

## **Research on the gut microbiome receives highly endowed funding**

**Professor Julio Saez-Rodriguez's team, researcher at the Medical Faculty of Heidelberg University and Heidelberg University Hospital, together with scientists from Heidelberg and Sweden, has received a ERC Synergy Grant in the amount of 10 Mio Euro for their joint project to study host-microbiome interactions in the gut.**

The human microbiome, consisting of many billions of microorganisms that inhabit our bodies, contributes to health and disease in many ways, in particular in the gut. The group of Professor Julio Saez-Rodriguez, head of the Institute for Computational Biomedicine at Heidelberg University's Faculty of Medicine develops novel computational and machine learning approaches to study molecular alterations in human cells in disease, and has recently started to also investigate the microbiome and how it interacts with the cells in the human body.

Previous research has typically analyzed the gut's microbiome indirectly in stools of the patients. The stool contains food residues as well as bacteria of the microbiome and human cells of the intestinal mucosa. However, these analyses lack spatial information - where in the gut certain microbes are located and with which human cells they interact. The CartoHostBug project, a collaboration between the research team led by Prof. Saez-Rodriguez with the teams of Dr. Georg Zeller from EMBL, Professor Eduardo Villablanca from the Karolinska Institute, and Professor Stefania Giacomello from KTH Royal Institute of Technology, aims to change this.

### **"Maps" of the gut**

The researchers hope to use the spatial information to create "maps" of the microbial composition and molecular status of human cells at spatially defined locations. In the process, they plan to compare the "maps" of the gut of healthy people with those of patients with inflammatory bowel disease or colon cancer. Based on these data, the scientists plan to develop computational models of the gut ecosystem to gain new insights into the biological processes underlying cell-microbiome interactions in healthy and diseased individuals, to ultimately develop novel therapies.

"We look forward to synergizing our expertise in computational biomedicine with those of our colleagues on immunology, spatial technologies and microbiome research", said Prof. Saez-Rodriguez. "This enables us to gain unprecedented high-resolution spatial atlases of the human gut at the interface between the microbiome and human cells."

### **The ERC Synergy Grant**

The ERC Synergy Grant is a funding program that supports small teams of scientists who want to tackle big research problems. This year, thirty-seven research groups will receive a total of €359 million. ERC-Synergy Grants help research groups pool diverse skills, knowledge, and resources to make progress with new approaches or techniques. The ERC-Synergy Grant is part of the EU research and innovation program "Horizon Europe".

### **Contact**

Professor Julio Saez-Rodriguez  
Direktor, Institute for Computational Biomedicine, Medizinische Fakultät Heidelberg  
Gruppenleiter Saez-Rodriguez Group  
Molecular Medicine Partnership Unit (MMPU) with EMBL  
ELLIS Heidelberg

Informatics for Life

[pub.saez@uni-heidelberg.de](mailto:pub.saez@uni-heidelberg.de)

[Saez-Rodriguez Group \(saezlab.org\)](http://saezlab.org)

[Press release to the ERC Synergy Grants](#)