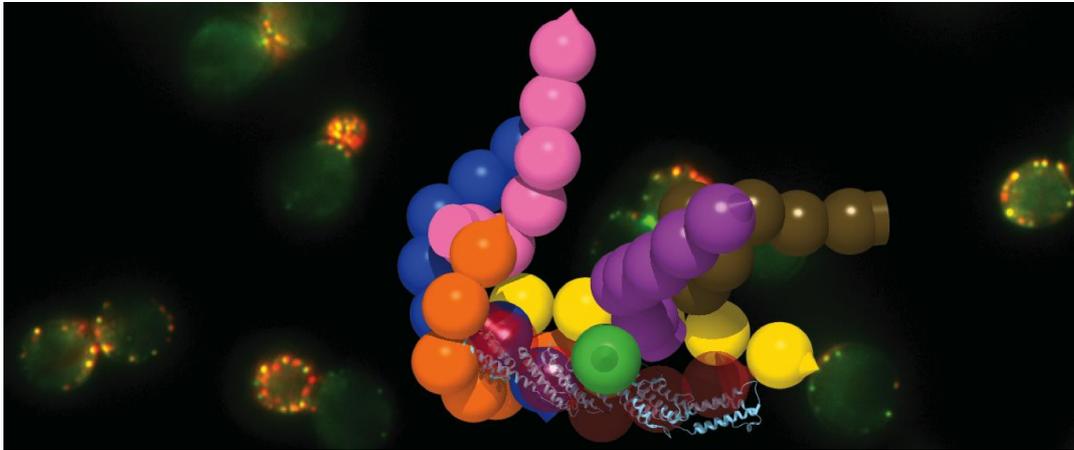


PhD in “Advanced microscopy of supra-assemblies regulating cell growth”

Oriol Gallego laboratory, DCEXS (UPF), Barcelona, Spain (www.gallegolab.org)



The project

The project aims to decipher the mechanism of exocytosis, a long-standing question in cell biology that is crucial to understand how cells control their growth. Exocytosis, an essential cellular process conserved in all eukaryotes, is one of the most important pathways to regulate the cell surface composition. Exocytosis is fundamental for cell polarity, morphogenesis, cell differentiation and neurobiology. Not surprisingly, a long list of diseases arises when the exocytic machinery is perturbed, such as the Polycystic kidney disease, the Joubert-Syndrome and cancer. Exocytosis remains a largely unknown process at the mechanistic level due to its dynamism and complexity.

Our group, in the frontier between cell biology and structural biology, develops new methods of fluorescence microscopy that allow the structural analysis of molecular pathways beyond the classical study of purified protein complexes isolated from their physiological context. We have developed a new method to visualize the spatial organization of molecular systems (supra-assemblies) at the low nanometer scale and directly in living cells. This unique tool, allows us to solve questions in cell biology that were not accessible by other techniques (Picco *et al*, 2017, Cell). The student will push the resolutive power of fluorescence microscopy to time-resolve the mechanism of exocytosis. The student will acquire a strong expertise in DNA editing tools, advanced light microscopy and image analysis. Depending on the student's skills and interest, the project could also involve *in silico* integration of acquired data to generate quantitative models.

Requirements

- Background in Biophysics, Optical physics, Biomedical Sciences, Biology, Biochemistry, or similar.
- A minimum of 1-year expertise in a research lab is required.
- Expertise in yeast genetics, membrane biology, fluorescence microscopy or programming is a plus.
- Excellent written and oral communication skills in English.

The position

This is a 4-year PhD position in the group of Oriol Gallego at the department of Experimental and Health Sciences (DCEXS) of the Pompeu Fabra University. The student will be part of a newly emerging research lab devoted to study supra-molecular machineries that control cell growth. We are building a team of scientist with different expertise where you will be trained in a wide panel of disciplines and where you are expected to contribute and collaborate.

The DCEXS is located at the PRBB, one of the strongest research centers in south Europe. We are equipped with state-of-the-art research facilities in a unique scientific environment. DCEXS research excellence has been recognized with a Maria de Maeztu award and our PhD program is entirely in English.

How to apply

To apply, please send your CV, motivation letter and contact details of two referees to Dr Oriol Gallego (oriol.gallego@upf.edu) before 31/07/2019.

Selected references

- Picco, A., Irastorza-Azcarate, I., Specht, T., Böke, D., Pazos, I., Rivier-Cordey, A-S., Devos, D.P., Kaksonen, M., **Gallego, O.**, (2017) “The *in vivo* architecture of the exocyst provides structural basis for exocytosis.” **Cell** 168, 400-412.e18.
- Irastorza-Azcarate, I., Castaño-Díez, D., Devos, D.P., **Gallego, O.**, (2019) “Live-cell structural biology to solve biological mechanisms: the case of the exocyst” **Structure** 27, 886-892.