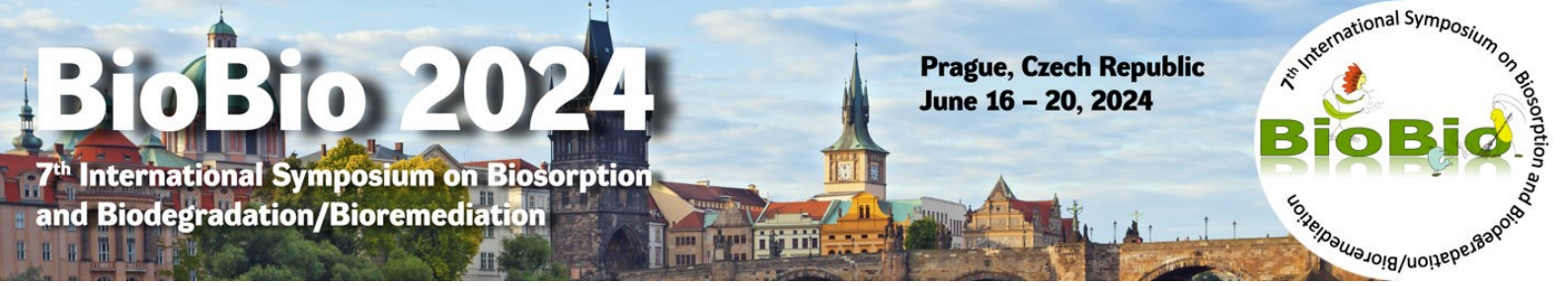

Scientific Program

Organizational notes:
Registration: daily (17.-19.6.2024) from 8:30 to 16:00
Color coding: social activities, breaks, sessions, Horizon NYMPHE meetings

SUNDAY 16. 6. 2024

15:00–16:30 Registration

16:30–17:00 **Opening ceremony: Kateřina Demnerová** (UCT Prague)

17:00–18:00 ENVIRONMENTAL POLLUTION
Chairpersons: Dr. Giulio Zanaroli, Prof. Kateřina Demnerová

17:00–17:40 **Plenary lecture**
Giulio Zanaroli (Università di Bologna, Italy):
Challenges in the intensification of organohalide respiration processes in marine

17:40–18:00 **Klara Slezakova** (University of Porto, Portugal):
Understanding child exposure to indoor air contaminants: a case study of sports environments

18:00–19:30 **Welcome reception**

MONDAY 17. 6. 2024

9:00–13:00 GREEN TECHNOLOGIES (BIOREMEDIATION TECHNOLOGIES), MICROALGAE-BASED BIOREFINERIES, AND PHYTOREMEDIATION
Chairpersons: Prof. Joan García, Dr. Bin Cao

9:00–9:40 **Plenary lecture**
Joan García (Polytechnic University of Catalonia, Spain):
Cyanobacteria microbiomes for bioplastics long-term production

9:40–10:00 **Simona Di Gregorio** (University of Pisa, Italy):
The innovative soil-omic® process for the *in situ* decontamination of soils and groundwaters contaminated by total petroleum, polycyclic aromatic hydrocarbons and heavy metals. The validation on the operational scale in Zorrotsaurre, Bilbao, Spain.

10:00–10:20 **Claudia Ortiz-Calderón** (University of Santiago de Chile, Chile):
Indigenous cyanobacteria as a multifunctional biotechnological tool for the mitigation of carbon emissions

10:20–10:40 **Fátima Jesus** (University of Aveiro, Portugal):
Bioremediation of wastewater using bivalves: comparative assessment of the potential of biofiltration and biosorption

10:40–11:00 **Coffee break**

11:00–11:40 **Plenary lecture**
Bin Cao (Nanyang Technological University, Singapore):
Biofilm Engineering for Environmental Sustainability

11:40–12:00 **Jinyao He** (Helmholz Centre for Environmental Research, Germany):
DC electric fields promote biodegradation of a waterborne contaminant in biofilter systems

12:00–12:20 **Diogo Alexandrino** (University of Porto, Portugal):
Ciimar blue biobank: a repository of marine biological resources with biotechnological potential

12:20–12:40 **Elisa Ghitti** (University of Milan, Italy):
Root exudates modulate the interactions between plants and xenobiotic-degrading bacteria and potentially improve polychlorinated biphenyls (pcbs) rhizoremediation

12:40–13:00 **Anamaria Gentile** (University of Salerno, Italy):
Monitoring antibiotic resistance in urban soils: a comprehensive study of arb presence and resistance levels in Milan, Italy

13:00–14:00 **Lunch**

14:00–15:00 WATER POLLUTION & WASTEWATER TREATMENT
Chairpersons: Prof. Tomáš Macek, Prof. Tomáš Cajthaml

14:00–14:20 **Cosimo Masini** (DND Biotech, Italy):
Application of natural and modified zeolites for water filtration

14:20–14:40 **István Fekete** (Bay Zoltán Nonprofit Ltd. for Applied Research, Hungary):
Secondary raw materials as potential adsorbents

14:40–15:00 **Alice Melzi** (University of Milan, Italy):
Reduction of hexavalent chromium and detection of enzymatic activity in *Rhodococcus qingshengii* strain SC26

15:00–16:00 BIODEGRADATION OF RECALCITRANT COMPOUNDS
Chairpersons: Prof. Tomáš Macek, Prof. Tomáš Cajthaml

15:00–15:40 **Plenary lecture**
Tomáš Cajthaml (Director Institute for Environmental Studies, Czech Republic):
Per- and polyfluoroalkyl substances - eternal chemicals; is there a forever solution

15:40–16:00 **Adam Sochacki** (Czech University of Life Sciences Prague, Czech Republic):
Reversible transformation of sulfamethoxazole by biogenic manganese oxides and manganese oxidizing bacteria

16:00–16:40 **Coffee break**

16:40–17:30 SHORT ORAL LECTURES
Chairpersons: Assoc. Prof. Hana Stiborová, Dr. Simona Lencová

Andrea Franzetti (University of Milano Bicocca, Italy):
Commercial products for the bioremediation of hydrocarbon-contaminated soil: characteristics and effectiveness

Jofre Herrero (Eurecat, Technological Centre of Catalonia, Spain):
Guidelines for Mycoremediation - Replicability to Boost Implementation

Alice Melzi (University of Milan, Italy):
Microporous microcarrier biofilm for copper removal from industrial wastewaters

Abdul Rehman (University of the Punjab, Pakistan):
Utilization and removal of azo dyes, and plastic by metal-resistant *Ochrobactrum intermedium* isolated from industrial wastewater

Christoph Bloss (Helmholtz Institute Freiberg for Resource Technology, Germany):
Comparative analysis of next-generation sequencing data in phage display trials: a bioinformatics approach for recycling fluorescent powder from fluorescent light bulbs

Marco Andreolli (University of Verona, Italy):
Isolation, characterization of biosurfactant producing bacteria and their application to enhance pesticides degradation in agri biobed system

Anna Poli (University of Torino, Italy):
Microbial diversity as a possible solution for restoring a PAHs contaminated soil

17:30–18:30 PLASTICS & MICROPLASTICS: FRAGMENTATION, MONITORING, BIODEGRADATION, FATE, RECYCLING
Chairpersons: Assoc. Prof. Hana Stiborová, Dr. Simona Lencová

17:30–17:50 **Sonja Harter** (Helmholtz Institute Freiberg for Resource Technology, Germany):
Engineering of polymer-specific and high-affinity binding peptides as a platform for microplastic valorization

17:50–18:10 **Rafaela Perdigao** (University of Porto, Portugal):
Screening marine bacteria for plastic degradation: insights from net biofilms and hydrocarbon-degraders

18:10–18:30 **Marcus A. Horn** (Leibniz University Hannover, Germany):
Effect of earthworms and fungi on the mineralisation of biodegradable and non-biodegradable plastics: importance of isotope tracing techniques

18:30–19:30 POSTER SESSION WITH A GLASS OF WINE

BIODEGRADATION OF RECALCITRANT COMPOUNDS

Tatiana Stella (M3R-Monitoring and Management of Microbial Resources Srl, Milano, Italy):
Biopile technology: Upscaling of total petroleum hydrocarbons (THP) contaminated soil treatment at industrial scale

Jesus Berganza (GAIKER Technology Centre, Basque Research and Technology Alliance, Zamudio, Spain):
Assessment of the bioremediation potential of soil contaminated with hydrocarbons from a fuel spill_Berganza

Tiago Maia (CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, University of Porto, Portugal):
Investigation of the interplay between bacterial defluorination and fluoride toxicity

Jose Carlos Castilla-Alcantara (ICCRAM, University of Burgos, Burgos, Spain):
Soil bioaugmentation based on colloid biology to improve degradation of recalcitrant pollutants

Camilla Valli (Department of Food, Environmental and Nutritional Sciences, University of Milan, Italy):
Dihydrogen (H_2) pulses for possible application in groundwater bioremediation from chloroethenes

ENVIRONMENTAL POLLUTION (SOIL, SEDIMENT, AIR POLLUTION, MARINE POLLUTION)

Elisabetta Loffredo (Department of Soil, Plant and Food Sciences, University of Bari, Italy):
Untreated plant waste of the mediterranean region as biosorbents of persistent organic pollutants

Verónica Peña-Álvarez (University of Oviedo, Mieres, Spain):
Enhancing arsenic phytoextraction rates: A nano-phyto-bioremediation approach

Lila Aldakheel (King Abdullah University of Science and Technology, Thuwal, Saudi Arabia):
Exploring plastic-degrading microbial communities in Red Sea-associated mangrove soils

Elisabetta Loffredo (Department of Soil, Plant and Food Sciences, University of Bari, Italy):
Byproducts of bioenergy production as sustainable tools to mitigate soil pollution

Hana Horváthová (The Centre of Environmental Services, Bratislava, Slovakia):
Biodegradation of crude oil contamination: from microcosm to in situ bioremediation

Magdalena Urbaniak (European Regional Centre for Ecohydrologuy of the Polish Academy of Sciences, Lodz, Poland):
Fertilization of agricultural soil with sewage sludge affects its resistome

Iva Dolinová (Technical University of Liberec, Liberec, Czechia)
Field study on the dynamics of microbial communities following biostimulation at chlorinated ethenes-contaminated site

GREEN TECHNOLOGIES (BIOREMEDIATION TECHNOLOGIES), MICROALGAE-BASED BIOREFINERIES

Cosimo Masini (DND Biotech, Pisa, Italy):
Bio-flushing, an innovative technology for in situ soil and groundwater decontamination

Sona Nikolyan (Yerevan State University, Yerevan, Armenia):
Assessment of the growth characteristics of multiple heavy metal-resistant artrobacter sp. Arts.1-2 strain isolated from artsvanik tailing

Asia Rosatelli (Università degli Studi di Milano-Bicocca, Milano, Italy):
Crafting a toolbox: unleashing the power of microbiologically activated biochar in bioremediation processes

Sara Muñana González (Universidad del País Vasco UPV/EHU, Leioa, Spain):
Natural biopolymers as nanocarriers for encapsulation and controlled release of nutrients in bioremediaton systems

Domenico Palatucci (Depatment of Biology, Federico II University of Naples, Italy):
Halotolerant cyanobacteria strains application for desalination of saline and hypersaline liquids

Michel Chalot (Université de Franche-Comté, Montbéliard, France):
Biochemical traits, genome sequencing and metabolic modeling of rhizospheric microorganisms isolated at a metal contaminated site

Usharani RK (Department of Civil and Environmental Engineering, UNESP, SP, Brazil):
Bioremoval of pollutants and recovery of nutrients from wastewater through sustainable ecotechnological approaches

Petra Lovecká (UCT Prague, Prague, Czechia)
Effect of endophytic microorganisms isolated from wheat seeds on plant growth

Martí Aliaguilla (LEITAT technological center, Terrassa, Spain):
Electro-bioremediation strategies for the removal of hydrocarbons, BTEX, chlorinated compounds and heavy metals from groundwater

PHYTOREMEDIATION, PHYCOREMEDIATION, MYCOREMEDIATION AND COMPOSTING

Ahmed Abderrafaa Tamma (Institute of Environmental Engineering, Wrocław University of Environmental and Life Sciences, Wrocław, Poland):
Integrating biodegradable water-absorbing geocomposites and soil amendments for enhanced phytoextraction: A sustainable approach to soil and heavy metal remediation

Arturo Redondo Lopez (Centro de Biotecnologia y Genomica de Plantas, Madrid, Spain):
Poplar-based phytoremediation of heavy metals enhanced through altered ethylene signaling pathways

Magdalena Urbaniak (University of Lodz, UNESCO Chair on Ecohydrology and Applied Ecology, Poland):
Pop-bioaccumulation control in cucurbits for safe and healthy food production

Rocío Barros García (Universidad de Burgos, Spain):
Enhancement of heavy metals phytoremediation potential in phragmites australis through plant growth promotal rhizobacteria (PGPR)s inoculation

Arturo Redondo Lopez (Centro de Biotecnologia y Genomica de Plantas, Madrid, Spain):
Poplar-based phytoremediation of heavy metals enhanced through altered ethylene signaling pathways

Kateřina Němcová (Institute of Environmental Studies, Faculty of Science, Charles University in Prague, Czechia)
Effects of different organic substrate compositions and soil-to-substrate ratios on the decontamination of aged PAH-polluted soils through outdoor co-composting

Michel Chalot (Université de Franche-Comté, Montbéliard, France):
Edaphos : advanced mapping, risk assessment and nature-based depollution methods are combined to accelerate the recovery of contaminated soils and ensure that ecological restoration enters mainstream business

WATER POLLUTION & WASTEWATER TREATMENT

Yingrun Chen (Czech University of Life Sciences Prague, Prague, Czechia)
Enhanced treatment performance and reduction of antibiotic resistance genes of biochar-aeration vertical flow constructed wetland for treating real domestic wastewater.

TUESDAY 18. 6. 2024

9:00–11:00 **WASTE MANAGEMENT (WASTE VALORIZATION) & WORKSHOP ON CIRCULAR ECONOMY**
Chairpersons: Prof. Petra Patáková, Prof. Víctor de Lorenzo

9:00–9:40 **Plenary lecture**
Petra Patáková (UCT Prague, Czech Republic):
Biotechnological valorization of animal and/or plant waste

9:40–10:00 **Igor Yannick Brandão** (Federal University of São Paulo, Brazil):
Bionanomining of copper-based nanoparticles using mine tailings as precursor

10:00–10:20 **Christian Hintersatz** (Helmholtz-Zentrum Dresden-Rossendorf, Germany):
Selective recovery of germanium applying agrobactin, a siderophore identified utilizing density functional theory

10:20–10:40 **Katarzyna Kowalczyk** (Bio-Rad Laboratories):
Bio-Rad Droplet Digital PCR - your partner in environmental screening

10:40–11:00 **Radim Špaček** (CzechInvest):
Technology Incubation - grant scheme to support fresh-born start-ups

11:00–12:00 POSTER SESSION WITH COFFEE AND SNACKS

MICROBIAL DIVERSITY AND BIODEGRADATION OF POLLUTANTS

Paolo Piccolo (Università degli Studi di Salerno, Fisciano, Italy):
Resilience and response of plant-associated microbiomes to urban wastewater in constructed wetlands: insights from rhizosphere biodiversity analysis

Silvia Leoci (M3R, Milan, Italy):
Biomolecular markers for the assessment of genetic potential in bioremediation projects

Laura Carrera Ruiz (Universidad Autónoma de Madrid, Madrid, Spain):
Design of a synthetic community for the bioremediation of hydrocarbon polluted soil

Tomas Aparicio (CNB-CSIC, Madrid, Spain):
A genetic tool to foster bacterial evolution at the community level

Joana P. Fernandes (CIIMAR, University of Porto, Matosinhos, Portugal):
Microbial diversity of CM2C (ciimar microbial culture collection) as a tool for the development of bioremediation applications

Madiha Siddiqui (University of Antwerp, Antwerpen, Belgium):
Exploration of bacteria for indoor malodor degradation and their integration in commercial applications

Luca Di Stasio (University of Salerno, Fisciano, Italy):
Micro-biological approach for suistainable urban soil restoration: A case study in Milan

Ryan Thompson (Newcastle University, Newcastle upon Tyne, United Kingdom):
Investigating the nodule microbiome of a heavy metal stressed Alnus glutinosa chronosequence

Manuela Tadrosová (UCT in Prague, Czechia):
The role of secondary plant metabolites in the expression of aromatic ring-hydroxylating dioxygenases in rhodococci

Tomáš Engl (UCT in Prague, Czechia)
Novel fad-dependent oxidoreductase involved in the catabolism of acetosyringone and co-metabolic degradation of phenaclor and 2,6-dicp

Lýdie Jakubová (UCT in Prague, Czechia):
Bacterial strains utilizing guaiacylglycerol-β-guaiacylether and their contribution to the decomposition of pollutants

PLASTICS & MICROPLASTICS: FRAGMENTATION, MONITORING, BIODEGRADATION, FATE, RECYCLING

Arely Lechuga Jimenez (Universidad Nacional Autónoma de México, CDMX, Mexico):
Metaomic analysis reveals key functions in a bacterial community involved in recalcitrant polyether polyurethane degradation

Evdokia Syranidou (Cyprus University of Technology, Limassol, Cyprus):
The use of microbial cultures with microalgal species for the degradation of bioplastics (PHB and TPS)

Katerina Karkanorachaki (Technical University of Crete, Chania, Greece):
Development of a soil community for the simultaneous degradation of plastics and pesticides in pilot scale bioremediation experiments

Eliana Musmeci (University of Bologna, Italy):
Exploring the microbial colonization and biodegradation of biopolyesters in the marine environment under different ocean acidification scenarios: A field study

Rosaria Capuozzo (University of Bologna, Department of Civil, Chemical, Environmental and Materials Engineering, Italy):
Biodegradation of biopolyesters in an anoxic marine sediment and effects on microbial activities and biodiversity

Caterina Bosticco (Alma Mater University of Bologna, Italy):
Enhancing bioplastics upcycling through optimized enzymatic depolymerization: A step towards circular recovery methods

TOXICITY & RISK

Davide Righetti (University of Verona, Italy):
PFAS contamination on environmental matrices and their impact on microbial cells

WASTE MANAGEMENT (WASTE VALORIZATION) & CIRCULAR ECONOMY

Hubert Byliński (Gdańsk University of Technology, Poland):
Insights into low-thermal pretreatment combined with enzymatic hydrolysis of food waste: Experimental studies

Anshu Shaw (Czech University of Life Sciences Prague, Czechia):
Application of waste filter cakes for growth promotion and production of bioactive substances

Ben Nkapbela (Thomas Jefferson University, Philadelphia, United States):
Using beer and weed to recover critical materials from agricultural waste

Kristýna Kliková (UCT in Prague, Czechia):
The contribution of bacillus in facilitating waste concerete recycling through microbially induced calcite precipitation

Emma Jones (University of Bologna, Bologna, Italy):
Valorization of commercial cellulose acetate plastic from eyewear via polyhydroxyalkanoates production

Tomáš Hašek (UCT in Prague, Czechia):
Endophytic microorganisms and their potential use in agriculture as biofertilizers

Henrietta Ottová (UCT in Prague, Czechia):
Feather: cost-effective solution for sustainable bioconcrete?

Marie Martincová (Czech University of Life Sciences Prague, Czechia):
Monitoring of ATP for an assessment of working indoor air quality

Milena Rousková (Institute of Chemical Process Fundamentals of the Czech Academy of Sciences, Prague, Czechia):
Hydrolytic animal waste processing

František Kaštánek (Institute of Chemical Process Fundamentals of the Czech Academy of Sciences, Prague, Czechia):
Animal hydrolysates as new chelatation and biostimulation agents

WATER POLLUTION & WASTEWATER TREATMENT

Karel Soukup (Institute of Chemical Process Fundamentals of the Czech Academy of Sciences, Prague, Czechia):
Ecological utilization of sewage sludge

Ljuba Zídková (DEKONTA, Dřetovice, Czechia):
Reuse of treated wastewater from the constructed wetland for irrigation of lawn areas

Xiangyu Ji (Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany):
Sorption of road runoff pollutants to wood-derived biochars

Ewa Felis (Silesian University of Technology, Gliwice, Poland):
The influence of contact time of free nitric acid on the activity of functional genes in aob and nob bacteria

Grzegorz Cema (Silesian University of Technology, Gliwice, Poland):
Tertiary treatment of nitrites in denitrification filters following the shortcut nitrification process in the mainstream of wwtp

Adam Sochacki (Czech University of Life Sciences Prague, Czechia):
Partially-saturated constructed wetlands for the enhanced removal of total nitrogen: is there a side-effect on the micropollutants and genes?

Diogo Alexandrino (CIIMAR, Matosinhos, Portugal):
Integrating nanophotocatalysis and biodegradation for improved defluorination efficiencies: The xenohybrid project

Elena Biagi (University of Bologna - Dept. of Civil, Chemical, Environmental and Materials Engineering, Bologna, Italy):
Enrichment and characterization of mixed microbial communities able to biodegrade pharmaceutical compounds

Olga Šolcová (Institute of Chemical Process Fundamentals of the Czech Academy of Sciences, Prague, Czechia):
Waste biomass as effective sorbents for water treatment

Ana M. Gorito (LSRE-LCM, FEUP, Porto, Portugal):
The antibiotic dilemma in aquaculture waters: evaluating ozonation for effective elimination and mitigation of toxicity

Ana M. Gorito (LSRE-LCM, FEUP, Porto, Portugal):
Development of an analytical method for multi-residue micropollutants analysis in water: response surface methodology approach

Joaquin A. Marrero (LSRE-LCM, FEUP, Porto, Portugal):
Enantioselective analytical method to determine chiral antibiotics in aquatic environments

12:00–13:00 **Key note lecture**
Víctor de Lorenzo (Centro Nacional de Biotecnologia, Spain):
Environmental bacteria as authentic (nonmetaphorical) cellfactories

13:00–14:00 **Lunch**

14:00–18:00 **Horizon NYMPHE meeting** – *closed session for NYMPHE partners*
Venue: CTU in Prague, Venue: Bulding B, Room B1, groundfloor

15:30–16:00 **Coffee break**

19:30–23:30 **Gala dinner**

WEDNESDAY 19. 6. 2024

9:00–14:00 **MICROBIAL DIVERSITY AND BIODEGRADATION OF POLLUTANTS**
Chairperson: Prof. Sara Borin, Prof. Rafael Rivilla

9:00–9:40 **Plenary lecture**
Sara Borin (University of Milan):
Rhizoremediation potential in a historical polychlorinated biphenyl polluted site

9:40–10:00 **Lorraine Meyer** (Laboratoire Chrono-Environnement, France):
Role of rhizospheric microorganisms at a mercury-enriched chlor-alkali site

10:00–10:20 **Francesca Mapelli** (University of Milan, Italy):
Ecological interactions favor the selection of microbial communities exploitable for hydrocarbon bioremediation in polluted soil

10:20–10:40 **Francesca Demaria** (University of Applied Sciences and Arts Northwestern, Switzerland):
Analysing microbial community dynamics and pharmaceuticals degradation in lab-scale MBRs under fluctuating micro-pollutant concentration

10:40–11:00 **Coffee break**

11:00–11:40 **Plenary lecture**
Rafael Rivilla (Universidad Autónoma de Madrid):
Inoculants for soil bioremediation from consortia to synthetic communities

11:40–12:00 **Joana P. Fernandes** (University of Porto, Portugal):
Unveiling the potential of microorganisms isolated from estuarine sediments to biodegrade pharmaceuticals

12:00–12:20 **Margarida Pereira** (University of Porto, Portugal):
Development of an autochthonous microbial consortium to assist phytoremediation of metals and pharmaceuticals

12:20–12:40 **Giulia Stilo** (University of Turin, Italy):
Fungal involvement in (bio)plastics degradation in the marine environment

12:40–13:00 **Jofre Herrero Ferran** (Eurecat, Barcelona):
Evaluating the feasibility of the clean-up of hydrocarbon-contaminated soils by mycoaugmentation: the LIFE MySOIL project

13:00–14:00 **Lunch**

14:00–18:00 **Horizon NYMPHE meeting** – *closed session for NYMPHE partners*
Venue: CTU in Prague, Venue: Bulding B, Room B1, groundfloor

15:30-16:00 **Coffee break**

THURSDAY 20. 6. 2024

8:30–11:30 **EU Bioremediation cluster**
Chairpersons: Prof. Nicolas Kalogerakis, Prof. Kateřina Demnerová

8:30–9:10 **Key note lecture**
Nicolas Kalogerakis (Technical University of Crete, Greece):
Biodegradation of plastics and microplastics in agricultural soils

9:10–11:00 Lectures (4 lectures + 1 streamed lecture)

11:00–11:30 **Coffee break**

11:30–12:30 Panel discussion & Q&A with audience

12:30–13:00 **Closing ceremony**
The best poster presentation award
Closing remarks: Prof. Kateřina Demnerová (UCT Prague)