

IRB BARCELONA 2010 ANNUAL REPORT

SCIENCE AT IRB BARCELONA

Research Programmes

Cell and Developmental Biology

Lluís Ribas de Pouplana: Gene translation laboratory



Group Members

Group Leader

Lluís Ribas de Pouplana. *ICREA*
Research Professor

Research Associate

Alfred Cortés

Postdoctoral Fellows

Laia Cubells
Francesc Miró
Daniele Santoni

PhD Students

Valerie Margarita Crowley
Tanit Guitart
Eva Maria Novoa
Daria Picchioni

Research Assistant

Núria Rovira

Lab Technicians

Noelia Camacho
Anna Tor



Highlights

- A new essential mitochondrial protein has been discovered in insects. This protein is orthologous to canonical seryl-tRNA synthetase but its function is unrelated to tRNA aminoacylation.
- Mistranslation caused by chimeric tRNAs readily activates the Unfolded Protein Response and provides a new tool for the study of the regulatory mechanisms that control this cellular stress response.
- The human parasite *Entamoeba histolytica* has evolved a functional mimic of the human EMAPII cytokine. Similarly to EMAPII, the *Entamoeba signalling* molecule is associated with aminoacyl-tRNA synthetases but demonstrates a different type of cell specificity.

Publications

- Novoa EM, Ribas de Pouplana L, Barril X and Orozco M. Ensemble docking from homology models. *J Chem Theory Comput*, 6 (8), 2547-2557 (2010)
- Geslain R, Cubells L, Bori-Sanz T, Alvarez-Medina R, Rossell D, Martí E and Ribas de Pouplana L. Chimeric tRNAs as tools to induce proteome damage and identify components of stress responses. *Nucleic Acids Res*, 38 (5), e30 (2010)
- Guitart T, Leon Bernardo T, Sagalés J, Stratmann T, Bernués J and Ribas de Pouplana L. New aminoacyl-tRNA synthetase-like protein in insecta with an essential mitochondrial function. *J Biol Chem*, 285 (49), 38157-66 (2010)
- Novoa EM, Castro de Moura M, Orozco M and Ribas de Pouplana L. A genomics method to identify pathogenicity-related proteins. Application to aminoacyl-tRNA synthetase-like proteins. *FEBS Lett*, 584 (2), 460-6 (2010)

Collaborations

- Characterisation of antimalarial activities of ARS inhibitors. José Manuel Bautista, UCM Madrid (Madrid, Spain)
- Design of new dual ARS inhibitors. Miriam Royo, Barcelona Science Park (Barcelona, Spain)
- Role of AIMP1 in *Entamoeba* infections. Antonio Celada, IRB Barcelona (Barcelona, Spain)
- Solving the crystal structure of *Entamoeba* EELP. Osamu Nureki, University of Tokyo (Tokyo, Japan)

Research projects

- Implicación de componentes del código genético en patologías humanas. Proyectos Investigación Fundamental (BIO2009-09776). Spanish Ministry of Science and Innovation (MICINN). 2010-2012. Principal investigator Lluís Ribas de Pouplana

- Biologia de la traducció genética. Grups de Recerca reconeguts per la Generalitat de Catalunya 2009-2013 (2009 SGR 1277). Agency for Administration of University and Research Grants (AGAUR). Principal investigator: Lluís Ribas de Pouplana
- Targeting protein synthesis in the apicoplast and cytoplasm of plasmodium (MEPHITIS), European Commission (223024). 2009-2011. Principal investigator and consortium coordinator: Lluís Ribas de Pouplana
- Plasmodium falciparum que codifican ligandos para la invasión de eritrocitos y fenotipos asociados al silenciamiento o activación de los mismos. Proyectos de Investigación en Salud (PIO7-0891). Carlos III Health Institute (ISCIII). 2007-2010. Principal investigator: Alfred Cortés
- Implicación de componentes del código genético en patologías humanas. Proyectos Investigación Fundamental (BIO2009-09776). Spanish Ministry of Science and Innovation (MICINN). 2010-2012. Principal investigator: Lluís Ribas de Pouplan

PhD theses

- Generació d'un model de malaltia mitocondrial humana en *Drosophila melanogaster*. Tanit Guitart, University of Barcelona (2010). Thesis director: Lluís Ribas de Pouplana. Honors: Cum Laude

Awards and honours

- *Paper of the week*. Editorial Board of the Journal of Biological Chemistry (2010). Awardee: Tanit Guitart and Lluís Ribas de Pouplana



© Institute for Research in Biomedicine (IRB Barcelona)
 Parc Científic de Barcelona. C/ Baldiri Reixac 10. 08028 Barcelona - Spain
 Tel: +34 93 402 02 50 | Fax: +34 93 403 71 14
 info@irbbarcelona.org