

**Horizon 2020**  
**Marie Skłodowska Curie Actions**  
**PROFILE FORM – Expression of Interest**

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| <b>Organization Name / Department</b>                     | Center for Electron Microscopy (CONICET-National University of Tucuman)  | <b>Organization Short Name</b>   | CIME |
| <b>Organization Type</b>                                  | <input checked="" type="checkbox"/> University<br><input checked="" type="checkbox"/> Public Research Centre<br><input type="checkbox"/> Large Scale Enterprise<br><input type="checkbox"/> Small and Medium Scale Enterprise  | <input checked="" type="checkbox"/> Public Body<br><input type="checkbox"/> International NGO<br><input type="checkbox"/> National NGO   |      |
| <b>Research Fields</b>                                    | <input type="checkbox"/> Chemistry <b>CHE</b><br><input type="checkbox"/> Social and Human Sciences <b>SOC</b><br><input type="checkbox"/> Economic Sciences <b>ECO</b><br><input type="checkbox"/> Information Science and Engineering <b>ENG</b><br><input checked="" type="checkbox"/> Environment and Geosciences <b>ENV</b><br><input checked="" type="checkbox"/> Life Sciences <b>LIF</b><br><input type="checkbox"/> Mathematics <b>MAT</b><br><input type="checkbox"/> Physics <b>PHY</b>   | <b><u>Sub-Fields / Keywords:</u></b><br>Electron microscopy<br>Correlative Light Electron Microscopy<br>Molecular Microbiology<br>Molecular Photobiology<br>Prokaryotes Cell biology<br>Omics and Bioinformatics |      |
| <b>Short Description of the Organization / Department</b> | <p>The Center for Electron Microscopy (CIME) is an EM-core facility running in Tucuman since 1982. Located within the Scientific Pole of the University of Tucuman in association with the National Council of Research and Technology, it can conduct both transmission electron microscopy (TEM) and a scanning electron microscopy (SEM). The facility helps improve the scientific output of University and CONICET researchers, while providing faculty, students and staff with guidance for EM research. The EM facility also offers analysis for a variety of samples from biological tissues, body fluid, bacteria, viruses and samples from other scientific fields (geology, archeology). Applications include cell biology, structural biology, soft matter and nanomaterials, nanoparticles and other fields of nanotechnology where one requires nano level imaging.</p> <p>Research at CIME is led by Dr. Virginia Albarracin, a molecular microbiologist. She uses model extremophiles microbes to unravel the molecular mechanisms behind resistance to extreme conditions such as UV-radiation and heavy-metal stress. A combination of techniques (including multi-omics and bioimaging) is used to this purpose in which electron microscopy is the primer method to understand UV or/and metal stress effects on bacterial membranes and subcellular structures. Efforts are also made for developing novel techniques for EM in bacterial extremophiles.</p> |  |      |
| <b>Previous Related Projects / Research Experience</b>    | <ul style="list-style-type: none"> <li>• International Incoming Fellowship Marie Curie”, FP7: Incoming Phase at the Max-Planck Institute for Chemical Energy Conversion and Return Phase in CONICET-Tucuman “Screening and Functional Analyses of Photoreceptors in Extremophilic Microbial Communities” Grant: €179.242. Period: 2011-2013. Return Phase (2013-2014): €15.000.</li> <li>• Project PICT-2013-2991 granted by the National Agency for Science and Technology: “Unraveling the UV resistome of poly-extremophilic microbes from High-Altitude Andean Lakes”. Period: 2014-2017. U\$S: 22,000.</li> <li>• Project CONICET PIP-0519 “Análisis funcional de fotorreceptores de luz azul presentes en microorganismos extremófilos de la Puna Andina”. Period: 2014-2017. U\$S: 23,000.</li> <li>• Bilateral Project Proalar (MINCyT-DAAD) DA/13/01: “Fotorreceptores n6veles de extrem6filos: de la gen6mica a la fotoqu6mica” Period: 2014-2017. U\$S: 30,000.</li> </ul>  |  |      |

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| <b>Short Description of the Project idea (if foreseeable)</b> | <p>To use multidimensional, multimodal and correlative microscopy in combination with multi-omics approaches for dissecting adaptation and stress response to chemical (metals) and physical stresses (UV) in model extremophiles at several resolution levels: i.e. community, cell, subcellular and molecular.</p> <p>For background of the project please refer to the following publications:</p> <ul style="list-style-type: none"> <li>• ALBARRACÍN, V.H., PATHAK, G., DOUKI, T., CADET, J., BORSARELLI, C., GÄRTNER, W., FARIAS, M.E. 2012. Extremophilic <i>Acinetobacter</i> strains from High-Altitude Lakes in Argentinean Puna: Remarkable UV-B Resistance and Efficient DNA Damage Repair. <i>Origin of Life and Evolution of Biospheres</i>. 42: 201-221.</li> <li>• FARIAS, M.E., RASCOVAN, N., TONEATTI, D.M., ALBARRACÍN, V.H., FLORES, M.R., POIRÉ, D., COLLAVINO, M., AGUILAR, M., VAZQUEZ, M., POLERECKY, L. 2013. The discovery of stromatolites developing in a high-altitude volcanic lake Socompa, Argentinean Andes. <i>PLoS ONE</i> 8(1): e53497. doi:10.1371/journal.pone.0053497</li> <li>• BEQUER URBANO, S., ALBARRACÍN, V.H., ORDOÑEZ, O.F., FARIAS, M.E., ALVAREZ, H.A. 2013. Lipid storage in High-Altitude Andean Lakes extremophiles and its mobilization under stress conditions in <i>Rhodococcus</i> sp. A5, a UV-resistant actinobacterium. <i>Extremophiles</i>, 17: 217-227. DOI 10.1007/s00792-012-0508-2.</li> <li>• ALBARRACÍN, V.H., SIMON, J., PATHAK, G., VALLE, L. DOUKI, T., CADET, J., BORSARELLI, C., FARIAS, M.E., GÄRTNER, W. 2014. First characterisation of a CPD-Class I photolyase from an UV-resistant extremophile isolated from High-Altitude Andean Lakes. <i>Photochem. Photobiol.</i> 13, 739-750.</li> <li>• KURTH, D., BELFIORE, C., GORRITI, M., FARIAS, M.E., ALBARRACÍN, V.H. 2015. Genomic and proteomic evidences unravel the UV-resistome of the poly-extremophile <i>Acinetobacter</i> sp. Ver3. <i>Front. Microbiol.</i> 6: 328. doi: 10.3389/fmicb.2015.00328.</li> <li>• ALBARRACÍN, V.H., KURTH, D., ORDONEZ, O.F., BELFIORE, C., LUCCINI, E., SALUM, G.M., PIACENTINI, R.D., FARIAS, M.E. 2015. High-up: a remote reservoir of microbial extremophiles at Central Andean Wetlands. <i>Front. Microbiol.</i> 6: 1404. doi: 10.3389/fmicb.2015.01404.</li> <li>• ALBARRACÍN, V.H., GÄRTNER, W., FARIAS, M.E. 2016. Forged under the sun: life and art of extremophiles from Andean Lakes. <i>Photochemistry and Photobiology</i>. 92: 14-28. doi: 10.1111/php.12555.</li> <li>• ALBARRACÍN, V.H., KRAISELBURD, I., BAMMAN, C., WOODS, P. BAMBERG, E., FARIAS, M.E., GÄRTNER, W. 2016. Functional green-tuned proteorhodopsin from modern stromatolites. <i>PLoS ONE</i> 11(5): e0154962. doi:10.1371/journal.pone.0154962.</li> <li>• KURTH, D., AMADIO, A., ORDOÑEZ, O. F., ALBARRACÍN, V. H., et al. 2017. Arsenic metabolism in high altitude modern stromatolites revealed by metagenomic analysis. <i>Scientific Reports</i>, 7: 1024.</li> <li>• TONEATTI, D. M., ALBARRACÍN, V. H., et al. 2017. Stratified bacterial diversity along physico-chemical gradients in High-Altitude modern stromatolites. <i>Frontiers in Microbiology</i>, 8: 646.</li> <li>• RASUK, M.C., FERRER, G.M., KURTH, D., PORTERO, L.R., FARIAS, M.E. and ALBARRACIN, V.H. 2017. UV-resistant Actinobacteria from High-Altitude Andean Lakes: isolation, characterization and antagonistic activities. <i>Photochem. Photobiol.</i> DOI: 10.1111/php.12759.</li> </ul> |
| <b>Related Call</b>   | Global Fellowships [MSCA-IF-GF]   |
| <b>Contact Person</b>   | Dr. Virginia Helena Albarracin<br>CIME<br>Chacabuco 461<br>San Miguel de Tucumán (4000)<br>Tucumán-Argentina  |
| <b>Position in the Organization</b>                           | Head and Group Leader CIME<br>Adjunct Researcher CONICET  |
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