

Sunday 16th September

- 16:30 Registration
18:30 **Opening Ceremony**
19:00 S.V. Albers (GER)
How archaea swim: the archaellum
20:00 Welcome Reception

Monday 17th September

MICROBIAL ECOLOGY

Chairpersons: A. Strazzulli – C. Schleper

- 9:00 **K1 B.P. Hedlund (USA)**
The diversity and evolution of incomplete denitrification pathways in Deinococcus-Thermus
9:30 **OS1 D. Daffonchio (SAU)**
The hydrocarbon degradation potential of the seawater microbiome in the red sea
9.50 **OS2 M. Lopez-Fernandez (GER)**
Viable and active microorganisms in the deep terrestrial biosphere
10:10 **OS3 L. Procházková (CZE)**
The snow alga *Chloromonas krienitzii* from the high tatra (poland): ecophysiology and morphology
10:30 Coffee Break

ROOM A - PHYSIOLOGY AND METABOLISM

Chairpersons: P. Schönheit – O. Golyshina

- 11:00 **K2 M.W. Adams (USA)**
Structure and function of respiratory complexes in Sulfur-reducing hyperthermophilic Archaea
11:30 **OS4 T. Oshima (JPN)**
Unique polyamines in an extreme thermophile, *Thermus thermophilus*; their biosynthetic pathways and roles in life at high temperatures
11:50 **OS5 K. Hagiwara (USA)**
High field NMR-based analysis of metabolite pools in the marine hyperthermophile *Thermococcus onnurineus* NA1 and the extreme thermophile *Rhodothermus marinus*
12:10 **OS6 L. Huang (CHN)**
Insights into the functions of the Ne-acetyltransferase Pat and the N-terminal acetyltransferase Ard1 from *Sulfolobus islandicus*

ROOM B - GENOMIC AND GENE EXPRESSION

Chairpersons: M. White – P. Londei

- 11:00 **K3 D. Soll (GER)**
Natural non-canonical amino acids and the genetic code
11:30 **OS7 A. Fomenkov (USA)**
Complete genome and Methyloome analysis of *Deinococcus radiodurans* NEB 479

- 11:50 **OS8 E. Toksoy Oner (TUR)**
Genome-scale metabolic model reconstruction of *Brevibacillus thermoruber* 423
- 12:10 **OS9 T. Kanai (JPN)**
Identification of a transcriptional activator for genes involved in tryptophan biosynthesis in *Thermococcus kodakarensis*

12:30 **Terrace - Group photo**

- 12:40 Lunch
<Lunch meeting for editorial members of *Extremophiles Journal*>

ROOM A - BIOTECHNOLOGY OF EXTREMOPHILES

Chairpersons: G. Perugino – M. Jebbar

- 14:00 **K4 G. Antranikian (GER)**
Analysis of extreme thermophilic communities and their enzymes applying integrative multi-omic approach
- 14:30 **OS10 P. Golyshin (UK)**
Enzyme discovery from marine microbial biodiversity hotspots
- 14:50 **OS11 A. Bellack (GER)**
Microbial biosynthesis of methane in a trickle bed reactor for power-to-gas applications

15:10 - 15:30 SNEAK PEEK OF POSTER SESSION (ODD NUMBERS)

- FH1 N. Guilianì (CHL)**
Regulation Network of Pel exopolysaccharide biosynthesis in acidophilic bacterium *Acidithiobacillus thiooxidans*
- FH2 A. B. Kusuma (UK)**
Bioprospecting of Actinobacteria from unexplored Indonesian extremophilic biospheres for antimicrobial drug discovery: a pioneering campaign

ROOM B - ASTROBIOLOGY AND ANALOGS OF OTHER PLANETS

Chairpersons: S. Onofri – D. Cowan

- 14:00 **K5 D. Giovannelli (JPN)**
Extremophiles impact on volatile cycling at subduction zones
- 14:30 **OS12 A. Antunes (UK)**
Exploring deep-sea brines as potential terrestrial analogues of oceans in the icy moons of the outer solar system
- 14:50 **OS13 P. Di Donato (ITA)**
Resistance of Extremophiles in space simulated conditions

15:10 - 15:30 SNEAK PEEK OF POSTER SESSION (ODD NUMBERS)

- FH3 H. Laurent (UK)**
The biological role of water in extreme conditions
- FH4 Z. Harrold (USA)**
Investigating the value of Atomic Force Microscopy and force distance measurements for biosignature detection in Europe-analogue samples

- 15:30 Coffee Break

ROOM A - EVOLUTION AND ADAPTATION TO EXTREME CONDITIONS

Chairpersons: M. Corsaro – B. Hedlund

- 16:00 **OL1 M. Podar (USA)**
Global biogeography and evolution of the Nanoarchaeota
- 16:30 **OS14 J. Di Ruggiero (USA)**
Diversity and adaptive traits of endolithic microbial communities at the dry limit of life
- 16:50 **OS15 M. Yakimov (ITA)**
Evolutionary and physiological aspects of novel sulfur-respiring deep-sea haloarchaea

17:10 - 17:30 SNEAK PEEK OF POSTER SESSION (ODD NUMBERS)

FH5 C. Gonzalez (CHL)

Forces shaping microbial speciation in extremely acidic environments

FH6 L. Blanchard (FRA)

Extreme resistance of *Deinococcus* bacteria to radiation and desiccation: mechanisms & regulation

MICROBIAL ECOLOGY

Chairpersons: B. Siebers – S. DasSarma

- 17:30 **K6 O. Golyshina (UK)**
Cuniculiplasmataceae archaea, their “ARMAN”-related sentinels and other hyperacidophilic community neighbours
- 18:00 **OL3 N. Ravin (RUS)**
A metagenomic insight into the 2 km-deep subsurface aquifer in Western Siberia revealed taxonomically and functionally diverse microbial community
- 18:30 **OL4 G. Erauso (FRA)**
Comparative metagenomics highlighted a core of metabolic capabilities in multiple serpentinizing ecosystems
- 19:00 **OS18 A. Romani (ESP)**
Biofilms developing in salty lagoons sediments

ROOM B - BIOTECHNOLOGY OF EXTREMOPHILES

Chairpersons: G. Fiorentino – I. Cann

- 16:00 **OL2 T. Tamura (JPN)**
Invention of protein thermal refolding (ptr)
- 16:30 **OS16 A. Soares Rosado (BRA)**
Chasing novel carbon assimilation and nitrogen fixation systems in a thermophilic and autotrophic bacterial consortium
- 16:50 **OS17 O.F. Restaino (ITA)**
Biotechnological processes for high yield manufacturing of three recombinant thermophilic phosphotriesterases useful as bioremediation tools and bioscavengers.

17:10 - 17:30 SNEAK PEEK OF POSTER SESSION (ODD NUMBERS)

FH7 C. de Carvalho (POR)

Culturomics approach for the isolation of halophilic strains

FH8 S. Christel (SWE)

Low-rate iron oxidation by *Sulfobacillus* thermosulfidoxidans increases efficiency of microbially catalyzed copper extraction

- 17:30 VIRUS & CRISPRS**
Chairperson: Y. Ishino
- 17:30 **K7 M. White (UK)**
Synthesis and degradation of cyclic oligoadenylate: a new antiviral second messenger
- 18:00 **K8 E. Koonin (USA)**
CRISPR and anti-CRISPR proteins in archaea and archaeal viruses
- 18:30 **K9 M. Terns (USA)**
Cas4 nucleases define the PAM, length, and orientation of DNA fragments integrated at CRISPR loci
- 19:00 **OS19 V. Da Cunha (FRA)**
Mobile Genetic Element diversity and evolution in 100 Thermococcales genomes

ROOM A

19:15 – 20:00 MEETING OF THE INTERNATIONAL SOCIETY FOR EXTREMOPHILES-ISE

Tuesday 18th September

09:00 - 12:00 Excursion

12:30 Lunch

ROOM A - EVOLUTION AND ADAPTATION TO EXTREME CONDITIONS

Chairpersons: D. Madern – H. Atomi

- 14:00 **K10 A. Ventosa (ESP)**
Microbiota of hypersaline environments: saline soils versus salterns
- 14:30 **OS20 N. Birkeland (NOR)**
Methane oxidation by extremophilic verrucomicrobia adapted to acidic geothermal environments
- 14:50 **OS21 F. Sterpone (FRA)**
Is mechanical rigidity necessary for protein adaptation to high temperatures?

15:10 - 15:30 SNEAK PEEK OF POSTER SESSION (ODD NUMBERS)

FH9 L. Lemmens (SWE)

A GntR-like transcription factor regulates the expression of membrane proteins in the thermoacidophilic archaeon *Sulfolobus acidocaldarius*

FH10 S. Filker (GER)

A kingdom for a sack of salt: protists in need

ROOM B - GENOMIC AND GENE EXPRESSION

Chairpersons: M. Terns – P. Contursi

- 14:00 **OL5 H. Becker (FRA)**
RNA-Seq reveals an archaeal RNA ligase with circularization activity
- 14:30 **OS22 G. Michoud (SAU)**
Redundant nitrogen cycle processes variants at the oxic-anoxic transitions of deep-sea haloclines
- 14:50 **OS23 E. Peeters (BEL)**
Archaeal transcription factors: from understanding natural regulatory mechanisms towards their exploitation to engineer bacterial gene regulation

15:10 – 15:30 SNEAK PEEK OF POSTER SESSION (ODD NUMBERS)

FH11 C. Ciniglia (ITA)

The polyextremophilic cyanodiophytina (rhodophyta): evolution, metabolism and biotechnological perspectives

FH12 S.J. Davis (UK)

Complete assemblies of *Galdieria sulphuraria* eukariotic chromosomes from oxford nanopore sequencing

15:30 POSTER SESSION & COFFEE BREAK (ODD NUMBERS AND FH1-FH12)

ROOM A - DNA REPLICATION & REPAIR

Chairpersons: Z. Kelman – K. Stedman

17:30 K11 M. Ciaramella (ITA)

Peculiar hyperthermophilic genome-protecting enzymes: new techniques, applications and perspectives

18:00 K12 Y. Ishino (JPN)

Different functions of the two Cdc45/RecJ proteins for replication fork progression in *Thermococcus kodakarensis*

18:30 OS24 R.J. Stanley (USA)

Electron transfer-driven DNA repair in extremophiles or when is fast enough?

18:50 OS25 I. Cann (USA)

Biochemical and evolutionary analyses of a ssDNA-binding protein family widely distributed in the Euryarchaeota

19:10-19:20 SNEAK PEEK OF POSTER SESSION (EVEN NUMBERS)

FH13 Y. Shen (CHN)

The archaeal atpase *atpA* interacts with the helicase *hjm* via its carboxyl terminal kh domain remodeling and processing replication fork and holliday junction

ROOM B - POLAR ENVIRONMENTS

Chairpersons: M. Yakimov – N. Birkeland

17:30 K13 J.M. Blamey (CHL)

Coexistence of unusual microbial biodiversity within Antarctica

18:00 K14 M.M. Corsaro (ITA)

Bacterial life in cold environments: the role of extracellular polysaccharides in the adaptation mechanisms

18:30 OS26 K.E. Kendrick (UK)

Measuring the adapted low temperature resilience of cold shock proteins

18:50 OS27 S. Archer (NZL)

Out of thin air: Ecological roles of airborne microorganisms in Antarctica

19:10-19:20 SNEAK PEEK OF POSTER SESSION (EVEN NUMBERS)

FH14 M. Mangiagalli (ITA)

Life at sub-zero temperatures: two ice binding proteins from an Antarctic ciliate

Wednesday 19th September

ROOM A - PHYSIOLOGY AND METABOLISM

Chairpersons: B. Cobucci-Ponzano – T. Kurihara

- 9:00 **K15 C. Vetriani (USA)**
Ecophysiology of chemosynthetic microbial biofilms at a shallow-water gas vent in the Tyrrhenian Sea
- 9:30 **OS28 P. Schonheit (GER)**
Comparative analysis of allosteric properties of archaeal pyruvate kinases: 3-Phosphoglycerate, a novel allosteric activator of PKs from Thermoproteales
- 9:50 **OS29 M. Jebbar (FRA)**
Genetics and physiology of adaptation to high hydrostatic pressure in a piezo-hyperthermophilic archaeon *Thermococcus barophilus*

10:10 - 10:30 SNEAK PEEK OF POSTER SESSION (EVEN NUMBERS)

FH15 M. Basen (GER)

Physiological and genetic studies of sugar metabolism in the thermophilic acetogenic bacterium *Thermoanaerobacter kivui*

FH16 I. Kublanov (RUS)

Sugar metabolism of the first thermophilic planctomycete *Thermogutta terrifontis*

ROOM A - BIOTECHNOLOGY OF EXTREMOPHILES

Chairpersons: H. Santos – E. Bonch-Osmolovskaya

10:30 - 12:50 SNEAK PEEK OF POSTER SESSION (EVEN NUMBERS)

FH17 S. Fusco (ITA)

Robust virus particles as suitable scaffolds for the immobilization of enzymes for biorefinery applications

FH18 J. Mertens (SA)

From Antarctic DNA to Stress Tolerant Plants - The WHY Protein Domain

ROOM B - MICROBIAL ECOLOGY

Chairperson: J. Blamey

10:30 -10:50 SNEAK PEEK OF POSTER SESSION (EVEN NUMBERS)

FH19 O. Vilhelmsson (ISL)

Dehalogenating bacteria from natural methane seeps in Iceland

FH20 L. Cyclic (PAK)

Metagenomic diversity of indigenous microflora inhabiting the cold saline Borith Lake, situated at the base of Karakoram, Pakistan

10:50 POSTER SESSION & COFFEE BREAK (EVEN NUMBERS AND FH13-FH20)

12:50 Lunch

ROOM A - BIOTECHNOLOGY OF EXTREMOPHILES

Chairpersons: H. Santos – E. Bonch-Osmolovskaya

OL6 A. Sunna (AUS)

Bioconversion of organic waste using a cell-free synthetic pathway

- 14:50 **OS30 E.L.J. Watkin (AUS)**
Acidihalobacter: novel, halotolerant, iron-and sulfur oxidizing acidophiles with potential for saline water bioleaching
- 15:10 **OS31 N.M. Mesbah (EGY)**
Halophilic, alkalithermophilic glycosidases from the wadi an natrun, Egypt and their biotechnological applications

ROOM B - MICROBIAL ECOLOGY

Chairperson: J. Blamey

- 14:20 **OL7 P. Amato (FRA)**
How does it feel to live in clouds? Cloud water metatranscriptomics
- 14:50 **OS32 Z. Xie (CHN)**
Antioxidant defense contribute to the high pressure and low temperature adaptation of the deep-sea bacterium *Shewanella piezotolerans* WP3
- 15:10 **OS33 J. Macalady (USA)**
Mapping the composition of subsurface acidophile biofilms
- 15:30 Coffee Break

ROOM A - PHYSIOLOGY AND METABOLISM

Chairpersons: M. Tutino – R. Kelly

- 16:00 **K16 H. Atomi (JPN)**
Central carbon metabolism in *Thermococcus kodakarensis*
- 16:30 **OS34 B. Siebers (GER)**
Thermophilic archaea from genome to function and application
- 16:50 **OS35 H. Hemmi (JPN)**
A novel modified mevalonate pathway identified from a hyperthermophilic archaeon *Aeropyrum pernix*
- 17:10 **OS36 A. Daebeler (AUT)**
Exploring the metabolic versatility of *Candidatus Nitrosocaldus islandicus*, an obligately thermophilic, ammonia-oxidizing Thaumarchaeon

ROOM B - ASTROBIOLOGY AND ANALOGS OF OTHER PLANETS

Chairpersons: M. Voytek – D. Giovannelli

- 16:00 **K17 S. DasSarma (USA)**
Extremophilic models for astrobiology
- 16:30 **OS37 S. Onofri (ITA)**
The amazing journey of *Cryomyces antarcticus* from the antarctic to space
- 16:50 **OS38 M. Macey (UK)**
Simulating martian environments for microbial growth experiments
- 17:10 **OS39 N. La Rocca (ITA)**
Photosynthesis under simulated red dwarf star light: exploring the limits of par radiation
- 20:45 Banquet and Awards Ceremony (Poster and ISE)**

Thursday 20th September

BIOTECHNOLOGY OF EXTREMOPHILES

Chairpersons: G. Antranikian – M. Adams

- 9:00 **K18 R. Kelly (USA)**
Extreme thermophiles as metabolic engineering platforms: challenges and opportunities
- 9:30 **OS40 A. Fontana (ITA)**
Hydrogen and lactic acid metabolism in *Thermotoga neapolitana*
- 9:50 **OS41 P. DasSarma (USA)**
An archaeal therapeutic drug and antigen delivery system employing buoyant, bio-engineerable proteinaceous nanoparticles
- 10:10 **OS42 P. Contursi (ITA)**
VLL-28 is a bioactive peptide from the Archaea kingdom showing antimicrobial, anti-fungal and antitumor activities

MICROBIAL ECOLOGY

- 10:30 **K19 C. Schleper (GER)**
The hot origins and mesophilic adaptations of ammonia oxidizing thaumarchaea deciphered by ancestral reconstructions
- 11:00 Coffee Break
- Chairpersons: M. Moracci – C. Vetriani*
- 11:30 **Closing 1 D. Cowan (SAR)**
Cold and dry in South Victoria Land, Antarctica
- 12:15 **Closing 2 M. Voytek (USA)**
Astrobiology: Extremophiles to Life Beyond Earth
- 13:00 Closing Ceremony
- 13:30 End