

SMALL ANIMAL IMAGING, Basics and Practical Guide

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DESCRIPTION:

Small animal imaging has been recognized as an important tool in preclinical research. Nevertheless, the results of non-invasive imaging are often disappointing owing to choice of a suboptimal imaging modality and/or shortcomings in study design, experimental setup, and data evaluation. This textbook is a practical guide to the use of non-invasive imaging in preclinical research. Each of the available imaging modalities is discussed in detail, with the assistance of numerous informative illustrations. In addition, many useful hints are provided on the installation of a small animal unit, study planning, animal handling, and the cost-effective performance of small animal imaging. Cross-calibration methods, data postprocessing, and special imaging applications are also considered in depth. This is the first book to cover all the practical basics in small animal imaging, and it will prove an invaluable aid for researchers, students, and technicians.

CONTENTS:

1.Preamble 2.Role of small animal imaging: Non invasive imaging for supporting basic research.-Non invasive imaging in the pharmaceutical industry.-How to set up a small animal imaging unit.-Significance of non invasive imaging for animal protection 3.Study planning and animal preparation: Institutional preconditions for small animal imaging.-Statistical considerations for animal imaging studies.-Animal anesthesia and monitoring.-Drug administration 4.Imaging modalities and probes: How to choose the right imaging modality.-X-ray and X-ray-CT.-CT contrast agents.-MRI.-MR contrast agents.-MRS.-Ultrasound.-Ultrasound contrast agents.-PET and SPECT.-Radiotracer.-Optical imaging.-Optical probes.-Multimodal imaging and image fusion 5.Ex vivo validation methods:Ex vivo and in vitro cross calibration methods.-In Vitro Methods for In Vivo Quantitation of PET and SPECT Imaging Probes: Autoradiography and Gamma Counting 6.Data postprocessing: Qualitative and quantitative data analysis.-Guidelines for nuclear image analysis.-Kinetic modeling.-Data documentation systems 7.Special applications: Imaging in developmental biology.-Imaging in gynecology research.-Imaging in cardiovascular research.-Imaging in neurology research.-Imaging in oncology research.-Imaging in immunology research 8.Tables: Relevant physiological standard parameters of rodents.

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