4TH MEETING OF THE MEXICAN NETWORK OF

EXTREMOPHILES

International Workshop on Extremophiles and Extreme Ecosystems

ABSTRACT BOOK

RED MEXICANA DE EXTREMÓFILOS

Cinvestav Unidad Mérida

UNIVERSIDAD AUTÓNOMA DEL ESTADO DE MORELOS

CIATEJ

SCHEDULE

SUNDAY, NOVEMBER 13TH

07:30 – 15:00 CULTURAL ACTIVITY
14:00 – 16:00 REGISTRATION
17:30 – 17:45 WELCOME WORDS
17:45 – 18:30 CULTURAL TALK
Astronomy and mastery of nature among the Maya of northern Yucatan
Orlando J. Casares Contreras

INAUGURAL CONFERENCE

18:30 – 19:30
Astrobiology, Mars and Cuatro Ciénegas
Valeria Souza

19:30 – 20:30 WELCOMING COCKTAIL

MONDAY, NOVEMBER 14TH

PLENARY TALK

09:00 – 10:00
From glaciers to refrigerators: the population genomics and biocontrol potential of the black yeast Aureobasidium subglaciale
Nina Gunde-Cimerman

ORAL PRESENTATIONS

10:00 – 10:20
Site-directed mutagenesis, a tool to improve the thermophilic properties of xylanase Xyn11A from Cellulomonas uda.
María Eugenia Hidalgo Lara

10:20 – 10:40
Salt-dependent structure and dynamics of hydrophobins from mesophilic, halotolerant, and halophilic fungi
Marco A. Ramírez-Martínez

10:40 – 11:00
Submarine groundwater discharges alter rhizosphere prokaryotic community structure of Halodule wrightii beds in a karstic coastal area
Alonso De la Garza Varela

11:00 – 11:30 COFFEE BREAK

PLENARY TALK

11:30 – 12:30
Identification of marine microbiomes in Brazil and their behavior under high hydrostatic pressure
Patricia Machado

ORAL PRESENTATIONS

12:30 – 12:50
Holobiontic coralline algae as models to study halophilic niche evolution
Andrea Bautista García

13:00 – 15:00 LUNCH

ORAL PRESENTATIONS

15:00 – 15:20
Surveying acidophiles in two contrasting extreme environments of Mexico
Rocio Jetzabel Alcántara Hernández

15:20 – 15:40
Alternatives for detecting scarce targets by digital PCR
Sponsor: Qiagen-Genious

PLENARY TALK

15:45 – 16:45
Extremophiles: A Versatile Source of Exopolysaccharide
Annarita Poli

16:45 – 18:00 POSTER SESSION 1 (S1_1 – S1_41)

TUESDAY, NOVEMBER 15TH

PLENARY TALK

09:00 – 10:00
Genetic engineering of black yeasts
Julia Schumacher

ORAL PRESENTATIONS

10:00 – 10:20 *An hypersaline microbial mat in Cuatro Cienegas reveals a rich population of extreme prokaryotes*
Susana De la Torre Zavala

10:20 – 10:40 *Study of antagonism against multiresistant pathogens by haloalkaliphilic microorganisms isolated from Cuatro Ciénegas, Coahuila*
Josué Manuel Corona García

10:40 – 11:00 *Analysis of resistance to toxic metals As(V) and Pb(II) in the bacterium Microbacterium sp. sma-1*
Mariel Areli Blanco Mercado

11:00 – 11:30 COFFEE BREAK

ORAL PRESENTATIONS

11:30 – 11:50 *An alkaliphilic bacteria consortium for treatment of sulfides*
Luis Alberto Arellano García

11:50 – 12:10 *Bacterial degradation of PAHs at high concentrations in hypersaline sediments, under anaerobic conditions*
Itza García Bautista

12:10 – 12:30 *Exploring metal-microbe-mineral interactions in tailings of Pb-Zn-Ag-Cu mines: from geochemistry to metagenomics*
María Paloma Sánchez Juárez

12:30 – 12:50 *Evaluation and characterization of exopolysaccharides by halophilic archaeon*
Alejandra Aragón León

13:00 – 15:00 LUNCH

ORAL PRESENTATIONS

15:00 – 15:20 *Thermophilic microbial cell factory from Antarctica: the case study of Parageobacillus thermantarcticus*
Ilaria Finore

15:20 – 15:40 *Introduction to Illumina options for sequencing*
Sponsor: Analitek-Illumina

15:45 – 17:00 POSTER SESSION 2 (S2_42 – S2_82)

CLOSURE CONFERENCE

17:00 – 18:00 *Sulfur cycling and host-virus interactions at hydrothermal vent biofilms in Yellowstone Lake*
Luke McKay

WEDNESDAY, NOVEMBER 16TH

WORKSHOP

Multidimensional microbiology to study extremophiles

09:00 – 10:00 *Phenotype MicroArrays: applications in microbial metabolism and physiology*
Barry R. Bochner

10:00 – 12:00 *Multidimensional microbiology to study extremophiles*
Patricia Valdespino

12:00 – 12:30 COFFEE BREAK

REMEX MEETING

12:30 – 12:45 WELCOME WORDS
12:45 – 14:30 WORK DISCUSSION

14:30 – 16:00 LUNCH

16:00 – 17:00 WORK DISCUSSION
17:00 – 17:30 REMEX MEETING CLOSURE

19:00 – 22:00 FAREWELL GATHERING

POSTER LIST

S1_21

Detection of Mn oxidizing microorganisms in Desert Varnish from Chihuahuan Desert, Mexico

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Desert varnish is a microlayer that forms on rocky surfaces that is usually associated with arid and desert environments. It consists mainly of clay minerals (~70%) and Fe and Mn oxides (~30%) (Dorn & Oberlander, 1981). The film is 50 to 200 µm thick and its growth rate is very slow, 1 to 40 µm/ky. The development of vanishes could be due to biomineralization processes, dust precipitation events or pH fluctuations (Goldsmith et al., 2014). Microbial communities have been found associated with varnishes, mostly fungi (Esposito et al., 2015) and bacteria (Fagliarone et al., 2017; Lang-Yona et al., 2018). In Sonora, Mexico microorganisms have been detected inside the varnishes (Martinez-Pabello et al., 2020). The Sierra Samalayuca of the Chihuahuan Desert contains large extensions of varnishes which have not been thoroughly characterised. In this work we identify the presence of Mn oxidising microorganisms in patinas from the municipality of Juárez, Chihuahua. Rock samples were washed with a phosphate buffer and sterilised for 30 min under UV light. The patinas were pulverised in a mortar and a powder fraction (20 µg) was suspended in sterile peptone water [0.01%]. 10 µL of the suspension was planted on Czapek-agar, Thorton-agar and water-agar culture media. The Petri dishes were incubated at room temperature (21 ± 3, 25 ± 1 and 37 ± 1 °C). Fungi and bacteria colonies grow on all media after four incubation days. The cell morphology corresponded to septate and coenocytic hyphae, cocci and Gram-positive rods. After 21 days of growth, the Mn oxides colony production was determined with benzidine [1%] (Nealson, 2006). Some fungi species from varnishes were identified by rRNA18S. The presence of a microbial biofilm on the patinas was observed as well by SEM. Therefore, rock varnishes from the Sierra Samalayuca contain microbial communities that could oxide Mn.