

Sunday 22nd September 2024

Registrations from 16:00

Room A (Rosa & Tulip)

18:00 20:00 Opening Session (Chair: Konstantinos Vorgias)

KL1 **Dong-Woo Lee** Harnessing the extremely thermophilic bacterium *Fervidobacterium islandicum* AW-1 for a sustainable bioeconomyKL2 **Li Huang** *Saccharolobus islandicus* replicative primase is involved in DNA double-strand break repairKL3 **Inês Cardoso Pereira** Dissimilatory sulfate reduction in archaea

Welcome cocktail

Monday 23rd September 202409:00-10:30 Session 1 *Extremophiles* - Room A (Rosa & Tulip)

(Chair: Panagiotis Kastritis)

KL4 **Tessa Quax** Infection mechanisms of tailed haloarchaeal virusesKL5 **Tom Santangelo** RNA Modifications supporting life in the extremesKL6 **Panagiotis Kastritis** Accessing eukaryotic biology and biomolecular structure analysis using the mold *Chaetomium thermophilum* and cryo-electron microscopy

Break

11:00-12:00 Session 2 *Extremophiles* - Room A (Rosa & Tulip)KL7 **Mathias Wilmanns** Discovery of unexpected orphan enzyme function from extremophilic organisms using high-resolution structural biologyKL8 Presentation dedicated to **Mosé Rossi (Moracci)**12:00-13:15 Parallel Session 3a *Extremophiles* - Room A (Rosa & Tulip)

(Chairs: Vasil Gaisin - David Moreira)

Anna TrofimovaOS1 Novel *Thermus* bacteriophages encode CRISPR arrays involved in conflict with mobile genetic elements**Jyothi Basapathi Raghavendra**

OS2 Assessing the lower limits of life detection in extreme environments at the picogram level using nanopore technology

Costantino Vetrani

OS3 The chemosynthetic microbiome of deep-sea hydrothermal vents across space and time

Lara Vimercati

OS4 Unique Antarctic stromatolites reveal diverse taxa and metabolic complexity: implications for the early evolution of life

David Moreira

OS5 Multiple independent adaptations of archaea to hypersaline environments

12:00-13:00 Parallel Session MOSE ROSSI *Extremophiles and Biotechnology* - Room B (Jasmin)

(Chair: Cristina Cattò)

Simone Antonio De Rose

OS6 Rapid discovery and development of enzymes for novel and greener consumer products (RadicalZ)

Cristina Cattò

OS7 Bio-cleaning of graffiti on urban surfaces using extremophilic microorganisms inhabiting spray paints

Alexey FomenkovOS8 complete genome assembly and methylome dissection of two archaeal species *methanococcus aeolicus* PL15/HP and *methanobacterium wolfei* DSM 2970**Marika Gargano**

OS9 Extreme environments for extreme environmental challenges: exploration of a novel thermophilic pet hydrolyzing enzyme

13:15 14:30 LUNCH

14:30-15:30 Parallel Session 4a *Extremophiles* - Room A (Rosa & Tulip)

(Chair: Ok-Sun Kim)

Bledina Dede

OS10 High microbial metabolic versatility in geothermally influenced lakes across a salinity gradient in Danakil Depression

Subin Lee

OS11 A method evaluation for analyzing microbial communities in ice cores of Styx Glacier, Antarctica

Christaline George

OS12 Biogeography of photosynthetic microbial biofilms in the hot springs of Southeast Asia

Jiayi JiangOS13 Engineering *Escherichia coli* for saturated ether-lipid membrane formation14:30-15:30 Parallel Session 4b *Extremophiles and Biotechnology* - Room B (Jasmin)

(Chairs: Bjorn Adalsteinsson - Daniela Giordano)

Naoko Okibe

OS14 utilizing extremophiles for treating mining-impacted waters

Daniela Giordano

OS15 UV-resistant bacteria in antarctic aquatic environment and their biotechnological applications

Elizabeth Watkin

OS16 Microbial ecology of acidic saline lakes in the Yilgarn Craton Western Australia

Bjorn Adalsteinsson

OS17 Characterization and demonstration of thermostable carbohydrate-active enzymes for seaweed bio-processing

15:30-18:00 Poster Session 1

18:00-19:15 Parallel Session 5a *Extremophiles* - Room A (Rosa & Tulip)

(Chairs: Sabine Schwarzer - Christina Foreman)

Federica De LiseOS18 Life in extreme environments: behavior of the hyperthermophilic archaeon *Saccharolobus solfataricus* under stress and Mars simulated conditions**Marco Antonio Jiménez-Santos**

OS19 Seasonal variation of metazoans populations living in cryoconite holes

Sabine Schwarzer

OS20 Host cell binding and infection dynamics of the haloarchaeal virus HFTV1

Christine Foreman

OS21 Microbial response of glacial microbial communities to anthropogenic and microbially produced carbon substrate amendments

Matt Streets

OS22 A strategic method for substantial chemical reduction via advanced forecasting modelling and high-pressure bioreactors in H₂S production management

18:00-19:00 Parallel Session 5b Extremophiles and Biotechnology - Room B (Jasmin)

(Chair: Azadeh Zahra Fatemi)

Andreea-Melisa Tripon

OS23 Contrasting effects of nitrogen- and phosphorus-limiting conditions on polyhydroxybutyrate synthesis in the extremely halotolerant bacterium *Halomonas elongata*

Azadeh Zahra Fatemi

OS24 The ability of extremophilic alkaliphilic Halophilic bacteria isolated from Maharlo lake in Shiraz to remove sulfur from natural gas

Francesca Maria Pia Paragliola

OS25 Some like it hot: uncovering novel carbohydrate-active enzyme from Pisciarelli hot spring metagenome

Open Discussion

ISE meeting

Tuesday 24th September 2024**09:00-10:30 Session 6 Room A (Rosa & Tulip)**

(Chair: Nicola Curci)

Beatrice Cobucci Ponzano

KL9 Flexibility and regulation of genetic code decoding via translational recoding in archaea

John van der Oost

KL10 Thermophilic nucleases - from biology to biotechnology

Simon Rittmann

KL11 CO₂-fixation by a thermophilic archaeon for proteinogenic amino acid production

Break

11:00-12:00 Session 7 Room A (Rosa & Tulip)

(Chair: Takuro Nunoura)

Purificacion Lopez-García

KL12 Adaptations and metabolic flexibility of diverse archaea thriving in geothermal chaotropic brines near life limits

Takuro Nunoura

KL13 Identification of novel reactions in well-known metabolic pathways using a high-resolution MS system

12:00-13:15 Parallel Session 8a Physiology of Extremophiles - Room A (Rosa & Tulip)

(Chairs: Tatsuo Kurihara - Xiuzhu Dong)

Anandi Tamby

OS26 Physiological adaptations to multiple environmental parameters in an anaerobe from the Black Sea

Xiuzhu Dong

OS27 Extracellular electron transfer drives efficient H₂-independent methylotrophic methanogenesis by *Methanomassiliococcus*, a seventh order methanogen

Tatsuo Kurihara

OS28 Involvement of capsular polysaccharide in the biogenesis of extracellular membrane vesicles of *Shewanella vesiculosa* HM13

Irene Sanchez Andrea

OS29 Novel ammonification mechanism in *Acidithiobacillus acetoxidans*, coupled to NO detoxification at low pH

Aleksei Samolygo

OS30 Nuances of type III CRISPR-Cas systems in *Thermus thermophilus*

12:00-13:00 Parallel Session 8b Extremophiles and Biotechnology - Room B (Jasmin)

(Chairs: Sara Cantera - Xu Feng)

Sara Cantera

OS31 Extremophilic cell platforms for CO₂ valorization into pharm and cosmetic ingredients.

Xu Feng

OS32 A thermophilic TnpB nuclease enables flexible single-nucleotide editing with templated repair in archaea and bacteria

Vincenzo Zammuto

OS33 Biotechnological potentialities of exopolymers produced by bacilli of shallow hydrothermal vent origin

Nicola Curci

OS34 Xyloglucan oligosaccharides hydrolysis exploration by three exo-glycosidases from *S. solfataricus*

13:00 14:30 LUNCH

EXCURSION AND DINNER

Wednesday 25th September 2024**09:00-10:00 Session 9 - Room A (Rosa & Tulip)**

(Chair: Fengping Wang)

Wolfgang Streit

KL14 Plastic pollution, a global challenge: Extremozymes as useful tools for plastic recycling

Fengping Wang

KL15 MCT-S: Microbially mediated Carbon Transformation in marine Sediments

10:00-11:00 Parallel Session 10a Physiology of Extremophiles - Room A (Rosa & Tulip)

(Chairs: Costantino Vetriani - Mohamed Jebbar Jebbar)

Masahiro Ito

OS35 A comparative study of cesium ion resistance in alkaliphilic *Microbacterium* sp. TS-1 and *Escherichia coli* ZX-1

Vasil Gaisin

OS36 A novel contractile injection system in extremophilic bacteria

Mohamed Jebbar

OS37 *Thermococcus Barophilus* adapts to high hydrostatic pressure by modulating its metabolism

Donato Giovannelli

OS38 Trace metal availability controls metabolic shifts in microorganisms

10:00-11:00 Parallel Session 10b Extremophiles and Biotechnology - Room B (Jasmin)
(Chairs: Angeliki Sitara - Angela Casillo)**Kristy Chang****OS39** Differential gene expression of scCO₂ tolerant *Priestia megaterium* SR7 under variable growth rate and end-product toxicity during continuous flow under an ambient atmosphere.**Oriana Sacco****OS40** A new archaeal Amylomaltase from metagenomic dataset of extreme environments**Angeliki Sitara****OS41** Exploiting CRISPR in *Thermoanaerobacter kivui***Angela Casillo****OS42** Investigating the surface glycans from the psychrotolerant bacterium *shewanella vesiculosa* HM13**Break****11:30-12:45 Parallel Session 11a Physiology of Extremophiles - Room A (Rosa & Tulip)**
(Chairs: Heidi Smith - Javiera Norambuena)**Mirko Basen****OS43** Evolving thermophiles to thrive at suboptimal temperatures**Kesen Ma****OS44** A novel alcohol dehydrogenase from *Hyperthermus butylicus***Heidi Smith****OS45** Cold active biosurfactants: An adaptive strategy for enhanced survival across environmental extremes**Haruyuki Atomi****OS46** Cofactor and amino acid metabolism in the hyperthermophilic archaeon *Thermococcus kodakarensis***Javiera Norambuena****OS47** Novel low molecular weight thiols in Nitrospiraceae**11:30-12:45 Parallel Session 11b Extremophiles and Biotechnology - Room B (Jasmin)**
(Chairs: Stefan Janecek - Onur Kirtel)**Georgios Kontellias****OS48** Sustainable degradation of keratin waste using thermophilic enzymes: thermok**Martina Aulitto****OS49** Discovery of novel glycosyl hydrolases from extreme environments: insights from magma degassing at Vulcano Island**Onur Kirtel****OS50** Post-capture desorption of CO₂ via extremophilic amidases**Stefan Janecek****OS51** Division of the extremophilic family GH57 into subfamilies**Maria Michela Corsaro****OS52** Structural determination of the polysaccharide portion of the catasan complex**12:45 14:00 Lunch and POSTER SESSION-2****14:00-15:00 Parallel Session 12a System Biology of Extremophiles - Room A (Rosa & Tulip)**
(Chairs: Gaël Erauso - Khaleque Himel Nahreen)**Himel Nahreen Khaleque****OS53** Biomining with salt and acid-loving extremophiles**Zackary Jay****OS54** Methylo-trophic methanogenesis in thermophilic *Korarchaeia*, *Methanomethylica* and *Archaeoglobi* revealed by cultivation, visualization, stable isotope tracing, genomics and transcriptomics.**Gaël Erauso****OS55** Chemotrophic carbon fixation in the prony bay alkaline hydrothermal field**Francisco Issotta****OS56** Diversity within species in South American terrestrial hydrothermal systems**14:00-15:00 Parallel Session 12b Extremophiles and Sustainable Future - Room B (Jasmin)**
(Chairs: Elisa Huang Lin - Mauro Di Fenza)**Clemens Rausch****OS57** Espresso solo con *S. aci*? Growth of *Sulfolobus acidocaldarius* on spent coffee ground hydrolysates**Elisa Huang Lin****OS58** *Guyparkeria halophila* as a very efficient microbial platform for the circularization of carbon dioxide and thiosulfate into fine chemicals for the pharmaceutical industry**Mohamed A. M. Mostafa****OS59** Gene expression under stress conditions in the Thermophilic PHA-producing bacterium *caldimonas thermodepolymerans***Sreemoyee Mitra****OS60** *Bacillus altitudinus* sp. OQ983889- A novel halotolerant, soil fertility enhancer and heavy metal reducer isolated from the Indian Sundarbans**Break****15:30-16:45 Parallel Session 13a System Biology of Extremophiles - Room A (Rosa & Tulip)**
(Chairs: Manrique De La Cuba - Matteo Selci)**Matteo Selci****OS61** From deep-sea volcanoes to human pathogens: evolutionary adaptations in *Campylobacterota***Pamela Knoll****OS62** Biological and non-biogenic filamentous mineralization**Maria Fernanda Manrique De La Cuba****OS63** Cold adaptations in bacterial symbionts from Antarctic sponges: What differentiates host-related and free-living bacteria?**Memory Tekere****OS64** Extremophiles of contaminated Environments: surviving harsh metabolic and toxic settings**15:30-16:30 Parallel Session 13b Extremophiles and Sustainable Future Future - Room B (Jasmin)**
(Chairs: Miguel Paredes-Barrada - Roberta Iacono)**Miguel Paredes-Barrada****OS65** Towards the establishment of Thermophilic methanol-based microbial cell factories: rewiring the metabolism of *p. thermoglucosidasius* for methanol dependency.**Ahmad Ali Pourbabae****OS66** Screening for pahs-degrading bacteria from oil-contaminated saline soil and using real time PCR to assess changes in catechol 2, 3-dioxygenase and *alkB* gene copy number**Mauro Di Fenza****OS67** Leveraging extremophiles for advanced bioprocesses in Europe through Industrial Biotechnology and the IBISBA Research Infrastructure**Roberta Iacono****OS68** Valorization of biomasses from energy crops for the discovery of novel thermophilic glycoside hydrolases through metagenomic analysis

Thursday 26th September 2024

09:00-10:00 Session 14 - Room A (Rosa & Tulip)

(Chair: Ondrej Uhlík)

Sung Gyun Kang

KL16 Biohydrogen production from industrial by-product gas using a hyperthermophilic archaeon, *Thermococcus onnurineus* NA1

Ondrej Uhlík

KL17 Phylogenetic novelty of prokaryotes in subsurface thermal waters of cultural heritage significance

Break

10:30-11:45 Session 15 *Extremophiles and Sustainable Future* - Room A (Rosa & Tulip)

(Chairs: Patrizia Contursi - Michael Schlömann)

Ali Shaikh Ibrahim

OS69 A novel thermostable enzymatic cocktail from extremophilic microorganisms for transforming carbohydrates in lignocellulosic waste biomass

Alessia Di Fraia

OS70 Sustainable nanotechnology: silver nanoparticle production using secretomes of *Geobacillus stearothermophilus* GF16

Gabriella Fiorentino

OS71 Genomic mining of *Geobacillus stearothermophilus* GF16 for xylose production from hemicellulose-rich biomasses using secreted enzymes

Patrizia Contursi

OS72 Thermophilic biocatalysts for agri-food waste valorization into functional bioproducts

Michael Schlömann

OS73 *Acidiphilium acidophilum* CJR1, an Arsenite-oxidizing Autotrophic Acidophile: Physiology and the Transcriptomic Response to As(III)