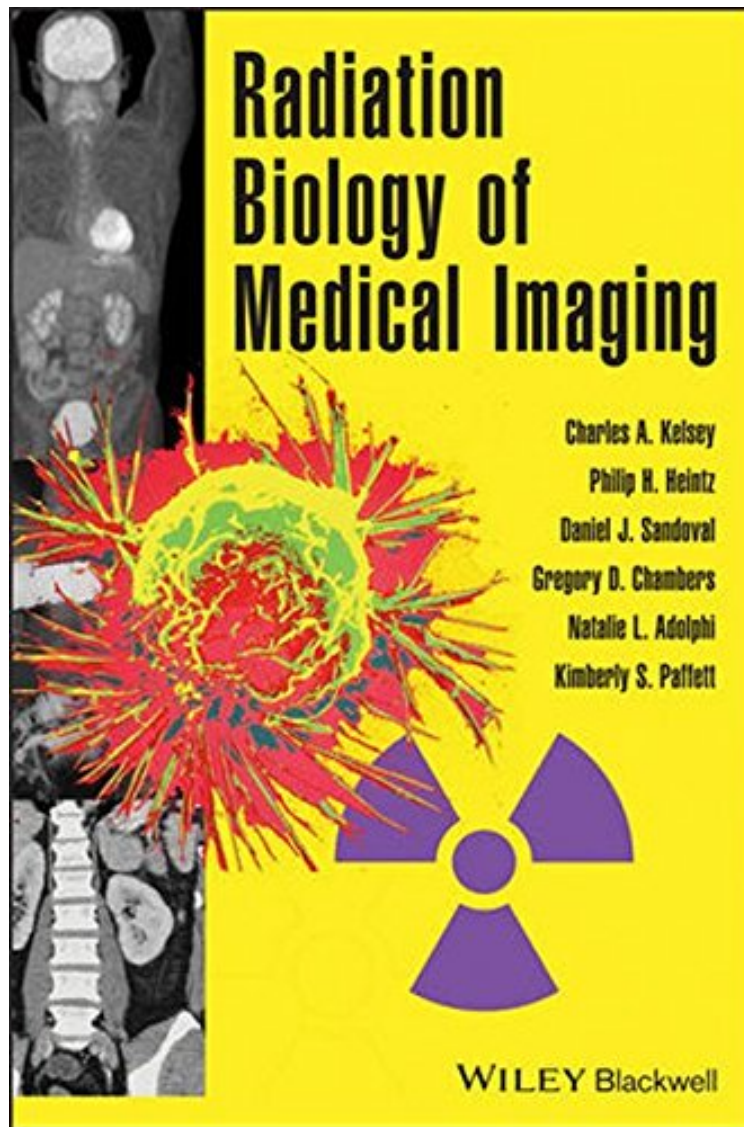


Radiation Biology of Medical Imaging

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Charles A. Kelsey, Philip H. Heintz, Gregory D. Chambers, Daniel J. Sandoval, Natalie L. Adolphi, Kimberly S. Paffett : Radiation Biology of Medical Imaging before purchasing it in order to gage whether or not it would be worth my time, and all praised Radiation Biology of Medical Imaging:

0 of 0 people found the following review helpful. Nice arrangement. Considering it as aBy JEJInformative. Nice arrangement. Considering it as a textbook0 of 0 people found the following review helpful. An interesting survey

bookBy MetallurgistThis is an interesting book that surveys subject of radiation biology. It was written primarily for individuals preparing for certification tests and as such only summarizes this important medical field. I am not in the target audience, but I found the book interesting and useful. I am a retired metallurgist and as such I have a reasonably good understanding of the physics of radiation, but I have almost no background in biology. I found that the book answered many of the questions that I have had regarding the medical effects of radiation imaging and the use of radioactive elements in medical diagnostic tests and treatments. I found the biology in the book very interesting and quite understandable, even though I had no prior knowledge of any of this material. I recommend this book to anyone who wants to know more about how radiation interacts with their body. This would include high school students who probably have a better biology background than I have. Someone without any physics or biology background is likely to have some difficulties with the book, but the authors have done a reasonably good job of keeping the text as clear as possible. My one caveat is that this is not a textbook on radiation biology and radiation physics - it only reviews these subjects and does not treat them in depth. This book provides a good review or survey for someone like myself who was not previously familiar with the material that is covered. What is in the book - The book is very well organized. It is divided into 15 chapters, each about 15-20 pages long. It is illustrated with numerous figures (many in color) and graphs that illustrate the text. Each chapter begins with a list of key words, topics to be covered, and ends with a summary of what was covered and with sample questions. The back of the book contains the answers to all of the odd numbered questions. For the most part, the questions were rather straightforward and focused on the definitions of the numerous terms defined in the book and on the simple equations that are stated and the information that was presented. The initial chapters cover some basic information on anatomy and cell biology, and the rudiments of radiation physics and the interaction of radiation and biological material. All of this material was quite basic and not presented in any great depth. This is followed by chapters that cover cell damage and repair, and the development of cancer - also covered at a basic level. There are also chapters that deal with diagnostic imaging machines and nuclear medicine. The final part of the book contains a chapter on the radiation exposure that one obtains from the natural environment and contrasts this with that obtained from medical sources and from non-medical, man-made, consumer and industrial sources. The book also briefly discusses regulations regarding the use of radiation, a radiation risk/benefit analysis and the interactions of the human body and Ultrasound and MIR. All this is done in a little less than 300 pages, so it is obvious that the level of detail is not as extensive as books devoted to any of these subjects. 0 of 0 people found the following review helpful. clearly written with well drawn diagramsBy W BoudvilleI remember reading articles and books on radiation effects in biology in the 70s and 80s. In contrast, this text is quite clearly written with well drafted diagrams. One example of the latter explains qualitatively the difference between alpha and beta particles. It shows an alpha source and a beta source on the left hand side of the figure. There are two markers 1 mm apart. The particles are shown as drifting from the sources to the right. The alpha particles tend to travel in straighter [though not straight!] trajectories. While the beta particles (which are just electrons after all) tend to meander in more contorted ways. Radiation damage takes up a crucial portion of the text. Delineating what can happen to DNA. Many aberrations; some lethal, we are reminded. Another key concept is the Mean Lethal Dose (LD₅₀). The analog of the half life of a radioactive element, if you will. Accompanying this in other parts of the text are some grisly photos of radiation injuries to humans. Quite graphic. Though of course if you are a medical student, you won't blink an eye. The text ends with chapters on ultrasound and MRI. Both relatively benign and safe if properly used. All the authors are from New Mexico. Hmm. I worked briefly in Los Alamos. I wonder if their expertise on radiation biology derives in part from the decades long legacy of nuclear weapons research at Los Alamos and Sandia National Labs. Or perhaps it is just a coincidence.

This book provides a thorough yet concise introduction to quantitative radiobiology and radiation physics, particularly the practical and medical application. Beginning with a discussion of the basic science of radiobiology, the book explains the fast processes that initiate damage in irradiated tissue and the kinetic patterns in which such damage is expressed at the cellular level. The final section is presented in a highly practical handbook style and offers application-based discussions in radiation oncology, fractionated radiotherapy, and protracted radiation among others. The text is also supplemented by a Web site.

This is a very comprehensive text that goes far beyond the content most would expect given the rather specific title. (Scope, 1 March 2015) From the Back CoverFrom basic science to contemporary applicationsthe definitive guide to radiobiology theory and practice This book is based on courses taught over many years to individuals preparing for certification or registry examinations to demonstrate their knowledge of radiation and its effects. We also taught CME courses to practicing physicians required to demonstrate their maintained level of competence in radiology and cardiology. Engineers, scientists, and radiation safety specialists also attended many of these courses. Through teaching these classes, we observed that most of our students didnt know or remember much about physics or biology. Practicing physicians and medical professionals were far from current in their knowledge of radiation and its biological effects. We felt a need for a book for the users of radiation which would include sections for reviewing

basic physics and biology. The authors are a team of scientists and engineers with over a century of combined experience teaching and working with radiation and biology. We are users of radiation and mindful of its effects. The first quarter of the book is designed to ensure the reader has a minimum essential knowledge base in biology and physics. The book then covers DNA structure and function, DNA damage and repair, genetic effects, and the characteristics of cancer. The third quarter of the book covers the effects of radiation on various body organs and the entire body as well as effects remote from the site of radiation (the bystander effect). A discussion of the cumulative effect of many small doses of radiation is included. The differences between radiation doses in diagnostic, therapeutic, and nuclear medicine are thoroughly discussed. The last quarter includes chapters describing the effects from medical and natural sources of radiation, while also incorporating a discussion of how regulations are designed to protect workers and the general public from long-term harmful effects. Chapters on the biological effects of MRI and ultrasound are included to complete the books coverage, although the radiation from an MRI or ultrasound does not produce ionization. Each chapter contains a clear statement of the chapter goals, an extensive body of material with figures and illustrations, and a summary of the important points covered in the chapter. Each chapter concludes with a series of multiple choice questions in the style and level of difficulty of many national examinations.