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Molecular Imaging: An Introduction

Jadvar H, Jacene H, Graham M (eds.)
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pp 82, 9 tables, 38 figures, paperback. ISBN 978-1-107-62128-2

Molecular imaging is a relatively recent term, and the Society of Nuclear Medicine and Molecular Imaging (SNMMI) formed a task force in 2007 to develop standard definitions and also to serve as the foundation of all communications, advocacy, and education activities related to molecular imaging. The SNMMI board approved the recommended definition of molecular imaging as the visualization, characterization, and measurement of biological processes at the molecular and cellular levels. The task force further elaborated that molecular imaging has a relevance for patient care since it reveals a clinical biology of the disease process, personalizes patient care by characterizing specific disease processes, and it is also useful in drug discovery as well as development.

The aim of this small handy book made by 12 contributors is to provide a brief introduction of molecular imaging to the world. It is not intended to provide an exhaustive list of all available or potential imaging techniques or methods, but major modalities and applications are included since there are a few comprehensive books now available for detailed techniques and applications of molecular imaging.

The book is organized by 15 chapters starting with instrumentation and physical principles of CT (chapter I), MRI/MRS (chapter II), optical and ultrasound imagings (chapter III), and nuclear medicine as well as PET (chapter IV). Chapter V deals with a quantitation of nuclear medicine imaging, and chapter VI discusses myocardial and cerebral perfusion imagings. Chapter VII covers a metabolism of glucose, acetate, and choline. Chapter VIII deals with a cellular proliferation, and chapter IX addresses a hypoxia. Chapter X discusses a receptor imaging, and chapter XI handles an apoptosis. Chapter XII covers an angiogenesis, and chapter XIII addresses reporter genes, and chapter XIV discusses a stem cell tacking, and

the final chapter XV deals with an amyloid imaging. The text is concise and well written with clearly stated information. Each chapter begins with introduction and ends with conclusion or summary after brief discussion. Some chapters provide updated references for further reading. There are only 9 tables and 38 figures, and they are informative, but the several images are not in high-quality. The index is helpful.

This new introduction of molecular imaging enables the reader to recognize the major methods, modalities, and various applications in an effective way to provide an insight for improved patient care towards precision medicine and medical research. Therefore, this book is useful for medical students, physicians in training, and others who desire to grasp the basic concepts of molecular imaging in a relatively short time.

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