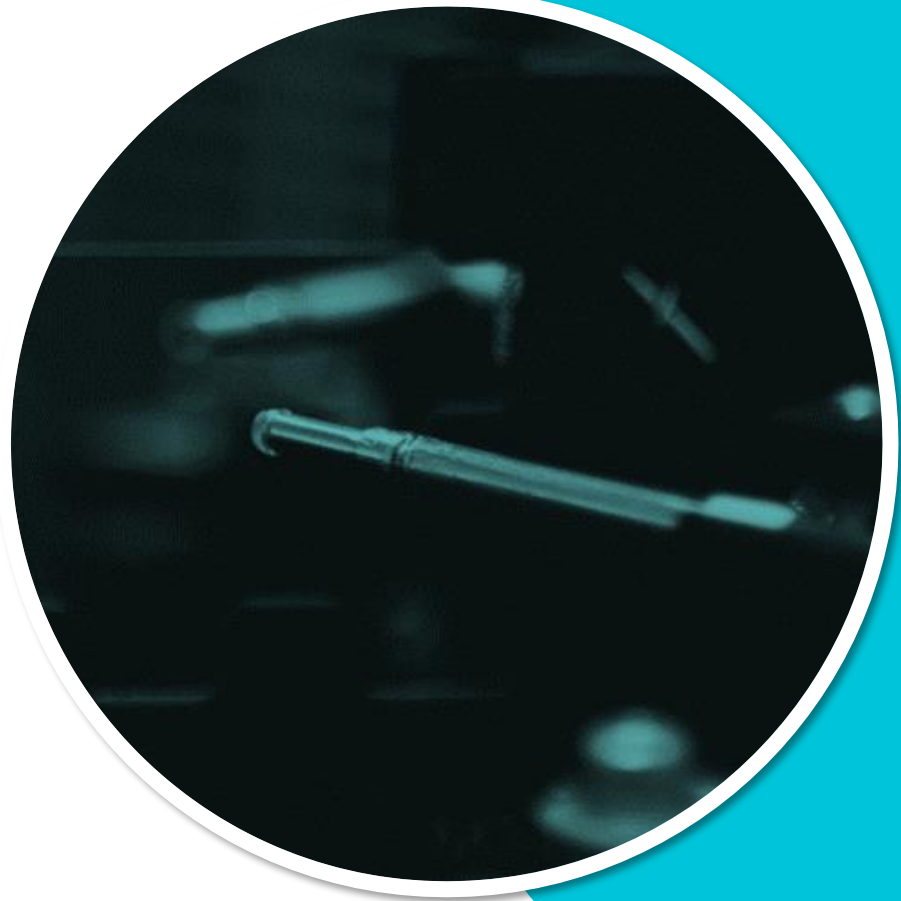


LIGHTCORE
technologies

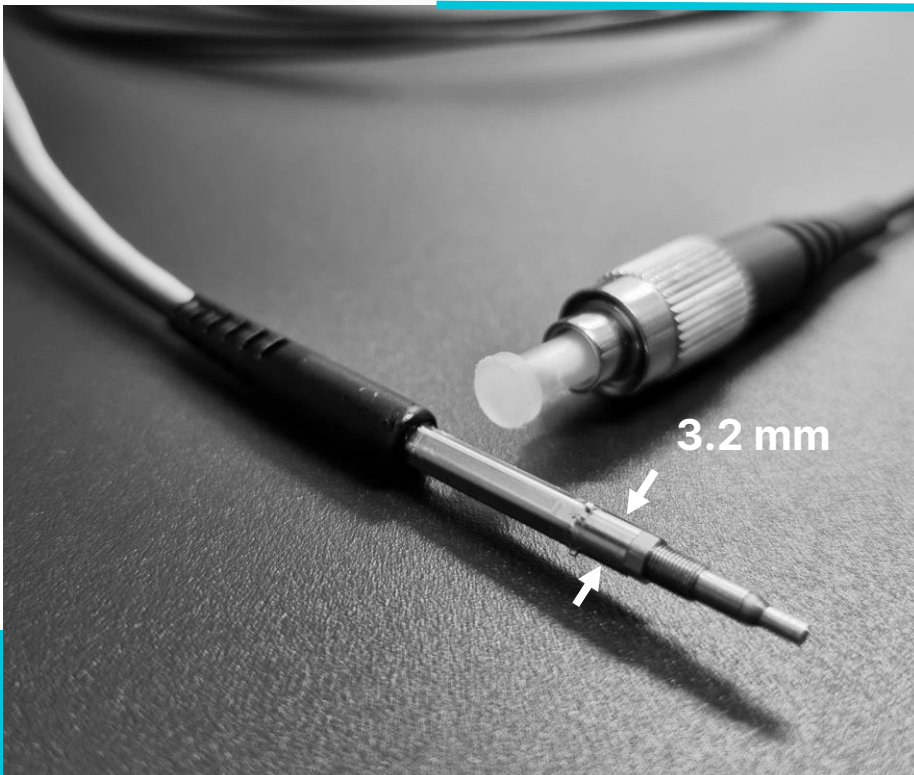


InSplorer

Cutting edge nonlinear endoscopy



Flexible probe



Endoscope dimensions

Fiber length : up to 3.5 m
Head length : \approx 50 mm
Head width : 3.2 mm

Imaging performances

Refresh rate : up to 10 fps
PSF : down to $0.9 \mu\text{m}^*$
Field of view : up to $600 \mu\text{m}^*$
Collection NA : up to 0.7^*
Working distance : up to $600 \mu\text{m}^*$
Axial resolution : $15 \mu\text{m}$ (2P) – $5 \mu\text{m}$ (3P)



Movable system



Standalone cart

Contains the electronics, control computer with monitor arm, compact source*, detection **optics**, and scanner **calibration** setup

* Available sources

Femtosecond and **picosecond** lasers

Option to integrate a tabletop laser via a **transport fiber**

Dedicated user-friendly software

Scanner **calibration**

Imaging and **signal** measurements

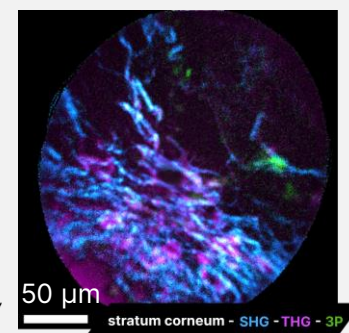
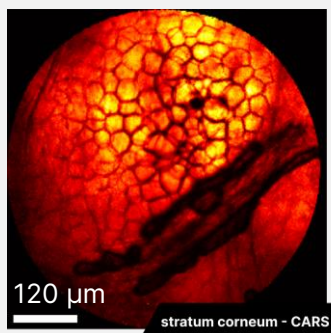
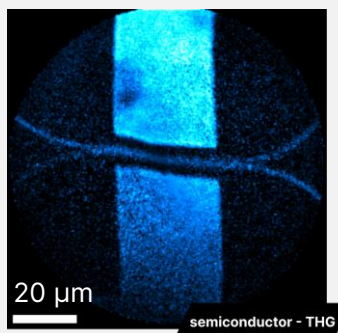
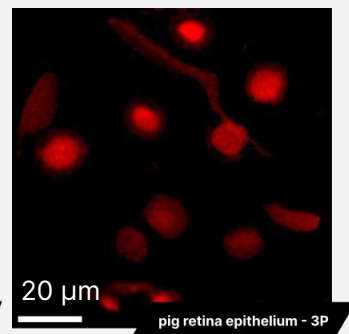
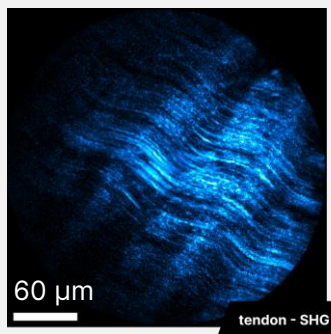
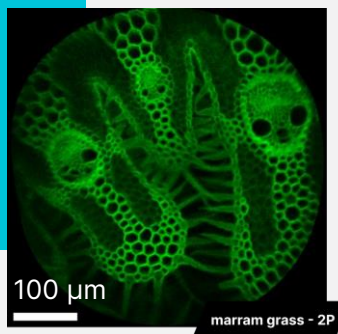
Image live and post **processing**



Multimodal imaging

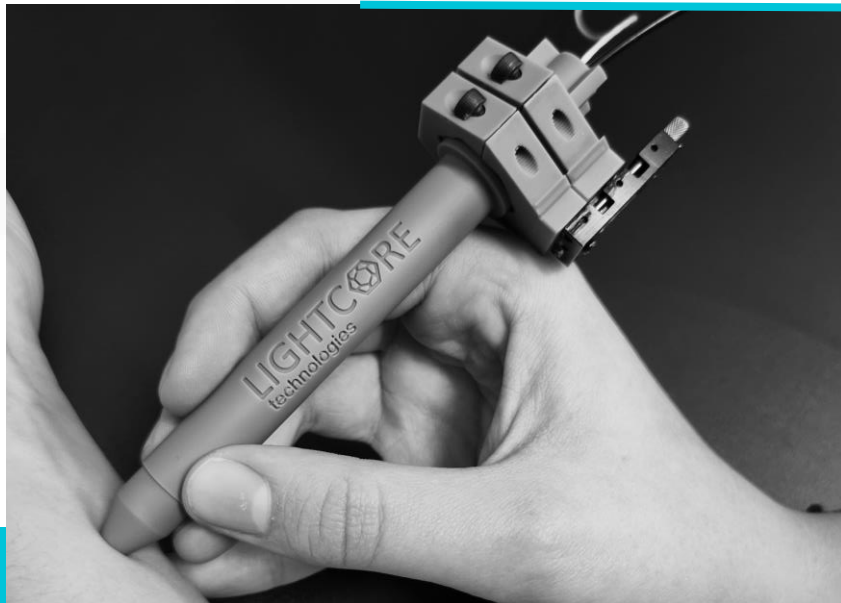
The InSplorer endoscope allows a variety of nonlinear imaging modality, including :

2-photon, 3-photon, SHG, THG, CARS

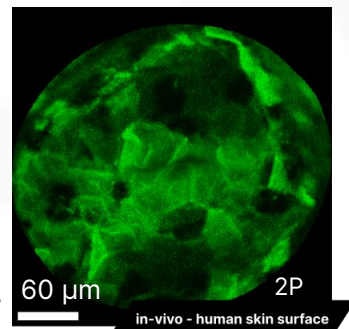
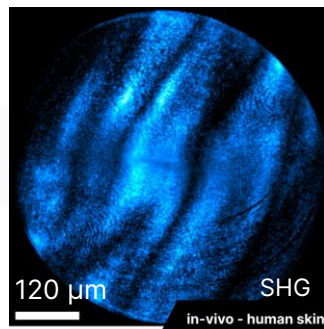
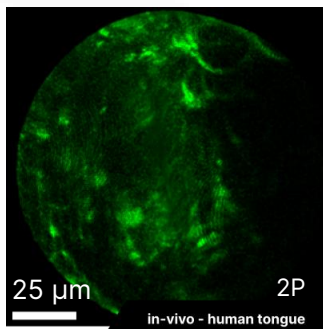




In-vivo imaging | hand-held pen



With our custom-made **hand-held** endoscope pen, and integrated **z-scan**, we are able to perform real-time in-vivo imaging

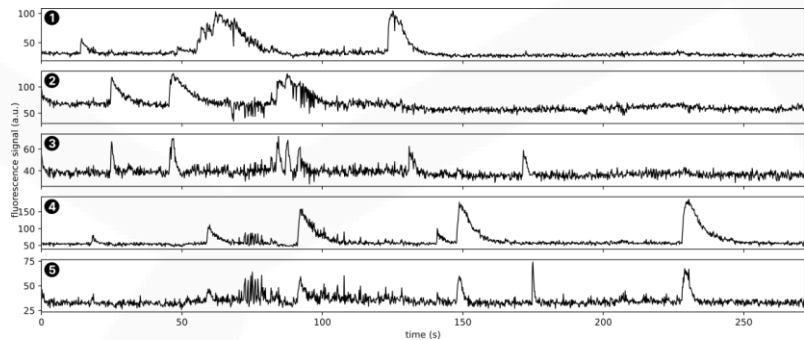
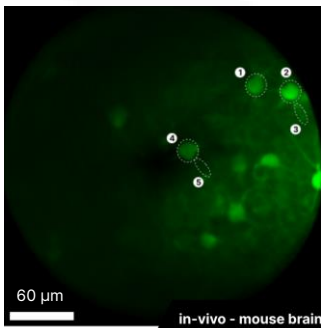
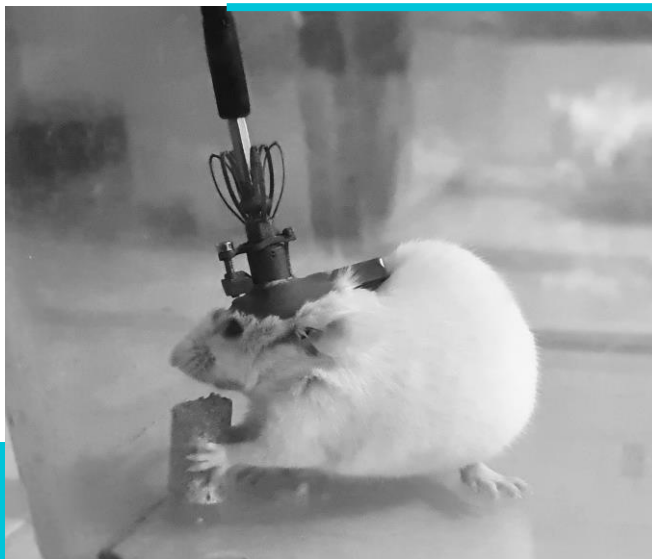




In-vivo imaging | neuronal activity

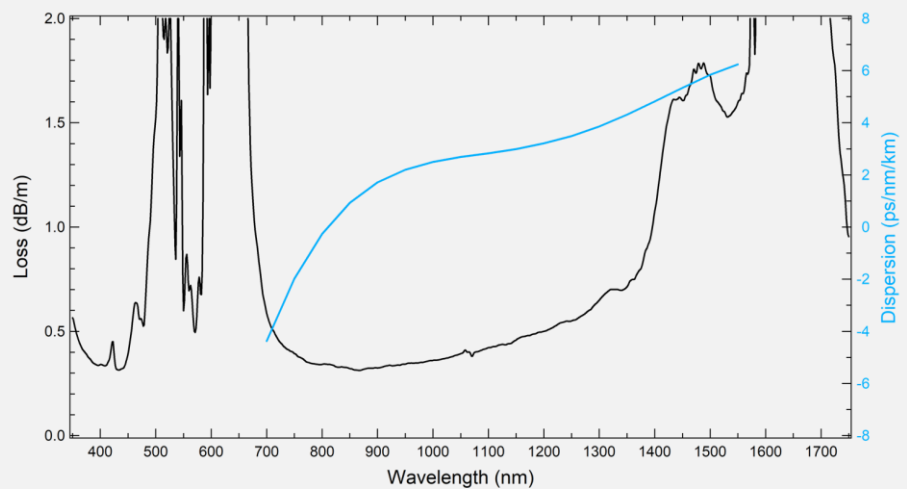
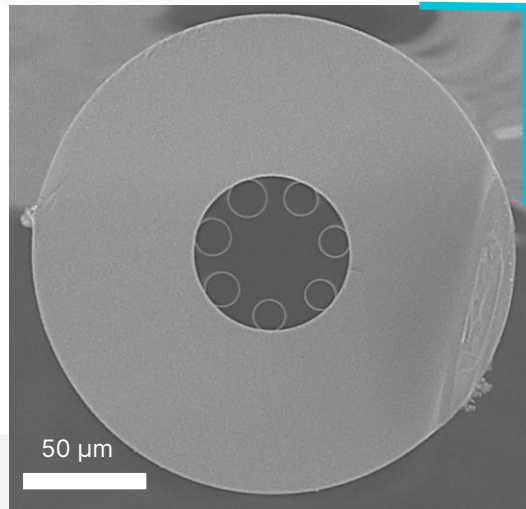
We developed a **lightweight** removable helmet, fixing the endoscope to the skull, for real-time neuronal activity tracking

Activity of individual neurons and dendrites can be recorded, even for a freely moving animal





Transport fiber | FemtoGuide



Custom-made fiber
In association with **Fibertech Lille**
On demand **length**
Pluggable with **FC/PC connectors**

Large band transmission
Low **dispersion**
Adjustable transmission band position
Field mode diameter : $24 \pm 0.5 \mu\text{m}$



Contact us



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Academic work

D. Septier, V. Mytskaniuk, R. Habert, D. Labat, K. Baudelle, A. Cassez, G. Brévalle-Wasilewski, M. Conforti, G. Bouwmans, H. Rigneault, and A. Kudlinski, **Label-free highly multimodal nonlinear endoscope**, Optics Express 30, 25020-25033 (2022). <https://doi.org/10.1364/OE.462361>

A. Kudlinski, A. Cassez, O. Vanvincq, D. Septier, A. Pastre, R. Habert, K. Baudelle, M. Douay, V. Mytskaniuk, V. Tsvirkun, H. Rigneault, and G. Bouwmans, **Double clad tubular anti-resonant hollow core fiber for nonlinear microendoscopy**, Optics Express 28, 15062-15070 (2020). <https://doi.org/10.1364/OE.389084>

A. Lombardini, V. Mytskaniuk, S. Sivankutty, E. R. Andresen, X. Chen, J. Wenger, M. Fabert, N. Joly, F. Louradour, A. Kudlinski, and H. Rigneault, **Highresolution multimodal flexible coherent Raman endoscope**, Light: Science & Applications 7, 10 (2018). <https://doi.org/10.1038/s41377-018-0003-3>