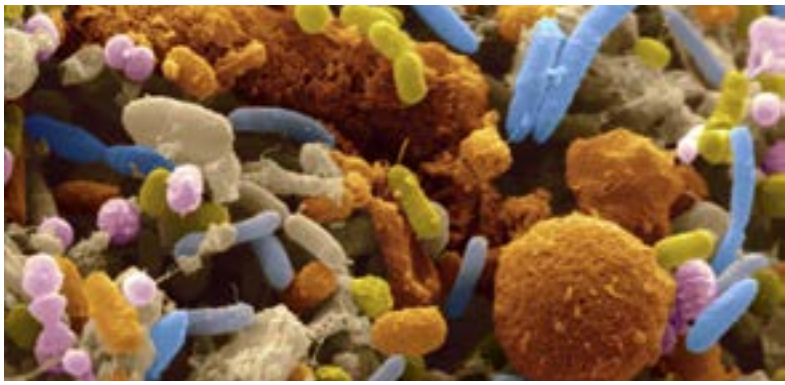

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

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Keynote Forum

Day 1

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Ruliang Pan

University of Western Australia, Australia

The devastated ecosystem and it impacts on China's wellbeing

In the face of the dramatized Old China, unprecedented human population growth and driven by mercantilism, China has since the 1950s embarked upon an important period of agricultural expansion, industrialization, economic reforms, and urbanization, which collectively depended principally on the depletion of natural resources and land conversion. The results based on a database from the World Bank composing 42 variables of eco-social development and the records on the related emissions in Asia indicate that 12 (23.7%) of them in China show larger values than the averages of the region; and the Euclidian distance between China and non China Asia shows a linear increase from the 1960s to the end of the last century. That is, China stands out alone in its negative impact on Asian ecosystem. The backgrounds rooted such unique scenarios are discussed. The factors leading up to such catastrophe, including extravagant depletion of the natural resources and land conversion, large scales of deforestation and contaminated lands, agriculture and water, excessive dam construction, heavily polluted air and remarkably increased human expansion, are presented. We also presented some scenarios showing how the fauna and the flora in China severely have been impacted, rigid climate pattern appeared and human society has been challenged unprecedentedly due to the prominent declining birth rate, mountainous burdens on the public health system, ubiquitously contaminated food chain and drink water, which has led to remarkably increased infertility and higher rates of cancer, lung and respiratory diseases and the booming immigration. Such devastating impact has raised a great attention following the spreading not just in Asia, but also to Western America. This study delivery a strong alarming message not just to China but also the other region: such an eco-social development model is also a pathway to devastating the whole global wellbeing, particularly humans.

Biography

Pan's academic commitments in zoology, primatology and conservation related to Asian and African regions, particularly China, have resulted in more than 90 publications with more than 30 scholars in China, Australia, the UK, the USA and South Africa. He has successfully conducted 36 research projects sponsored by the foundations in China, Australia, the USA, the UK and South Africa. His current specific focus is on the devastated ecosystem in China and its unprecedented impacts on fauna and flora as well as human society, which was initiated from his publication of Science Commentary in AJP (the first one listed about), and the submitted manuscript of "The Primate Extinction Crisis in China: Immediate Challenges and A Way Forward" to Diversity and Conservation, and the one whose abstract is attached here. He is playing a leading role for such a mission by bringing together scientists in Australia, the USA, Mexico, Brazil and China.

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Zhanqing Hao

Shenyang Institute of Applied Ecology, Chinese Academy of Sciences, China

The effect of intraspecific trait variation on the detecting of community assembly across successional stages

The trait-based approach is widely used in the study of different processes (dispersal limitation, habitat filtering, and limitation similarity) underlying community assembly. However, most researches are based on trait mean value, which only considers interspecific trait variation. Due to the genetic and environmental difference, a functional trait can also exhibit significant intraspecific trait variation (ITV). Thus disentangle whether and how will the detection of the relative importance of ecological process be influenced by the inclusion of ITV is of significant meaning for our understanding of community assembly. Here, we collected community composition data and 8 functional traits in a young (24 ha) and an old (25 ha) growth forest plot. We analyzed the relative importance of different process based on a recently developed modeling technique (STEPCAM). Moreover, we detect the effect of ITV on the relative importance with and without ITV. We found that dispersal limitation is most important at 20m scale in two forest plots, followed by habitat filtering, and limiting similarity had a minor effect. When taking ITV into consideration, the proportion of deterministic process (habitat filtering and limiting similarity) improved at the early successional stage, while such effect was not found at a late successional stage. Moreover, based on a single trait, we found the deterministic process only improved for the nutrition absorb related trait when we consider of ITV at a late successional stage, which implies the importance of soil condition on community assembly at this scale. In conclusion, our study highlights the importance of ITV for the detection of a trait-based ecological process in this temperate forest across successional stages.

Biography

Professor Zhanqing Hao focused on the biodiversity and ecological functions. As one of the Chinese scientists who participated in biodiversity research, he initiated the establishment of 25ha temperate permanent monitoring forest plot in Northeast China at 2004, which is the earliest temperate forest plot in China and had been an important member of Chinese Forest Biodiversity Monitoring Network (CForBio). After that, a series of forest plots had been established along successional stages and latitude gradients. All those forest plots provided the opportunity to detect the biodiversity patterns and maintaining mechanisms in temperate forests.

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Elsayed Abdelsatar El Meleigy

Suez Canal University, Egypt

Use of water separated from crude oil in the cultivation of wood trees and economic plants and biofuels production through phytoremediation

Oil-mining companies have to subject waste water to expensive treatment before it can be discharged on land or at sea to comply with environment regulations. This study aims at developing an economically valid and applied comprehensive solution that takes advantage of oil-contaminated brackish salty water disposed by the General Petroleum Company in Egypt, maximizes its economic value and ensures its safe use in the environment. Three fields in RasSidr site of the company were inspected. Two main common plant species to RasSidr, Tamarix niloteca tree and Phragmites australis grass, that are tolerant to salinity along with Pongamia pinnata tree that is a leguminous and suitable for the RasSidr environment and grow close to saline-tiled beaches were used. These plants together with their associated bacteria of endophytes and rhizosphere that utilize crude oil as a carbon and energy source was considered a useful combination of bioremediation agents. Initially, soil characteristics were determined by analyzing soil samples taken at depths of 25 cm and 50 cm, and bacterial content of soil around the roots and within plant tissues was examined. Discharged water (@50 m3day-1) was used in irrigating plant fields in amounts sufficient to plant needs only. Growth parameters of plants were assessed four times in an interval of two months. Preliminary results indicated that growth rates in plant length, number of branches and stem girth, and chlorophyll content of oil-polluted water-irrigated plants of the two plant species were not significantly different ($p \leq 0.05$) from plants irrigated with fresh water. The number of bacteria in the soil increased significantly ($p \geq 0.05$) over time, and the color of residual oil in the soil was fading, indicating its decomposition. Soil under Tamarix niloteca contained similar quantities of microorganisms in both coastal saline-alkali soil and inland arid region indicating that colonization of the plant provided stable growth conditions for microorganisms. These plants and endophytes and rhizosphere combination played the main rule in the in-situ bioremediation process, and were efficient in removing around 70 % of the initial traces of crude oil within two months. They also provide safe environment and promote plant growth. They were able to decompose hydrocarbons and residues of crude oil as they possess special physiological mechanisms (PGPR) turns polluted water to safe water for human and environmental, and meanwhile achieving the objectives of this work. These results indicated that Tamarix niloteca and Phragmites australis are promising agents for treating oil-polluted salty wastewater in other fields of crude oil mining.

Biography

Elsayed El-Meleigy is Professor Emeritus, Faculty of Science, Suez Canal University and president of General Syndicate of Scientific Professionals in Egypt. He obtained his PhD in 1989, Ain Shams University, and spent postdoctoral sabbaticals in Purdue University, USA (2000). He has a Bachelor in Shariaa Law, Al-Azhar University (2004). He is a member of the Supreme Council of Universities and Faculty of Science, Suez Canal University. He authored numerous cultural and scientific books in plant physiology. Professor El-Meleigy supervised many PhD and MSc Thesis and examined many others. He is a member of many scientific organizations and participated in numerous conferences and scientific events at national, regional and international levels. He offered hundreds of public lectures, carried out many projects and activities for the community. He attended specialized courses in Egypt, America, and Germany, and took consultancies in the fields of plastics, paints, inks, adhesives, dry-ink pens and detergents.

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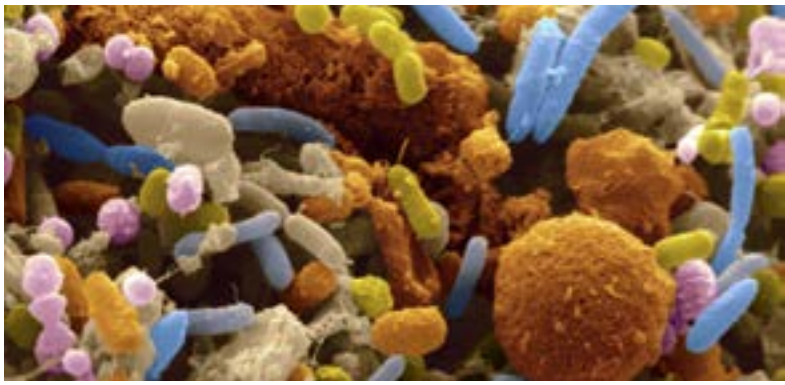

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William F Basener

Rochester Institute of Technology, USA

The fundamental theorem of natural selection with mutations, and mutation accumulation in small populations

The mutation-selection process is the most fundamental mechanism of evolution. In 1935, Ronald Aylmer. Fisher proved his fundamental theorem of natural selection (FTNS), providing a model in which the rate of change of mean fitness is equal to the genetic variance of a species. Fisher did exclude transformations in his model but rather trusted that changes would give a constant supply of fluctuation bringing about the unending increment in mean wellness, in this manner giving an establishment to neo-Darwinian hypothesis. In this discussion, we fabricate a differential conditions display from Fisher's first standards with transformations included and demonstrate an overhauled hypothesis demonstrating the rate of progress in mean wellness is equal to genetic variance plus a mutational effects term, called the fundamental theorem of natural selection with mutations (FTNSM). The expanded theorem has biological implications significantly different from what Fisher had envisioned; most critically, mutations with selection do not provide continual upward pressure on fitness. We observe that for small populations, the model predicts a fitness decline as the deleterious effects of mutation accumulate faster than selection can replenish fitness. In this talk, we present the new FTNSM model and its relation to Fisher's original work as well as recent work on mutation accumulation in small populations. We will show that our model is more complete than other models for understanding mutation accumulation, and discuss estimation of minimal population sizes for avoiding a near-term mutational meltdown in endangered species.

Biography

William F Basener is an Emeritus Professor in the School of Mathematical Sciences at the Rochester Institute of Technology. He is also founding President of two small software companies and is faculty at the University of Virginia Department of Systems and Information Engineering. His areas of expertise include population modeling, population genetics, topology, data mining, and dynamical systems.

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Maha Hamdy

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Improvement of compliance to hand hygiene (HH): Best practice as one of the patient safety goals (Psgs)

Introduction: Healthcare-associated infections (HAIs) lead to increased morbidity& mortality, disability, increase length of hospital stay, and increase in antibiotic resistance. Hands are the most common vehicle to transmit HAIs including (MDRS). Compliance with HH is one of the Egyptian PSGs. Most healthcare providers (HCP) believe they're practicing appropriate & effective HH, though it doesn't exceed 40% in most of the organizations according to WHO. Assessment of compliance to PSGs was done at Al-Zaytoon specialized multispecialty governmental hospital that provides various medical, surgical and diagnostic services for about 2 million of the population.

Methodology: Data collection was made by meetings with key persons & stakeholders, Structured Observation and reviewing of available forms, documents, and records. SWOT analysis was made focusing on factors related to PSGs including HH. Assessment of awareness& compliance to Egyptian PSGs was done by Questionnaire and Observation. The least rates were reported to HH (60% awareness and 40% compliance). To Increase overall HH awareness and compliance to 90% over 1 year. Phase I objectives (over 2 months) were to increase HH awareness from 60-80% and improve compliance from 40-60% among HCP that will improve PS. Cause, effect diagram and in-depth analysis of Possible Causes of non-compliance to HH were done, followed by Pareto Chart formulation. Remedy selection for the few vital causes (Lack of training and Lack of supervision) was followed by implementation and reassessment

After Improvement: Finally, a control chart was made to ensure consistency & further improvement in terms of how, where, who, what in relation to the overall goal.

Biography

Maha Hamdy is a Professor of Medical Microbiology & Immunology, Faculty of Medicine-Ain Shams University (ASU) and The Head of the department at Armed Forces College of Medicine. She participated in International research projects collaborated with Pasteur Institute & Co-authored international Publications. Actively participated as an infection prevention and control consultant (APIC member#180759), in the upgrading of medical services and accreditation of governmental &teaching hospitals according to Egyptian standards. As an Associate trainer (IBCT-MENA-AT063/08), she trained their staff on infection control measures. She is an Arbitrator (Promotion Committee, Supreme Council of Universities), Vice president of quality assurance unit, ASU& Egyptian fellowship in healthcare management. She is a member of Egyptian Scientific Societies of Medical Microbiology, immunologists, Infection Control, Arabic Society of infectious diseases& antimicrobials. She passed medical education courses from University 0f Michigan and is a member in Arabic association of medical education. She had been recognized as the "Ideal doctor" Egyptian Medical Syndicate, March 2006.

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Nadiya Boyko

Uzhhorod National University, Ukraine

Microbiome of soil, plants and humans, the ways and mechanisms of their interrelation, role in P4 and IT- medicine

Statement of the Problem: The fact that our host changes are more likely occur due to the modification of gene expression, rather than the alteration of the genetic code itself reverse/refresh our vision, and finally led to prognostic personified and preventive medicine and sustainable agriculture consistent with cyclic bioeconomy.

Methodology & Theoretical Orientation: *In vitro* and *in vivo* models, *in situ* monitoring, limited clinical trials, mathematical modeling, GIS.

Findings: Contaminants spread in targeted 16 EU/Ukrainian trans-border regions and their interplay with soil, water, air microbiome and plant/animal health had been investigated. Regional specificities and peculiarities, regularities and trends between chemical composition, biochemical and biological (microbiological) properties of soils (soil microbiome) and health of edible plants, crops' productivity, and nutritional value were defined. The prevalence of infectious and non-infectious diseases in connection with the ecological status of the regions was examined. Quantitative and qualitative microbiological characteristics were obtained for all the prioritized traditional foods originated from Black Sea region' countries within BaSeFood project, and new national and regional food compositions databases were created. The influence of biologically active compounds (BAC) of edible plants, the major ingredients of the traditional foods, as well as a number of beneficial microorganisms isolated from various sources on the human host was investigated. The pro- or anti-inflammatory effects were detected and the mechanisms of its influence on host immunity and microbiome have been studied. Correlated biomarkers for earlier detection of metabolic diseases were identified. The efficacy of individually selected foods rich with BAC to treat and prevent DT-2 had been proved in a limited clinical trial. GIS systems were created and currently applied for regional nature conservation.

Conclusion & Significance: Connected databases and unique IT instruments for personal nutrition calculation and healthy food manufacturing by local food producers are in focus.

Biography

Nadiya Boyko has defended her PhD in 1994 and doctoral degree in 2010. From 2000 until 2005 she occupied sabbatical Research Fellow position in Laboratory of Mucosal Immunology in University of Pennsylvania, USA. She is permanently working as a professor at the Uzhhorod National University and occupied following positions: Director of the R&D Centre of Molecular Microbiology and Mucosal Immunology; Vice-President and CSO of CLS in Slovakia and co-founder and CEO of Ediens LLC. Research interests are P4 medicine, personalized nutrition, pharmabiotics, human microbiome, noncommunicable diseases; food safety, knowledge transfer. Co-establisher of Ukrainian and Slovak Technology Platforms "Agro-Food"; experienced stakeholder manager with links to industry, academia, and researchers in Europe. She has published more than 250 papers, including a chapter in Mucosal immunology Elsevier press, h-index is 10.

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