Label-free imaging of 3D cellular systems

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ABSTRACT

Many specimens of interest, embryos, brain slices, organoids, are thick and optically inhomogeneous, which results in strong multiple scattering and low-contrast imaging. We developed GLIM as a novel label-free imaging method with applicability from nanoscale topographic structures to 2-300-micron thick tissues. Due to its interferometric principle that maintains equal power in the two interfering fields, GLIM is able to reject much of the multiple scattering background and generate high contrast interference. We present its principle and illustrate the performance with imaging nano pillars, cells, and embryos.