
Contents

Preface	vii
Contributors	xiii
Companion CD	xv

I. INTRODUCTION

1 Introduction to Magnetic Resonance Imaging and Spectroscopy Pippa Storey	3
2 Magnetic Resonance Microscopy: <i>Concepts, Challenges, and State-of-the-Art</i> Barjor Gimi	59

II. ANATOMY

3 Magnetic Resonance Imaging of Embryonic and Fetal Development in Model Systems Eric T. Ahrens, Mangala Srinivas, Saverio Capuano, Hyagriv N. Simhan, and Gerald P. Schatten	87
4 Mouse Morphological Phenotyping With Magnetic Resonance Imaging X. Josette Chen	103
5 Magnetic Resonance Microscopy of Mouse Brain Development Susumu Mori, Jiangyang Zhang, and Jeff W. M. Bulte	129

III. PHYSIOLOGY

6 Quantitative Perfusion Imaging Using Arterial Spin Labeling Donald S. Williams	151
7 Physiology of Functional Magnetic Resonance Imaging: <i>Energetics and Function</i> Ikuhiro Kida and Fahmeed Hyder	175
8 Functional Magnetic Resonance Imaging of the Kidney Pottumarthi V. Prasad	197
9 Cardiac Magnetic Resonance Spectroscopy: <i>A Window for Studying Physiology</i> Michael Horn	225

IV. PATHOPHYSIOLOGY

- 10 Application of Magnetic Resonance Imaging
to Study Pathophysiology in Brain Disease Models
***Rick M. Dijkhuizen* 251**
- 11 Magnetic Resonance Imaging of Tumor Physiology
***Arvind P. Pathak* 279**
- 12 MRI in Preclinical Drug Development
***Matthew D. Silva and Sudeep Chandra* 299**

V. NOVEL CONTRAST AGENTS AND MECHANISMS

- 13 Hyperpolarized Gas and Oxygen-Enhanced Magnetic
Resonance Imaging
***Vu M. Mai* 325**
- 14 Tissue pH Measurement by Magnetic Resonance
Spectroscopy and Imaging
***Natarajan Raghunand* 347**
- 15 Biological Applications of Manganese-Enhanced Magnetic
Resonance Imaging
***Robia G. Pautler* 365**
- 16 Targeted Magnetic Resonance Imaging Contrast Agents
***Shelton D. Caruthers, Patrick M. Winter,*
Samuel A. Wickline, and Gregory M. Lanza 387**
- 17 Design and Characterization of Magnetic Resonance
Imaging Gene Reporters
***Angelique Louie* 401**
- 18 Intracellular Endosomal Magnetic Labeling of Cells
***Jeff W. M. Bulte* 419**
- Index **441**



<http://www.springer.com/978-1-58829-397-8>

Magnetic Resonance Imaging
Methods and Biologic Applications

Prasad, P.V. (Ed.)

2006, XV, 447 p., Hardcover

ISBN: 978-1-58829-397-8

A product of Humana Press