



Methods in Cellular Imaging

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Advances in technology have revolutionized the development of light microscopy techniques in biomedical research, thus improving visualization of the microstructure of cells and tissues under physiological conditions. Fluorescence microscopy methods are non-contact and non-invasive and provide high spatial and temporal resolution that other laboratory techniques cannot. This well-illustrated book targets graduate students and scientists who are new to the state-of-the-art fluorescence microscopy techniques used in biological and clinical imaging. It explains basic concepts and imaging procedures for wide-field, confocal, multiphoton excitation, fluorescence resonance energy transfer (FRET), lifetime imaging (FLIM), spectral imaging, fluorescence recovery after photobleaching (FRAP), optical tweezers, total internal reflection, high spatial resolution atomic force microscopy (AFM), and bioluminescence imaging for gene expression. The usage of these techniques in various biological applications, including calcium, pH,

membrane potential, mitochondrial signal, protein-protein interactions under various physiological conditions, and deep tissue imaging, is clearly presented. The authors describe the approaches to selecting epifluorescence microscopy, the detectors, and the image acquisition and processing software for different biological applications. Step-by-step directions on preparing different digital formats for light microscopy images on websites are also provided. (For more details visit: www.cci.virginia.edu/book/)

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