Preface

In the last decade there has been a focused need for developing non-invasive biomarkers for disease diagnosis, monitoring response to therapy and for designing therapeutics. In the field of musculoskeletal diseases with the aging population, increased activity and sports-related injuries, there has been an increased focus on osteoarthritis. The public-private partnership or the Osteoarthritis Initiative sponsored through the National Institute of Arthritis and Musculoskeletal and Skin Diseases underlines the overwhelming need and keen interest amongst scientists, clinicians, pharmaceutical companies and the government to develop biomarkers for assessing osteoarthritis.

Radiography has been the established tool for assessing osteoarthritis presence, and severity of disease. However, in osteoarthritis, in addition to the bony changes depicted by the X-ray images, cartilage, bone, bone marrow and other tissues are involved. It is within this context that magnetic resonance imaging has been proposed as a non-invasive imaging technique, with potential for quantitative evaluation of the whole joint, including cartilage, bone, meniscus and ligaments.

This book arose from a multi-disciplinary collaboration between radiologists, orthopedic surgeons, engineers and physicists and a recognition within the team that a concise reference guide was needed to introduce the field to a diverse group. It covers the basics of anatomy, etiology of osteoarthritis, methodologies for morphological and functional imaging of

cartilage and bone. It is expected that this book will serve as a reference and guide to a wide range of individuals, who are delving into the area of osteoarthritis imaging for the first time, as well as those who are already in the field but in need of a quick refresher.

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