

Optical Imaging Centre Erlangen (OICE)

Speaker

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Aims and structure

OICE is a central institute of the FAU. It delivers a platform for light-based microscopy, is involved in the development of new optical methods, and delivers education for researchers of every background and experience level.

OICE's Board of Members currently consists of more than 30 PIs from the Faculties of Medicine, of Sciences, and of Engineering, respectively, the UK Erlangen, the Max-Planck Institute for the Science of Light and the Fraunhofer Institute IIS. From within the Board of Members, a Steering Committee is elected for a bi-annual period. The Steering Committee, consisting of about ten members, itself elects its speaker for a two year period. The Committee conducts the scientific direction and development according to the request of the Board of Members. Further, the Steering Committee supports and supervises the head of OICE.

Dr. R. Palmisano is the assigned permanent head of OICE. He is responsible and in charge of the daily operation, supervising the administration and scientific staff, and the day-to-day performance.

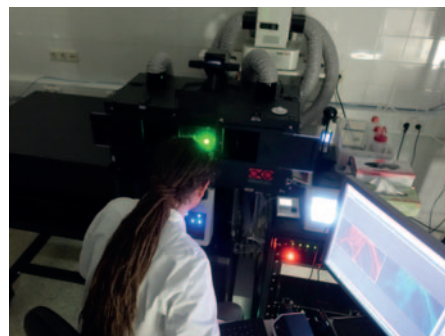
Latest state-of-the-art microscopes from a variety of commercial suppliers are based at OICE for the use by researchers. The resolution of this microscopes ranges from 20 nm up to millimeters. This allows imaging of smallest intra-cellular structures within cells into organoids and tissue and ranges up to whole organ imaging of small mammalian animals and *in vivo* imaging in small mammalian animals.

OICE aims to identify new technologies and methods within the frame of light-based microscopy. Identified potential technologies are advertised by performing seminars or workshops or by invited speakers within the range of the FAU. Subsequently, a user based evaluation is performed and if the outcome is positive, OICE will coordinate the acquisition of such hardware

and make it available to the researchers. Further OICE will then provide training, education, and access for the researchers from FAU, UK Erlangen, and additional institutes. This service is delivered by the Core Facility Unit (CFU) of OICE. In the meanwhile OICE supports more than 150 researchers from within the above mentioned entities per year.

Research

Within its Exploratory Research Unit (ERU), OICE is involved in research to optimize optical technologies, in the development of new methods, and in particular in the development of post image processing of imaging derived data sets, both qualitative and quantitatively. In this respect OICE cooperates with the Departments of Physics and Mathematics, the Max-Planck Institute for the Science of Light, UK Erlangen, the Fraunhofer Institute for Integrated Circuits (Department Smart Sensing and Electronics) as well as a number of international co-operations, such as for example Institute Pasteur, Paris; Kennedy Institute of Rheumatology, Oxford; Howard Hughes Medical Institute Janelia, Washington DC.



Dr. P. Tripal, member of staff at OICE, while imaging a sample with the super-resolution 2D/3D STED microscope, delivering a lateral resolution down to 20 nm

Teaching

OICE has no formal education and teaching obligations, but delivers more than 40 lectures, seminars, and practical workshops per year within its Educational Training Unit (ETU). They are open to all researchers from the FAU, UK Erlangen, and adjacent institutes. Topics of seminars reach out from methods or technologies to use of software, such as ImageJ/Fiji, OMERO, Matlab e.g. Practical courses cover hands-on workshop starting from basic fluorescence imaging or advanced laser microscopy imaging turning into specialized technologies or methods, for example super resolution microscopy

(3D-STED / RESOLFT / STORM e.g.), intra-vital microscopy (Single / Multiphoton excitation), spinning disc laser scanning microscopy, Light-Sheet microscopy and more.



Light-Sheet microscopy hands-on workshop, conducted by OICE with attendees from UK Erlangen, the Faculty of Medicine, and the Faculty of Sciences

