



Universitat  
Pompeu Fabra  
Barcelona

Departament  
de Ciències Experimentals  
i de la Salut



EXCELENCIA  
MARÍA  
DE MAEZTU



CEX2018-000792-M

Date of publication of the job offer: 20th January 2021

### Job title

Image analysis/Data modelling for single molecule localization microscopy (Barcelona)

### Job description

The Department of Experimental and Health Sciences - Faculty of Health and Life Sciences (DCEXS - FCSV; <https://www.upf.edu/cexs/>) at Pompeu Fabra University (Barcelona) is specialized in Biomedical Research (Cell and Molecular Biology, Molecular Medicine, Evolutionary Biology and Complex Systems, Biomedical Informatics, Genetics and Neurosciences, Biomedical Engineering, and Public Health and Education in Health Sciences), Teaching Degrees (Human Biology, Medicine and Biomedical Engineering) and Teaching Master's degrees (Biomedical Research, Bioinformatics for Health Sciences, Pharmaceutical and Biotechnology Industry, Clinical Analysis Laboratory, and Public Health).

We are seeking for motivated scientist to work on bioimage analysis in the Group led by Dr. Oriol Gallego. With the co-supervision of the group of Carlo Manzo (UVic-UCC), the candidate will participate to an interdisciplinary project by deriving biological measurements from Single Molecule Localization Microscopy (SMLM) and live-cell imaging by using machine learning and data modelling.

In the past, we combined cell engineering and advanced live-cell imaging to develop PICT, a new method that can resolve molecular architectures *in vivo* with up to 2 nm precision (Picco *et al*, 2017, Cell; Irastorza-Azcarate *et al*, 2019, Structure). In this new project we would like to go one step further by using super resolution microscopy. **The researcher will develop computational tools that allow us to extract quantitative models from advanced microscopy data and to deliver mechanistic insight about the 3D organization of the cell machinery.** In particular, the tasks of the researcher will include the implementation of deep learning and Bayesian methods for the statistical analysis and quantification of images obtained through super resolution microscopy and live-cell imaging (Kosůta *et al*, 2020).

The researcher will join an international team developing imaging techniques at the frontier between cell biology, engineering and physics. The project is truly interdisciplinary, and it will be carried out together with biologists, microscopists, bioinformaticians and physicists. The researcher, who will be based on our laboratory at the Pompeu Fabra University (UPF, Barcelona), will have all the necessary facilities and expertise available. As part of the UPF, the lab is located at the PRBB, one of the strongest scientific campus in south Europe. With state-of-the-art research facilities, PRBB offers an ideal scientific and international environment.



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#### **Project and Institution that finance the contract**

DCEXS Unidad de excelencia María de Maeztu, Pompeu Fabra University, funded by the Ministerio de Ciencia, Innovación y Universidades.

#### **Official number reference**

CEX2018-000792-M

#### **Information on the requirements**

- Expertise in at least one of the following: Optics applied to light microscopy, bioimage analysis or data modelling.
- Bs or MSc in computer sciences, (Bio-)physics, (Bioscience) engineering, biotechnology, or related disciplines.
- Basic knowledge of computer programming (Python, R, Matlab, Julia).
- Expertise in SMLM will be valued, although it is not a requirement.

#### **Benefits of the opening**

The candidate will receive a full-time contract and an annual salary according to the UPF salary guidelines. She/he will be able to receive training in complementary through courses of Pompeu Fabra University and the PRBB Intervals Programme.

#### **Information on the application process**

Please send the following documents:

- CV
- Cover letter

to the email address [oriol.gallego@upf.edu](mailto:oriol.gallego@upf.edu) with "Application to the Image analysis/Data modelling for single molecule localization microscopy" in the email title.

Confidentiality in document handling and equality of opportunities policy are guaranteed by Pompeu Fabra University.

#### **Deadline to submit applications:**

01/03/2021