

Engineer or PhD position in super-resolution microscopy

We are seeking an enthusiastic scientist in super-resolution microscopy to join us at the Centre for Integrative Biology, IGBMC, Illkirch, France.

We have recently done a series of developments in super-resolution microscopy to facilitate single molecule localization microscopy (SMLM) analysis. This includes a pipeline for image reconstruction, drift correction, chromatic aberration correction for dual-color analysis and resolution estimation (Andronov *et al.*, *Bioinformatics* 2016), Voronoi-diagram based tools for 2D clustering and segmentation analysis (Andronov *et al.*, *Sci Rep* 2016) and most recently 3D clustering and segmentation analysis based on Voronoi diagrams (Andronov *et al.*, *Bioinformatics* 2018).

The person to recruit should have a strong interest in conducting such developments, which aim at (i) routine implementation of SMLM for various projects at the institute and for external users as part of the National and European Infrastructures FRISBI and Instruct-ERIC, (ii) performing developments in correlative light and electron microscopy (CLEM) at the interface between imaging, FIB/SEM, cryo electron tomography and single particle cryo-EM. The long-term aim is to interface SMLM and cryo-EM to observe and reconstruct in 3D macromolecular complexes at high resolution once they have been localized and imaged in the cellular context.

The person to recruit (Engineer or PhD) should have a Master or a PhD and have a strong background in imaging, optics, physics or informatics & software developments and ideally have experience in super-resolution microscopy (e.g. (d)STORM or PALM etc.).

For more details please see below.

The platform and associated research groups are located at the Centre for Integrative Biology (CBI) at IGBMC, Illkirch/Strasbourg, France, which comprises cutting-edge imaging and cryo-EM facilities:

The CBI provides a leading-edge scientific and technological environment in integrated structural biology to address the structure and function of biological systems, notably on gene expression, from the atomic, molecular to the tissue scales. The CBI <http://www.igbmc.fr/grandesstructures/cbi/>, hosts the French and European Infrastructures for Integrated Structural Biology, FRISBI <http://frisbi.eu/> and Instruct-ERIC <https://www.structuralbiology.eu/> which comprises **super-resolution fluorescence microscopy (dSTORM/GSDIM Leica Microsystems SRGSD, equipped with adaptive optics for 3D SMLM image acquisition)**, advanced electron microscopy facilities equipped with cutting-edge instrumentation such as Titan Krios and Polara cryo electron microscopes, and cryo Focused Ion Beam Scanning Electron Microscope (cryo-FIB/SEM). The Titan Krios microscope is equipped with Cs corrector, Falcon 3 camera, GIF energy filter, K2 camera and phase plate. In addition, the EM facility has a suite of associated equipments for sample preparation and dedicated computing resources for image analysis, processing and 3D reconstruction by SMLM/fluorescence microscopy, single particle cryo-EM and cryo electron tomography (cryo-ET). The CBI hosts the Imaging Centre of the IGBMC, which comprises numerous equipments such as confocal microscopes, macrosopes, videomicroscopes / time-lapse instruments, FRET, FLIM, etc., see <http://www.igbmc.fr/technologies/> and <http://ici.igbmc.fr/equipment/>.

Applications should be sent via email to klaholz@igbmc.fr including CV, list of publications, names of 3 referees and motivation letter. The position remains open until filled.

Some recent publications:

- L. Andronov, J. Michalon, K. Ouararhni, I. Orlov, A. Hamiche, J.-L. Vonesch & B. P. Klaholz. 3DClusterViSu: 3D clustering analysis of super-resolution microscopy data by 3D Voronoi tessellations. *Bioinformatics*, **2018**. <http://dx.doi.org/10.1093/bioinformatics/bty200> & <https://www.biorxiv.org/content/early/2017/06/07/146456>.
- I. Orlov, A. G. Myasnikov, L. Andronov, S. K. Natchiar, H. Khatter, B. Beinsteiner, J-F. Ménétret, I. Hazemann, K. Mohideen, K. Tazibt, R. Tabaroni, H. Kratzat, N. Djabeur, T. Bruxelles, F. Raivoniaina, L. di Pompeo, M. Torchy, I. Billas, A. Urzhumtsev & B. P. Klaholz. The integrative role of cryo electron microscopy in molecular and cellular structural biology. *Biol Cell.*, **2017**, 109, 81-93. doi: <http://dx.doi.org/10.1111/boc.201600042>.
- S. K. Natchiar, A. G. Myasnikov, H. Kratzat, I. Hazemann & B. P. Klaholz. Visualization of chemical modifications in the human 80S ribosome structure. *Nature*, **2017**, 551, 472-477. doi: <http://dx.doi.org/10.1038/nature24482>.
- L. Andronov, I. Orlov, Y. Lutz, J-L. Vonesch & B. P. Klaholz. ClusterViSu, a method for clustering of protein complexes by Voronoi tessellation in super-resolution microscopy. *Sci. Rep.* **2016**, 6, 24084. doi: <http://dx.doi.org/10.1038/srep24084>.
- L. Andronov, Y. Lutz, J-L. Vonesch & B. P. Klaholz. SharpViSu: integrated analysis and segmentation of super-resolution microscopy data. *Bioinformatics*, **2016**, 32, 2239-2241. doi: <http://dx.doi.org/10.1093/bioinformatics/btw123>.

For ongoing projects and full publication list of the associated team and the infrastructures see:

<http://igbmc.fr/Klaholz>

<http://www.igbmc.fr/grandesstructures/cbi/>

<http://frisbi.eu>