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1. Learning objectives

Explore several **cutting-edge techniques in microscopy**.

Learn how imaging techniques are used to understand biology: to explore morphology and functional anatomy, but also how to detect and manipulate electrical and biochemical activities of cells and networks.

2. Topics

The course will cover fluorescence techniques, from confocal, two-photon, light-sheet to super-resolution microscopy

3. Teaching

Seminars by active researchers/experts in the field

4. Examination

Final exam (written, 2 hours, questions based on lecture material)

5. Speakers/topics

Elena Avignone: Basic principles of fluorescence microscopy

Marc Landry: Basic principles of electron microscopy

Frédéric Lanore: In vivo 2P imaging

Stephane Bancelin: Label-free imaging

David Perrais: Design and use of sensors in neuroscience

Julien Dupuis: Single-molecule techniques to study synapses

Gregory Giannone: Super-resolution and protein tracking, cell migration

Mathieu Ducros: Light-sheet microscopy

Eirini Papagiakoumou: Light sculpting for neuronal activation