



Venus International Foundation Centre for Women Development



10th ANNUAL WOMEN'S MEET – AWM 2025

1st March 2025, Chennai, India

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AWM 2025

10th Annual Women's Meet

1 March 2025, Chennai, India

CONFERENCE PROCEEDINGS

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More information on AWM 2025 is given at: www.venusinfo.org/women/2025.html

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Acknowledgment

With great pleasure, we welcome you all to the 10th Annual Women's Meet – AWM 2025 hosted by the Centre for Women Development (CWD), Venus International Foundation (VIF), Chennai, India on 1 March 2025. This scientific conference is organized with the theme – “To Cultivate Research Spirit and Create a Vibrant Community of Women in Science and Technology” and how to plan a journey forward to have a voice for women professionals and female intellectualism. The conference focuses on recent research, developments, and challenges in the field of Agricultural Sciences, Engineering, Health and Medical Sciences, Humanities and Social Sciences, Law, Management and Science.

The AWM 2025 conference provides a great opportunity for women to focus on meeting the changing requirements of science and technology and to foster collaborative relationships. The conference allows all participants to celebrate accomplishments, extend peer networks, and jointly explore future research directions. Further, the conference offers enlightening keynote lectures by renowned experts, followed by scientific parallel sessions. The conference received an overwhelming response from women researchers, which is leading to high-quality presentations and discussions. Finally, the conference team wishes every participant to have a productive and enjoyable time at this special conference.

Team, AWM 2025

Message from General Chair – AWM 2025



The Annual Women's Meet is now a well-established platform for women researchers and the key aim remains the opportunity to share ideas and meet the people to exchange new knowledge and innovation to stimulate fresh insights on different levels.

The Tenth Women's Meet – AWM 2025, in particular, was a challenging exercise as the format (Scientific Conference) allowed us to structure sessions differently, facilitating participation in innovative ways. The scope of papers will ensure an interesting day and the subjects covered illustrate the wide range of topics that fall into this important and ever-growing area of research.

I thank the Organizing Committee, Keynote Speakers, and Reviewers for their enthusiastic support. We would like to thank all the authors for submitting their work to AWM 2025 and for giving us the opportunity to assemble a high-quality program. We are happy to publish the proceedings of AWM 2025. I hope that AWM 2025 will be successful and enjoyable to all participants.

A handwritten signature in green ink that reads "R. Sathish Kumar". The signature is fluid and cursive, with a long horizontal stroke at the end.

R.SATHISHKUMAR

General Chair – AWM 2025

Organizing Committee – AWM 2025

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Ms. S. Mohana Priya, VIF, Chennai

AWM 2025 Conference Schedule

Programme Venue: Green Park Hotel, Chennai

9:00 am onwards	Registration
INAUGURAL SESSION	
9.30 am	Welcome Address
9.35 am	Lighting of the Lamp
9.45 am	Thamiz Thai Vaazthu
9.50 am	Presidential Address by General Chair
Networking and Refreshment Break (10:00 –10:15 am)	

KEYNOTE SESSION – I	
Venue: Vauhini Hall (10:15 –12:00 noon)	
Speaker	Title of Talk
Dr. Katherina Kuschel, Karlsruhe Institute of Technology, Germany	Midlife Entrepreneurship
Dr. Sudipta Roy, University of Strathclyde Glasgow, Scotland	Working at the Interface: Electrochemistry, Chemical Engineering and Materials
Prof. Dr. Julie Anne Lovegrove, University of Reading, England	Nutrition and Cardiometabolic Disease
Dr. Mili Shrivastava, Bournemouth University, England	Empowering Mission-Driven Entrepreneurs: Integrating Experiential Learning and Flipped Classrooms for Sustainable Innovation

AWM 2025 Conference Schedule

SCIENTIFIC SESSION – I Venue: Vauhini Hall (12:00 – 12:45 pm)	
Parallel Track – 1 Discipline: Medical Sciences – I, Management – I and Humanities – I	
Speaker	Title of Talk
Dr. Savitha Dandekery, Yenepoya Dental College, Mangaluru, India	Formulation of a Non-invasive Natural Medicament for Enhancing Oral Tissue Wound Healing
Dr. Deepika R Gupta, Indian Institute of Management Visakhapatnam, India	IFRS 17: Issues and Challenges Before the Indian Insurance Industry
Dr. Sarbani Mitra, Indian Institute of Social Welfare and Business Management, Kolkata, India	Insights into Financial Decision-Making: Key Drivers of Mutual Fund Investments among Working Women in India
Dr. Chandramma M, Karnatak University, Dharwad, India	Women Empowerment and Economic Development
Dr. Lancelet. T. S, Sree Sankaracharya University of Sanskrit, Kalady, India	Physical and Anthropogenic Activities on the Degradation of Ashtamudi Lake
Dr. Madhuri Goswami, Government Girls College, Chomu, Jaipur, India	Reclaiming ‘Her’ Literary Legacy: Cultural Sustainability and Gender Representation in the Digital Era
Dr. P. Swarnakumari, Holy Cross College, Tiruchirapalli, India	Flavours of Independence: Thai Suvais Path to Economic Empowerment of Women with Disabilities
Dr. Jolly Jose, Amity University, Noida, India	Educational and Health Status of Migrant Children in India: A study of Destination States

AWM 2025 Conference Schedule

SCIENTIFIC SESSION – I Venue: Board Room (12:00 – 12:45 pm)	
Parallel Track – 2 Discipline: Engineering – I, Science – I, Law – I and Agriculture – I	
Speaker	Title of Talk
Dr. Manisha Yashwant Joshi, MGM’s College of Engineering, Nanded, India	An Optimal n/t Clustered Tree for Secure Multicast
Dr. Jahagirdar Aditi Shantanu, Dr. Vishwanath Karad MIT World Peace University, Pune, India	Iris Recognition in CCTV Cameras
Dr. Bharti Chaudhry, Ramjas College, University of Delhi, Delhi, India	Is Integrating Traditional Medicine into Healthcare Systems the Key to Mitigate Non- Communicable Diseases?
Dr. K. M. Roopa, Bangalore Institute of Technology, Bengaluru, India	A Comparative Analysis of Various Numerical Iterative Methods for Approximating Polynomial Roots
Dr. Leeja Mathew, Baselios Poulose II Catholicose College, Piravom, India	An Efficient Ensemble Model for Sentiment Classification using Heterogeneous Transformer based Language Models
Dr. S. Manjula, The Tamil Nadu Dr. Ambedkar Law University, Chennai, India	The Legal Perspective of Gender Equality and Gender Equity – A Critical Study with Special Reference to Personal Laws of India
Dr. Tanushri Kaul, International Centre for Genetic Engineering and Biotechnology, Delhi, India	Unlocking the Power of Gene Editing: Precision Agriculture 2.0 for Climate-Smart, Sustainable, and Nutritious Crops

AWARDS CEREMONY SESSION – I Venue: Vauhini Hall (12:45 – 1:00 pm)

AWM 2025 Conference Schedule

Lunch and Networking Break (12:30 to 2:00 pm)

SCIENTIFIC SESSION – II

Venue: Vauhini Hall (1:15 – 2:45 pm)

Parallel Track – 3

Discipline: Medical Sciences – II, Management – II, Science – II and Humanities – II

Speaker	Title of Talk
Dr. S. Priyanka, Jawaharlal Nehru Medical College, Belagavi, India	To Study AST/ALT Ratio as an Indicator of Functional Severity in Chronic Heart Failure with Reduced Left Ventricular Ejection Fraction
Dr. Seema Siddiqi, St. Philomena's College (Autonomous), Mysuru, India	Association Between Mealtime Behavior Problems and Somatic Status among Indian Children with Autism Spectrum Disorder
Dr. Nilam Kaushik, Indian Institute of Management Bangalore, Bengaluru, India	Understanding the Drivers of Novel Scientific Research: The Role of Industry Involvement in Scientific Publishing
Dr. Jhuma Ray, RCC Institute of Information Technology, Kolkata, India	Metaheuristic Optimization in Portfolio Selection: A Comparative Analysis of Risk and Performance
Dr. Bilwa Gandhar Deshpande, FLAME University, Pune, India	When Scarcity Meets Desire: The Role of Demand and Supply in Impulse Buying for Vice and Virtue Products
Dr. Arenkala Kichu, VIT-AP University, Amaravati, India	Oscars and Grammy Winning Songs/Lyrics: An Effective Language Teaching Tool
Dr. Anjali Sharma, University of Allahabad, Prayagraj, India	Virtue Ethics : Theory Versus Anti-Theory
Dr. Tanushree Bala, University of Calcutta, Kolkata, India	Assorted Nanomaterials: New Methods of Synthesis and their Various Applications

AWM 2025 Conference Schedule

Dr. Sanjukta Roy, Raman Research Institute, Bangalore, India	Quantum Technologies with Ultra-Cold Rydberg Atoms
Dr. Sabeela Beevi U, Rajagiri College of Social Sciences (Autonomous), Cochin, India	Sustainable Microalgal Biomass Production in Wastewater for Biofuels and Bioproducts in a Circular Bioeconomy Approach
Dr. Rizwana Kallooravi Thandil, Sullamussalam Science College Areekode, Malappuram, India	Integrating Multimodal Data for Enhanced Mental Health Diagnosis: A Machine Learning Approach

SCIENTIFIC SESSION – II Venue: Board Room (1:15 – 2:45 pm)	
Parallel Track – 4 Discipline: Engineering – II, Law – II and Agriculture – II	
Speaker	Title of Talk
Dr. Siti Azlida Ibrahim, Multimedia University, Malaysia	Recent Developments in Distributed Optical Fiber Sensors and Its Applications
Dr. Syamala Devi Mandalika, Indian Institute of Information Technology, Design and Manufacturing, Kurnool, India	Designing Multiagent Systems for Complex Real-World Decisions
Dr. Vairat Amita Dinkar, ICAR – National Dairy Research Institute, Bengaluru, India	Transforming Agro Waste into Energy: A Sustainable Approach for the Future
Dr. Rina Sahu, National Institute of Technology Jamshedpur, India	Hardness Control in Automobile Casting – A Case Study
Dr. Bala Naga Jyothi Vandavasi, National Institute of Ocean Technology, Chennai, India	Bio-inspired Intelligent Homing Guidance System for Autonomous Underwater Vehicles
Dr. Chaya Ravi Jadhav, Dr. D.Y. Patil Institute of Technology, Pune, India	Malaria Detection using CNN based Image Processing

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Dr. Swati Kumari, Deakin University, Gandhinagar, India	Securing the Future of Blockchain: A Comprehensive Analysis of Current Vulnerabilities and Post-Quantum Cryptographic Solutions
Dr. Mandeep Kaur, Bennett University, Greater Noida, India	Enhancing Multilingual Text Recognition with Tesseract OCR
Dr. Garima Kapur, Jaypee Institute of Information Technology, Noida, India	On-Chip Tunable Analog IC Designing
Dr. Bhatt Megha Bhupendrabhai, LDRP Institute of Technology and Research, Gandhinagar, India	Sectional Properties and Overall Performance of FRP Wrapped RC Chimneys
Dr. Bhandare Deepa Shivshant, P.E. Society's Modern College of Engineering, Pune, India	Analysis and Design of Intelligent Controller for Mimo System with Reference to Liquid Level Control
Dr. K. Komala, Sri Siddhartha Institute of Technology, Tumakuru, India	Novel Algorithms for the Design and Development of Emotional Detection in Human-to-Human Computer Interface
Dr. Kavila Selvani Deepthi, Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, India	A Comprehensive Approach to Explainable Deep Learning in Brain Health Analytics: Discovering Neurological Insights through Multi-Modal Data Integration
Dr. Thilagham K T, Government College of Engineering, Salem, India	Investigation on Effect of Multi pass Friction Stir Welded Dissimilar AA5052/AA6082 Joints
Dr. Reshma Sheik, TKM College of Engineering, Kollam, India	AI Models for Legal Text Processing: Tackling Legal Language Complexity with Deep Learning

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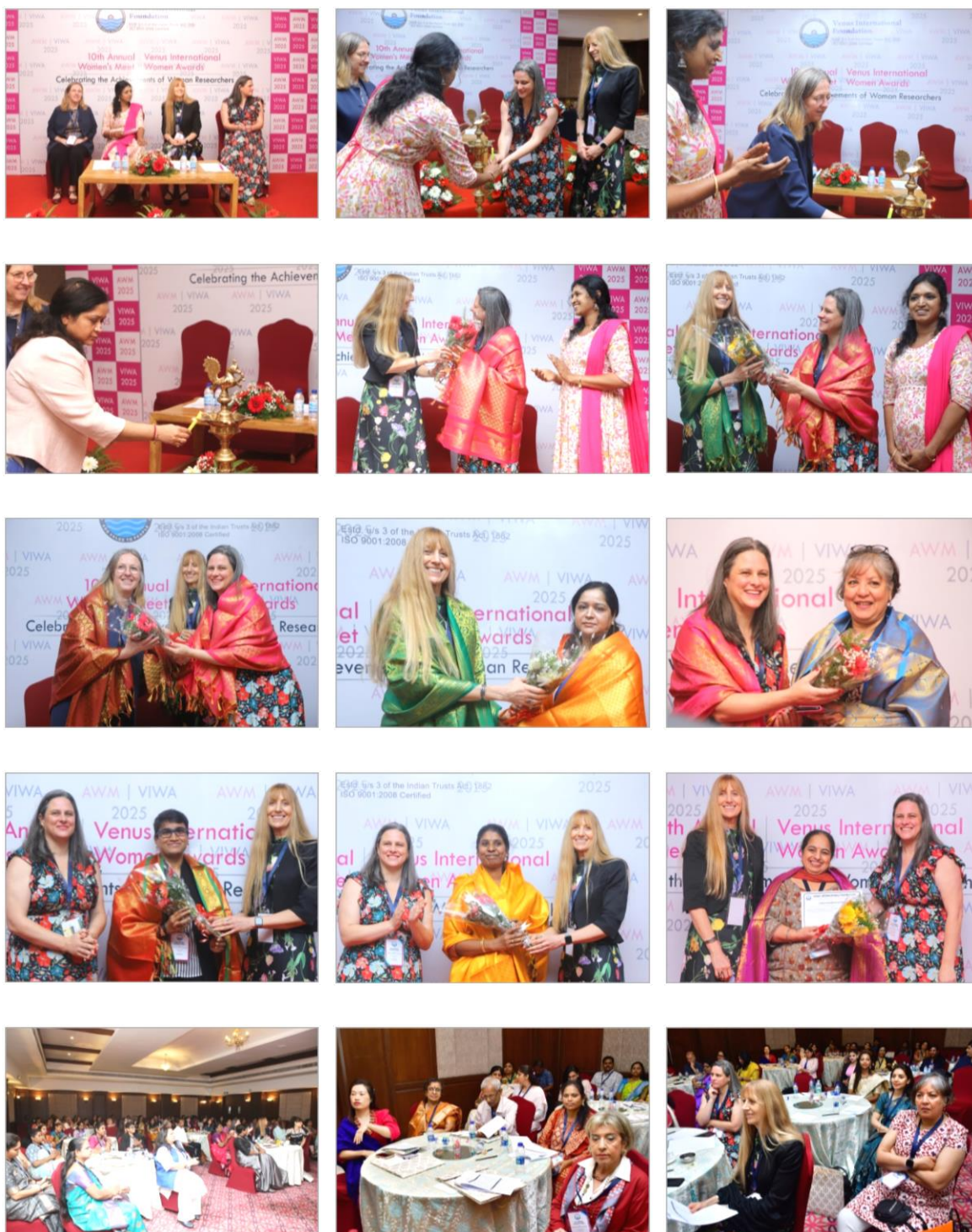
Dr. Arpitha H C, RV University, Bengaluru, India	A Profession Under Threat: Advocating for a Comprehensive Legislation for the Safety of Healthcare Workers
Dr. Linu M Salim, Mahatma Gandhi University, Kottayam, India	Assessment of Antifungal Activity of Pseudomonas aeruginosa against Colletotrichum capsici causing Chilli Anthracnose

KEYNOTE / INVITED SESSION Venue: Vauhini Hall (2:45 – 4:15 pm)	
Speaker	Title of Talk
Dr. Rupinder Kaur Kanwar, All India Institute of Medical Sciences Bhopal, India	Empowering the Next Generation in Translational Research: Personal Insights in Fostering a Research Culture for Future Innovation & Pathways to Excellence
Dr. Ulrike Loch, Free University of Bolzano, Italy	Protection and Participation of Children and Young People
Prof. Carla Palumbo, University of Modena and Reggio Emilia, Italy	Pal-OS® – An Innovative Proposal Aimed to Strategies of Regenerative Medicine for Critical-Sized Bone Lesions
Dr. Wei Quin Yow, Singapore University of Technology and Design, Singapore	A Life-Course Perspective on the Impact of Bilingual Experience on Social Cognition
Dr. Sheena Ramazanu, Hong Kong Metropolitan University, Hong Kong	Empowering Rural Indonesian Farmers: A Community-Driven Initiative to Prevent Heat Stroke
Dr. Richa Karmakar, Indian Institute of Technology Madras, India	Detection of Antimicrobial Susceptibility on Microfluidics Sensor by Electrochemical Impedance Sensing

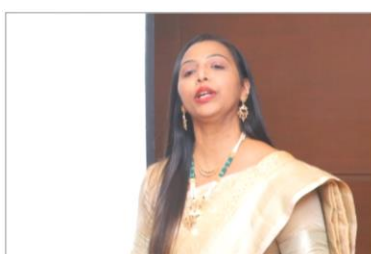
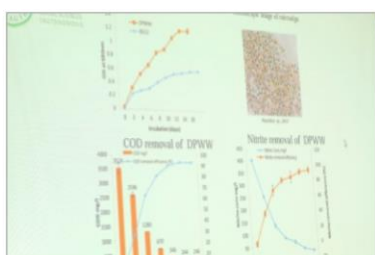
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AWARDS CEREMONY SESSION – II
Venue: Vauhini Hall (4:15 – 4:45 pm)
Valedictory, Networking & Refreshment (4:45 – 5:30 pm)

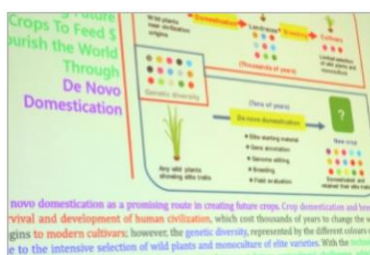
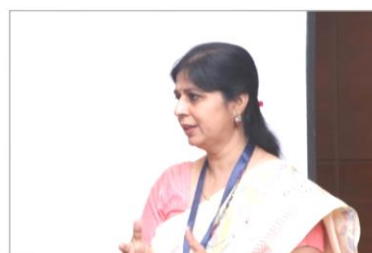
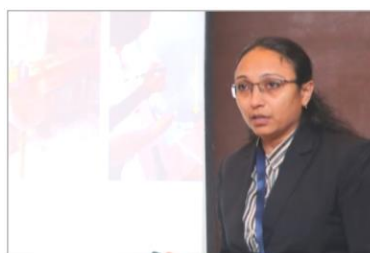
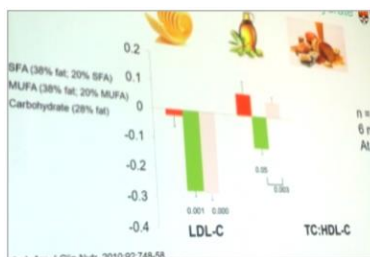
Glimpses – Inauguration



Glimpses – Scientific Sessions



Glimpses – Scientific Sessions



Glimpses – Scientific Sessions



Keynote Speaker 1



Dr. Katherina Kuschel, Karlsruhe Institute of Technology, Germany

Title: Midlife Entrepreneurship

Abstract: People aged 45 and older make up a vibrant and highly skilled segment of the workforce, often balancing careers, active parenting, and the pursuit of personal goals. Yet, midlife is marked by intense pressures: the constant juggle of work and family demands, and the search for fulfilment in a world that promotes career and material success. Adding to this complex mix are hormonal changes that impact energy, mood, and social dynamics, prompting many to question their direction in life. The MIDLIFE project delves into this pivotal phase of reassessment, where individuals seek deeper meaning and fulfilment amidst external pressures and inner change. Remarkably, people aged 45 to 54 have shown the highest rates of entrepreneurial activity across age groups since 2016 in the USA, pointing to a new trend: midlife entrepreneurship. In the next decade, 75% of the workforce will engage in entrepreneurial or independent work, but existing frameworks often fail to address the unique challenges faced by individuals in midlife, creating an urgent gap in support systems and entrepreneurial education. Ultimately, MIDLIFE aims to develop tailored entrepreneurial training programs addressing the unique needs of midlife, while contributing to the broader understanding of work-life dynamics and personal fulfilment at this stage of life. The findings will inform policies and support systems to foster meaningful opportunities for those who seek to redefine their lives and careers in midlife.

Keynote Speaker 2



Dr. Sudipta Roy, University of Strathclyde Glasgow, Scotland

Title: Working at the Interface: Electrochemistry, Chemical Engineering and Materials

Abstract: Electrochemical engineering is a subject which sits at an interface of electro-chemistry, chemical engineering, and materials. While current undergraduate curricula in chemical engineering cover some “core” aspects of engineering, it very rarely covers electrochemistry. However, in future, most distributed energy will be in the form of electricity from the grid, batteries or fuel cells. While the last two are well known electrochemical energy devices, less well known but more economically significant is the rôle of electrochemical engineering in micro-fabricated products, nano-scale materials, chemical synthesis and analysis, environmental applications as well as in recovering critical materials. For an electrified and low-carbon future electrochemical engineering will provide new methods of manufacturing which require controlling electrons at an interface. The talk will focus on the inter-relationship of materials, electrochemistry and chemical engineering which has fascinated the speaker and how this led to a very rewarding experience as an engineer and scientist.

Keynote Speaker 3



Prof. Dr. Julie Anne Lovegrove, University of Reading, England

Title: Nutrition and Cardiometabolic Disease

Abstract: Cardiovascular diseases (CVD) are the greatest cause of death globally. High intakes of dietary saturated fatty acids (SFA) have been linked to an increased risk of cardiovascular events, primarily through their association with raised serum low density lipoprotein (LDL) cholesterol, and their reduction has formed the backbone of dietary guidelines to prevent CVD for decades. However, there is some confusion over what should replace SFA in our diets. Evidence indicates that replacement of SFA with carbohydrates, particularly refined sources, has minimal benefit to CVD mortality. Whereas replacement with unsaturated fats, particularly cis polyunsaturated fatty acids, has beneficial effects and is a recommendation in current guidelines. However not all SFA are equal and foods rich in SFA have differential associations with CVD risk. The associations of dietary sources of dietary fats, including dairy, meat and plants will be presented. The evidence for the negative associations of dairy and CVD, despite their saturated fat content will be discussed and potential mechanistic links between saturated fats, dairy foods and CVD risk factors will be explored.

Keynote Speaker 4



Dr. Mili Shrivastava, Bournemouth University, England

Title: Empowering Mission-Driven Entrepreneurs: Integrating Experiential Learning and Flipped Classrooms for Sustainable Innovation

Abstract: This talk will explore the integration of experiential learning theories and the flipped classroom model in advancing education for sustainable development (ESD), using the Hacking for Sustainability (H4S) initiative at Bournemouth University as a case study. H4S is a student-driven program where learners tackle real-world challenges of a Mission-driven organisation, from enhancing biodiversity in estates to decarbonising Defense equipment. Students employ Lean Start-Up methodologies, rapidly validating problems and creating solutions that offer operational sustainability advantages for the UK Ministry of Defence (MoD). By collaborating with MoD sponsors and industry mentors, students gain hands-on experience in innovation, project management, and problem-solving, significantly boosting their employability. This approach addresses critical skill shortages and facilitates deep engagement with sustainability goals, driving impact at both regional and national levels. The flipped classroom model empowers students to take ownership of their learning as they move from theoretical knowledge to applied solutions in complex, high-stakes environments. With 70% of student developed solutions adopted by MoD sponsors, H4S showcases the power of experiential learning in fostering sustainable innovation and creating mission-driven entrepreneurs. The talk highlights how this education model bridges the gap between academia, government, and industry, positioning students as critical contributors to sustainability and the transition towards a Net Zero future. The talk is derived from the research project on education for sustainable development in progress at Bournemouth University.

Keynote Speaker 5



Dr. Rupinder Kaur Kanwar, All India Institute of Medical Sciences Bhopal, India

Title: Empowering the Next Generation in Translational Research: Personal Insights in Fostering a Research Culture for Future Innovation & Pathways to Excellence

Abstract: Translational research is the cornerstone of modern biomedical innovation, bridging fundamental discoveries with clinical applications to improve patient outcomes. As we navigate an era of rapid scientific advancements, fostering a research culture that empowers the next generation is imperative for sustaining excellence and driving future innovation. As we navigate an era of rapid scientific advancements, fostering a research culture that empowers the next generation is imperative for sustaining excellence and driving future innovation. This talk will provide personal insights into cultivating a dynamic research ecosystem that nurtures curiosity, critical thinking, and interdisciplinary collaboration. Drawing from my journey in translational medicine, mentorship, and leadership, I will highlight strategies to inspire young women researchers, build resilient research frameworks, and translate discoveries into tangible healthcare solutions. By reflecting on both successes and setbacks, this presentation aims to inspire leaders and future innovators to build sustainable, impactful research cultures that drive groundbreaking discoveries and improve patient outcomes.

Invited Speaker 1



Dr. Ulrike Loch, Free University of Bolzano, Italy

Title: Protection and Participation of Children and Young People

Abstract: Over the past several decades, there has been a noticeable shift in societal attitudes towards violence against children and adolescents. While it is not yet completely taboo, the trend is encouraging. A key catalyst for this change is the UN Convention on the Rights of the Child (1989), ratified by 196 states. Although the full realisation of these rights may take time, progress related to protection and participation is undeniable in Central Europe. My research deals with violence against children and adolescents in their families as well as in child and youth welfare. In the context of professional action, the forms of violence expand, especially when there is a system failure in terms of victim protection and prosecution of acts of violence by organizations, as shown by many studies on violence in educational institutions carried out in the last 20 years. In studies on therapeutic pedagogy, for example, forms such as abusive medication and epistemic violence have also emerged (cp. Friedmann, 2022; Loch et al., 2022; Loch, 2025). The following strategies for preventing the violence shown in studies and ombudsperson offices are currently being discussed:

- Child rights-oriented development of child protection concepts as a quality development process in organisations.
- Analysis of scientific theories concerning epistemic injustice and violence and, if necessary, their modification in compliance with children's rights and ethical values.
- Social sensitisation of the importance of nonviolence agreements for developing democracy, participation, and solidarity.

Invited Speaker 2



Prof. Carla Palumbo, University of Modena and Reggio Emilia, Italy

Title: Pal-OS® – An Innovative Proposal Aimed to Strategies of Regenerative Medicine for Critical-Sized Bone Lesions

Abstract: In alternative to the existing solutions in the bone regeneration field, we propose innovative approaches based on the use of scleral ossicles (SOs) for the recovery of critical-bone-lesions (accounting for about 7% of total bone injuries, unresolved challenge for the healthcare system) which, due to size and associated vascular damages, are unable to self-repair. The proposal is also in line with animal welfare, as SOs are taken from chicken heads, waste from avian butchery (no animal sacrifice required). In particular, SOs are small bony segments in the sclero-corneal border of lower vertebrate eyeballs with protruding eyes. We demonstrated that SOs are spontaneously decellularized, biocompatible, with pro-angiogenic properties and that, if implanted in non-immuno-depressed animals, do not induce immune reactions. For bone tissue regeneration, a functional vascular network is a prerequisite, which is significantly impaired in critical-injuries. Currently, commercially available products used in the clinic are not able to simultaneously restore the vascular network and trigger reparative osteogenesis. SOs use was patented in 2020; then, in 2022, we filed the trademark Pal-OS® (indicating both SOs and their derivatives: powder, sticks, etc.). Experimentally, SO-powder is currently mixed with 3D-printable-bio-inks to produce complex constructs for various injury types, which when introduced into the volume of the critical-injury could provide a trigger for angiogenesis and osteogenesis in the skeletal lesions to be repaired. We recently applied to the Italian-Intellectual-Property-Award_IPA-2023: our patent proposal was ranked 2nd, in MEDTECH category, for female entrepreneurship, because the team that conceived and is developing the product is all female.

Invited Speaker 3



Dr. Sheena Ramazanu, Hong Kong Metropolitan University, Hong Kong

Title: Empowering Rural Indonesian Farmers: A Community-Driven Initiative to Prevent Heat Stroke

Abstract: Climate change has negatively impacted systems and populations globally. The intensifying weather conditions, including the rise in temperatures, have and will continue to have serious health impacts on populations in various parts of the world. Agricultural farmers, in particular, are at higher risk of suffering from heat-related illnesses and injuries due to occupational exposure to harsh weather conditions. Therefore, it is crucial that Indonesia, where agriculture significantly contributes to the country's economic development, implements measures to protect its citizens. This study describes a service-learning experience aimed at imparting knowledge on climate change, heat stroke, and its prevention and management strategies for agricultural farmers in Indonesia. The primary aim of the study was to improve the awareness and knowledge of climate change and its impact on health, focusing on heat stroke, among members of the community. Using the train-the-trainer approach, the study team developed and provided a 3-day face-to-face education and training session on climate change and its impact, and heat stroke to faculty members (n = 30) of University of Serang Raya in September 2024. Interactive activities, such as role playing, were incorporated to facilitate uptake of understanding in addressing climate change-related heat stroke. The faculty members then adapted this training session to provide education to farmers (n = 23) at Tirtayasa, a rural village in Indonesia. Thereafter, feedback of the program was collected from both faculty members and farmers.

Invited Speaker 4



Dr. Richa Karmakar, Indian Institute of Technology Madras, India

Title: Detection of Antimicrobial Susceptibility on Microfluidics Sensor by Electrochemical Impedance Sensing

Abstract: Antimicrobial resistance (AMR) is a global health threat, making infections harder to treat with empirical antibiotics. Antimicrobial susceptibility testing (AST) ensures appropriate antibiotic selection. We developed a microfluidic device with screen-printed carbon electrodes to perform rapid AST by leveraging the impedance characteristics of bacterial cells. A 3D-printed mold was used to fabricate a PDMS channel, which was functionalized with poly-L-lysine for bacterial attachment. Electrochemical impedance sensing (EIS) was conducted after introducing a bacterial suspension (10^8 CFU/mL) and washing unattached cells. Impedance changes were monitored with and without antibiotics (Ampicillin, 5 μ g/mL). In the control device, the charge transfer resistance (R_{ct}) decreased, indicating bacterial growth, while in the test device, R_{ct} remained constant, reflecting bacterial inhibition. The device was tested with resistant strains and human samples, showing consistent results. This low-cost system offers a simple, rapid AST method suitable for front-line healthcare workers with minimal training.

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