Functional magnetic resonance imaging (fMRI) represents one of the most advanced and enlightening functional imaging techniques that has ever been developed. One major area of research interest in fMRI is within the field of Cognitive Neuroscience, which focuses on understanding all aspects of the mental processes involved in awareness, reasoning, and acquisition of knowledge and behavior. This book includes selected chapters from Functional MRI: Basic Principles and Clinical Applications (S. Faro and F. Mohamed, Eds. New York: Springer Science+Business Media, LCC 2006) that the editors feel are of particular interest to neuroscientists, as the focus is primarily on describing the basic principles of Blood Oxygen Level Dependent (BOLD) imaging and the developing clinical applications of fMRI in the neurosciences.

The first section of the book is an introduction to the physics principles of BOLD imaging as well as a review of fMRI scanning methodologies, data analysis, experimental design, and clinical challenges. The second section reviews some current and future clinical applications of fMRI, including the clinical fields of Language, Memory, fMRI WADA, and Brain Mapping. The third and final section is a pictorial neuroanatomical atlas of the basic motor, sensory, and cognitive activation sites within the brain. This section will give neuroscientists a familiarity with some of the more clinically relevant brain activation sites that are discussed in other chapters.

There has been a discovery of a tremendous body of knowledge in the relatively young field of fMRI. Functional imaging has quickly grown to be a vital tool for clinical and cognitive neuroscience research. It is the hope of the editors that this book will give a thorough introduction to this exciting field and will serve as a concise reference to all cognitive neuroscientists for the emerging clinical applications of fMRI.
BOLD fMRI
A Guide to Functional Imaging for Neuroscientists
Faro, S.H.; Mohamed, F.B. (Eds.)
2010, X, 294 p. 79 illus., 60 illus. in color., Softcover