5TH MEETING OF THE MEXICAN NETWORK OF EXTREMOPHILES

MONTERREY 2023

INTERNATIONAL WORKSHOP OF EXTREMOPHILES AND EXTREME ECOSYSTEMS

FIRST BILATERAL MEETING OF MEXICAN AND SPANISH EXTREMOPHILES NETWORKS

KEYNOTE SPEAKERS

Luc Dendooven
Josefa Antón
Ramón Rossello-Mora
David Moreira
Francisco Rodríguez-Valera
Purificación López
Asunción de los Ríos
Juan M. González

REGISTRATION

Extended early Registration date:
March 15th to July 15th

INFORMATION

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DATE & VENUE

October 21st -24th

Auditorium Reyes Tamez
Autonomous Univ. of Nuevo Leon

SPONSORS & ORGANIZERS

RED MEXICANA DE EXTREMÓFILOS
Universidad Autónoma del Estado de Morelos
Casa abierta al tiempo

RED MEXICANA DE EXTREMÓFILO

SCHEDULE

SATURDAY, OCTOBER 21ST

09:30 – 15:00 CULTURAL ACTIVITY – Monterrey Tour

14:00 – 16:00 REGISTRATION

17:30 – 17:45 WELCOME WORDS

17:45 – 18:30 CULTURAL TALK

Orígenes del noreste
David Canales Martínez

INAUGURAL CONFERENCE

18:30 – 19:30
Contribution of Genomics to the microbiology of extremophiles
Francisco Rodríguez-Valera

19:30 – 20:30 WELCOMING COCKTAIL

SUNDAY, OCTOBER 22ND

KEYNOTE SPEAKER

09:00 – 9:35
Virus-host interactions in hypersaline environments
Josefa Antón

SELECTED TALKS

09:35 – 09:55
Dichromanthus cinnabarinus in saline soil adjacent to the protected natural area Texcoco Lake
Rogelio Carrillo-González

09:55 – 10:15
Evaluation of the biotechnological potential and molecules of biomedical interest in extremophile bacteria from Laguna Salada, Baja California, Mexico
Ninfa Ramírez Durán

SELECTED TALKS

10:15 – 10:35
Dynamics of extreme halophilic microbial and viral communities submitted to osmotic disturbances over 813 days
Esteban Bustos Caparrós

KEYNOTE SPEAKER

10:35 – 11:05
Phylogenomic exploration of multiple adaptations to extreme halophily in archaea
David Moreira

11:10 – 11:40 COFFEE BREAK

KEYNOTE SPEAKER

11:40 – 12:15
Unraveling the presence and function of non-methylotrophic methanogenic communities in hypersaline microbial mats from Guerrero Negro, Mexico
José Q. García Maldonado

SELECTED TALKS

12:15 – 12:35
Discovery of Bioactive Metabolites from polyextremophilic red microalga Galdieria USBA-GBX-832
Gina Pilar López Ramírez

12:35 – 12:55
Bacterioruberin and fructans from halophilic archaea and their health potential
Rosa María Camacho

12:55 – 13:10
Química Valaner
Sponsor presentation

13:10 – 15:00 LUNCH

KEYNOTE SPEAKER

15:00 – 15:35 *Cultured and uncultured prokaryote classification and naming following the Bacteriological Code (ICNP) or the SeqCode: The example of Salinibacter*
Ramon Rossello-Mora

FLASH POSTER PRESENTATIONS

15:35 – 16:00 *S1-6: Molecular identification of yeasts present in two artisan mezcal fermentations in Oaxaca*
Víctor Adrián Espinoza Martínez

S1-17: Bioinformatic analysis of structure and modelling the halophilic enzyme from Haloarcula marismortui
Diego Pelayo Soltero

S1-27: Degradation of nonsteroidal anti-inflammatory drugs by extremotolerant bacteria
Claudia Soria Camargo

S1-31: Production and evaluation of secreted proteases by Nesterenkonia sp. LNSP9103-1 and Halobacillus sp. LNHM4103-1
Luna Montserrat Cruz García

S1-34: Antioxidant and antimicrobial activity of the extract of an isolate of haloarchaea
Diana Nancy Cruz Luna

16:00 – 18:00 **POSTER SESSION 1**

MONDAY, OCTOBER 23RD

KEYNOTE SPEAKER

09:00 – 09:35 *Understanding life at high temperatures*
Juan M. González

SELECTED TALKS

09:35 – 09:55 *Geobacillus thermoleovorans CCR11 thermoalkaliphilic recombinant lipase immobilization via cross-linked enzyme aggregates: production and characterization*
Maria Guadalupe Sanchez Otero

09:55 – 10:15 *Extremophile microorganism trends in microbiomes of Chichonal Volcano plants*
Elva T. Arechiga Carvajal

10:15 – 10:35 *Isolation of polyethylene terephthalate PET-degrading bacteria from Antarctic marine sediments*
Carolina Rubiano Labrador

KEYNOTE SPEAKER

10:35 – 11:05 *A tour to the microbial world of the Danakil Depression: from polyextreme to early Earth analog ecosystems*
Purificación López

11:10 – 11:40 **COFFEE BREAK**

KEYNOTE SPEAKER

11:40 – 12:15 *Are microbes awake during the polar night? An integrated metabarcoding, metagenomics, synchrotron infrared imaging study*
Patricia Valdespino

SELECTED TALKS

12:15 – 12:35 *Microscopy Tools to Study Arbuscular Fungi and Plant-Growth-Promoting Bacteria in Metal Polluted Soils*
Ma. del Carmen A. González Chávez

12:35 – 12:55 *Fantastic microorganisms and where to find them*
Peggy E. Álvarez Gutiérrez

POSTER SESSIONS

S2-71	*Characterization of Operons and Metabolic Pathways Governing Secondary Metabolite Production in Pseudomonas asiatica, a Bacterium Associated with Kluyveromyces marxianus*	Debany Marlen Valdez Rodríguez
S2-72	*Comparison of environmental adaptability between some polyextremotolerant Actinomycetal isolates from Cuatro Ciénegas, Coahuila*	Martha Adriana Martínez Olivas
S2-73	*Metagenome-assembled genomes (MAG´s) from Thermoplasmatales archaea recovered from a metagenome from a steam vent in Los Azufres geothermal field*	Roberto Marín Paredes
S2-74	*Production and immobilization in copper alginate gel beads of native thermophilic laccase (TtLacA) from the thermophilic biomass-degrading fungus Thielavia terrestris Co3Bag1*	Marina Gutiérrez Antón
S2-75	*Screening of the plant growth promoting properties of bacteria isolated from the active volcano "El Chichon"*	Juan José Hernández González
S2-76	*Identification of black varnish fungi of the Samalayuca desert, Chihuahua, Mexico*	Víctor A. López Ruiz
S2-77	*Analyzing the variances resulting from diverse extraction and purification methods employed, this study focuses on characterizing β-glucans produced by the BMA2 [a2b2 Δ rim101:: hyg] strain of Ustilago maydis*	Cristina Lizbeth Sifuentes Estrada
S2-78	*Production and extraction of mannosylerythritol (MEL) biosurfactant from Ustilago maydis, FMA2 strain, NRG1 gene, using different precursors and growth conditions*	Julia Alexsandra González Villarreal
S2-79	*B-galactosidase, a TIM barrel enzyme diversified by convergence or early evolution diversity in extremophiles*	Héctor Gilberto Vázquez López
S2-80	*Effect of As5+ on the production of the yellow pigment of Microbacterium sp. M24*	Fernando Gabriel Santana Vergara
S2-81	*From folklore to science: antimicrobial activity of a plant species endemic to the Dominican Republic against agents that cause otitis*	Alexander Valdez Disla
S2-82	*Qualitative characterization of indigenous hydrocarbon-tolerant bacteria isolated from the coast of Rosarito Port, Baja California, Mexico*	Hortencia Silva Jiménez

Identification of black varnish fungi of the Samalayuca desert, Chihuahua, Mexico

Marisela Aguirre-Ramírez, Víctor Antonio López-Ruiz, Fernando López Mora, Pável Ulianov Martínez-Pabello, María Colín García, Paulina Del Valle Pérez y Aldo Izaguirre Pompa

Rock varnish is a thin mineral layer that forms on rock surfaces, it is commonly found in arid and desert environments. Rock varnish is mainly composed of clays, Fe and Mn oxides, and other elements such as Si, Al, Mg, Ca, Ba and Ce, among others (Dorn & Oberlander, 1981). Its formation depends on abiotic processes, such as variable mineral deposition cycles, and/or biological processes involving Fe and Mn mineralizing microorganisms.

Black fungi are a polyphyletic group that are usually associated with rocks in arid areas. Several species have been found in desert varnishes, among which black fungi, also known as black desert fungi, belonging to the Ascomycota class (Gorbushina & Broughton, 2009). These fungi accumulate melanin in their wall, to protect themselves from UV radiation and other environmental stressors. Black fungi of the classes Alternaria, Cladosporium, Dothideomycetes and Eurotiomycetes classes have also been identified on desert varnishes (Sterflinger & Prillinger, 2001; Gorbushina & Broughton, 2009).

In the northern desert of Mexico, the mountain range is mainly composed by sandstone that the potential to form and retain the varnish; and they also present associated black fungi (López-Ruiz et al., 2022). In this work, isolated five different fungi morphotypes from Samalayuca's varnishes, Chihuahua were characterized microscopically and identified at the molecular level. The role of these species in the possible biological contribution to varnish formation will be discussed.

Dorn & Oberlander (1981) Science, 213(4508): 1015-1017.
Gorbushina & Broughton (2009) Annual Review of Microbiology, 63: 431-450.
López-Ruiz *et al*. (2022) 4th Meeting of Mexican Network of Extremophiles. Poster S1-21.
Sterflinger & Prillinger (2001) Antonie van Leeuwenhoek, 80(4): 275-286.