
Foreword

Physicians have used their sense of touch as a powerful diagnostic tool for centuries. It has long been known that many disease processes are associated with major changes in the mechanical properties of tissue. Historically, investigators in the fields of biomechanics and physiology have sought to integrate our knowledge of the mechanical properties of normal and abnormal tissue into our understanding of biological function. Building on these advances, we have more recently seen the emergence of the new science of mechanobiology. This has revealed the profound extent to which forces and physical properties of the cellular environment can affect cellular behavior. Indeed, it is now known that abnormalities in the mechanical environment contribute to the development of many diseases through a process known as mechanotransduction.

Motivated by these considerations, researchers have worked to develop noninvasive technologies for quantitatively evaluating the mechanical properties of tissue. A very promising approach that has emerged from this effort is Magnetic Resonance Elastography. This innovation, developed with the support of the National Institute of Biomedical Imaging and Bioengineering at the National Institutes of Health, makes use of acoustic and magnetic resonance phenomena to accurately and noninvasively identify the disease. Over the last few years, Magnetic Resonance Elastography has been successfully translated from the laboratory to clinical practice. Even at this early stage, it is now used in medical care worldwide.

I am delighted to write a foreword for this, the very first book on MR Elastography. The book starts with a history of Elastography, providing the readers an overview of the development of the technique. The following chapters provide coverage of currently established applications and a preview of things to come. This historic book would be useful for radiologists, imaging scientists, technologists, residents, and fellows who are interested in learning about the new and exciting field of MR Elastography.

Roderic I. Pettigrew, PhD, MD
Director
National Institute of Biomedical Imaging
and Bioengineering (NIBIB)
Bethesda, MD, USA

Magnetic Resonance Elastography

Venkatesh, S.K.; Ehman, R.L. (Eds.)

2014, XII, 137 p. 83 illus., 66 illus. in color., Hardcover

ISBN: 978-1-4939-1574-3