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Soggetti	Pharmaceutical technology Biotechnology Molecular biology Pharmaceutical Sciences/Technology Molecular Medicine
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Scintillation detectors for small-animal imaging -- Solid-state detectors for small-animal imaging -- Photodetectors for small-animal imaging instrumentation -- Design considerations of small-animal SPECT cameras -- Design considerations of small-animal PET scanners -- Design considerations of small-animal CT systems -- Small-animal MRI instrumentation -- Preclinical optical molecular imaging -- Advances in radiotracer development for molecular imaging -- Image registration for multimodality small-animal imaging -- Dual-modality preclinical SPECT/PET instrumentation -- Dual-modality preclinical SPECT/CT instrumentation -- Dual-modality preclinical PET/CT instrumentation -- Dual-modality preclinical SPECT/MR instrumentation -- Dual-modality preclinical PET/MR instrumentation -- Dual-modality preclinical PET/OI instrumentation -- Quantification of small-animal multimodality imaging data -- Animal handling and preparation for imaging -- Applications of molecular small-animal imaging in neurology and psychiatry -- Applications of molecular

small-animal imaging in cardiology -- Applications of molecular small-animal imaging in oncology -- Applications of molecular small-animal imaging in inflammation and infection -- Role of small-animal molecular imaging of gene expression -- Applications of molecular small-animal imaging in drug development -- Multimodality molecular imaging: A futuristic outlook.

Sommario/riassunto

This book examines the fundamental concepts of multimodality small-animal molecular imaging technologies and their numerous applications in biomedical research. Driven primarily by the widespread availability of various small-animal models of human diseases replicating accurately biological and biochemical processes in vivo, this is a relatively new yet rapidly expanding field that has excellent potential to become a powerful tool in biomedical research and drug development. In addition to being a powerful clinical tool, a number of imaging modalities including but not limited to CT, MRI, SPECT and PET are also used in small laboratory animal research to visualize and track certain molecular processes associated with diseases such as cancer, heart disease and neurological disorders in living small animal models of disease. In vivo small-animal imaging is playing a pivotal role in the scientific research paradigm enabling to understand human molecular biology and pathophysiology using, for instance, genetically engineered mice with spontaneous diseases that closely mimic human diseases. .