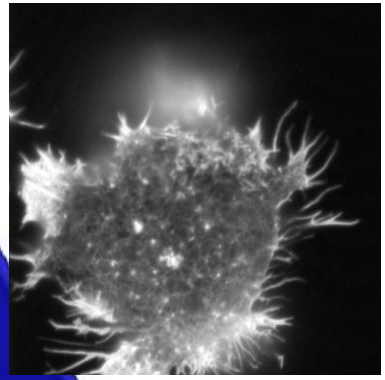
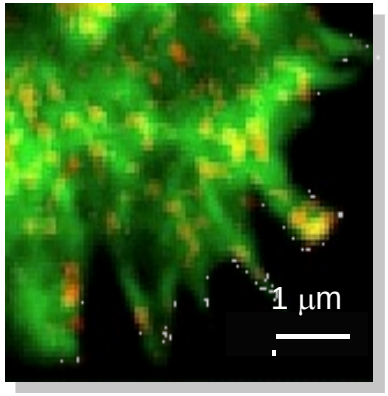
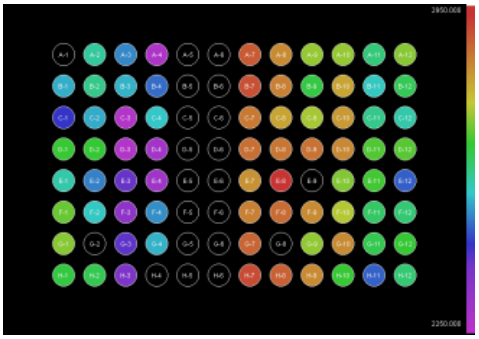
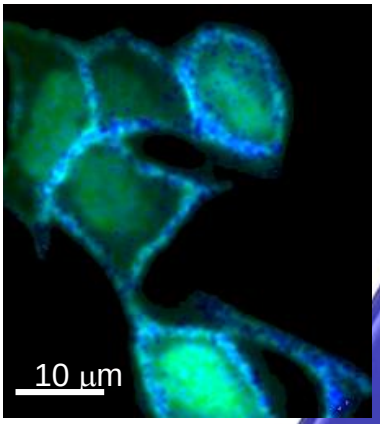
Multi-dimensional fluorescence imaging

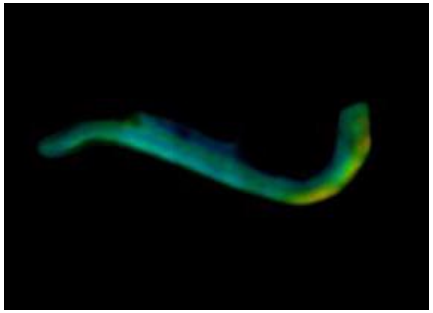
Bioimaging frontiers

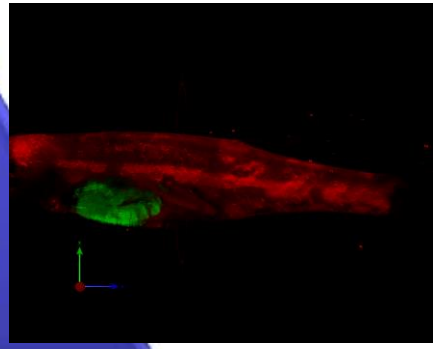






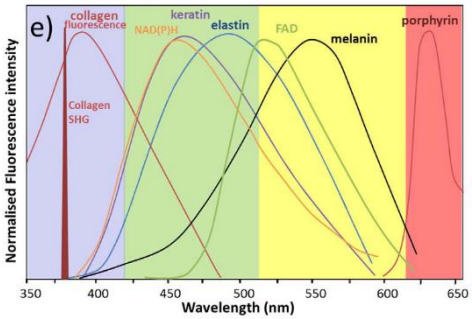


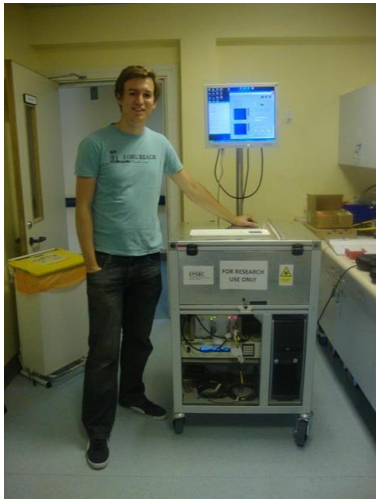




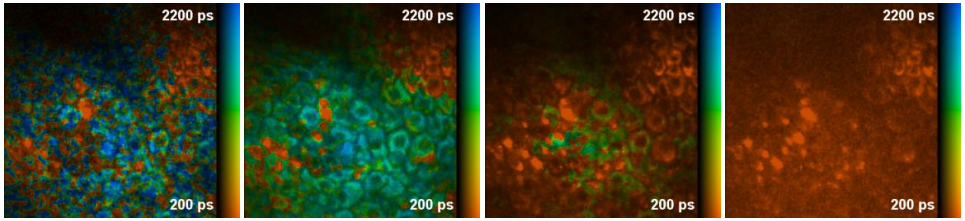
Clinical autofluorescence imaging and metrology

Multispectral FLIM multiphoton microscopy



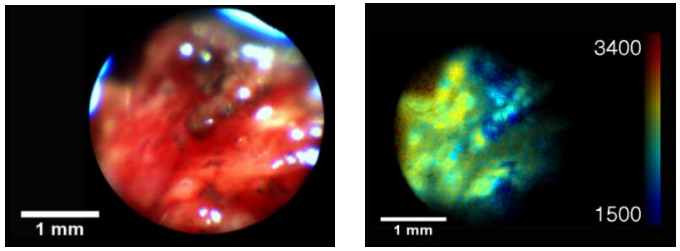


in vivo, 60 μm depth,

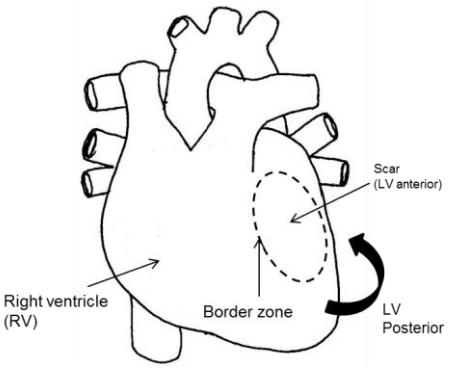


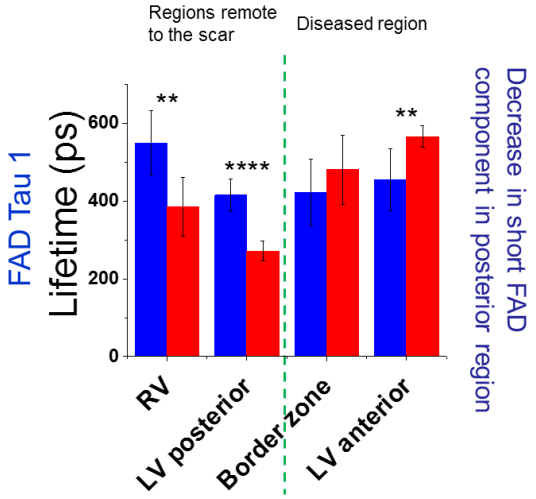
Autofluorescence lifetime probe

FLIM endoscopy



ex vivo diode laser excited FLIM endoscopy of diseased human laryngeal tissue





Biomedical PhD opportunities with Photonics

Imperial College London

- Development and application of clinical handheld multiphoton microscope
  - Clinical label-free multispectral FLIM for dermatology; brain (intra-operative), ..
  - Handheld, motion-compensated, multimodal, ..
- Development and application of fluorescence lifetime endoscopy
  - *Preclinical FLIM endoscopy of FRET biosensors*
  - Clinical label-free FLIM endoscopy and autofluorescence metrology fibre-optic probes
- Preclinical OPT of live zebrafish disease models from embryo to adult
  - *FLIM of FRET biosensors (for cancer, inflammation)*
  - 3-D cell tracking in vivo in intact zebrafish
- Development and application of high content analysis platforms
  - *Automated FLIM FRET assays of protein interactions and FRET biosensors in live cells, 3-D cell cultures, small organisms*
  - Automated label-free FLIM assays of cellular metabolic changes [NAD(P)H, FAD] in live cells – including patient-derived cells for screening of drug efficacy
  - *Rapid 3-D imaging (400 fps) of live cells and organisms using OPM including spontaneous calcium signalling, 3-D invasion, FRET, ..*