

THE COMPLEXITY OF LICHEN SYMBIOSIS:

Novel interdisciplinary approaches from genomic to functional perspectives



Antoni Pitxot
Autoretrat amb licorelles, 1974

3-4
DECEMBER
2018

**OPEN TO ALL:
REGISTRATION FREE**

FOR MORE INFORMATION
<http://symbiolichen.blogs.uv.es/december-2018/>

REGISTRATION
liquenologiauv@gmail.com

SPEAKERS

Pavel Škaloud & Jana Steinová
Charles University in Prague,
Czech Republic

Francesco Dal Grande
Senckenberg Biodiversität und
Klima - Forschungszentrum |
BiK-F; Goethe-Universität,
Germany

Tomislav Cernava
Graz University of Technology,
Institute of Environmental
Biotechnology, Austria

Lucia Muggia
Università di Trieste,
Department of Life Sciences,
Italy

Florian Mundt
University of Hamburg,
Scientific Computing,
Bremerhaven, Germany

Pradeep Divakar
Universidad Complutense
de Madrid, Biología Vegetal II,
Spain

**Sergio Pérez-Ortega & Isaac
Garrido-Benavent**
Real Jardín Botánico de
Madrid, CSIC, Spain

**Eva Barreno & Pedro Carrasco
& Francisco Marco & Patricia
Moya**
Universitat de València,
ICBIBE & BIOTECMED, Spain

Alfonso Garmendia
Universidad Politécnica de
Valencia, Ecosistemas
agroforestales, Spain

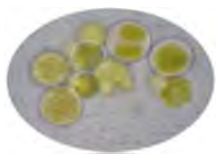
Myriam Catalá
Universidad Rey Juan Carlos,
Biodiversidad y Conservación,
Spain

ORGANIZERS

**Eva Barreno
Pedro Carrasco
Francisco García-Breijo
Francisco Marco
Patricia Moya
Salvador Chiva**

“Symbiosis diversity and
evolution of lichens
and plants: biotechnology
and innovation”
UVEG/team
“Plant Biodiversity -
Ecophysiology team”

**Universitat de València,
Campus de Burjassot
VALENCIA
SPAIN**



THE COMPLEXITY of LICHEN SYMBIOSIS: NOVEL INTERDISCIPLINARY APPROACHES from GENOMIC to FUNCTIONAL PERSPECTIVES

3-4 December 2018



The Workshop will take place at the Universitat de València,
Campus de Burjassot, Valencia, Spain

Lichens are complex symbiotic systems, in which coexistence occurs between several microalgal taxa and/or lineages with a single fungus -mycobiont-, displaying different tolerance patterns to multiple kinds of abiotic stress. Furthermore, certain communities of non-photosynthetic bacteria and yeasts are starting to be considered as an integral part of the lichen thalli.

Currently, interdisciplinary genomic approaches (NGS, culture isolations, multi-tool genetic analyses, etc.) have generated promising results to deal with lichen complexity and microalgae diversity. Therefore, the new point of view considers lichen thalli to be complex micro-ecosystems, which brings about further questions concerning many of the biochemical and cellular mechanisms of the microalgae involved in the functional equilibrium of lichen symbioses.

This meeting is dedicated to discussing and better clarifying our knowledge of the complex interactions that uphold lichen symbiosis, through the characterization of different aspects of biology and phylogenetic relationships within the symbionts.

Outstanding international attendees experienced in different research field of lichen symbiosis will present and discuss their novel results. A DEMO training session will be dedicated to explain/ teach some biogeographical and phylogenetic tools in an informatics room. At the same time, this unique meeting will give everyone the opportunity to both strengthen present cooperation and establish new contacts for the compilation of future research proposals.

This interdisciplinary meeting is open to Masters and Doctoral students, Post- Doctoral fellows, lecturers, etc., both directly related or not to research in lichen symbiosis. **OPEN to ALL: NO REGISTRATION FEES, REGISTRATION** would be appreciated prior to attending talks in: liquenologiauv@gmail.com

The Faculties of Biological Sciences and Mathematics will provide the venue and informatics facilities. The Cavanilles Institute of Biodiversity and Evolutionary Biology (ICBIBE) and the Department of Botany and Geology will provide lab facilities and other seminar rooms for any additional needs during the workshop.

Venues: Lectures in the Degree Seminar room in the Mathematics Faculty. Informatics room 4B at the Faculty of Biological Sciences, 46100- Burjassot, C/ Dr. Moliner 50 (see maps below).

Website: <http://symbiolichen.blogs.uv.es/december-2018/>

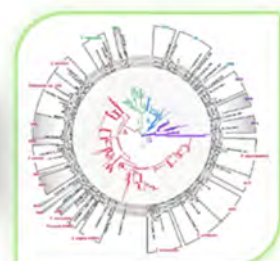
The venue can be easily reached in 15-20 min from the city centre (bus line n. 63), or from the underground/ tram stations.

Organizers:

Eva BARRENO, Pedro CARRASCO, Francisco GARCÍA-BREIJO, Francisco MARCO, Patricia MOYA, Salvador CHIVA

"Symbiosis diversity and evolution of lichens and plants: biotechnology and innovation" UVEG/team

"Plant Biodiversity-Ecophysiology team"



WORKSHOP SCHEDULE

The Complexity of Lichen Symbiosis: Novel Interdisciplinary approaches from Genomic to Functional perspectives

3-4 December 2018

Venues: Lectures in the **Degree Seminar room in the Mathematics Faculty. Informatics room 4B at the Faculty of Biological Sciences**, Universitat de València. 46100- Burjassot, C/ Dr. Moliner 50

3-12-2018		
Authors	Title	Institution
9:15 – 9:30 h: Registration 9:30 – 10:00 h: Welcome address		
10:00 - 10:30 h: Pavel Škaloud	“The <i>Primus</i> project - towards understanding the nature of lichen symbiosis”	<i>Charles University in Prague, Czech Republic</i>
10:30 - 11:00 h: Francesco Dal Grande, Anjali Calchera & Imke Schmitt	“High-throughput sequencing of lichen photobionts: from species to communities”	<i>Senckenberg Biodiversität und Klima - Forschungszentrum BiK-F; Goethe-Universität, Germany</i>
11:00 - 11:30 h: Tomislav Cernava, Martin Grube & Gabriele Berg	“Recent insights into the functioning of lichen-associated bacterial communities”	<i>Graz University of Technology. Institute of Environmental Biotechnology, Austria</i>
Coffee-break 11:30-12:00 h		
12:00 – 12:30 h: Sergio Pérez-Ortega	“Invariant network properties shape the relationships between lichen-forming fungi and their photobionts”	<i>Real Jardín Botánico de Madrid, CSIC, Spain</i>
12:30 - 13:00 h: Patricia Moya, Arantzazu Molins, Lucia Muggia & Eva Barreno	“Illumina assay reveals habitat/ location as the main factor influencing microalgal diversity in <i>Ramalina farinacea</i> ”	<i>Universitat de València, ICBIBE, Spain</i>
13:00 -13:30 h: Lucia Muggia	“Culture approaches in the study of lichen symbiosis”	<i>Università di Trieste, Department of Life Sciences, Italia</i>
Lunch time		

Authors	Title	Institution
15:00 - 15:30 h: Florian Mundt, Dieter Hanelt, Lars Harms & Sandra Heinrich	“Shedding light on the dark – Linking physiology and gene expression in <i>Cosmarium crenatum</i> under the influence of polar night”	<i>University of Hamburg, Scientific Computing, Bremerhaven, Germany</i>
15:30 - 16:00 h: Ernesto Hinojosa-Vidal, Francisco Marco, Fernando Martínez-Alberola, Francisco J. Escaray, Francisco J. García-Breijo, José Reig-Armiñana, Pedro Carrasco & Eva Barreno	“Characterization of the responses to saline stress in symbiotic green microalga <i>Trebouxia</i> sp. TR9”	<i>Universitat de València, BIOTECMED & Universidad Politécnica de Valencia, Spain. I IIB-INTECH/CONICET-UNSAM, Argentina</i>
16:00 - 16:30 h: Myriam Catalá, J.R. Expósito, M.R. de las Heras González, A. Casillas, L. Ben Oukhiye, P. Herrero & Eva Barreno	“Advances in the study of the role of NO in lichen phycobiont adaptation to anhydrobiosis and other interesting topics”	<i>Universidad Rey Juan Carlos & Universitat de València, ICBIBE, Spain</i>
Coffee-break 17:00-17:30 h		
16:30 - 17:00 h: Salvador Chiva, Patricia Moya, Arantazu Molins & Eva Barreno	“Biological Soil Crusts: myco/phycobiont relationships in terricolous lichen communities”	<i>Universitat de València, ICBIBE, Spain</i>
17:00 - 17:30 h: Tomislav Cernava, Martin Grube & Gabriele Berg	“Persistence of the lichen microbiome under unfavorable environmental conditions”	<i>Graz University of Technology. Institute of Environmental Biotechnology, Austria</i>
18:00-19:00 h	Research Projects Discussion	
20:00 h	Dinner in Valencia city	

WORKSHOP SCHEDULE

The Complexity of Lichen Symbiosis: Novel Interdisciplinary approaches from Genomic to Functional perspectives

3-4 December 2018

Venues: Lectures in the **Degree Seminar room in the Mathematics Faculty. Informatics room 4B at the Faculty of Biological Sciences**, Universitat de València. 46100- Burjassot, C/ Dr. Moliner 50

4-12-2018		
Authors	Title	Institution
9:30 - 10:00 h: Ernesto Hinojosa-Vidal, <u>Francisco Marco</u>, Fernando Martínez-Alberola, Pedro Carrasco & Eva Barreno	"The genome of <i>Trebouxia</i> sp. TR9. How we have improved its assembly and which new insights have emerged from its annotation"	<i>Universitat de València, BIOTECMED, Spain</i>
10:00 - 10:30 h: Pradeep Divakar	"Larger genome size of mitochondria in mutualistic fungi and its role to maintain obligate mutualistic relations"	<i>Universidad Complutense de Madrid, Biología Vegetal II, Spain</i>
10:45 - 11:15 h: Jana Steinová	"Diversity and phylogeny of symbiotic partners in zeorin-containing red-fruited <i>Cladonia</i> species"	<i>Charles University in Prague, Czech Republic</i>
Discussions and Coffee-break 11:15-12:00 h		
12:00 - 12:30 h: Francisco J. García-Breijo, <u>Alfonso Garmendia</u>, José Reig-Armiñana, Patricia Moya, Arantzazu Molins & <u>Eva Barreno</u>	"Towards a new proposal on the ultrastructural taxonomy of <i>Trebouxia</i> microalgae"	<i>Universidad Politécnica de Valencia & Universitat de València, ICBIBE, Spain</i>
12:30 - 13:00 h: Pavel Škaloud	"DNA-based taxonomy in ecologically versatile microalgae: a re-evaluation of the species concept within the coccoid green algal genus <i>Coccomyxa</i> "	<i>Charles University in Prague, Czech Republic</i>
Lunch time		
PRACTICAL ANALYSIS TOOLS 15:00-19:00 h		
Francesco Dal Grande	"Introduction to the assembly, taxonomic binning of mycobiont-photobiont-bacteria components and functional characterisation of metagenomic reads from whole lichen thalli"	<i>Senckenberg Biodiversität und Klima - Forschungszentrum BiK-F, Germany</i>
Pavel Škaloud	"Species delimitation and speciation analyses in R"	<i>Charles University in Prague, Czech Republic</i>
Isaac Garrido-Benavent	"Biogeographical analysis tools: dating and delimitation of species, population genetics"	<i>Real Jardín Botánico de Madrid, CSIC, Spain</i>