



Quantitative MRI in Cancer (Imaging in Medical Diagnosis and Therapy)

From CRC Press



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Propelling quantitative MRI techniques from bench to bedside, **Quantitative MRI in Cancer** presents a range of quantitative MRI methods for assessing tumor biology. It includes biophysical and theoretical explanations of the most relevant MRI techniques as well as examples of these techniques in cancer applications.

The introductory part of the book covers basic cancer biology, theoretical aspects of NMR/MRI physics, and the hardware required to form MR images. Forming the core of the book, the next three parts illustrate how to characterize tissue properties with endogenous and exogenous contrast mechanisms and discuss common image processing techniques relevant for cancer. The final part explores emerging areas of MR cancer characterization, including radiation therapy planning, cellular and molecular imaging, pH imaging, and hyperpolarized MR. Each of the post-introductory chapters describes the salient qualitative and quantitative aspects of the techniques before proceeding to preclinical and clinical applications. Each chapter also contains references for further study.

Leading the way toward more personalized medicine, this text brings together existing and emerging quantitative MRI techniques for assessing cancer. It provides a self-contained overview of the theoretical and experimental essentials and state of the art in cancer MRI.

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Editorial Review

Review

"... this book fills a void in the literature in this area. ... The text is well written and in particular is well organized ... The text has abundant mathematic derivations and numerous figures and diagrams (including many pulse sequence diagrams) ... the text fulfills the goal of providing a one-volume overview of quantitative oncologic MR imaging. It is ideally suited to physician scientists and medical physicists working to advance research in the field and improve future clinical MR imaging applications."

?Michael Orsi, *Radiology*, July 2012

"This book presents a range of quantitative MRI methods for assessing tumor biology, including biophysical and theoretic explanation of the most relevant MRI techniques as well as examples of these techniques in cancer applications. ... I recommend this special book to trainees and radiologists using advanced MRI and to basic scientists and physician scientists using MRI."

?E. Edmund Kim, *Journal of Nuclear Medicine*, June 2012

"... useful as an introductory text for imaging scientists and physicians who engage in quantitative cancer imaging methodologies with other modalities, such as nuclear medicine. ... the greatest strengths of this book are its breadth of subject matter, the uniformly large numbers of citations provided by the chapter authors and the detailed index."

?Geoffrey Clarke, *Medical Physics*, March 2012

About the Author

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