Sveučilište u Rijeci, Medicinski fakultet
University of Rijeka, Faculty of Medicine
Braće Branchetta 20 | HR - 51000 Rijeka
e-mail:dekanat_medri@uniri.hr
Tel:+385 (0)51 651 111
www.medri.uniri.hr

Pozvano predavanje prof. Simon Lebaron, 19. ožujka 2025. godine, u 14,00 sati u Vijećnici Medicinskog fakulteta u Rijeci

SURF2 as a new key regulator of nucleolar stress response.

Ribosome synthesis, is very energy consuming process, with more than 200 factors involved. When this process is altered due to endo- or exogenous stresses, human cells trigger so called nucleolar stress response. Indeed, nutrient deprivation, U.V/drug exposure or genetic mutations that affect one the factors involved in this mechanism, will promote ribosome synthesis alteration and stop, which will drive to the accumulation of an unassembled sub-ribosomal particle: the 5S RNP, in the nucleoplasm. In this free form, 5S RNPs are able to sequester and inhibit MDM2, thus promoting p53 stabilization, and cell cycle arrest. This regulation by 5S particles is key in cell response to most of nuclear stresses including chemotherapies.

In patients suffering from ribosomopathies, this activation of p53 by free 5S RNPs plays a full part in the etiology of the diseases. Furthermore, the 5S rRNA synthesis by the RNA polymerase III is uncoupled from the synthesis of the other rRNAs by the RNA polymerase I. This independency might drive to unwanted accumulation of free 5S in the cell even under normal conditions.

To investigate how free-5S could be regulated in the cell, we purified free-5S RNP and uncovered a new interaction partner, SURF2 and we set-out its functional characterization. During this study, we were able to show that SURF2 competes with MDM2 for 5S binding both in vivo and in vitro and that its depletion promotes cell cycle arrest and apoptosis upon stress whereas its over-expression protects cells from nucleolar stresses and impedes p53 activation following exposure to different drugs. During this presentation, I will present our last data on SURF2 characterization and why we think that SURF2 could represent an innovative therapeutic target both as an anti-cancer treatment and for patients suffering from ribosomopathies, including DBA.

Sveučilište u Rijeci, Medicinski fakultet
University of Rijeka, Faculty of Medicine
Braće Branchetta 20 | HR - 51000 Rijeka
e-mail:dekanat_medri@uniri.hr
Tel:+385 (0)51 651 111
www.medri.uniri.hr

Biography

Dr. Simon Lebaron is a molecular biologist specializing in ribosome synthesis and nucleolar stress. He currently serves as a Research Scientist (Chargé de Recherches INSERM) at the Centre de Biologie Intégrative (MCD-CNRS UMR 5077) in Toulouse, France. His research focuses on the molecular origins of ribosomopathies, with a particular interest in 5S RNP particles and their role in cellular stress responses.

Dr. Lebaron obtained his PhD in Molecular Biology from Université Paul Sabatier in 2008, where he studied under the supervision of Dr. Yves Henry. He then pursued postdoctoral research at the Wellcome Trust Centre for Cell Biology, University of Edinburgh, working with Professor David Tollervey on ribosome assembly factors and developed the first in vitro maturation assay of eukaryotic ribosomes. From 2013 to 2017, he was a Research Scientist at Université Paris Descartes, applying integrative structural biology approaches to study ribosome assembly in yeast and human systems. In 2016, he earned his Habilitation à Diriger des Recherches (HDR) from the University Paris Descartes.

Dr. Lebaron has been the recipient of numerous prestigious grants and fellowships, including an EMBO Postdoctoral Fellowship, funding from ANR, INCA, and the Ligue Contre le Cancer. As a dedicated mentor, he has supervised multiple PhD and master's students. He is also actively involved in scientific coordination at the CBI RNA department and has contributed to teaching next-generation sequencing (NGS) analysis and is involved in science communication with society.

A recognized expert in his field, Dr. Lebaron has been invited to present his research at several international conferences. His ongoing work continues to provide key insights into ribosome biogenesis and its implications for human health.