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Selective Plane Illumination Microscopy

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Abstract

Selective plane illumination microscopy (SPIM), or light sheet microscopy, is a microscopy technique that allows you to acquire high resolution fluorescence images of biological samples by illuminating the sample with a thin plane from the side, instead of along the imaging axis as in traditional transillumination or epi-illumination. The purpose of this SPIM research assignment was to combine two previously built systems, an inverted SPIM and a tunable lens system. This report includes use of optics, coupling lasers and proper technique to building optical systems. Programming in Matlab, LabVIEW, and other programming languages was used to synchronize the shutter and camera electronics and acquire and process images. The paper is concluded with expected results to ensure to detection path is optimized.

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