# ERC Synergy Grant for Juri Rappsilber and Partners

Start Time: Monday, November 6, 2023

End Time:

It's the 3rd time a UniSysCat researcher has been part of a team that received an ERC Synergy Grant. After Peter Hegeman in 2020 and Robert Bittl in 2022, Juri Rappsilber is the fortunate recipient in 2023. But he is not alone - the ERC Synergy Grant specifically promotes collaborations between different researchers, who jointly "address a research problem so ambitious, that cannot be dealt with one team alone" (source). In this case, Juri Rappsilber and his team collaborate with researchers from the European Molecular Biology Laboratory (EMBL) and Johns Hopkins University. Their project, "TransFORM," was one of only 37 projects that received an ERC Synergy Grant this year. The ERC (European Research Council), set up by the European Union in 2007, is the premier European funding organization for excellent frontier research. It funds creative researchers of any nationality and age, to run projects based across Europe. The ERC offers four core grant schemes: Starting Grants, Consolidator Grants, Advanced Grants and their flagship Synergy Grants.

We asked Prof. Rappsilber some questions about this significant achievement and the plans for the "TransFORM" project:

**Could you briefly describe your main research topics and what role UniSysCat plays in your work?**

We are developing a new kind of chemistry- and AI-based microscope that allows us to visualize all or at least many proteins in the context of their interactions within the context of a whole cell. UniSysCat allows us to take a longer-term approach to this fundamental development and provides us with an environment that appreciates risk-taking and audacious thinking.

**You have been awarded the ERC Synergy Grant for the "TransFORM" project – what are the focus and objectives of this project?**

Proteins are produced by cells using molecular factories called ribosomes. These ribosomes react to the changing cellular needs. Newer research sees ribosomes to have an additional and more active role in how a cell senses and adapts to a changing environment or when the cell develops. In addition, where a ribosome is positioned within a cell may play a role in its functioning. We will study these processes and contributions of ribosomes that go beyond their established role as production sites of proteins, placing them into the context of whole cells. This makes also clear why my lab is involved, given our focus on making proteins visible inside cells.

**The ERC Synergy Grant promotes collaborations across disciplines. How did the partnership with your colleagues from the European Molecular Biology Laboratory and Johns Hopkins University come to be and how will you benefit from working together?**

The seed was laid during a collaboration with Julia Mahamid at EMBL to study ribosomes in *Mycoplasma pneumoniae*, a pathogenic bacterium that causes lung infections. We used our budding chemical microscope in conjunction with the EMBL's world-leading ability to image ribosomes inside cells by electron microscopy to find how ribosomes look inside cells and interact with other cellular processes. Results of this work were reported by us in Science 2020 and Nature 2022. In the ERC Synergy Grant, we want to advance our investigations into human cells. For this, we could excite Rachel Green, Johns Hopkins University, who is one of the most renowned ribosome experts. This will help convert our unprecedented ability to visualize ribosomes inside cells with the ability to manipulate them and consequently better understand their functioning.

**What are you most excited about with this project?**

All too often we follow the dictates of our circumstances. I am excited about being part of a team of world-leading scientists that pushes the boundary of what is thinkable, sees what no one has seen before, and lays the foundation for countless advances that may fundamentally change the way biological research will be done in the near future.