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Robert Prevedel is a group leader at the European Molecular Biology Laboratory, Heidelberg (Germany). His primary research interest lies in developing advanced and innovative optical techniques for biomedical imaging, such as multi-photon microscopy, photo-acoustics or Brillouin spectroscopy. Robert holds a PhD in experimental physics from the University of Vienna (Austria) for which he developed new approaches for optical quantum computing. During his postdoctoral years, first at the University of Waterloo (Canada) and later at the Institute of Molecular Pathology in Vienna (Austria), Robert worked on innovative optical methods and tools for imaging in biology, with a focus on functional neuroimaging in small model organisms.

ABSTRACT

Probing the mechanical properties of living organisms at high-resolution using light

Mechanical properties of cells and tissues have been shown to play a crucial role in development and disease, but standard techniques for probing them are usually invasive and limited to the sample's surface. In contrast, Brillouin microscopy is an emerging optical technique that enables non-contact measurement of viscoelastic properties of a material with diffraction-limited resolution in 3D. In my talk, I will briefly introduce and review this emerging field before discussing our current efforts to study the role of mechanical properties in developing organisms such as zebrafish and *Platynereis* embryos, as well as in the early detection of cancer.