

Quantum Dots

Applications in Biology

Edited by

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Quantum Dots: Applications in Biology is the first book published on the subject, and it emphasizes a variety of methods that were developed using commercially available materials. Each of the protocols in this authoritative, cutting-edge text have been prepared and written by the developers of novel applications for quantum dots, many of whom have published the initial reports on the subject in major journals. This comprehensive volume outlines nearly all currently developed applications of quantum dots in precise detail.

The protocols will be of tremendous interest to experimental biologists, as they examine current and potential applications of quantum dot labeling in the field. Cutting-edge examples of potential biological applications for quantum dots include cancer detection, live cell tracking, and pathology. This volume provides an excellent reference for protocols that can be utilized repeatedly to yield reliable performance from quantum dot-enabled applications.

FEATURES

- The first resource published on the topic
- Cutting-edge protocols for imaging of fixed cells and tissues
- Groundbreaking methods for imaging of live cells and animals
- New directions in the application of flow cytometry
- Innovative biochemical applications for quantum dots

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Part I Imaging of Fixed Cells and Tissues. Immunofluorescent Labeling of Proteins in Cultured Cells With Quantum Dot Secondary Antibody Conjugates. Immunohistochemical Detection With Quantum Dots. Quantum Dots for Multicolor Tumor Pathology and Multispectral Imaging. Light and Electron Microscopic Localization of Multiple Proteins Using Quantum Dots. Human Metaphase Chromosome FISH Using Quantum Dot Conjugates. **Part II Imaging of Live Cells.** Biotin-Ligand Complexes With Streptavidin Quantum Dots for In Vivo Cell-Labeling of Membrane Receptors. Single Quantum Dot Tracking of Membrane Receptors. Optical Monitoring of Single Cells Using Quantum Dots. Peptide-Mediated Intracellular Delivery of Quantum Dots. Multiple Cell Lines Using Quantum Dots. Measuring Cell Motility

Using Quantum Dot Probes. **Part III Imaging of Live Animals.** Quantum Dots for In Vivo Molecular and Cellular Imaging. Sentinel Lymph Node Mapping With Type-II Quantum Dots. Macrophage-Mediated Colocalization of Quantum Dots in Experimental Glioma. **Part IV Flow Cytometry Applications.** Application of Quantum Dots to Multicolor Flow Cytometry. Quantum Dots in Flow Cytometry. **Part V Biochemical Applications.** Luminescent Biocompatible Quantum Dots: A Tool for Immunosorbent Assay Design. Fluorescence-Based Analysis of Cellular Protein Lysate Arrays Using Quantum Dots. Application of Quantum Dots to Multicolor Microarray Experiments: Four-Color Genotyping. Index.

