
Preface

To visualize the inside of a living human brain has been the goal of physicians since ancient times. The advent of noninvasive imaging technology, such as magnetic resonance imaging (MRI), during the latter half of the twentieth century has allowed for the opening of new vistas of the inner workings of the brain to biologists and clinicians on a daily basis. Great strides in unraveling the secrets of the brain have been achieved since the widespread implementation of imaging protocols in universities and hospitals.

The gradual merging of molecular biology and imaging techniques at the beginning of the twenty-first century now affords a detailed investigation of the molecular underpinning of a working brain. The 30 chapters in this book contain experimental MRI protocols that can be used to noninvasively interrogate the healthy and diseased brain. The protocols are divided into general techniques (e.g., measuring relaxivity, magnetic resonance spectroscopy, diffusion tensor imaging, MR reporter genes) and specific applications in brain imaging (e.g., phenotyping transgenic animals, detecting amyloid plaques, fMRI in psychiatry). Most of these methods can be applied to both animal and human studies and may therefore provide a great resource for translational efforts. Clinical neurologists, psychiatrists, and radiologists will find these protocols useful, as will basic scientists working in the field of neuroscience.

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Methods and Protocols

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