



FROM HELL TO HEAVEN: EXTREMOPHILES FOR ENVIRONMENTAL BIOTECHNOLOGY

Caldes de Montbui, 3rd of July 2015

PRESENTATION

Extremophilic microorganisms can thrive in physical and geochemical conditions that are detrimental to most current life. There are many classes of such exceptional environmental niches, which range from extremes in **pH**, **temperature**, **pressure**, poor availability of **water** and **nutrients**, presence of **toxic chemicals** and **ionizing radiation**, etc.

Extremophiles have often been associated to **prokaryotic** evolutionary relicts from the primordial Earth. The study of these organisms has therefore been related to the **origin of life** on Earth and on other planets (**astrobiology**). Yet, relatively evolved **eukaryotic** organisms, such as the **black yeasts**, have been described among the most extreme-loving life forms.



Besides fundamental research, the study of life at the extremes provides a unique opportunity for innovation in a wide range of **environmental biotechnology** applications, such as in the **bioremediation** of toxic wastes, and utilization of enzymes that tolerate harsh conditions (**extremozymes**) for more efficient and sustainable industrial processes.

The aim of the present workshop is to provide an **interdisciplinary forum** for the exchange of ideas and the discussion of recent results in the fields of extremophilic microorganisms and their biotechnological applications. **English** will be the taught language.

VENUE

The workshop will take place on Friday the 3rd of July in Torre Marimón (30 Km North from the centre of Barcelona), a heritage-listed building which more than a century ago held one of the first modern agronomical schools in Spain. This historical site currently harbors the headquarters of IRTA (Catalan Institute for Research and Technology in Food and Agriculture).

Address: IRTA - Torre Marimón, Caldes de Montbui (Barcelona)

Coordinates: 41° 36' 47.71" N – 2° 10' 9.57" E

Web: <http://www.irta.cat/en-us/rit/centres/pages/torremarimon.aspx>

TARGET AUDIENCE

The program has been carefully designed to fulfill the interests of **scientists**, **engineers**, **microbiologists** and **biotechnologists**. **Professionals** and **students** with a general interest on microbiology and biotechnology are also welcome to this meeting.

REGISTRATION

Participation to the workshop is **free** but **registration is required** due to limited capacity. You must contact the organizers (francesc.prenafeta@irta.cat) **before the 26th of June** and specify your name and affiliation. A certificate of attendance will be issued upon request.

WORKSHOP PROGRAM

Event Time	Speaker Presentation title
09:00	Registration and welcoming
09:30	Opening: <u>Francesc Prenafeta</u> (GIRO-IRTA, Caldes de Montbui)
Session 1: Fundamental research and applied perspectives Chair: August Bonmatí	
10:00	<u>Ricardo Amils</u> (Astrobiology Centre - CSIC, Madrid) <i>Biotechnological interest of the extreme acidic microorganisms of Rio Tinto</i>
10:30	<u>Magdalena Grifoll</u> (Group of Biodegradation and Bioremediation, University of Barcelona) <i>Metabolic networks for environmental PAH removal</i>
11:00	<u>Sybren de Hoog</u> (Fungal Biodiversity Centre - CBS-KNAW, Utrecht, The Netherlands) <i>Thoughts on the natural ecology of Chaetothyrialean black yeasts, potential agents of bioremediation</i>
11:30	Coffee break
Session 2: Applications in environmental biotechnology Chair: Belén Fernández	
12:00	<u>Pilar Díaz</u> (Group of Microbial Enzymes for Industrial Application, University of Barcelona) <i>Ancient volcanic soils as a source of extremoenzymes: evolution of bacterial thermoresistant lipases</i>
12:30	<u>Barbara Blasi</u> (VIBT Extremophile Center - BOKU, Vienna, Austria) <i>Physiological and molecular characterization of black fungal candidates for the bioremediation of toluene</i>
13:00	<u>David Gabriel</u> (BIO-GLS Technological Center - Autonomous University of Barcelona) Role and diversity of microbial cultures in bioreactors for waste gas treatment: biogas desulfurization as a case study
13:30	<u>Marc Viñas</u> (GIRO - IRTA, Caldes de Montbui) <i>Syntrophic acetate oxidation: a metabolic "by-pass" for the anaerobic decomposition of organic matter under high ammonia concentration</i>
14:00	Conclusion & Lunch

ORGANIZATION



FUNDING

Optimization of the anaerobic digestion and biogas production process of proteins and lipids rich wastes, with ammonia recovery (INIA RTA2012-00098-00-00)

Bioremediation of waste gas and soil by black extremotolerant fungi (FWF P 25119)