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Ecole Polytechnique

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Label-free, multi-scale imaging of mitochondrial and metabolic function in living tissues

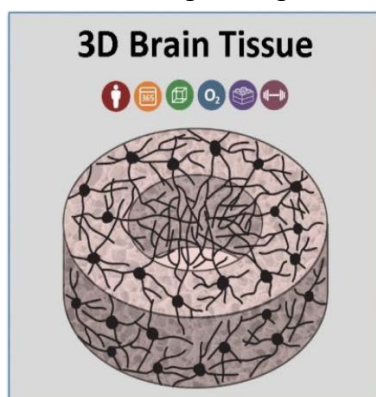
This presentation will highlight the unique opportunities to assess metabolic and mitochondrial function and/or dysfunction afforded by label-free, two photon imaging.

The high resolution of two-photon images enables unique assessments of the spatiotemporal heterogeneity of metabolic and mitochondrial dysfunction, which is recognized increasingly as a significant driver of events that determine the development and/or treatment response of numerous diseases.

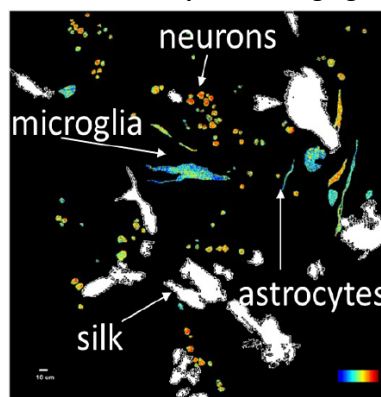
The combined use of readouts from fluorescence intensity and lifetime images yields sensitivity and specificity to metabolic function changes. However, approaches such as spectral imaging may be needed to identify all major contributors to cellular autofluorescence, and develop protocols to quantify reliably the fluorescence emanating from NAD(P)H and flavins and extract robust metabolic readouts.

Examples will include such measurements from engineered tissues, excised human tissues, and living patients in the context of neurodegeneration, cancer detection, and vitiligo treatment monitoring.

Tissue engineering



Label-free two photon imaging



Dynamic monitoring following injury

