

What Life Scientists Should Know About Molecular Imaging

Optical Imaging, Ultrasound, Photoacoustics

Optical Tomography

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Learning Objectives:

- Basis of Scattering and absorption
- Light propagation and the role of scattering
- Approaches to 3D optical imaging

During this talk we shall first discuss the basis of absorption and scattering, with emphasis on the optical properties of tissue. Once this has been covered, we will analyze the basis of light propagation and study it in the context of scattering where two extremes can be identified: ballistic propagation, the approach used in microscopy and the basis of direct imaging; and diffuse propagation, the approach used in diffuse optical tomography in which case we need to resort to indirect imaging. Once these two extremes have been identified, we shall cover different approaches currently being used for 3D optical imaging in-vivo based on the different contribution of scattering.