

CLSM

STED

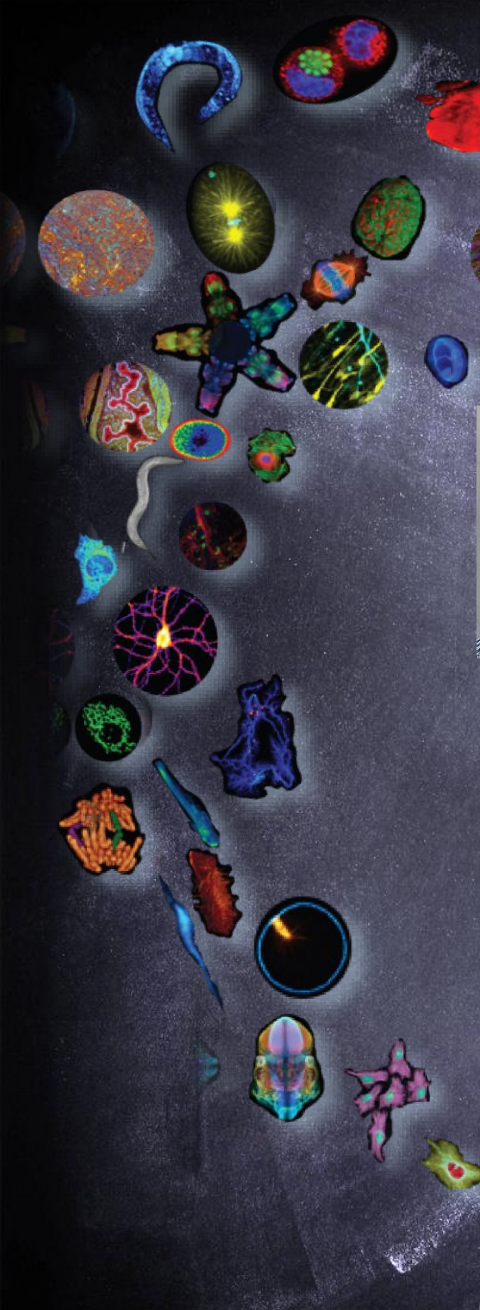
Core Facilities Open Day | 9th november | 2018

The Bioimaging Core Facility

a technological faculty platform

specialized in light microscopy

<https://www.unige.ch/medecine/bioimaging/en/bioimaging-core-facility/>



Sergei



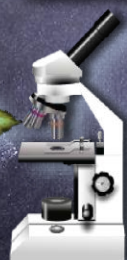
Nicolas



Olivier



François



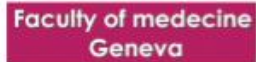
Publication

Data analysis

Image processing

Acquisition

Bioimaging
CORE FACILITY
Faculty of medicine
Geneva

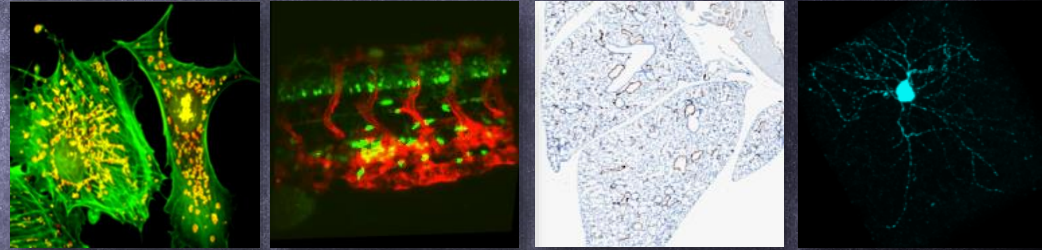


Bleaching	★★★★☆☆	low
Resolution	★★★★☆☆	medium
Speed acq.	★★★★☆☆	good
Multicolor	★★★★☆☆	2
Depth (z)	★★★★☆☆	<200 nm

Main applications in light microscopy

1- Localization

(co-localization, structure, large image, 3D...)



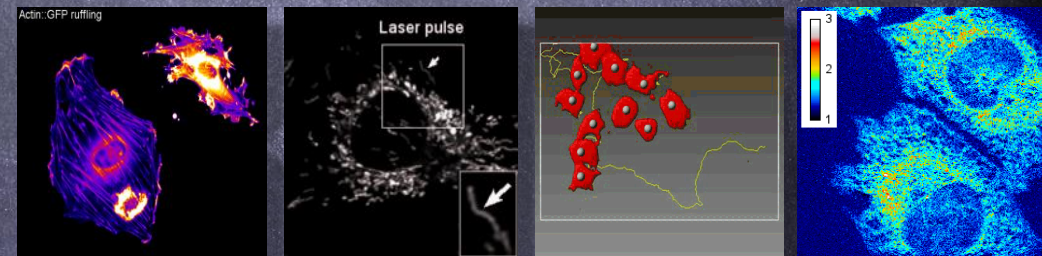
2- Isolation/ablation

(laser microdissection, laser injury)



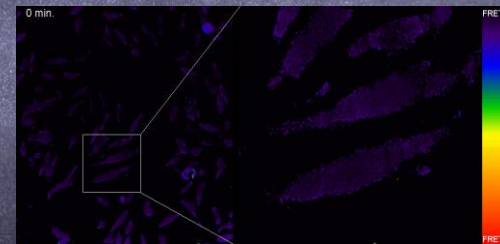
3- Dynamics

(time-lapse, FRAP/ photoactivation, tracking, Ca²⁺ imaging/ ratiometric Imaging...)



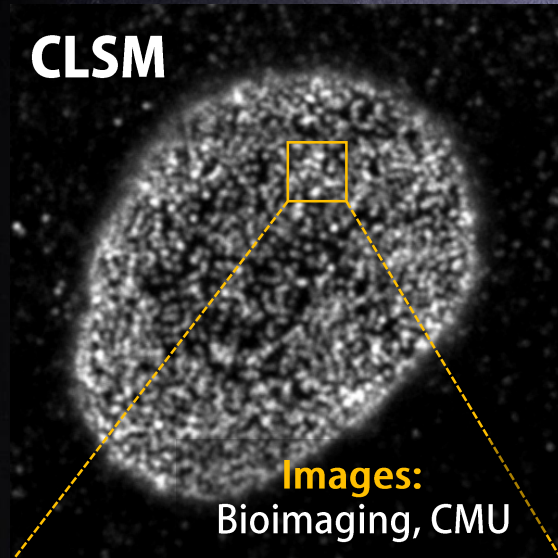
4- Interactions

(FRET, FLIM, FC(CS)...)

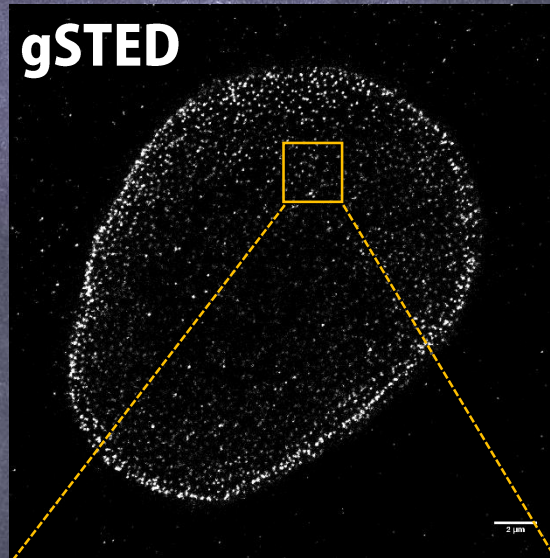


Gated STED nanoscopy of Nups

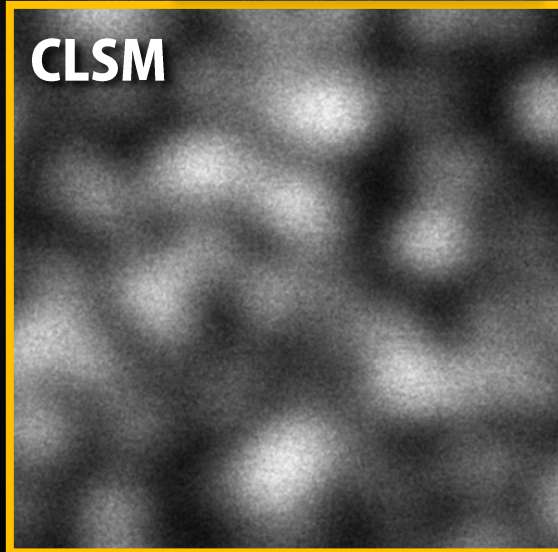
CLSM



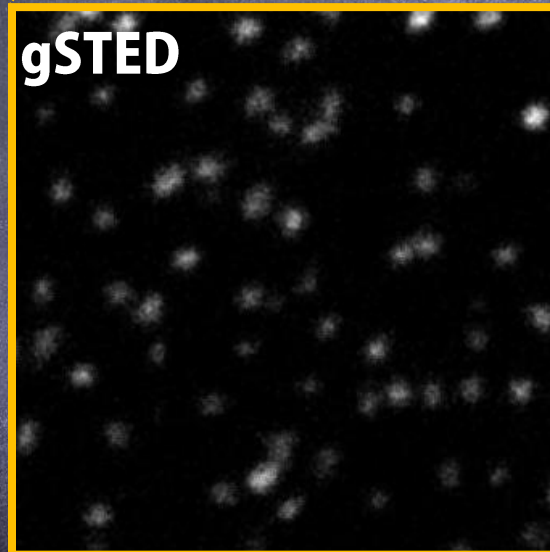
gSTED



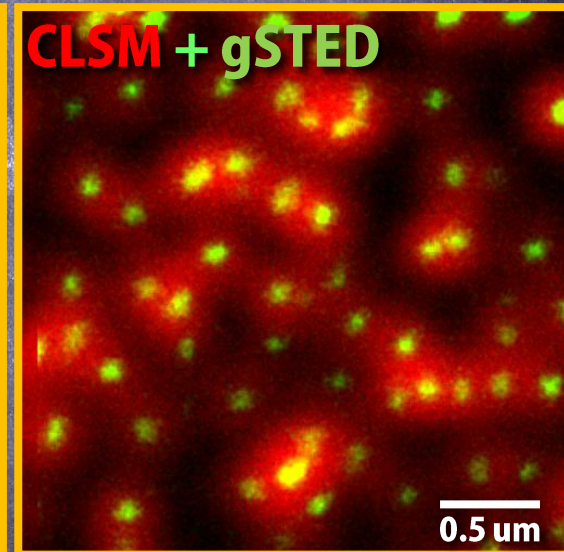
CLSM



gSTED

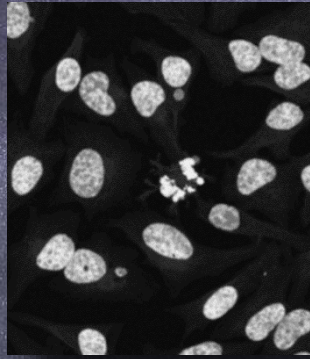
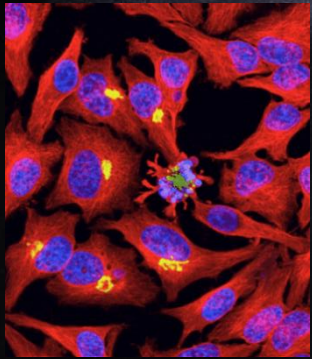


CLSM + gSTED



	gSTED	CLSM
Lateral Resolution (XY)	50 nm	200-250nm
Axial resolution (Z)	80nm	Up to 500nm

Tools available for image processing



35 nuclei

.....

Image
Acquisition

Image
Pre-processing

Image
Segmentation

Quantification,
Annotation

Data
analysis

DEFINIENS
the tissue phenomics company



Definiens/ Tissue Studio
Huygens
Amira
Imaris
Metamorph
Matlab

(Commercial licences)

ImageJ/Fiji
Cell profiler

NIS Element (Nikon)
ZEN (Zeiss)
Las-AF (Leica)

(Open-source, freewares)



Examples of interactions

between core facilities

Anticorps Recombinants

Controls

Zebrafish

Embryos/
Laser injury
& recordings

Histology

Samples
preparation/
Automated
imaging

Flow Cytometry

Microfluidic single cell
experiment

Biostock

Sale of
laboratory
supplies at
preferential
prices

Institute of Translational Molecular Imaging (ITMI)

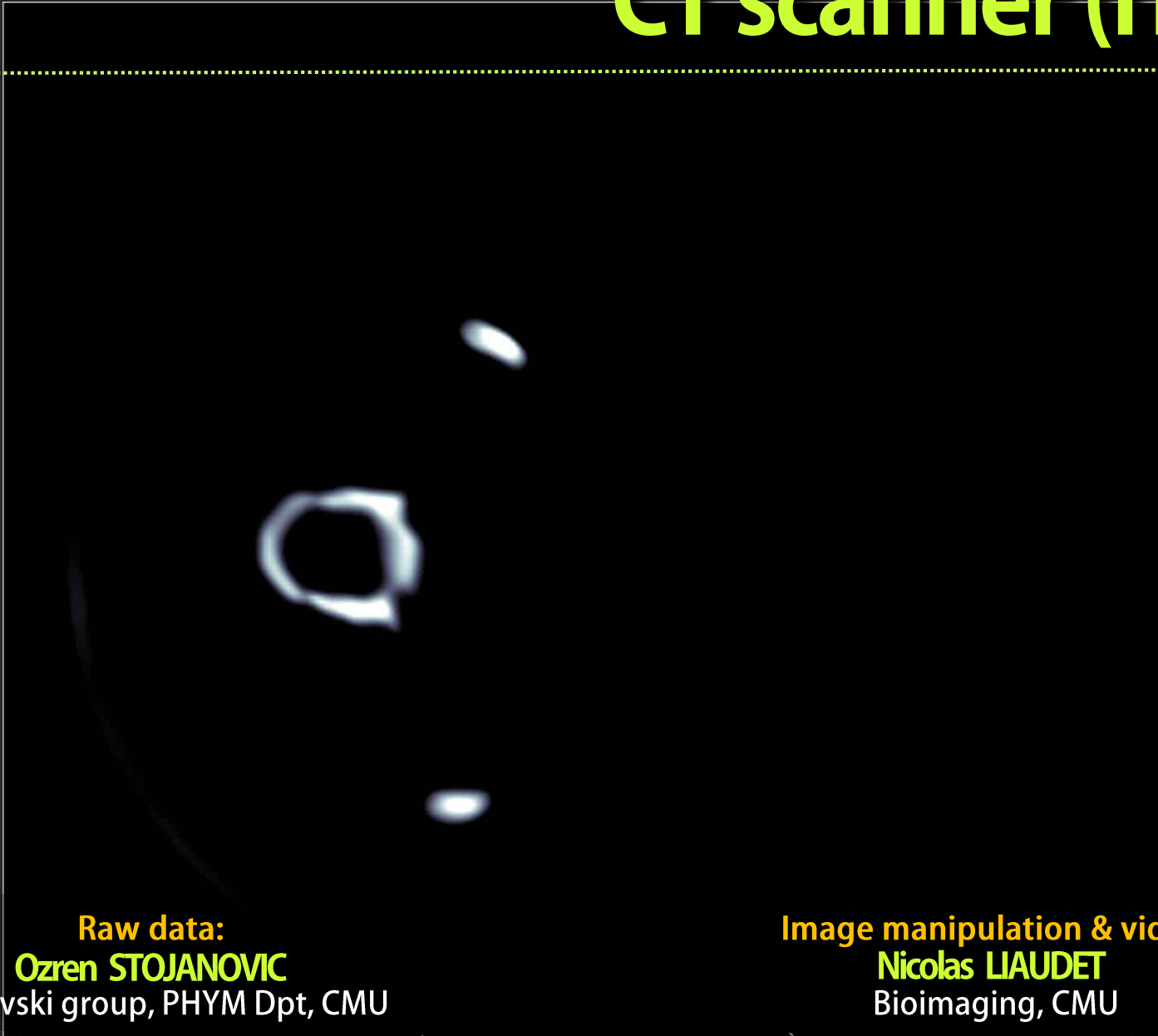
CT scans/ 3D rendering-
quantification

BiOimaging
CORE FACILITY

Electron Microscopy (PFMU)

CLEM

CT scanner (ITMI)



Raw data:

Ozren STOJANOVIC

Trajkovski group, PHYM Dpt, CMU

Image manipulation & video:

Nicolas LIAUDET

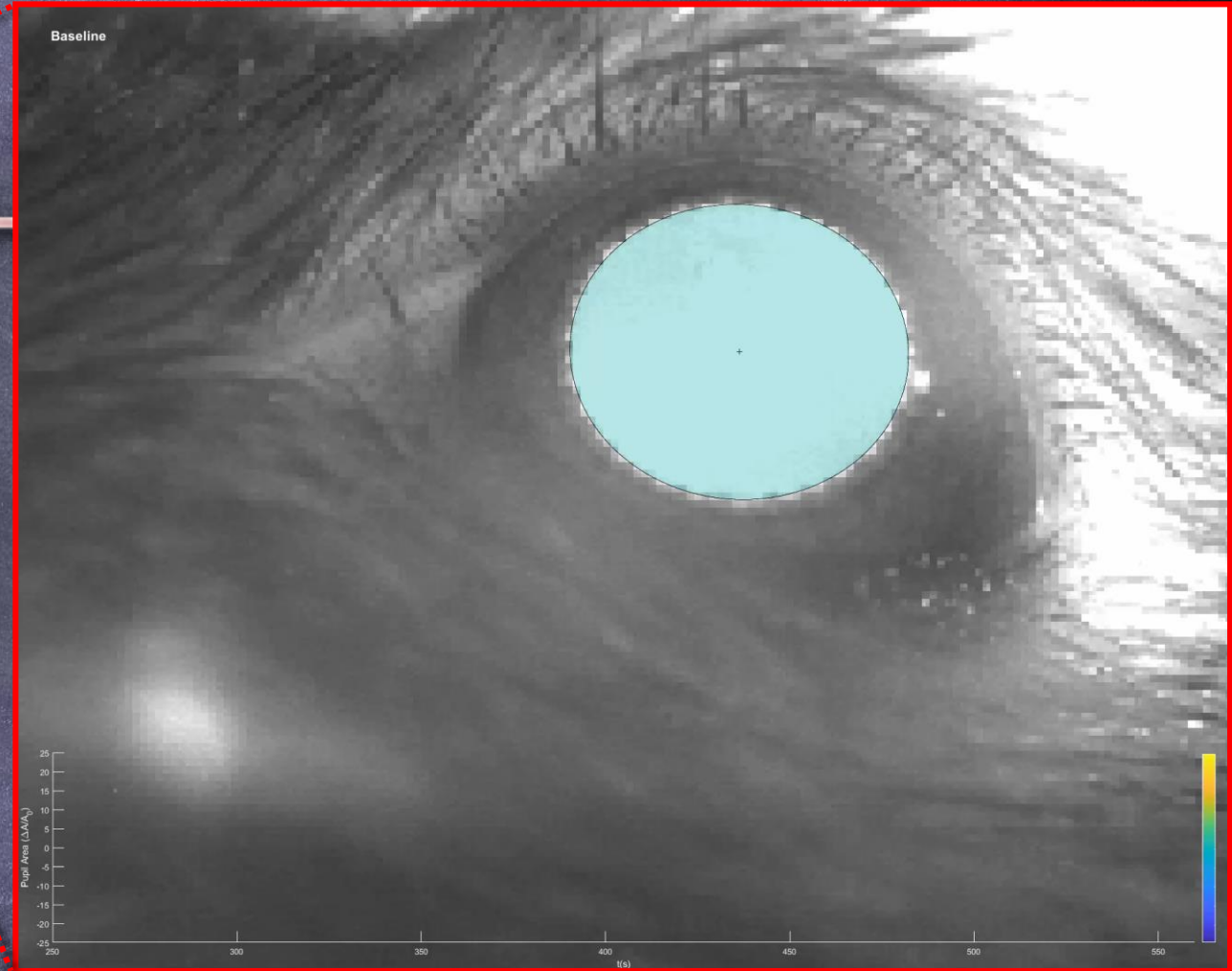
Bioimaging, CMU

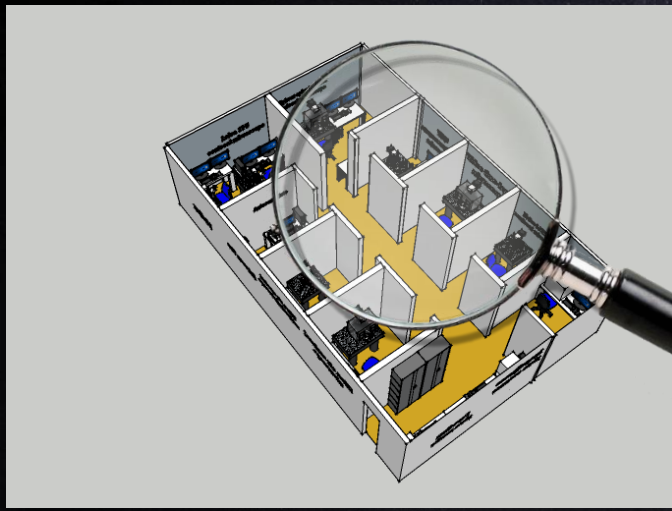
Behavioral study after a sound stimulus



Raw data:
Giuliana FOSSATI
Dayer group
Dpt de psychiatrie/
NEUFO Dpt, CMU

**Image processing
& video:**
Nicolas LIAUDET
Bioimaging, CMU





Visits start at 14:10

THE MICROSCOPES
ARE THERE!

Buildings
E & F

- Avenue de Champel -

Buildings
A & B



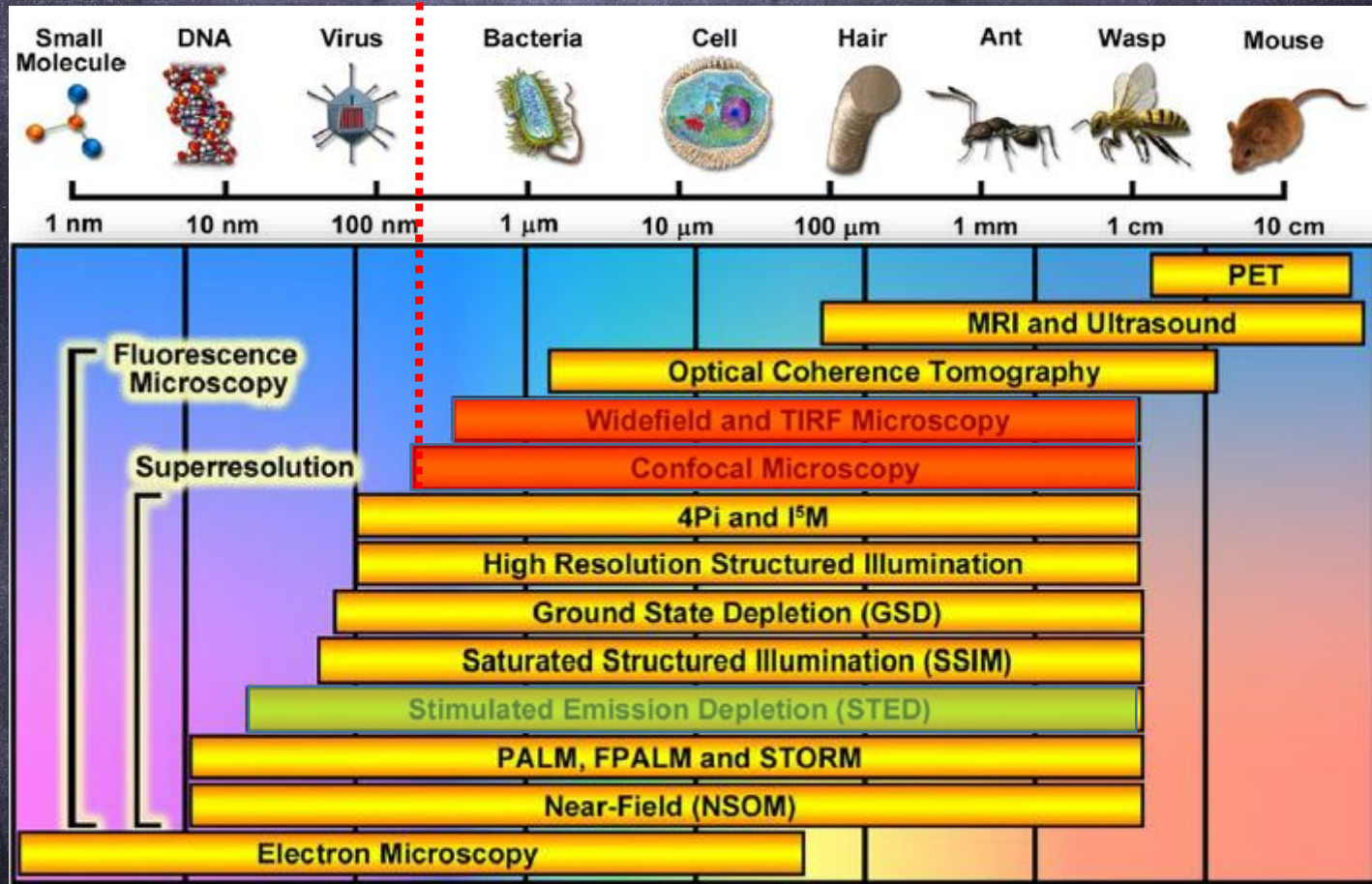
OUR OFFICE
IS HERE!

- Rue du Lombard (HUG side) -

Spatial & temporal resolution of biological imaging techniques

200 nm (lateral) & 500 nm (axial)

Temporal resolution



(from Zeiss at: <http://zeiss-ampus.magnet.fsu.edu/articles/superresolution/introduction.html>)