

Platform μ Life: fluorescence microscopy imaging

*Visualising the molecular architecture
of living entities*

μ Life is a microscopy platform dedicated to fluorescence imaging. Equipped with state-of-the-art instruments, μ Life can handle a wide range of applications, from high-resolution molecular imaging to dynamic imaging for life-sciences.

The R&D work performed on the platform relies on a technology watch approach, through which, in particular, the platform is able to acquire and test innovative equipment before it becomes commercially available.

EXPERTISES

- **Visualise**
dynamic events rapidly in several dimensions
- **Characterise**
fixed or dynamic molecular structures using evanescent wave imaging
- **Co-localise**
molecules using high-resolution molecular imaging
- **Perform**
spectral detection
- **Characterise**
the dynamics of proteins by targeted illumination: FRAP, Photoconversion
- **Study**
the mechanical properties of a structure by applying laser photoablation
- **Measure**
cellular traction stresses using «Traction Force Microscopy»
- **Modify**
the cellular environment in a controlled manner thanks to laser-induced dynamic patterning

Focus

Super resolution Microscopy

The μ Life platform is distinguished at national level by its β -tester activity for innovative technology, in particular focusing on high- and super-resolution techniques.

These techniques make it possible to exceed the light diffraction limit and achieve resolutions in the range of a few tens or hundreds of nanometres.

> Recently-acquired equipment increases the resolution while maintaining the possibility to observe dynamic processes in live.



TECHNOLOGY AND TOOLS

- **1 confocal microscope**
1 Zeiss LSM880 equipped with an Fast AiryScan detector
- **1 Nikon spinning disk confocal microscope**
equipped with a laser photo-ablation module
- **1 Nikon multimodal tirlf**
equipped with a targeted illumination module ; equipped with a laser photo-ablation module ; compatible with super-resolution (PALM)
- **1 Olympus inverted fluorescence microscope**
to observe live samples in phase-contrast or fluorescence
- **1 cell culture laboratory**
with a BSL2 containment level
- **1 data-analysis station**

SERVICES

- **Advice and follow-up on projects** from sample preparation to image acquisition
- **Expertise in** *in vitro* and *in cellulo* molecular imaging, traction stresses measurement by «traction force microscopy» and dynamic «laser patterning»
- **Practical and theoretical training** on the equipment
- **Technical assistance** for use of equipment
- **Temporary data storage** and transfer to a server exclusively dedicated to platform users
- **Technology watch** associated with R&D activity making it possible to offer the latest state-of-the-art technology

Highlights

Journal of Cell Science 2019

Spatial integration of mechanical forces by α -actinin establishes actin network symmetry

Nucleic Acid Research 2018

Direct transfection of clonal organoids in Matrigel microbeads: a promising approach toward organoid-based genetic screens

PLoS Pathogen 2017

Pseudomonas aeruginosa ExlA and *Serratia marcescens* ShlA trigger cadherin cleavage by promoting calcium influx and ADAM10 activation

irig.cea.fr

Interdisciplinary Research Institute of Grenoble

CEA-Grenoble
17 avenue des Martyrs
38054 Grenoble cedex 9

TO DEVELOP YOUR PROJECT

<http://www.cea.fr/drif/irig/Plateformes/mulife>

SCIENTIFIC DIRECTOR

Laurent Blanchoin / +33 4 38 78 32 90 / laurent.blanchoin@cea.fr

HEAD OF PLATFORM

Laëtitia Kurzawa / +33 4 38 78 32 03 / Laetitia.kurzawa@cea.fr