Ruth R. Sims

ruth.sims@inserm.fr

SKILLS

MICROSCOPY:

2-photon
Light field
Light sheet
Confocal
Single Molecule Localization

PROGRAMMING:

Python
MATLAB
LabVIEW

TEACHING

Co-supervision of 1 PhD student
Co-supervision of 2 masters students

CONFERENCES

INVITED TALKS

Symposium on advanced microscopy, Belgium, (2021)
Optical control of brain functioning with optogenetics and wavefront engineering, France, (2021)
Super Resolution Imaging Developers Symposium, UK, (2019)

CONFERENCE PROCEEDINGS

FOM (2015, 2017, 2019)
Photon (2016)
Sculpted light in the brain (2022)

AWARDS

£70000 EPSRC
£35000 CRUK
£2000 IOP
£1500 Homerton College

REFEREES

Dr Valentina Emilani
PI, Wavefront engineering microscopy
Institut de la Vision |
valentina.emiliani@inserm.fr

Dr Kevin O'Holleran
PI, Cambridge Advanced Imaging
University of Cambridge |
ko311@cam.ac.uk

RESEARCH EXPERIENCE

Ahrens/ Turaga Lab, Janelia Research Campus
2022 | Virginia, USA | Supervised by Dr Srinivas Turaga

- Experimental implementation and validation of programmable microscopy

Neurophotonics Department, Institut de la Vision
2019 – 2022 | Paris, France | Supervised by Dr Valentina Emiliani

- Development of tools for multi-photon all-optical neurophysiology experiments

Cambridge Advanced Imaging Centre, University of Cambridge
2014 – 2019 | Cambridge, UK | Supervisor: Dr Kevin O'Holleran

- Volumetric imaging in biology with fluorescence microscopy

Kromek PLC (Industrial Experience)
2012 | Durham, UK | Supervisor: Dr Ben Cantwell

- Investigation of the hyperspectral CT imaging capabilities of CZT detectors

EDUCATION

DOCTOR OF PHILOSOPHY

University of Cambridge
2014 – 2019 | Cambridge, UK

- Thesis: Volumetric imaging across spatiotemporal scales in biology with fluorescence microscopy. Supervisor: Dr Kevin O'Holleran

MASTER OF RESEARCH IN PHOTONIC SYSTEMS DEVELOPMENT

University College London (Distinction)
2013 – 2014 | London, UK

- Thesis: Design and fabrication of sub-wavelength aperture arrays for polarization-tuneable extra-ordinary transmission. Supervisor: Dr Paul Warburton

BACHELOR OF SCIENCE IN MATHEMATICS AND PHYSICS

University of Durham (First class honors)
2010 – 2013 | Durham, UK

- Thesis: Investigation of aggregation processes in superparamagnetic beads using TIRF microscopy for drug discovery. Supervisor: Dr K. Weatherill

SELECTED PUBLICATIONS

- Deb, D. et al, Programmable 3D snapshot microscopy with Fourier convolutional networks, NeurIPS, (2022)
- Emiliani, V. et al, Optogenetics for light control of biological systems, Nature Reviews Methods Primers, (2022)
- Abdelfattah, A. et al, Neurophotonic tools for microscopic measurements and manipulation: status report, Neurophotonics, (2022)
- Vierock, J. et al, BiPOLES is an optogenetic tool developed for bidirectional dual-color control of neurons, Nature Communications, 12(4257), 1-20 (2021)
- Sims, R.R., Rehman, S.A. et al, Single molecule light field microscopy, Optica, 7(9), 1065-1072 (2020)
- Sims, R.R., et al, Light field microscopy: principles and applications. In Focus, 53, (2019)