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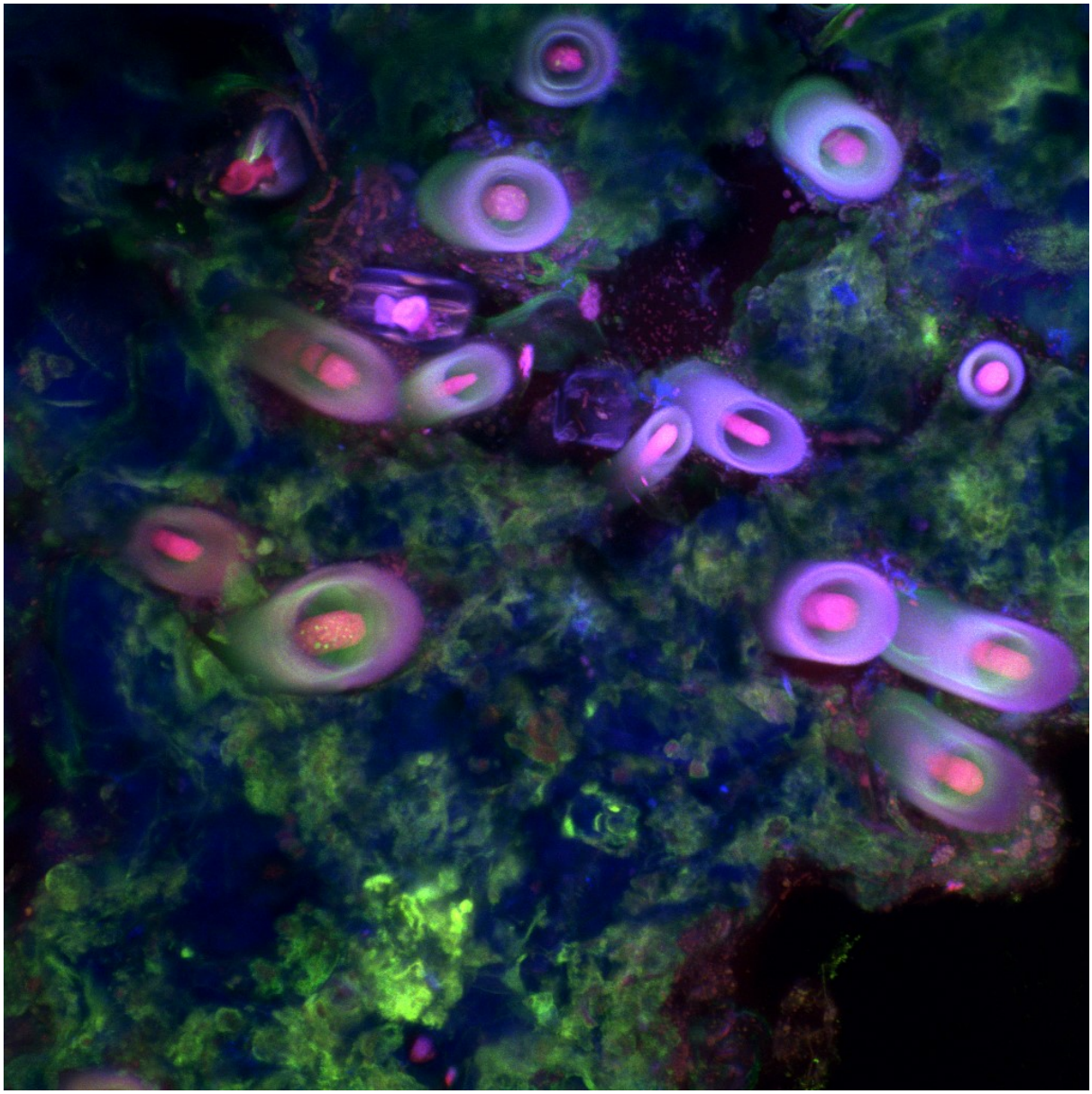
LVI SAIB Meeting – XV SAMIGE Meeting



SAIB-SAMIGE Joint Meeting 2020 – *Online*

Cover image:

Mineral–microorganisms interactions

Mlewski EC[1], Gérard E[2]
[1]Centro de Investigaciones en Ciencias de la Tierra CICTERRA-CONICET-UNC. [2]Institut de Physique du Globe de Paris, IPGP.

A Confocal Laser Scanning Microscopy image of a resin-embedded microbialite from Laguna Negra (Puna-Catamarca), stained with calcein (a fluorescent dye that produces a stable complex in the presence of calcium and fluoresces in the green region of visible light). Mineral aggregates are observed in blue. Their surfaces are partially stained with calcein, indicate the presence of free Ca^{2+} ions. Diatoms and *Rivularia halophila* filaments are visible in red thanks to their photosynthetic pigments.

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LVI Annual Meeting
Argentine Society for Biochemistry and Molecular Biology
(SAIB)

XV Annual Meeting
Argentinean Society for General Microbiology
(SAMIGE)

SAIB-SAMIGE – Online
Joint Meeting 2020

SAIB-SAMIGE- Program at a glance

<table>
<tr><th>Monday, November 2</th><th>Tuesday, November 3</th><th>Wednesday, November 4</th><th>Thursday, November 5</th></tr>
<tr><td>9:15-9:30
Opening Ceremony</td><td></td><td></td><td></td></tr>
<tr><td>9:30-10:30
SAIB-SAMIGE
Plenary Lecture
Rotem Sorek</td><td rowspan="2">9:30-11:30

Young Investigators Symposium II</td><td>9:30-10:30
CONO SUR
Plenary Lecture
Dario Zamboni</td><td rowspan="2">9:30-11:30

SARS-CoV-2 Symposium</td></tr>
<tr><td rowspan="2">11:00-13:00

Young Investigators Symposium I</td><td rowspan="2">11:00-13:00
ROUND TABLE
Scientific Policies in Argentina
Roberto Salvarezza
Ana Franchi
Fernando Peirano</td></tr>
<tr><td>12:00-13:00
SEBBM
Plenary Lecture
Manuel Serrano</td><td>12:00-13:00

Closing Ceremony</td></tr>
<tr><td>BREAK</td><td>BREAK</td><td>BREAK</td><td>BREAK</td></tr>
<tr><td>14:00-16:00

Oral Communications
Cell Biology I
Microbiology I
Plants I</td><td>14:00-16:00

Oral Communications
Biotechnology II
Lipids
Microbiology III</td><td>14:00-16:00

Oral Communications
Microbiology IV
Enzymology</td><td rowspan="2">16:00
SAMIGE ASSEMBLY</td></tr>
<tr><td>BREAK</td><td>BREAK</td><td>BREAK</td></tr>
<tr><td>16:30-18:30

Oral Communications
Microbiology II
Biotechnology I</td><td>16:30-18:30

Oral Communications
Cell Biology II
Plants II
Signal Transduction & Structural Biology</td><td>16:30-18:30

Oral Communications
Cell Biology III
Plants III
Microbiology V</td><td>17:30
SAIB ASSEMBLY</td></tr>
<tr><td colspan="4">Monday, November 2 - Thursday, November 5</td></tr>
</table>

Full Time	***Eposters*** *Cell Biology* (CB P01/14) *Lipids* (LI P01/08) *Microbiology* (MI P01/68) *Plant Biochemistry & Molecular Biology* (PL P01/26) *Signal Transduction* (ST P01/07) *Biotechnology* (BT P01/26) *Enzymology* (EN P01/08) *Neuroscience* (NS P01/03) *Structural Biology* (SB P01/P03)

SAIB-SAMIGE
ON LINE
PROGRAM

MONDAY NOVEMBER 2, 2020

9:15-9:30 **OPENING CEREMONY**
María Isabel Colombo- SAIB President
Eleonora García Véscovi - SAMIGE President

9:30-10:30 **SAIB-SAMIGE PLENARY LECTURE**
Rotem Sorek
Weizmann Institute of Science, ISRAEL
"The immune system of bacteria: Beyond CRISPR"
Chairpersons: Claudio Valverde- Andrea Smania

11:00-13:00 **YOUNG INVESTIGATORS SYMPOSIUM I**
Chairpersons: Silvia Moreno and Leonardo Curatti

Luis Mariano Polo
IHEM-CONICET, Facultad de Medicina, UNC
"DNA-protein interactions involved in single strand DNA-break repair"

Paula Tribelli
IQUIBICEN. Facultad de Ciencias Exactas y Naturales, UBA
"Staphylococcus aureus Lpl lipoproteins trigger human host cell invasion via activation of Hsp90 receptor"

Corina Fusari
Centro de Estudios Fotosintéticos y Bioquímicos, CONICET-UNR
"Genetic regulation of metabolic and physiological traits in Arabidopsis thaliana"

Betina Agaras
Lab. de Fisiología y Genética de Bacterias Beneficiosas para Plantas – UNQ
"Autochthonous isolates from the Pseudomonas genus: evaluation of their plant probiotic traits for the development of agricultural bio-inputs"

14:00-16:00 **ORAL COMMUNICATIONS**

Cell Biology I
Microbiology I
Plants I

16:30-18:30 ORAL COMMUNICATIONS

Microbiology II
Biotechnology I

00:00-23:59 ePOSTERS

Cell Biology (CB P01/14)
Lipids (LI P01/08)
Microbiology (MI P01/68)
Plants Bioch. and Mol. Biol. (PL P01/26)
Signal Transduction (ST P01/07)
Biotechnology (BT P01/26)
Enzymology (EN P01/08)
Neuroscience (NS P01/03)
Structural Biology (SB P01/P03)

TUESDAY NOVEMBER 3, 2020

9:30-11:30 YOUNG INVESTIGATORS SYMPOSIUM II

Chairpersons: Federico Sisti-Rosana De Castro

Alfonso Soler Bistue.
Instituto de Investigaciones Biotecnológicas, UNSAM
"Genomic strategies to rationally reprogram bacterial growth"

Betiana Garavaglia.
Instituto de Biología Molecular y Celular de Rosario (IBR) - UNR
"General stress response proteins from Xanthomonas citri subsp. citri_ involved in stress adaptation and virulence"

Matías D. Asención Diez.
Instituto de Agrobiotecnología del Litoral CCT-Santa Fe
"Glucosamine in rhodococci. From metabolism to enzyme precision synthesis"

Daiana Capdevila.
Fundación Instituto Leloir.
"Role of conformational entropy in allostery: new insights into bacterial transition metal and polysulfide"

12:00-13:00 SEBBM PLENARY LECTURE

Manuel Serrano
IRB Barcelona- SPAIN
"Understanding and controlling cellular identity and plasticity"
Chairpersons: María Isabel Colombo-Gabriela Salvador

14:00-16:00 ORAL COMMUNICATIONS

Biotechnology II
Lipids
Microbiology III

16:30-18:30 ORAL COMMUNICATIONS

Cell Biology II
Plants II
Signal Transduction and Structural Biology

00:00-23:59 **ePOSTERS**

Cell Biology (CB P01/14)
Lipids (LI P01/08)
Microbiology (MI P01/68)
Plants Bioch. and Mol. Biol. (PL P01/26)
Signal Transduction (ST P01/07)
Biotechnology (BT P01/26)
Enzymology (EN P01/08)
Neuroscience (NS P01/03)
Structural Biology (SB P01/P03)

WEDNESDAY, NOVEMBER 4th 2020

9:30-10:30 **CONO SUR PLENARY LECTURE**

Dario Zamboni.
San Pablo University. BRASIL
"Manipulation of host signaling pathways by Leishmania RNA Virus 1".
Chairpersons: María Isabel Colombo-Eleonora García Vescovi

11:00-13:00 **ROUND TABLE**

"Scientific policies in Argentina"
Chairpersons: María Isabel Colombo-Eleonora García Vescovi

Fernado Peirano
ANPIDTYI President-ARGENTINA
Ana María Franchi
CONICET President-ARGENTINA
Roberto Salvarezza
Science, Technology and Innovation Minister-ARGENTINA

14:00-16:00 **ORAL COMMUNICATIONS**

Microbiology IV
Enzymology

16:30-18:30 **ORAL COMMUNICATIONS**

Cell Biology III
Plants III
Microbiology V

00:00-23:59 **ePOSTERS**

Cell Biology (CB P01/14)
Lipids (LI P01/08)
Microbiology (MI P01/68)
Plants Bioch. and Mol. Biol. (PL P01/26)
Signal Transduction (ST P01/07)
Biotechnology (BT P01/26)
Enzymology (EN P01/08)
Neuroscience (NS P01/03)
Structural Biology (SB P01/P03)

THURSDAY NOVEMBER 5, 2020

9: 30-11:30 **SARS-CoV-2 SYMPOSIUM**

Argentine scientific developments to cope with the SARS-CoV-2 pandemic: Reinventing potentials

Chairpersons: José Luis Bocco and Laura Raiger-Iustman

Marcos Bilen-Daniel Ghiringhelli
Laboratorio de ingeniería genética y biología celular y molecular-UNQ
"Kits development associated with COVID-19 diagnosis"

Diego Chouhy
Instituto de biología molecular y celular de Rosario –UNR
"Development of methods for the molecular diagnosis of the SARS-CoV-2 virus by Real Time PCR"

Cecilia D´Alessio -Matías Blaustein
On behalf of Consorcio Anti-COVID
"Social distancing and strengthened research community efforts to fight pandemics: producing a low-cost SARS-CoV-2 antigen"

Mariana Viegas
Laboratorio de virología -Hospital general de niños "RICARDO GUTIERREZ"
"Argentine epidemiological surveillance of SARS-CoV2 in the NGS era"

12.00-12:30 **Closing Ceremony**: Oral Communication Awards and BIOCELL Cover
16:00 ***SAMIGE ASSEMBLY***
17.30 ***SAIB ASSEMBLY***

driving forces arising from dynamics can be harnessed by nature to evolve new allosteric ligand specificities. To test this hypothesis, we are currently investigating the contribution of entropy reservoirs to a wide range of sensors from the ArsR family that share the same molecular scaffold but respond to a binding event in a distinct recognition site. I will present a structural and mechanistic study on a sulfide-responsive transcriptional repressor, SqrR, that functions as a master regulator of sulfide- dependent gene expression. We conducted an extensive crystallographic study of SqrR and have solved the crystal structures of the reduced -DNA binding competent- and several oxidized forms -DNA binding incompetent- SqrRs. This includes, to our knowledge, the first crystal structure of a tetrasulfide crosslink within proteins. These studies strongly suggest that this allostery may be inherently dynamic (all structures are globally nearly identical), which is further supported by our initial NMR characterization of fast internal side-chain dynamics.

SARS-CoV2 S01.
KITS DEVELOPMENT ASSOCIATED WITH COVID-19 DIAGNOSIS

Borio CS[1,2], Bergier JA[1,2], Ripoll L[1,2], Nugnes V[1,2], Bilen MF[1,2,3], Ghiringhelli PD[1,2,3]
[1] LIGBCM-AVI, Dto. de Ciencia y Tecnología, Univ. Nac. de Quilmes. [2] CONICET. [3] Productos Biológicos SA (PB-L).

Most of the molecular diagnostic methods require a first step, which is the purification of nucleic acids. At the beginning of the SARS-CoV-2 pandemic, there were incremental needs around the world for optimized kits for RNA purification, resulting in shortages in the provision of these inputs. In this context, PBL developed a purification kit optimized for the purification of viral RNA, called PURO Virus. The kit comes in two variants: one for manual operation and the other for use in automated systems, and both variants are used both in the state and private sphere. Regarding diagnosis, the UNQ laboratory developed an isothermal *in vitro* nucleic acid amplification method called ELA (Easy Loop Amplification). This method is a modification of LAMP, which uses fewer primers and where the specificity is additionally ensured through the use of a labeled probe. Additionally, the ELA method uses a thermostable DNA-dependent DNA polymerase called Bfo that had been developed in PB-L. Bfo is a rational in silico design based on molecular information from an Argentine isolate of a mesophilic bacterium. In the genetic construction, the characteristics for an adequate in vitro activity –both polymerase and chain displacement– have been optimized. The ELA method has already been tested for the detection of *Chlamydia trachomatis* DNA and as RT-ELA for the detection of RNA of the different Dengue types. When the SARS-CoV-2 expanded to all the world and cases began in our country, we formed a partnership between the National University of Quilmes, the National University of San Martín, and the Biotechnology companies Productos Bio-Lógicos SA and Chemtest Argentina SA. The central objective of this partnership was the rapid development of a POC (Point of Care) system for the diagnosis of COVID-19. In this way, ELA-Chemstrip arises, where the amplification of the target is carried out by RT-ELA and the visualization of the result by GenCap, a method derived from NALFIA (Nucleic Acid Lateral Flow ImmunoAssay). The current version of ELA-Chemstrip is of the monoplex type, having to work with two reaction tubes and two test strips; the viral target is evaluated in a tube and an endogenous control in the other. The product has been approved by ANMAT and has very-good sensitivity and specificity. We are currently working on the development of a multiplex version in which the viral target and the endogenous control are co-amplified in the same tube, and the results are visualized using a single test strip. In parallel, we continue working on new applications and developments.

SARS-CoV2 S02.
DEVELOPMENT OF METHODS FOR THE MOLECULAR DIAGNOSIS OF THE SARS-COV-2 VIRUS BY REAL-TIME PCR

Chouhy D
Instituto de Biología Molecular y Celular de Rosario –UNR.

The disease caused by the SARS-CoV-2 virus (COVID-19) ranges from mild with few or no symptoms to pneumonia and death in the most severe illness. The most common symptoms are fever, cough, and shortness of breath. These nonspecific symptoms are shared by many other common infectious diseases of the respiratory tract caused by bacteria and viruses, most of which are self-limited but can also progress to serious conditions. Among these, the most relevant agent is the Influenza virus (FluA and FluB), whose infection is generally characterized by fever, myalgia, headache, and non-productive cough, which can also cause complications with a high rate of morbidity and mortality, such as pneumonia, myocarditis, central nervous system disease, and death. DETx MOL SA is a diagnostic technology development company with the vision of promoting the growth of the country and the diagnostic sector through the development of technologies that improve access to high quality molecular diagnostic methods in different laboratories distributed throughout Argentina and other Latin American countries. We have developed, validated, and registered in ANMAT a kit based on the RT-qPCR technique (TaqMan®) for the detection of SARS-CoV-2 virus and an endogenous control in 2 detection channels. For the registration, production, and marketing of this kit, we have established a strategic alliance with the company Wiener Laboratorios. Furthermore, we are in the process of developing a second kit based on the RT-qPCR technique (TaqMan®) for the 4-channel detection of SARS-CoV-2, FluA, FluB, and an endogenous control. The development of a kit that can determine in a single test the main viral causative agents of serious acute respiratory diseases will be of great relevance not only for Argentina but also for the rest of the countries. From DETx MOL, we propose to develop high-quality products at competitive prices, replacing imports of kits developed and produced in other countries. We deeply believe that Argentina has the capabilities to be sovereign in critical public health issues, specifically in the molecular diagnosis of infectious diseases.

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