity of existing flora and fauna, both qualitatively and quantitatively, enabling the detection of rare species. The use of eDNA allows for increased taxonomic resolution and thus contributes to a more comprehensive and accurate understanding of local and global changes in biodiversity and in the population structure of organism communities. Environmental DNA is increasingly being chosen to monitor biodiversity and ecosystem integrity, enabling the assessment of the effectiveness of environmental protection and management measures. While traditional paleoecology was long limited by the availability of microfossils, the development of sedimentary ancient DNA (sedaDNA) has revolutionized the study of past ecosystems, allowing researchers to observe unfossilized organisms. This methodology is particularly crucial in the Arctic, where minor fluctuations in temperature, salinity, and ice cover trigger significant ecological shifts. In this region, changes in species composition and phenology serve as vital bioindicators of climate change. By analyzing water and sediment samples from an Arctic fjord, this study evaluated the potential of DNA-based methods to monitor ecosystem integrity. The results confirmed that eDNA is a powerful tool for detecting both present and past shifts in biodiversity.

Keywords: eDNA, metabarcoding, Arctic, environmental changes

When Technology Meets Curiosity: The Next Generation of Education

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We often hear that technology is a threat to traditional schooling and that kids are losing interest in learning. But we believe that education isn't losing the battle, and it's actually standing before its greatest opportunity. It all depends on us: our mindset as teachers, educators, and parents. We want to show how AI tools like Kahoot, Blooket and many more can become our best allies instead of our enemies. They help us help children absorb knowledge in a way that feels natural and exciting to them. Our presentation is broken down into three simple steps:

1. Our Mindset: Why it's up to us to turn technology from a distraction into a bridge. We'll talk about our new role as guides who support a student's curiosity rather than just following a rigid curriculum.
2. Gamification in Practice: We'll show how AI tools turn a stressful test into an adventure. This isn't just about fun, it's about making students want to try again and not be afraid of making mistakes.
3. The AI Partner: We'll look at how we can use AI to explain tough topics and help kids be more creative, making learning more personal for every student.

In short, we want to prove that when we combine our experience with the right technology, we can create a new generation of education where curiosity always comes first.

Southern Baltic Sea nematode monitoring: morphotaxonomy vs multiplex barcoding and metabarcoding

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Marine ecosystems are undergoing drastic changes due to the climate change and anthropogenic impacts, making effective monitoring essential for assessing ecosystem health and informing marine management. Current biomonitoring programmes rely mainly on morphological identification of macrofaunal indicator species, which represent only a small fraction of biodiversity and require time-consuming taxonomic expertise. In contrast, most marine biodiversity consists of micro- and meiofaunal organisms that remain largely overlooked. Recent advances in high-throughput sequencing technologies offer new opportunities for DNA-based biodiversity assessment. In particular, environmental DNA (eDNA) metabarcoding can complement traditional monitoring methods and expand the range of detectable bioindicators. Meiofaunal organisms are promising candidates for such approaches due to their abundance, diversity, and sensitivity to environmental stressors. In this study, we integrate molecular methods with traditional morphotaxonomic approaches to improve monitoring of benthic biodiversity in coastal environments. We analyse meiofaunal diversity in sediments from the Southern Baltic Sea, focusing on key meiofaunal group - nematodes. Diversity patterns obtained through nanopore-based multiplex barcoding and Illumina sediment DNA metabarcoding are compared with reference to traditional morphotaxonomic identification. Taxonomic composition, relative abundance, and correlations between methods are evaluated to assess the accuracy and applicability of molecular approaches. This study demonstrates how integrating emerging sequencing technologies with traditional monitoring can improve benthic biodiversity detection and support the development of rapid, cost-effective DNA-based marine monitoring.

Noise reduction methods in modern aircraft engines

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Aircraft engine noise remains a major environmental and regulatory challenge, particularly for communities located near busy airports. Prolonged exposure to high noise levels has been linked to a range of adverse health effects. These impacts make noise pollution not only an engineering problem but also a significant public health concern that continues to drive stricter international regulations and community pressure.

This presentation examines noise-reduction strategies integrated into modern aircraft engine designs, including chevron nozzles, acoustic panels, and liners. While nacelle modifications play an important role in shaping overall noise characteristics, equal emphasis is placed on the development of high-performance acoustic liners and advanced composite materials capable of absorbing a broader spectrum of sound frequencies. Attention is given to the balance between acoustic efficiency, structural integrity, and weight constraints, as well as the practical challenges associated with implementing these technologies in modern turbofan engines.

The memory of Arctic Sea ice: a question of scale

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This presentation will discuss how sea ice in the Arctic carries temporal memory and why understanding the characteristic spatial length scales in the cryosphere is crucial for the interpretation of climate change impacts and model projections.

Near-surface temperatures there have risen two to three times faster than the global average, which is a phenomenon known as Arctic Amplification. This means Earth's coldest areas are warming up the fastest, which may be very confusing at first glance. This enhanced warming occurs largely due to a group of climate feedbacks involving sea ice, permafrost and ocean-atmosphere exchange. One of the most visible signs of this change is the steady decline of the sea-ice concentration (SIC) in September, which is of interest due to the annual minimum of sea ice area.

Despite the clear trend, the predictability of SIC remains surprisingly low. State-of-the-art Earth System Models tend to overestimate how long the sea-ice "memory" persists from one summer to the next, especially in the seasonally ice-covered marginal zones. This suggests a misrepresentation of the processes that store and release the sea-ice memory. The way sea ice anomalies imprint on local sea surface temperatures and persist over the summer season may not be fully captured.

By analyzing model simulations and reanalysis products alongside observational datasets, this study aims to identify which spatial scale-dependent processes are well captured and where important gaps remain. Using a simple concept of e-folding length scales, it becomes possible to demonstrate how far a SIC anomaly spreads across neighbouring grid cells and evaluate its consistency with satellite observations.

Socio-environmental dynamics of bycatch: perspectives, practices, and emotions in Argentine fisheries

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Bycatch remains a persistent challenge for marine conservation, yet it is often addressed primarily through technical and ecological lenses. This study explores how different actors linked to industrial fisheries on the Argentine Continental Shelf perceive, experience, and respond to interactions with marine fauna. Using a qualitative approach, 29 semi-structured interviews were conducted with eight stakeholder groups. Findings reveal that fishers hold experiential knowledge of marine fauna, integrating ecological observations with affective and relational dimensions. Seabirds, especially albatrosses, are described not only in terms of behavior and distribution, but also through admiration and familiarity, highlighting the cultural dimension of human–wildlife interactions. Bycatch is recognized, though perceived as infrequent and manageable by fishers and industry actors. In contrast, researchers highlight its long-term ecological significance, particularly for vulnerable species. Handling practices vary across vessels, shaped by operational constraints, leadership, and ethical considerations, and often result in high post-release mortality. Fishers report distress, empathy, and frustration. These emotions can encourage care practices, but repeated exposure to bycatch events, especially when frequent, may also lead to habituation and normalization over time. Additionally, the visible abundance of seabirds around vessels fosters perceptions of healthy populations, potentially obscuring broader declines. These results underscore the need to integrate local knowledge, emotional dimensions, and governance contexts into bycatch mitigation strategies, moving beyond technical solutions toward more socially attuned and effective conservation approaches.

Arctic and Alpine Lakes as Sentinels of Environmental Change

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Arctic and alpine lakes are key components of high-latitude and high-altitude landscapes, altering biogeochemical cycles, supporting regional biodiversity, or connecting aquatic and terrestrial ecosystems through trophic fluxes. Although they occur in geographically distinct regions, these lakes are considered analogous ecosystems because they share many common features. They are characterised by low temperatures, prolonged ice cover, short growing seasons, exposure to high ultraviolet radiation, and low nutrient concentration, resulting in low productivity and simplified food webs.

At the same time, their geographical position and structural simplicity make them highly sensitive to environmental change, including climate warming, pollution, biological invasions and changes in their catchments. Consequently, they are among the most threatened ecosystems worldwide, and disrupted ecosystem services provided by Arctic and alpine lakes may lead to severe negative socio-economic effects. On the other hand, their sensitivity, along with worldwide distribution, mutual comparability, and environmental history preserved in their sediments, makes them good ecosystem indicators of environmental change in remote Arctic and alpine regions.

Despite their importance, significant gaps remain in our understanding of their functioning under changing environmental conditions. This contribution provides a comparative synthesis of Arctic and alpine lakes, presenting results from our projects and highlighting key gaps requiring further attention. Participation in the conference was supported by the Slovak Research and Development Agency (No. APVV-24-0241) and by the Grant Agency of the Ministry of Education, Research, Development and Youth of the Slovak Republic (No. VEGA 2/0090/26).

Exploring Selective Anticancer Properties of Baltic Cyanobacterial Metabolites in Neuroblastoma

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Neuroblastoma is a pediatric malignancy originating from the sympathetic nervous system and remains a leading cause of cancer-related mortality among children. Its aggressive progression, high metastatic potential, and often late diagnosis contribute to poor clinical outcomes, particularly in high-risk patients. Despite advances in treatment strategies, relapse rates remain substantial, highlighting the need for novel therapeutic approaches.

Cyanobacteria, especially those adapted to unique ecological niches such as the Baltic Sea, are recognized as prolific producers of biologically active secondary metabolites. In this study, we investigated the anticancer potential of compounds isolated from the cyanobacterial strain *Nostoc edaphicum* CCNP1411.

The biological activity of these metabolites was evaluated using human neuroblastoma cell lines (SH-SY5Y and IMR-32), alongside normal human dermal fibroblasts (HDFc) as a reference model. Cell viability was assessed using the MTT assay following treatment with increasing concentrations of the tested compounds.

Our results demonstrated a clear dose-dependent reduction in neuroblastoma cell viability, whereas the effects on normal fibroblasts were comparatively limited. This differential response suggests a degree of selectivity toward malignant cells.

In conclusion, metabolites derived from *Nostoc edaphicum* CCNP1411 show promising anticancer activity and warrant further investigation. Ongoing work aims to identify the molecular mechanisms responsible for their selective cytotoxicity and to evaluate their potential for future therapeutic applications.

Foraminiferal record and paleoenvironmental changes over the last 5000 years in the Gulf of Gdańsk, southeastern Baltic Sea

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This study presents a multi-proxy analysis of a 1.2 m-long sediment core retrieved near the Vistula River mouth in the Gulf of Gdańsk, southeastern Baltic Sea, to reconstruct paleoenvironmental changes over the past 5 kyr. The multi-proxy record indicates generally stable environmental conditions between 5 and 1.5 kyr BP. Magnetic susceptibility and grain-size analyses reveal a distinct shift at ~4 kyr BP, suggesting intensified storm activity and reduced river discharge, conditions likely associated with the development of a coastal spit. Enhanced freshening between 3 and 1.7 kyr BP, evidenced by geochemical proxies and lower benthic $\delta^{18}\text{O}$ values, likely associated with increased Vistula River discharge to the Gulf. A marked change in the depositional environment occurred around 1.4 kyr BP, when declining salinity and the onset of possible hypoxia disrupted benthic habitats. These changes led to the local disappearance of benthic foraminifera assemblages, previously dominated by *Elphidium clavatum*. Although environmental conditions appear to have improved around 0.9 kyr BP, benthic foraminiferal communities did not re-establish, likely due to persistently low salinity and recurrent hypoxic bottom-water conditions. Beyond natural variability, the sedimentary record reveals clear evidence of anthropogenic activities such as the construction of Vistula canal and eutrophication conditions due to agricultural activities on the Gulf of Gdańsk beginning around 1895 AD.

The research was financially supported by the National Science Centre in Poland through project 2024/53/N/ST10/02876.

Where the World Is Heading in Terms of the Literacy Crisis

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Our presentation, "Where the World Is Heading in Terms of the Literacy Crisis", aims to educate listeners on the severity of today's illiteracy pandemic while encouraging them to become the change needed to prevent the potential tragedy this crisis may cause.

The opening segment explains what we mean by the term "literacy crisis". We will delve into its origins and the teaching methods that have harmed youth development, supported by studies conducted in the United States.

Afterwards, we will shift our focus to the current effects of the literacy crisis on both young people and adults today, as well as the impact of technology and society's changing view of literacy, reinforced by statistics.

Next, we will examine where the literacy crisis is heading, using real-life examples of illiterate societies alongside predictions presented in literature.

Lastly, we will conclude on a hopeful note: where the literacy crisis could lead if we intervene, how we can support young people, and how to ensure future generations are not consumed by these same problems.

Pain as a Predictor for Alcohol Consumption Escalation in Current Drinkers: A Longitudinal Cohort Study

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In an ageing society, pain management becomes an increasingly prevalent and challenging public health concern. Over 60% of older adults report pain of at least moderate intensity over the past month. Alcohol use is often a maladaptive coping mechanism, and due to its analgesic effects, it may be used for pain self-management. Previous research has shown links between experiencing pain and substance use, however the findings are mostly contradictory.

This study aimed to investigate the longitudinal relationship between pain intensity and alcohol consumption among older adults. It was hypothesized that an increase in pain intensity would result in increase of alcohol consumption. Data from Health and Retirement Study were used. Between 2016 and 2022, a sample of 4,191 adults (2,533 females, 1,658 males; mean age 59.45 years at baseline) participated in a four-wave study, reporting their average pain intensity and weekly alcohol intake.

The results showed that higher average pain intensity was generally associated with lower overall alcohol consumption. Within-person escalations in pain significantly predicted increased alcohol use among individuals with higher baseline consumption, whereas there was no such link among those with low to no alcohol consumption. The results emphasise the role of pain as a risk factor for alcohol overuse. While pain does not necessarily trigger the initiation of drinking habits, it escalates consumption levels primarily among current drinkers, who may be particularly susceptible to increasing their intake of alcohol as a self-medication strategy during symptomatic flare-ups.

Examining the Roles of Religious Affiliation and Gender in the Relationship Between Religiosity, Authoritarianism, and Social Dominance Orientation: A Systematic Review and Meta-Analysis

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As the global landscape grapples with rising polarization and threats to democratic values, understanding the ideological foundations of societal inequalities is crucial for predicting "where the world is heading." This presentation outlines the findings of a comprehensive systematic review and meta-analysis exploring the relationship between religiosity and two key inequality-endorsing belief systems: authoritarianism and social dominance orientation (SDO). Authoritarianism prioritizes social conformity and obedience over personal autonomy, while SDO reflects a preference for hierarchy and inequality among social groups. While previous research frequently links religiosity to conservative ideologies, the nuances of these associations remain fragmented. Adhering to PRISMA guidelines, we quantitatively synthesized existing literature to estimate the strength and direction of these relationships using random-effects models. Crucially, our analysis goes beyond universal assumptions by adopting an intersectional approach, specifically examining the moderating effects of gender identity and religious affiliation. By shedding light on the complex interplay between faith, gender, and prejudice, this research provides vital, evidence-based insights into the mechanisms that sustain social hierarchies, offering a foundation for interventions aimed at fostering a more egalitarian future.

Gut-Brain Axis Interaction With Digital Overstimulation Factors: A Prospective, Randomized Controlled Trial (RCT) on the Effect of Postbiotic *Akkermansia muciniphila* Akk11 in Young Women

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Contemporary affective neuroscience and psychodietetics increasingly highlight the modifying role of the gut microbiota in regulating cognitive and emotional processes, known as the gut-brain axis. The *Akkermansia muciniphila* strain Akk11 has been identified as a next-generation microorganism with therapeutic potential, capable of improving metabolic health and reducing systemic inflammation. This project addresses a pioneering research problem: the role of digital overstimulation as a behavioral moderator of psychobiotic efficacy. The overarching goal of the project is a precise, multidimensional assessment of the impact of a 30-day supplementation with the pasteurized Akk11 strain on the metabolic profile and objective neurophysiological indicators in young women. The study is designed as a randomized, double-blind, placebo-controlled trial (DB-RCT) involving 120 healthy young women aged 18–30. We hypothesize that Akk11 supplementation will cause a statistically significant improvement in body composition indices, including reduced metabolic age and visceral fat, measured via BIA. Furthermore, we expect a measurable improvement in self-regulation abilities, verified by an increase in alpha/theta band power in EEG for relaxation and more efficient prefrontal cortex oxygenation in fNIRS for concentration, with a simultaneous reduction in subjective anxiety and stress. Finally, we hypothesize that the level of digital overstimulation moderates the intervention's effectiveness, indicating the need for a holistic approach to psychobiotic therapy.

Biological characterization and antibacterial potential of bacteriophage 4.1 against Salmonella enterica

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Increasing antibiotic resistance among bacterial pathogens is a major challenge for modern medicine and food safety. In the case of *Salmonella enterica*, an important zoonotic pathogen strongly associated with poultry production, alternative antibacterial strategies are urgently needed. Bacteriophages are promising candidates due to their high specificity and natural antibacterial activity.

The aim of this study was to characterize a newly isolated bacteriophage, 4.1, infecting *S. enterica*, and to evaluate its potential as an antibacterial agent in poultry-derived food matrices. The host range was tested on strains representing 100 *S. enterica* serotypes relevant to salmonellosis, and the efficiency of plating (EOP) was determined. Adsorption kinetics, one-step growth, and genomic analyses were also performed to assess the phage's biological properties.

Bacteriophage 4.1 showed high stability at pH 4–12 and thermal stability up to 60°C. It displayed lytic activity against selected *S. enterica* strains, with productive infection observed in 46% of tested isolates. Adsorption kinetics demonstrated rapid attachment to host cells, with a marked decrease in free phage particles within the first 5 minutes. One-step growth analysis revealed a short infection cycle: at 37°C, the burst phase began after 7.5 minutes and lasted until 20 minutes. In contaminated poultry meat, phage application at MOI 10 and 100 reduced viable *Salmonella* counts by approximately 2 log CFU/g after 7 days, while MOI 1000 eliminated detectable bacteria after 3 days.

These results indicate that bacteriophage 4.1 is a strong candidate for phage-based control of *S. enterica*. Importantly, the reduction of bacterial counts in contaminated meat highlights its practical applicability in food protection.

*Reproductive biology of the Fiddler crab *Afruca tangeri* in South Coast of Portugal*

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Fiddler crabs are among the most conspicuous organisms in many intertidal ecosystems and the West African fiddler crab, *Afruca tangeri*, is the sole representative of this group found in Europe. Despite being an ecologically and socio-economically important species in Portuguese coastal systems, its reproductive patterns, fundamental for effective management and conservation, remain poorly understood. Therefore, this study aimed to characterize the reproductive biology of *A. tangeri* in the Ria Formosa. For this, the population size structure, gonadal development stages, size at sexual maturity, reproductive period, and the morphometric-fecundity relationship of *A. tangeri* were analysed. Crabs were sampled monthly by hand collection, from January 2020 to August 2023. A total of 9687 individuals were examined. Carapace width (CW) ranged from 5 to 53 mm, and the overall sex ratio (m:f) was 1.16:1. Sexual maturity was reached at around 20 mm CW, with females maturing at a slightly smaller size than males. Gonadal development, characterized through histological analysis, revealed four distinct stages in males (two immature and two mature) and five stages in females (two immature and three mature). Although mature individuals were present throughout the year, their proportion decreased during the colder months, and ovigerous females were observed between May and July. Fecundity ranged from 28430 to 129000 eggs per female, exhibiting a positive correlation with female CW. These results provide a detailed characterization of the reproductive patterns of Europe's only fiddler crab species. The gonad stage key, adapted for this temperate species, offers a valuable tool for future studies and establish a crucial foundation for the informed management and protection of this species.

Filter feeders in polar regions

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There is a subtle debate about if all filter feeders are suspension feeders or if such groups should be considered apart. This functional trait includes all those taxa whose feeding depends on the particle availability in the water column and constitute one of the most diverse and specialized animals in the ocean. Include a wide range of species from microscopic organisms to gigantic whales navigating the ocean, occurring from the shallow waters to the hydrothermal vents, and from the tropics to the polar regions. Recent studies in the polar regions have been destroying previous stereotypes about life in these extreme environments, for example, thinking of the polar night as a dormant period. An (unpublished) review has collected all available information regarding filter feeders foraging activities in the polar regions. Both terms “filter feeders” and “suspension feeders” were included in the search carried out on Web of Science in 2025. Most studies conducted in the Arctic are focused on bivalves and most studies in Antarctica are focused on ascidians and bryozoans. However, studies in the Arctic are mostly related to ecological succession or circadian cycles, in contrast to the studies found in Antarctica that did study the feeding activities year around. Still, there are plenty of taxa that have not been studied in each pole and gaps for future studies to cover will be discussed.

Struggle for existence of high-Arctic marine lithophiles assessed by means of underwater macrophotography

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Arctic biological assemblages exist in a highly dynamic environment shaped by disturbance and relentless competition for resources. In the shallow subtidal zone of Arctic fjords, lithophiles — organisms tightly associated with hard substrates — dominate the benthos and act as pioneers of primary succession on newly available surfaces. Their struggle for existence is played out through spatial interference competition, which drives the long-term structure and composition of the entire assemblage.

The predominantly bidimensional geometry and (sub)circular growth patterns of most lithophiles make them well suited to high-resolution image-based monitoring: colony edges are identifiable, growth is trackable, and time-series comparisons are feasible. IO PAN scientific divers have exploited these properties through underwater macrophotography, generating datasets that allow ecological succession to be followed in direct, optical terms.

Yet raw imagery is not knowledge. Realising the full analytical potential of such a dataset demands a lifecycle-oriented framework — one that explicitly links acquisition decisions to downstream inference, from spatial standardisation and resolution through annotation continuity to long-term digital archiving and data reuse. Without this methodological backbone, ecological signal remains trapped in inaccessible or non-interoperable files.

The struggle for existence of polar marine lithophiles can thus be preserved-and its study extended across time and institutions — through rigorously structured digital archives. Bridging the ecological and the methodological is what makes the science last.

Understanding Burnout in Sport: Associations with Big Five Personality Traits, Imagery Ability, and Perfectionism.

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Athlete burnout (AB) is associated with negative outcomes such as decreased motivation, reduced performance, and sport dropout (Gustafsson et al., 2014). It is defined as a cognitive-affective syndrome including emotional and physical exhaustion, reduced sense of accomplishment, and sport devaluation (Raedeke & Smith, 2001). Research shows links between AB and perfectionism (Hill & Curran, 2015; Waleriańczyk et al., 2022), imagery ability (Marciniak et al., 2025; Simonsmeier et al., 2020), and Big Five traits (Tahir et al., 2024), suggesting these may act as antecedents or protective factors.

This study examined correlations between AB and perfectionism (high personal standards, concern over mistakes, doubts about actions), imagery ability, and Big Five traits (conscientiousness, emotional stability). It was hypothesized that perfectionism dimensions would be positively correlated with AB, while imagery ability and personality traits would be negatively correlated.

The study included 124 athletes (72 females, 52 males). Data collected included gender, age, sport, training years, and classification. AB, perfectionism, imagery ability, and personality traits were measured using Polish versions of the Athlete Burnout Questionnaire, Sport Multidimensional Perfectionism Scale-2, Sport Imagery Ability Questionnaire, and Ten Item Personality Inventory.

AB was positively related to concern over mistakes and doubts about actions, and negatively related to imagery ability, conscientiousness, and emotional stability. High personal standards showed no significant correlation with AB.

The findings enhance understanding of athlete burnout and highlight the need for further research on its prevention and treatment, including longitudinal studies to clarify causal relationships.

Neurodidactics in teaching and learning processes: teachers' awareness of neurodidactics and their training needs in teaching and learning processes

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Understanding how the brain learns is essential for improving teaching effectiveness. Neurodidactics connects knowledge about brain functioning with educational practice, yet many teachers remain unsure how to apply its principles in everyday work. The aim of this study was to examine teachers' awareness of neurodidactics, explore how its principles are used in classrooms, and identify training needs in this area. The research was conducted using a questionnaire completed by 105 teachers representing various educational levels in Poland. The data were analysed using quantitative and qualitative methods.

The results show that most teachers have heard of neurodidactics and believe it has practical value, although their understanding is often basic. Many respondents reported using selected neurodidactic strategies—such as activating prior knowledge, multisensory learning, or emotional engagement—regularly or occasionally, while only a few rarely applied them. At the same time, teachers indicated limited access to structured training and practical materials supporting the implementation of neurodidactics. They also noted that traditional teaching methods only partially reflect neurobiological knowledge. The main barriers identified were lack of knowledge, insufficient training, limited time, and scarce teaching resources.

The findings suggest that although teachers hold positive attitudes toward neurodidactics and incorporate some of its elements, there is a clear need for more systematic training and practical support. Strengthening teachers' competencies in this field may lead to more effective teaching strategies aligned with how students learn, with implications for teacher education and professional development.

Different adaptation to myophily, fly pollination, in two species of Veratrum.

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Species that are pollinated by flies (Diptera) express diverse adaptations of pollination strategies based on rewards and flower deception. The goal of this study was to describe the type of secretions, type of secretory structures and the analysis of composition of the cell wall of secretory cells in two species of *Veratrum*. Through the application of histochemical, immunohistochemical, and ultrastructural methods, this research demonstrates significant variations in the distribution of proteinaceous secretions, starch grains, mucilage, lipid droplets, and epicuticular waxes between the two species.

The two species are from the same genus in the Melanthiaceae family, however they belong in different clads. *Veratrum nigrum*, which is critically endangered and protected in Poland and highly toxic due to high alkaloid content, displays characteristics that align with the attraction of necrophilous and saprophagous flies. These traits include the absence of nectar secretion, an increased presence of mucilage, and a profusion of epicuticular wax blisters. In contrast, *Veratrum lobelianum*, which is also a protected species and is associated with myophilous pollination, exhibited higher concentrations of starch grains. This may signify the presence of proteinaceous nectar and finely granulated epicuticular wax, both of which are conducive to attracting pollinators seeking nutritional rewards. Immunohistochemical investigations indicate a significant divergence in the expression and localization of cell wall polysaccharides. These species-specific adaptations in secretory pathways are likely linked to their respective pollination strategies, thereby underscoring the functional and ecological divergence present within the *Veratrum* genus.

Vulnerable student profiles: the interaction between studying related psychological characteristics, emotional affect, and study addiction with moderating effect of perceived university support.

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Introduction: Study addiction is an emerging behavioral addiction that poses a threat to the mental health of students. Understanding student psychological diversity is vital. This study identified distinct latent profiles based on attitude towards studying, emotional affect, and perceived academic pressure, with the moderating role of university support also being evaluated.

Method: Data was collected from students from the University of Gdańsk (N=3075). Latent profile analysis (LPA) was performed using the previously mentioned indicators. Differences in study addiction between the profiles were analyzed using ANOVA with Tukey HSD post-hoc tests. OLS regression model with interaction terms was used to test for moderating effect of university support across the profiles.

Results: Three distinct profiles were identified (entropy=0.525). Profile 0 (low-risk) with the lowest study addiction (M=8.5); Profile 1 (moderate-risk) with average levels of study addiction (M=12.5); Profile 2 (high-risk) with the highest levels of study addiction (M=14.4). The differences between the profiles were significant ($F=259.92$; $p<0.001$ $\eta_p^2=0.145$). The moderation analysis revealed that university support significantly buffers addiction, but only for the high-risk group (Profile 2; $\beta=-0.31$; $p=0.024$). For other profiles the effect of support was non-significant, which suggests a targeted benefit. Significant gender imbalances were found across clusters ($\chi^2=35.93$; $p<0.001$).

Conclusions: The findings demonstrate that university support is not a universal solution for combating study addiction but is most effective for the most vulnerable group of students. Institutions should focus on targeted support for these specific high-risk profiles to best enhance student wellbeing.

Emotional intelligence training program for adolescents involved in intensive training centers – a replication study on a polish group of table tennis players

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The main purpose of the study was to replicate the intervention programme implemented in the study of Cece et al. (2023) which focused on developing emotional intelligence in the group of adolescent table tennis players training within intensive training centers.

A total of 20 players participated in five workshops aimed to explore topics like: optimal arousal theory, emotions, emotional intelligence, relaxation and imagery, coping strategies, preperformance routines. After the workshops were completed the five months long follow-up period was applied during which players received reminders about each topic.

Athletes completed questionnaires: Brasseur's et al. (2013) The Profile of Emotional Competence with was submitted before the first, after the last workshop and after follow-up, and the logbook of emotions by Cece et al. (2023) measuring emotions and regulation, cognitive evaluations with which data was collected after every workshop and follow-up. Both instruments were translated to Polish.

Linear mixed-effects models were used to analyze longitudinal variations in trait emotional intelligence, emotion regulation strategies, cognitive appraisals, and emotions across three data collection waves. The same approach was applied to examine emotional intelligence as predictor of individual differences. Intrapersonal emotional intelligence predicted lower levels of less adaptive emotion regulation, anger and rumination. The results have also shown a significant improvement in intrapersonal ($p=0,010$) and global emotional intelligence ($p=0,007$) in the group of females.

Results of this study indicate that emotional intelligence can be developed in the group of adolescent athletes and emphasize the importance of interventional studies in the field of sport psychology.

Antibiotics from the Baltic – Antibacterial activity of the KUCC C4 (Pseudanabaenaceae) cyanobacterial strain, towards drug-resistant Streptococci

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Antimicrobial resistance is recognized by the WHO as one of the biggest threats to public health worldwide. To systematize antibiotic research, WHO prepares the Priority Pathogens Lists, which identify the resistant pathogens that most urgently require novel therapies. Macrolide-resistant group A Streptococci are included in the latest List, highlighting the growing burden they pose. Most active agents within currently available antibiotics originate from metabolites of living organisms. Cyanobacterial metabolites exhibit a wide range of biological activities, with antibacterial activity among the most commonly reported, making them a promising source of novel antibiotics.

The aim of the presented research was to determine the metabolite/s responsible for the antibacterial activity of the KUCC C4 cyanobacterial strain, towards *Streptococcus pyogenes*, with a focus on its macrolide-resistant strain. To achieve this, we applied a bioassay-guided isolation approach. Crude KUCC C4 extract exhibited minimal inhibitory concentration (MIC) value of 250 µg/ml, towards non-resistant *S. pyogenes* ATCC 12344 strain. In subsequent steps, the extract was fractionated using solid-phase extraction, flash chromatography, and finally preparative chromatography. The fractions activity was tested against three *S. pyogenes* strains – including macrolide-resistant BAA-946. The MIC value of the most active fraction was below 100 µg/ml. At each stage, the content of fractions was analyzed via an LC-MS/MS system. The activity annotated molecular networking analysis was employed to determine best hits within the KUCC C4 metabolome.

Although not yet clinically applicable, the results appear promising, as indicated by low MIC values and the potential novelty of metabolites identified by LC-MS/MS.

Lifestyle Patterns as Indicators of Psychosocial Risk: A Latent Profile Analysis of Gastrointestinal and Behavioral Factors

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Objectives: To identify distinct lifestyle-symptom profiles related to the gut-brain axis and test whether these profiles differentiate psychosocial functioning and cognitive flexibility in adults. **Methods:** Adults (N = 442) completed measures of diet quality, sleep, physical activity, microbiome-supporting behaviors, gastrointestinal symptoms, and psychosocial outcomes. Latent profile analysis identified profiles; adjusted comparisons examined differences in depression, anxiety, stress, well-being, life satisfaction, neurotic worry, impulsivity, and cognitive flexibility. **Results:** Three profiles were identified: Health-Promoting (n = 134, 30.3%), Lifestyle-Passive (n = 148, 33.5%), and Symptom-Distressed (n = 160, 36.2%). The Symptom-Distressed profile showed the highest depression, anxiety, stress, impulsivity, and neurotic worry, and the lowest well-being and life satisfaction. The Health-Promoting profile showed the highest well-being, life satisfaction, and cognitive flexibility, and the lowest impulsivity. All adjusted profile effects were statistically significant. **Conclusion:** Co-occurring lifestyle behaviors and gastrointestinal symptoms cluster into profiles meaningfully linked to psychosocial risk. Using profile-informed feedback may help clinicians personalize explanations of the gut-brain connection. The finding that the Symptom-Distressed profile is a prevalent risk pattern in this sample supports routine, phenotype-specific screening and counseling.

Investigating Empathic Behaviour in Immersive Virtual Reality: A Study of Prosocial Decision-Making in Medical Students

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Understanding the mechanisms underlying empathy and prosocial behaviour is an important topic in contemporary cognitive and behavioural science. Virtual reality (VR) allows researchers to simulate realistic social interactions while maintaining experimental control. This study examined behavioural and emotional responses to a helping situation presented in an immersive VR environment. A total of 49 participants completed a pre-experiment questionnaire measuring affect and selected personality variables. Participants were then immersed in a VR scenario involving a simulated social situation in which helping behaviour could occur. Behavioural response (help vs. no help) served as the primary outcome measure. After the VR exposure, participants completed post-experiment measures assessing affect and perceived presence in the virtual environment. Twenty-one participants demonstrated helping behaviour, whereas twenty-eight did not. Statistical analyses showed no significant increase in positive affect following the VR experience. A trend toward reduced negative affect after the scenario was observed. Participants who helped obtained slightly higher perspective-taking scores, though this difference was not statistically significant. No differences were detected in personality traits or perceived immersion. The results highlight the potential of immersive VR as a methodological tool for investigating social cognition and behavioural responses in experimentally controlled environments. Such approaches may contribute to future research on empathy, decision-making, and human interaction within technologically mediated contexts.

Water in Purification Rituals as an Example of the Religious Use of Natural Resources

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The presentation focuses on the analysis of water as an ablutionary material used in purification rituals across various religious traditions and systems of belief. The point of departure is the concept of the ablutionary material understood as a substance medium of the purificatory act, enabling the transition from a state of ritual impurity to a state of purity and the restoration of the possibility of participation in cultic practices.

Against the background of other materials employed in purificatory practices, water occupies a distinctive position. Its widespread use in ablutions results both from its physical properties and from the symbolic meanings attributed to it, associated with life, renewal, and regeneration. The presentation discusses selected examples of water-based ablutions attested in ancient cultures as well as in contemporary religions of the world, demonstrating the diversity of their forms and the universal character of this practice.

The aim of the presentation is to show that the use of water in ablutions constitutes one of the many ways in which water has been employed in culture and religion since the earliest stages of human history. The presentation also seeks to prompt reflection on the fact that the long-standing and widespread use of water in religious practices highlights the importance of care for the natural environment also in this, not always prominently emphasized, dimension of human activity.

Graph Neural Networks as a Model for a Relational World: Why the Future of AI is Graph-Based

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Many systems shaping our world - from biological pathways to social structures and energy grids - are fundamentally relational. Their behavior emerges not merely from individual components, but from the intricate interactions between them. However, classical AI models are largely optimized for grid-like data (images) or sequential data (text), which makes modelling complex networks challenging.

Graph Neural Networks (GNNs) offer a shift in this paradigm by operating directly on graph-structured data, where nodes represent entities and edges encode relationships. Through message passing and neighborhood aggregation, GNNs learn representations that capture both local interactions and global structure.

This presentation argues that the rise of GNNs reflects a broader transformation in AI: from feature-centered to relation-centered modelling. Using examples across diverse domains -including molecular property prediction in drug discovery, protein interactions, community detection in social networks, and the optimization of power grids - I demonstrate how AI capable of reasoning over relationships is becoming essential.

As scientific and societal challenges become increasingly interconnected, AI systems capable of reasoning over relationships will play a central role. In this sense, graph-based learning is not only a technical innovation, but also a sign of where AI - and research - is heading.

The role of emotion regulation in alcohol craving

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Alcohol dependence remains a significant public health problem in Poland. Alcohol craving, one of the diagnostic criteria for alcohol dependence, constitutes an important factor affecting individuals on multiple levels and increasing the risk of relapse. This phenomenon requires a deeper psychological understanding. Emotion dysregulation, defined as difficulties in regulating emotions despite efforts to do so, is a common factor underlying many mental disorders. Similarly, emotional suppression is considered an ineffective strategy in the long term. This study examined the relationship between emotion dysregulation, emotion suppression, and alcohol craving, as well as the moderating effects of gender and duration of abstinence. A total of 102 patients diagnosed with alcohol dependence from a day addiction treatment center participated in the study. The results indicated that greater difficulties in emotion regulation are associated with higher levels of alcohol craving, particularly in areas such as impulse control and access to adaptive regulation strategies. Emotional suppression was not significantly related to craving and did not predict its intensity, while gender and duration of abstinence did not moderate the observed relationships. Overall, difficulties in emotion regulation emerged as a significant predictor of alcohol craving, explaining 16% of its variance. The findings of the present study highlight the importance of addressing emotion regulation in the treatment of individuals with alcohol dependence.

Drowning in Nutrients: The Impact of Uncontrolled Aquaculture Expansion on the Trophic Status of Lake Maninjau

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Intensive aquaculture activities in Lake Maninjau, a volcanic lake in West Sumatra, Indonesia, are represented by uncontrolled expansion of floating net cages (FNC). These activities have triggered massive nutrient accumulation, yet eutrophication control has not been effective due to lack of spatial and temporal identification of trophic status. This study aims to identify the spatial and temporal trophic status and analyze its correlation with FNC activities. Identification was conducted at five utilization sites between June 2022 to March 2023 using Trophic Level Index (TLI) method based on total nitrogen (TN), total phosphorus (TP), chlorophyll a, and turbidity parameters, followed by Hierarchical Cluster analysis. The results showed a spatial and temporal trophic status ranging from eutrophic to hypereutrophic conditions with TLI values of 5.28-6.25. Hypereutrophic conditions were identified at the FNC site and the lake outlet with TP concentrations (206-754 $\mu\text{g/L}$) and TN concentrations (148-1,730 $\mu\text{g/L}$). Spatial cluster analysis formed three clusters the low nutrient zone (endemic-domestic), the accumulation nutrient zone (FNC-middle of the lake), and the sink nutrient zone (outlet). Temporally also formed three clusters following the FNC cycle the postharvest phase (July 2022), the intense cultivation phase (September 2022 & March 2023), and the mass mortality phase (January 2023). These findings confirm that eutrophication in Lake Maninjau is linked to the high intensity of FNC activities, contributing to nutrient accumulation in the lake. Given the important role of FNC in supporting increased food demand, sustainable management of FNC is imperative through nutrient load control to prevent water quality degradation caused by eutrophication.

Attitudes Toward Domestic Violence: Gender Differences and Order Effects in Questionnaire Administration

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The presentation reports on preregistered research whose main goal was to examine gender differences in attitudes toward domestic violence (DV) in the legal field (students, trainees, and professionals). DV constitutes a significant social problem, and attitudes toward it – shaped by prevailing social norms – may reflect not only individual beliefs but also a social-cognitive expression of broader societal processes.

The study sought to integrate and build on prior research in this domain by examining both interindividual differences and intraindividual dynamics in attitudes toward DV perpetrated by men and women, while accounting for respondents' gender. Notably, participants were randomly assigned to one of two experimental groups, differing in the order of questionnaire administration: either the assessment of attitudes toward male-to-female DV was administered first, followed by the assessment of attitudes toward female-to-male DV, or vice versa. Furthermore, attitudes were measured using questionnaires that reflected a tripartite model encompassing cognitive, affective, and behavioral components and, unlike vignette-based methods, allowed for independent assessment of attitudes regardless of specific situational framing. Linear mixed-effects models were used in R to analyze the data.

The study revealed an intriguing asymmetry in gender differences not observed in previous research of this kind. Specifically, men appear to differentiate the direction of DV, evaluating male-to-female violence more negatively than female-to-male violence, without exhibiting an order effect. In contrast, women's responses suggest they tend to evaluate violence more leniently when female-to-male DV is presented first, while not differentiating their attitudes by the direction of DV.

POSTER PRESENTATION ABSTRACTS

Parental Identity in Transition: A Holographic Perspective on Preschool Adaptation

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This poster addresses the issue of parental identity in the context of children's adaptation to preschool. The aim of the study was to explore the meanings parents assign to this experience and to examine how it contributes to the construction of their identity as mothers and fathers. The research was conducted within a qualitative paradigm, using a phenomenographic approach. The empirical material consists of interviews with seven parents (four mothers and three fathers) whose children attend the same preschool.

The analysis is grounded in the holographic concept of parental identity, encompassing the projected, trained, and confronted dimensions, developed by Maria Mendel. The findings reveal diverse ways of understanding the process of preschool adaptation, reflecting tensions between expectations associated with the parental role, social norms of upbringing, and parents' individual emotional experiences. Children's adaptation to preschool emerges as a moment of intense reflection on parenthood, leading both to the reinforcement and the reconfiguration of parental identity.

The results highlight the importance of institutional experiences in shaping parental identity and point to the need to include the parental perspective in early childhood education practices.

Artificial Intelligence in Education – Help or Threat?

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The project focuses on the role of artificial intelligence in modern education and its impact on the future of learning. The aim of the study is to analyze both the benefits and potential risks associated with the use of AI-based tools in the teaching and learning process.

The project presents opportunities offered by artificial intelligence, such as personalized learning, quick access to information, and support for teachers in preparing educational materials. It also highlights possible challenges, including students' dependence on technology, the risk of misuse (e.g., plagiarism), and the limitation of independent thinking.

The analysis leads to the conclusion that artificial intelligence can significantly improve the educational process; however, its use requires a conscious and responsible approach. Developing critical thinking skills and maintaining a balance between technology and traditional teaching methods becomes essential. The project raises an important question: will artificial intelligence become a support for education, or a threat to its fundamental values?

Ferroptosis dysregulation as a potential mechanism of cellular damage in myofibrillar myopathy type 6

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Myofibrillar myopathy type 6 (MFM6) is a rare genetic disease associated with mutations in the BAG3 gene, leading to progressive weakening of skeletal muscles and often involving the cardiac muscle. Currently, there is no effective causal treatment for this condition.

Due to disruptions in cellular stress response, autophagy dysfunction, and increased oxidative stress observed in MFM6, this suggests that ferroptosis may also be dysregulated. Ferroptosis is a form of regulated cell death iron-dependent and characterized by lipid peroxidation. Similar mechanisms have been described in other muscle diseases, such as Duchenne muscular dystrophy, where iron homeostasis is disrupted and antioxidant defenses are weakened.

The aim of this study was to evaluate whether cells derived from MFM6 patients exhibit changes indicative of alterations in the ferroptosis pathway. The research was carried out on fibroblasts collected from patients with MFM6. Western blotting was used to assess the levels of proteins related to iron metabolism and oxidative stress, while fluorescence microscopy was applied to analyze their intracellular localization.

The obtained results suggest that ferroptosis may be dysregulated in MFM6, as evidenced by altered levels of the analyzed proteins. Based on these findings, it can be concluded that ferroptosis dysregulation may represent one of the elements of MFM6 pathogenesis, potentially linked to impaired iron homeostasis and increased oxidative stress.

These findings provide a foundation for further research into the role of ferroptosis and iron metabolism in MFM6 and may contribute to the development of new hypotheses regarding disease mechanisms and potential therapeutic targets.

The Crossroads of Tomorrow: Human Agency and Responsibility in Shaping the Global Future

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Every day we ask ourselves: is the destruction of our planet inevitable, or is it a fate we can still rewrite? This project is a visual response to the question "Where the world is heading?", shifting the focus from global fear to individual power. It argues that the future is not a predetermined script, but a direct consequence of the choices we make today. Through the lens of human agency, this work challenges the idea of passive waiting and replaces it with a call to action.

The viewer's gaze is drawn to a young person standing at a crossroads, facing a signpost that points toward two divergent futures. This signpost serves as a metaphor for the contemporary climate crisis and the power of choice. The composition is divided into two contrasting visions: the path to the left, titled "The Way of Renewal," leads through vibrant nature, pristine blue oceans, and sustainable cities of the future. In stark contrast, the path to the right, marked "The Way of Degradation," depicts a grim landscape dominated by smog, withered trees, and polluted waters, symbolizing the catastrophic consequences of indifference.

Through the contrast of colors and the clear symbolism of the crossroads, the work confronts the viewer with the question of the real cost of our choices, illustrating the long-term consequences of both paths. It emphasizes that for the younger generation, the future of the climate and the oceans remains an open question. The project highlights that the power to steer the planet toward a sustainable tomorrow remains in our hands through the conscious exercise of human agency.

The Earth for Sale

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The project titled 'The Earth for Sale' presents the problem of 'greenwashing', focusing on how large corporations overuse the eco-friendly trend as a marketing strategy rather than a true commitment to environmental protection. The aim of the project is to analyze the gap between corporate communication and the real impact on the environment the industrial activities have. The research is based on visual analysis and critical interpretation. In the center of the poster the Earth wrapped in plastic foil is placed, marked with a barcode and a price tag attached to it. This symbolizes treating nature as a product that can be packaged, labeled, and sold. The background of the poster includes industrial elements such as factories, smoke, and pollution showing the hidden consequences of corporate practices, contrasting with the positive, eco-friendly image often promoted in advertising. This contrast is a key part of the analysis, highlighting the difference between appearance and reality. The project also examines the use of color and visual language. Green tones are used to represent ecological branding, while darker colors symbolize environmental degradation. This combination reinforces the critical message of the work. The expected outcome of the project is to increase awareness of greenwashing and encourage viewers to critically evaluate sustainability claims made by corporations. The project aims to contribute to a broader discussion about ethical responsibility, consumer awareness, and the role of visual communication in shaping public opinion.

Reconstructing temperature-dependent growth in herring larvae using otolith microstructure

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Early growth in fish larvae is a key determinant of survival and recruitment success. Environmental temperature strongly influences growth rates, yet its effects can be complex and vary among individuals. Otolith microstructure provides a powerful tool for reconstructing individual growth histories at fine temporal resolution.

We investigated the influence of temperature on growth in herring larvae using otolith microstructure as a record of daily growth. Daily increment widths were measured to reconstruct individual growth trajectories. These data were linked with environmental temperature to examine how thermal conditions shape growth over time.

We found that growth rate increased with temperature, with a clearly nonlinear response to environmental variation. Growth was influenced not only by current temperature but also by conditions experienced on previous days, indicating short-term environmental memory. We also observed substantial variation among individuals in both average growth rates and their responses to temperature. Faster-growing individuals exhibited stronger responses to temperature, suggesting a positive relationship between baseline growth and thermal sensitivity.

Our results show that growth in herring larvae is driven by a combination of environmental conditions, developmental processes, and individual-level differences.

Is Intracellular Calcium Enough to Drive T Cell Activation?

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Calcium signaling is essential for T-cell activation, enabling sustained intracellular Ca^{2+} elevation required for calcineurin activation, nuclear translocation of Nuclear Factor of Activated T-cells (NFAT), and cytokine production. Although store-operated calcium entry (SOCE) is considered the primary mechanism supporting this process, the extent to which intracellular Ca^{2+} release alone can drive NFAT activation remains unclear.

This study aimed to assess whether perturbation of intracellular calcium homeostasis is sufficient to induce NFAT activation in T lymphocytes. Jurkat-Lucia™ NFAT reporter cells were treated with brefeldin A, a compound disrupting endoplasmic reticulum function and vesicular trafficking. Experiments were performed in both the presence and absence of extracellular Ca^{2+} , with additional stimulation using PMA, PHA, and a calcium ionophore. NFAT activity and cell viability were measured using QUANTI-Luc™ and MTT assays, respectively.

Brefeldin A modulated activation levels and influenced cell viability under stimulation conditions. However, in the absence of extracellular Ca^{2+} , a marked reduction in NFAT activity was consistently observed. Even strong stimulation failed to restore activation to levels seen in Ca^{2+} -containing conditions.

These findings indicate that intracellular Ca^{2+} release is insufficient to sustain NFAT activation and cannot compensate for the lack of extracellular influx. The results highlight the critical role of SOCE in T-cell activation and suggest that intracellular perturbations may modulate, but do not replace, key calcium-dependent signaling mechanisms.

The Role of Home and School in Children's Environmental Education: The Example of Waste Segregation.

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Education of children in the field of waste segregation is increasingly important, as pro-environmental habits developed at an early age influence behaviors in adult life. Therefore, it is essential to examine how children understand and practice waste segregation at home and in educational institutions.

The aim of the project was to assess children's knowledge and habits related to waste segregation and to determine the role of parents, schools, and kindergartens in environmental education. The study was conducted using an anonymous survey addressed to parents of preschool and school-age children. The questionnaire concerned familiarity with waste segregation, rules of selective waste collection, container colors, everyday household practices, and educational activities carried out in educational institutions.

The analysis focused on the relationship between children's age, place of residence, and type of institution, and their level of knowledge and practice of waste segregation. The study verified the hypothesis that younger children demonstrate a lower level of practical knowledge and that the development of these skills depends on the involvement of parents and teachers. The results help identify effective methods of environmental education supporting the development of lasting pro-environmental habits in children.

Where the world is heading? The choice is ours

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The Choice is Ours-Mapping the World's Future

This poster takes a deep dive into the big question: "Where is the world heading?" Instead of giving a single answer, it looks at the two very different paths currently sitting in front of us. It's a visual story about a world at a breaking point, where our next few moves will decide everything.

On one side, we see the "Worst Case Scenario"-a path defined by industrial neglect and old habits. It's a gritty look at a future where pollution, waste, and climate change have taken over, leaving behind a gray, exhausted planet. It's a warning about what happens if we stay on our current track without making real changes.

On the flip side, the poster shows a "Vision of Hope." This isn't just a dream; it's a look at smart, green growth. It features a world where technology and nature actually work together. Think vertical gardens, clean energy, and cities designed to breathe. It's a future where innovation helps the planet heal instead of just using it up.

By placing a person right at the center of these two worlds, the poster reminds us that the future isn't just something that "happens" to us. It's something we're building right now. The main takeaway? We are at a crossroads, and the direction the world takes depends entirely on the choices we make today.

Alternative treatments of hepatoblastoma – How does the oldest organisms on the earth can be used to benefit the youngest ones?

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Hepatoblastoma is the most common liver cancer among pediatric patients, and it affects about 1.5 children in a million per year. Observation of the mortality rate in recent years shows a positive tendency - the number of individuals with successful treatment results is growing. Although known treatments bring visible results for mild cases, patients with stage IV hepatoblastoma still have a low chance of recovery. There is a need for extended research and searching for alternative solutions as pediatric cancers are less studied than the adult ones.

In this study, the aim was to test whether *Nostoc edaphicum* metabolites have potential in treating hepatoblastoma. Two of the metabolites coming from *Nostoc edaphicum* (monolinolein and palmitelaidic acid) were used on hepatoblastoma cells (G2 line) and on healthy cells (fibroblasts). The MTT test was performed to check the cell viability of both lines and after 24 hours, palmitelaidic acid (in concentration of 100 and 200) killed about 90% of hepatoblastoma cells, without causing harm to fibroblasts. After 48 hours of incubation this metabolite became a threat to healthy cells. This study proves that there is anticancer potential in *Nostoc edaphicum* metabolites, but it needs further research to explore all possibilities of these substances.

Crisis of endangered species and the path to restoration

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It is known that we are entering the “Sixth Mass Extinction”, which is a biological crisis, where species are disappearing 1.000 times faster than natural evolution. Over 44.000 species are on the IUCN Red List. The Earth’s ecosystems are under unprecedented threat but by focusing on habitat protection and policy reform we can shift the disappearance to restoration and resilience.

In this poster we focus on the crisis of endangered species and the path to restoration. It is in a map form where the poster is divided into four parts with slogans and pictures to catch the interest of people and line out the problem, causes and some possible solutions. The four sections are in order: current reality- where we are now, the human impact- why it matters, drivers of decline- the “Root Causes” and the solutions part. In each part there are two to three main bullet points- slogans, which can lead people to become aware of the problem of mass extinction and biological crisis. Also, in each section there are pictures to show and bring out main sentences. They are crucial to catch people’s attention to the poster.

There is nowhere to run anymore

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This poster shows a symbolic image of a world facing environmental problems. In the center, it contrasts human industry with the balance of nature. On one side, there is a small island with a factory on fire. On the other side, there is an icy mountain and a rough ocean.

In the middle, a single person stands on a piece of floating ice. This person can be seen as someone watching what is happening or someone affected by it. The phrase “There is nowhere to run anymore” highlights the idea that climate change affects everyone and cannot be escaped.

The artwork mixes realistic and surreal elements, creating a slightly disturbing feeling. It looks attractive, but it also sends a strong warning. The different colors help show the conflict between nature and human activity.

Art of animation: Is the future of animations unsure?

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The presentation showcases the art of animation, its evolution, beauty and also the threats concerning its following future. It starts with the early beginnings of animation, struggles with undeveloped technology, its history throughout changing times to the present moment and also the unsure future. Particular attention is paid to the importance of animation in our everyday life and astonishing things that it teaches. In the end of my presentation I have mentioned the threats that come with modern animation and financial goals. In conclusion I will show why the art of animation is so crucial and why we should be taking care of it.

Types of fishes in the rainbow

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A poster presents well-defined composition. It's a visual representation of the colours of saltwater fishes. Inspiration derived from the structure of the rainbow. The image intends to show the aesthetic value of the marine ecosystem. It also highlights the variety of colours in saltwater environments.

To mark the living of organisms in the depths of water, the poster was created on a black background. The only colours that appear are colours of fishes. It attracts viewer's attention. The arc structure (shaped like a rainbow) divides fishes into categories by color. Red colour presents three fishes: Lionfish, Tomato clownfish and Flame angelfish. Orange colour shows the viewer another types: Catalina goldfish, Orangepeel angelfish and Clownfish. Yellow colour presents: Golden butterflyfish, Lemonpeel Angelfish and Yellow tang. In the green colour appear: Mahi-mahi fish, Green spotted puffer and Pastel-green wrasse. The blue colour presents: Blue chromis, Blue line trigger and Atlantic blue tang. Next one is the purple colour and another types of fishes: Black cap gramma, Orchid Dottyback and Purple tang. Last but not least is the pink colour, which shows: Pink maomao, Rose-Veiled Fairy Wrasse, Bargibant's Pygmy Seahorse. The species name is included in the poster, also like educational elements and interesting facts about each type.

The poster promotes scientific data, educational descriptions as well as aesthetic, the beauty of the marine and organisms that exist in saltwater. It brings attention of people and reminds about taking care of ecosystems.

Where is the world heading? – Spirituality in youth

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Increasingly, young people are moving away from institutionalized religion, such as Christianity, and toward individualized, fluid belief systems often described as “spiritual but not religious.” This shift reflects a broader cultural transition in which spirituality becomes detached from doctrine and redefined as a personal journey focused on self-discovery, meaning, and autonomy. Emerging practices such as manifestation, energy work, and the idea of “escaping the matrix” illustrate how spirituality is being reshaped by digital culture, popular discourse, and a desire to reclaim control over one’s reality.

Rather than rejecting spirituality altogether, youth appear to be reconstructing it in ways that prioritize personal experience over tradition. Research suggests that spirituality remains a significant dimension of adolescent development, contributing to identity formation and a sense of purpose, even when it is loosely defined or detached from religion. At the same time, this individualized spirituality reflects a response to uncertainty in the modern world, offering both empowerment and ambiguity.

Ultimately, the rise of alternative spiritualities among youth signals a transformation rather than a disappearance of belief. The world may be heading toward a more subjective, decentralized understanding of meaning - one in which spirituality is no longer inherited but consciously constructed.

Drowning in Polyester: The hidden cost of fast fashion

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The modern clothing industry, driven by the fast fashion model, contributes significantly to global environmental challenges. A key factor in this issue is the widespread use of polyester, a synthetic fiber derived from fossil fuels. This poster aims to highlight the environmental impact of fast fashion, with a particular focus on microplastic pollution, greenhouse gas emissions, and the growing problem of textile waste. It also explores potential solutions, including more sustainable production practices, conscious consumer behavior, and systemic policy changes. The objective is to raise awareness about the hidden costs of cheap clothing and to encourage more responsible consumption patterns.

Evolutionary Mismatch: the Stone Age Body in the Age of Smartphones

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This poster presents SciClub's scientific and prosocial activities through the lens of evolutionary mismatch: humans now function in a hyperconnected, overstimulating digital environment while still carrying bodies and brains shaped for very different conditions. First, we summarize our profiling work showing that lifestyle-health patterns are meaningfully linked to psychosocial and prosocial functioning. In this line of research, healthier routines and dietary profiles, combined with a more favorable gastrointestinal profile, were associated with more adaptive psychological functioning and stronger socially beneficial tendencies. Second, we show how these findings motivate the next research step: an RCT built around AKK11, designed to test whether a biologically grounded intervention can support well-being, self-regulation, and everyday functioning. Third, we discuss how this scientific program is complemented by student-led social initiatives focused on digital overstimulation and recovery. These include the Stress Relief Initiative and related activities that promote rest, offline balance, breathwork, and intentional breaks from constant smartphone-driven input. Together, these scientific and community actions are presented as one coherent response to a contemporary mismatch problem: a civilization of infinite stimulation acting on nervous systems that did not evolve for it.

A dormant threat: risks and management strategies for potentially polluting wrecks

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Shipwrecks are frequently referred to as “ticking time bombs” on the seafloor. This term accurately reflects the growing environmental threat posed by potentially polluting wrecks (PPWs), which can contain substantial quantities of fuel, munitions, and other hazardous agents. The ongoing corrosion of these structures, combined with the impact of hydrodynamic forces and accidental events, may lead to the release of toxic substances trapped within them into marine environment, affecting sediments, water quality and biota. Globally, the scale of the problem is significant, as estimates show that over 8500 PPWs may contain 2,5 to 20,4 tons of petroleum products of different kinds. To address this challenge, international initiatives and regional programs are developing preventive strategies, including fuel removal, in situ remediation, and advanced monitoring technologies. Central to these efforts is the implementation of systematic risk assessments and classification frameworks, which allow prioritization of wrecks based on the environmental threat that they pose. This problem also concerns the Baltic Sea, where thousands of wrecks lie on the seabed, and which, due to its semi-enclosed character and limited water exchange, is particularly vulnerable to the accumulation and persistence of pollutants. In Poland, the lack of a comprehensive national program for the identification, assessment, and management of shipwrecks makes it difficult to determine the actual scale and severity of the threat. This underscores the urgent need for coordinated policies, standardized risk assessment frameworks, and proactive mitigation measures to effectively manage PPWs as a latent yet increasingly pressing threat to the marine environment.

Impact of inflows on the structure and diversity of Baltic Sea zooplankton

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The Baltic Sea is a semi-enclosed, stratified marine ecosystem where episodic saltwater inflows from the North Sea play a key role in regulating deep-water salinity, oxygenation, and biological processes. These changes in hydrological conditions determine the species composition and population structure of many zooplankton taxa. The intervals between inflows, which have been increasing over the decades, make them even more crucial for the Baltic Sea ecosystem.

The aim of this study is to provide a theoretical assessment of the impact of inflows from the North Sea on Baltic zooplankton. This analysis is based on a review of the literature concerning hydrological conditions and environmental changes in the Baltic Sea.

Available evidence suggests that future inflows may contribute to an increase in taxonomic diversity through the introduction of typically marine species from the North Sea while also significantly affecting on the population structure of taxa occurring in the Baltic Sea, as well as their distribution within the water column.

This study highlights the importance of inflows in the Baltic Sea and their crucial role in shaping the ecosystem. The analyses of the role of inflows in Baltic zooplankton are also of broad significance for understanding the functioning of the entire ecosystem, including trophic relationships. In the context of climate-driven changes in hydrological regimes, understanding the ecological consequences of inflows is increasingly important.

The Impact of the Oil and Gold Extraction on the Environment

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Getting resources like oil and gold is a big part of the global economy, but it also harms the environment. This study examines what these industries do to nature. Oil extraction can damage natural areas, divide habitats, and pollute soil and water - especially when there are spills or large installations involved. Gold mining, especially open-pit or small-scale mining, often leads to cutting down forests and releasing dangerous chemicals like mercury and cyanide into rivers and lakes. When we look at both sectors, we can see that these activities decrease biodiversity and can damage people's health. Moreover, they make the effects of climate change worse. The main goal of this poster is to show that we need better ways to collect resources that don't focus mostly on profit but also protect the environment.

From glaciers to fjords: how climate-driven meltwater shapes contaminant pathways in the Arctic

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Rapid Arctic warming accelerates glacier melt, increasing the input of freshwater and suspended material to coastal systems. These changes influence how contaminants, including trace metals, are transported and transformed between glaciers and fjords. To explore these processes, we studied Brepollen (Hornsund, Svalbard) during the summer season. Samples collected along a glacier-fjord transect show that metal distributions do not follow a simple pattern away from glacier fronts, but instead depend on meltwater input, suspended particles, and mixing. Most trace metals were predominantly present in dissolved form, although the particulate fraction also played an important role. This suggests that glacier melt affects not only the amount of contaminants entering fjords, but also their chemical form and potential environmental impact. Our results highlight that changes in meltwater input may significantly alter contaminant pathways in Arctic coastal waters.

The Impact of Arctic Climate Change on Polar Bear Behavior and Life Cycle

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The Arctic, the habitat of polar bears, is warming four times faster than the rest of the world, leading to a rapid decline in sea ice cover. This rapidly warming region is impacting the animals inhabiting it. The shrinking ice cover leads to habitat loss, limited access to food, and disrupted reproduction. For years, long winters, stable ice cover, and a consistent seasonal cycle provided Arctic animals with suitable living conditions. Now, these conditions are undergoing rapid change, and is becoming crucial for survival. This project aimed to determine the impact of ongoing environmental changes on the behavior and ontogenetic cycle of polar bears – a species highly adapted to life in the Arctic and subarctic zones. The project was based on an analysis of publications and popular science articles. Information was analyzed regarding changes in the length of the ice season, hunting strategies, and increased energy consumption while traveling longer distances in search of food.

The results of the analysis indicate earlier melting of the ice in summer and its freezing in winter shorten polar bears' hunting season for seals, their main food source, essential for survival. The lack of ice cover reduces polar bears' chances of survival, limiting their ability to forage. As a result, the animals need to change their feeding habits, which forces them to approach human settlements and expose them to conflict with humans. In recent years, the consumption of waterfowl eggs and chicks, as well as attacks on larger land mammals such as caribou and reindeer, has increased. The project's conclusions indicate that ongoing climate change poses a serious threat not only to the survival of polar bears but also to the sustainability of Arctic ecosystems.

The world of the future = the education of the future.*Agnieszka Rinc, Kornelia Patoka*

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The poster presents our perspective on the future of education. As the world changes rapidly, education must evolve to remain effective and relevant. With advancing technology and increasing global connections, traditional teaching methods are no longer sufficient for modern learners.

The poster contrasts the “old school” model with the classroom of the future. The old model represents learning from even a decade ago—focused on passive listening, memorisation, and limited interaction. In contrast, the future classroom reflects an environment already emerging in many schools and likely to continue developing.

Traditional education offered little room for creativity, technology, or meaningful collaboration. Lessons were standardised and rarely adapted to individual needs, making learning less engaging and effective. Students followed fixed structures instead of exploring ideas or developing critical thinking skills.

Future education places technology at the centre of learning. It enhances communication and collaboration, supports creativity, and enables personalised learning experiences. By integrating digital tools already present in students’ lives, education becomes more interactive and relevant.

*Returning to the Roots of Evolution- From Destruction to Birth.**Anita Pellowiska, Ewa Szmuc, Anita Projs, Joanna Wittbortd*

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In the face of the question "Where is the world heading?", this presentation outlines a vision of Earth following a global ecological catastrophe resulting from devastating armed conflicts. The wars of the future, employing weapons of unprecedented power, have led to the destabilization of tectonic plates, extreme flooding, and lethal levels of light radiation, rendering the planet nearly uninhabitable.

The turning point of this narrative is a radical redefinition of technology. Tools that once served destruction- combat drones used for surveillance and extermination- become the sole hope for the survival of the species. In a world too dangerous for humans, autonomous systems take on the role of "architects of rebirth." Equipped with advanced sensors, drones scan contaminated areas in search of enclaves capable of regeneration, subsequently executing missions of mass reforestation and seed dispersal.

The project analyzes the process of technological expiation, where the machine becomes a catalyst for natural restoration. The message is clear: the path to the future leads through repairing the mistakes of the past using the very tools that brought us to the brink of the abyss.

Rare Diseases and the Need for Coordinated Care in Future Healthcare Systems

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Rare diseases pose a growing challenge for modern healthcare systems. Due to the complexity and heterogeneity of these conditions, patients often face prolonged diagnostic processes and require multidisciplinary care involving multiple specialists across different levels of the system. Social assistance for patients and parents suffering from rare diseases, although very necessary, is still very poorly developed. This research coordinated care as a response to the unmet needs of rare disease patients. Coordinated care is understood not only as improved medical management, but as effective collaboration between healthcare, social services, psychological support, and educational institutions. The aim of this work is to identify key systemic gaps that hinder effective care delivery, including fragmentation of services, lack of continuity of care, insufficient communication between stakeholders, and limited access to specialized and comprehensive care. During the study, a survey was conducted which identified the most significant challenges faced by families of patients with rare diseases. These challenges were primarily related to the family's psychological well-being, difficulties in understanding medical terminology, limited access to specialists, and a lack of coordinated care. By analyzing selected models of coordinated care, the studies demonstrates how better integration across sectors and improved patient pathways may lead to more efficient use of resources, improved patient outcomes, and enhanced quality of life. The issue is particularly relevant in the context of future healthcare systems, which must adapt to increasing medical complexity and evolving patient needs.

Neurodidactics: the role of teacher-student relationships in teaching effectiveness.

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Understanding the role of teacher–student relationships is central to neurodidactics, which emphasises that learning is both cognitive and emotional. Neuroscientific research shows that trust, safety, and a positive emotional climate enhance attention, motivation, memory, and stress regulation. Mechanisms such as mirror neurons, dopamine-based reward pathways, and reduced cortisol levels demonstrate how supportive relationships influence the learning brain.

This study examines the neurodidactic importance of teacher–student relationships and how relational behaviours shape teaching effectiveness. The analysis draws on a teaching practicum in a primary school in Malbork and a review of neurodidactic literature. Classroom observations confirmed that emotionally safe, respectful, and consistent teacher behaviour increases students’ motivation, willingness to communicate, and openness to feedback. Students also reported that relational aspects of teaching were as significant as instructional methods.

The findings indicate that positive relationships activate neural processes supporting learning, including improved working memory, stronger executive functions, and better memory consolidation. Based on these insights, recommendations for EFL teachers include integrating emotional engagement into lessons, building trust through empathy and active listening, using multisensory methods, balancing focus with movement, promoting cooperative learning, and expanding professional development in neurodidactics.

Addicted Children – Smartphone Dependency in the Young Generation in Poland

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In recent years, the rapid development of digital technologies has fundamentally transformed the daily lives of children and adolescents. Among these technologies, smartphones have become the most pervasive and influential devices, shaping communication, education, entertainment, and socialization. While they offer numerous benefits, growing evidence suggests that excessive and uncontrolled smartphone use among young people may lead to behavioral patterns resembling addiction. This phenomenon is increasingly recognized as a significant public health and social issue.

The main thesis of this study is that smartphone addiction among children and adolescents in Poland constitutes an emerging public health concern, characterized by high prevalence, measurable psychological and physical consequences, and insufficient preventive strategies.

Smartphone addiction among children and adolescents represents a growing and complex challenge in Poland. The widespread availability of smartphones, combined with their highly engaging and often addictive design, creates an environment in which excessive use becomes normalized. The resulting psychological, physical, and social consequences underscore the urgency of addressing this issue.

Ocean of Changes in Education.

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This poster is about changes and chances in early primary education (grades 1–3) in public schools in Poland in 2026, which could be called an “ocean of possibilities”.

One of the changes in teaching is developing competencies like critical and logical thinking, creativity and problem-solving, communication and collaboration instead of memorization of facts and information.

Another change is Digital Transformation. In the new curriculum digital competence is an essential element of early education. Students are expected to use basic digital tools (e.g., computers, tablets) and understand safe and responsible use of technology. Teachers are encouraged to integrate technology into everyday learning processes rather than treat it as a separate subject.

What is controversial about the new core curriculum is its focus on the holistic development of the child. It focuses on students’ emotional development (recognizing and expressing emotions), social functioning (cooperation, empathy, respect) as well as physical and mental well-being. Education is designed to support the child as a learner, a member of a community, or an individual developing identity and values. The teacher is a guide and facilitator more than a transmitter of knowledge. The new core curriculum creates an educational “ocean of possibilities” because it moves from standardization to flexibility, shifts from content to competencies, and expands from academic focus to whole-child development.

The new Polish core curriculum does not limit education—it opens it, creating an ‘ocean of possibilities’ in which the quality of learning depends on how deeply schools choose to explore it.

Blue Future. Why don't we escape the noise?

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Stop for 30 seconds. Can we do it easily ? Probably after 5 seconds the stream of thoughts is attacking us. We're living in a world that never hits the Mute button. The noise which is everywhere and digital mess are sapping our energy. The project "Blue Future" is the response to that chaos. The idea is very simple: the cities shouldn't be the energy vampire, they are supposed to recharge us. The silence and balance in urban life - that's the main point.

This poster visualizes a shift toward "calm architecture" and urban silence zones. It's about making digital detox which will be crucial in the future and access to nature as a standard, not a luxury possibility. "Blue Future" isn't just a design concept. It's a vision of a world where mental well-being is built directly into the streets we walk on. Maybe at the end of the day, real progress isn't about how much ground we cover, but whether our cities actually let us breathe. Blue future is calling, are you ready to answer?

Uncovering the identity of Arctic staurozoans with integrative taxonomy

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Staurozoa are a small class of Cnidaria comprising about 50 extant species, formally recognized since 2005. Despite their cosmopolitan distribution, staurozoans remain poorly studied, and their taxonomy proves to be particularly problematic. Species identification is difficult due to limited macromorphological characters and high intraspecific variability, pertaining also to the internal anatomy. Moreover, even the molecular taxonomy is hampered by a long history of misidentifications, obscuring the usage of public sequence databases. This study aims to identify and describe three unusual staurozoans collected by divers from the Moseoya and Fugloya (Svalbard) during the Institute of Oceanology of the Polish Academy of Science AREX2017 expedition. Specimens were subjected to the integrative molecular (DNA barcoding and phylogenetics), macromorphological, and histological analyses. Using molecular taxonomy, two out of three specimens were classified as *Lucernaria quadricornis*, based on no genetic distance between them, and the genetic distance to other *L. quadricornis* sequences within the intraspecific variability range. Those results were consistent with the morphology, despite the present specimens being 2x larger [MM1.1] than typically reported, and the distribution of the species, underscoring its broad presence across North Atlantic. Same approach grouped the third specimen within *Manania* genus. Histological analyses revealed that this specimen had a single chamber in the peduncle, what together with the morphological characteristics and the analysis of all *Manania* species distribution allowed its identification as *M. auricula*. This work underscores that such integrative approach is necessary to identify Staurozoa, and highlights the need for revision in both genera.

The Role of Exams in the Education System: Do Paper-Based Exams Still Make Sense?

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This poster examines the role of examinations in contemporary education and critically addresses the question of whether paper-based exams remain relevant in the era of digitalisation. For decades, examinations have been a fundamental tool for assessing students' knowledge, skills and level of preparation, as well as the effectiveness of the teaching process.

Paper-based exams continue to offer several significant advantages. They are widely familiar, relatively easy to organise and independent of technological infrastructure, which makes them accessible across diverse educational contexts. Moreover, for many learners, the paper format supports concentration and reduces the stress associated with digital environments.

Nevertheless, traditional assessment methods also present clear limitations. They are time-consuming to mark, require extensive preparation of printed materials and involve considerable consumption of paper and other resources. In comparison with digital exams, they are less flexible and do not allow for efficient data processing or rapid analysis of results.

Environmental considerations further complicate the issue. While paper-based exams contribute to increased resource consumption, digital solutions depend on electricity, electronic devices and appropriate infrastructure.

It is therefore argued that paper-based exams should not be entirely eliminated, but rather integrated with modern digital tools. A balanced approach may ensure a more effective, inclusive and environmentally responsible assessment system.

The impact of combined lentiviral vector and resveratrol therapy on autophagy in Mucopolysaccharidosis Type IVA

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Mucopolysaccharidosis type IVA (MPS IVA) is a rare autosomal recessive lysosomal storage disorder caused by a deficiency of the N-acetylgalactosamine-6-sulfatase enzyme (GALNS). This deficiency leads to the pathological accumulation of glycosaminoglycans (GAGs) in the skeletal system, resulting in progressive skeletal dysplasia. Although gene therapy utilizing lentiviral vectors offers sustained GALNS overexpression and enzyme distribution via the cross-correction mechanism, its impact on intracellular pathways remains unclear. One of the molecular pathways that are disturbed in MPS IVA is the impairment of the autophagy process, and the interaction between viral vectors and this pathway has not yet been fully elucidated. Consequently, this study investigates the potential of a combined therapy, linking a lentiviral vector with resveratrol, natural a compound that stimulates lysosomal biogenesis, activates autophagy, and reduces inflammation. The objective of this research is to evaluate whether such a combined approach optimizes molecular processes in affected cells.

Dysregulation of Ferroptosis in Mucopolysaccharidosis Type I: Insights from Estrogen Receptor Modulation

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Ferroptosis is a form of regulated cell death dependent on iron and oxidative stress, distinguished from other cell death pathways by its unique morphological and biochemical features. Although interest in this process has increased in recent years, its regulatory mechanisms remain incompletely understood. In this study, ferroptosis was investigated in the context of mucopolysaccharidosis type I (MPS I), a lysosomal storage disorder characterized by impaired degradation of glycosaminoglycans (GAGs).

The aim of the study was to analyze the expression levels and subcellular localization of proteins involved in iron metabolism in relation to ferroptosis in MPS I. Selected proteins included CD71 (transferrin receptor), STEAP3 (ferrireductase), ferritin (iron storage), and ferroportin (iron export). Additionally, the role of the G protein-coupled estrogen receptor (GPER) was examined by modulating its activity using a selective agonist (G1) and antagonist (G15).

Experiments were conducted using a cellular model based on fibroblasts derived from MPS I patients, with healthy fibroblasts as control group. Protein levels and localization were assessed using fluorescence microscopy and Western blot analysis. Comparative analysis revealed differences in both the levels and distribution of the examined proteins between MPS I and control cells.

These findings provide new insights into the involvement of key iron metabolism proteins in the regulation of ferroptosis and suggest a potential contribution of this process to the pathogenesis of MPSI.

The Use of Technology in Teaching English in Primary School (Grades 4-8)

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As digital tools become increasingly present in education, their role in teaching English in primary schools is growing significantly. The integration of technology in grades 4–8 can enhance student engagement, support language acquisition, and develop key skills such as listening, speaking, reading, and writing. This presentation explores the benefits and challenges of using technology in the English language classroom. Educational platforms and applications, such as language-learning apps and interactive quiz tools, allow students to practice vocabulary and grammar in an engaging and personalized way. Multimedia materials -including videos, audio recordings, and interactive presentations - help learners improve listening comprehension and understand authentic language use in context. Interactive whiteboards and projectors enable teachers to create dynamic lessons, combining visual, auditory, and interactive elements. Additionally, access to online resources provides students with exposure to real-life English through articles, podcasts, and educational websites, supporting both language development and cultural awareness.

While technology offers many advantages, such as increased motivation, individualized learning, and the development of digital competences, it also presents certain challenges. These include limited access to devices or the internet, potential distractions, and the need for proper teacher training. By thoughtfully integrating technology into English lessons, educators can create a more effective and engaging learning environment. This session will present practical examples and strategies for using digital tools to support language learning in primary school students.

Leisure Time Patterns and the Level of Satisfaction and Mental Well-being Among Adults

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The aim of this study was to analyze how adults spend their leisure time and to assess the level of satisfaction associated with it. Leisure time plays an important role in modern life and significantly affects quality of life and psychological well-being. The study examined common leisure activities, frequency of physical activity, development of interests, time management, and the role of social relationships. It also explored the relationship between leisure activities and mental and physical well-being.

The research was conducted using an online survey. A total of 100 participants took part, 63% of whom were women. The largest group consisted of individuals aged 18–34, and most respondents lived in cities with over 100,000 inhabitants. The questionnaire included closed-ended questions about the amount of leisure time, preferred activities, physical activity, development of interests, and satisfaction levels.

The results show that most respondents have between 5 and 20 hours of leisure time per week. This time is usually spent at home, mainly watching movies and series, reading books, and meeting with family and friends. Many participants engage in physical activity several times a week and regularly develop their interests. Most respondents reported a high level of satisfaction with their leisure time. The findings indicate that active leisure and social relationships positively influence well-being and reduce stress, while excessive passive leisure may limit physical activity. The results highlight the importance of balanced leisure time management.

The Rise of “Post-Human” Language Learning: AI as a Peer, Not a Tool

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This study explores the effectiveness of using fairy tales as a tool for vocabulary acquisition among young learners of English as a Foreign Language (EFL). The research was conducted with students aged 9-13 and aimed to determine whether literature-based instruction can enhance vocabulary development in a meaningful and engaging way.

The study employed a mixed-method approach, including pre - and post - tests, classroom observations, and student questionnaires. The instructional process was based on selected fairy tales, which provided a rich linguistic context and opportunities for repetition, interaction, and contextualized learning.

The results indicate a noticeable improvement in students' vocabulary knowledge, as well as increased motivation and engagement during lessons. Learners demonstrated better retention of new lexical items when they were introduced through storytelling and supported by interactive activities.

The findings suggest that integrating literature, particularly fairy tales, into EFL teaching can significantly support vocabulary development and create a more natural, engaging learning environment.

Who Becomes a Leader in the Future of Work? Soft Skills as Drivers of Informal Leadership Emergence

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This poster explores how leadership is emerging in modern organizations by examining the role of socio-emotional competencies (“soft skills”) in shaping informal influence within teams. Informal leader emergence is understood as a process in which individuals gain influence and recognition without formal authority, driven by dynamic social and relational mechanisms.

Building on an integrative synthesis of organizational and leadership research, the poster presents a distal–proximal model in which soft skills function as relational capacities shaping influence-granting processes. Three key mechanisms are identified: (1) affect regulation and socio-emotional coordination that stabilize team interaction, (2) signaling of competence and warmth under uncertainty, and (3) network positioning through relational ties, centrality, and visibility of influence.

The model emphasizes that leadership emergence is inherently multilevel, evolving from dyadic perception processes into stable network structures. Importantly, the analysis distinguishes between leader emergence and leader effectiveness, highlighting the risk that socially skilled individuals may gain influence even without superior expertise.

In the context of global transformation and increasingly collaborative, knowledge-based work, the findings suggest that the future of leadership will depend less on formal authority and more on relational competence, trust-building, and network dynamics. The framework contributes to understanding how influence is constructed in modern teams and offers implications for talent identification, assessment, and organizational design.

Where Is Work Heading? Designing Future Organizations Through Psychological Need Regulation

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This poster addresses where modern work systems are heading by examining the work environment as a regulator of human motivation and performance. Drawing on Self-Determination Theory (SDT), it presents an integrative synthesis explaining how organizational structures shape the satisfaction of basic psychological needs - autonomy, competence, and relatedness - and influence the quality and sustainability of work outcomes.

The analysis highlights a process model in which leadership, job design, and reward systems determine whether employees develop autonomous or controlled motivation. Autonomy-supportive leadership, developmental feedback, and meaningful job design are linked to higher-quality motivation and adaptive performance, while controlling environments produce short-term compliance at the cost of long-term effectiveness and well-being.

In the context of global transformation, the poster argues that the future of work depends less on control and more on designing systems that enable internalization, self-regulation, and sustainable engagement. Motivation quality becomes a key mechanism linking organizational design with adaptability, innovation, and resilience.

Preliminary insights into temporal variation of the moon jellyfish population structure in the Baltic Sea

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Jellyfish play a key role in the marine food webs, serving as a food source for other taxa and regulating populations of small plankton (including fish larvae). When environmental conditions become favorable, their numbers can suddenly increase, locally elevating their trophic impact. This sudden population outburst, known as a jellyfish bloom, is largely dependent on their life cycle, typically involving the asexually reproducing benthic polyp, releasing multiple planktonic jellyfish (sexually reproducing stage). Unlike polyps, jellyfish are passive drifters in the water column, so their distribution is driven primarily by water masses and currents. Therefore, the provenance (source) of locally appearing jellyfish blooms remains unknown, as it requires molecular matching of jellyfish-derived sequences to reference sequences from polyp populations. This study aimed to answer the question, where do the jellyfish observed in Polish waters of the Baltic Sea come from? *Aurelia aurita* jellyfish were collected using plankton nets during research cruises conducted monthly between 2022 and 2025. A small tissue sample was collected from each jellyfish and either fixed in ethanol, or frozen. In addition, polyp samples were collected from the Gulf of Gdansk, with additional specimens contributed by collaborators from across the Baltic Sea. Molecular methods used comprised DNA extraction with commercially available kits, PCR amplification of the COI gene, and Sanger sequencing. This study presents initial insights into sequence variation across the temporal scale of jellyfish collection, fed additionally with Baltic Sea derived sequenced available in the GenBank, and the results of linking jellyfish sequencing data to those originating from polyps.

Breaking the Biofilm: vB_Sen-Miriam1 Phage Against Salmonella enterica

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The growing problem of bacterial antibiotic resistance poses a serious threat to public health and demands new treatment methods. A promising approach is phage therapy, using bacteriophages- viruses that destroy bacterial cells. It may support the poultry industry by reducing Salmonella biofilms that cause production losses and food contamination. As biofilms are highly resistant, bacteriophages offer a way to control bacteria and improve food safety. Therefore, this study aimed to assess the effectiveness of bacteriophage vB_Sen-Miriam1 in disrupting Salmonella enterica biofilms. Biofilms of different S. enterica strains were grown in vitro and infected with the phage at different concentrations or treated with the enrofloxacin. Experiments were conducted at 15°C, 25°C, and 37°C, and assessed after 3, 6, 12, and 24 hours. Biofilms were stained with crystal violet, and absorbance was used to evaluate changes in biofilm biomass. The results showed that the phage was highly effective in reducing biofilm formation, leading to an approximately 52% decrease in biomass compared to the control. Its efficacy was comparable to or greater than that of the antibiotic, which also demonstrated biofilm-disrupting activity. At 15°C, typical for poultry production, the phage exhibited strong antibiofilm activity and destroyed S. enterica biofilms. This effect was observed particularly at multiplicity of infection (MOI) 10. These findings indicate that bacteriophage vB_Sen-Miriam1 is a promising antibiofilm agent. The observed effectiveness of the antibiotic suggests that combined therapies may be feasible. Such approaches could reduce antibiotic use and limit resistance while maintaining treatment efficacy. Further studies are needed to assess the phage in vivo and optimize its use.

Student Employment and Mental Health

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Engaging in paid employment among students has become an increasingly common phenomenon in contemporary higher education. This activity may significantly affect students' psychological functioning, including stress levels, experienced emotions, and overall mental well-being.

The aim of the study was to analyze the mental condition of students engaged in employment, with particular emphasis on the impact of work on their well-being and daily functioning.

The study was conducted using an online survey among 120 undergraduate students working during their studies in the winter semester of the 2025/2026 academic year. The questionnaire included questions on mental condition, dominant emotions, stress, fatigue, and the perceived impact of employment on academic and personal life.

The results indicate that employment is associated with a significant emotional burden. A high level of anxiety was reported by 45% of respondents, while 61.7% experienced strong feelings of overwhelm and 67.5% reported high levels of uncertainty.

At the same time, 59.2% of students declared high motivation to work, which indicates an ambivalent emotional profile, where stress coexists with engagement.

Importantly, the findings show that students experience high levels of uncertainty and fear related to entering the labor market. Over half of respondents (52.5%) are concerned about job mismatch, while only 32.5% feel ready to enter the labor market. Additionally, 61.7% reported fear of job interviews.

The findings highlight the need to develop psychological support and career guidance programs, as well as to better adapt academic organization to the needs of working students.

Evaluation of the antibiofilm potential of bacteriophage 4.1 against Salmonella enterica biofilms

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Salmonella are a major public health risk because they can easily spread in poultry production chain. The excessive and inappropriate use of antibiotics has led to the development of resistance mechanisms in bacteria, increasing their survival and reducing the effectiveness of antimicrobial treatment. One of the promising alternatives is bacteriophage therapy, which uses viruses that infect bacterial cells.

The aim of the study was to evaluate the ability of bacteriophage 4.1 to destabilize mature *Salmonella enterica* biofilms by reducing biomass.

Biofilm was quantified using crystal violet staining with absorbance measurements (OD570) in samples incubated at 15, 25, and 37°C, and its reduction was measured after 3, 6, 12, and 24 hours of bacteriophage treatment and compared with antibiotic (enrofloxacin) treatment.

The greatest reduction in biofilm was observed at 15°C after 24 hours of treatment with bacteriophage 4.1 at a multiplicity of infection (MOI) of 1, with a decrease in biomass of 43.3%, compared to 54.1% after antibiotic treatment.

Bacteriophage 4.1 effectively reduced the biomass of *Salmonella enterica* biofilm. The strongest effect was observed after 24 hours at 15°C, which is a temperature reflecting conditions in certain stages of poultry processing. These findings suggest that bacteriophages may represent a promising strategy for biofilm control in poultry production.



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