Challenges and Applications of Optical Tomography in Microscopy

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Abstract

Very recently, optical tomography setups for microscopy are being developed to image low scattering specimens, mainly triggered by the work of J. Sharpe et al (Science 2002). These setups offer many advantages over traditional 2D microscopy allowing 3D visualization of both fluorescence and absorption endogenous or exogenous contrast. However, several new challenges in the inverse problem appear when using such setups, mainly due to the change of position within the focal plane while rotating, and the point source-like emission of fluorophores. In this talk these new challenges will be analyzed and results in-vivo presented, outlining its potential as a quantitative in-vivo microscopy technique.