

**NUCLEAR MEDICINE IN VITRO, SECOND EDITION.** B. Rothfeld, Ed. Philadelphia, J. B. Lippincott Co., 1983, 458 pp, \$50.00

*Nuclear Medicine in Vitro* describes both the technical procedures and the medical applications of biochemical tests that utilize radioactive reagents. The topics cross over multiple specialties, including endocrinology, pharmacology, hematology, oncology, and statistics. The book is general enough to be used as a textbook for nuclear medicine students and comprehensive enough to be used as a reference for practicing internists, clinical pathologists, and nuclear medicine specialists.

The first quarter of the book is devoted to fundamental techniques. In addition to laboratory procedures, this section provides a detailed discussion on data reduction methods, method selection, and quality control. The discussion of measurement methods minimizes details and stresses the basic principles involved. Although many new techniques such as enzyme immunoassays and fluorescent immunoassays are presented, only one paragraph is devoted to the important topic of monoclonal antibody production.

The remainder of the book presents the pathophysiology, measurement, and medical applications of specific *in vitro* nuclear tests. Many of these chapters are written by well-established clinical investigators, such as Claude Arnaud for "Calcium Regulating Hormones," Victor Herbert for "Folic Acid and Vitamin B<sub>12</sub>," and Judith Vaitukaitis for "Gonadotropins and Prolactin." The personal experience and expertise of these and many of the other authors aid in the organization of the material and interpretation of the significance of recent investigations. A blend of didactic basic material combined with brief summaries from recent publications provides a good reference both for teaching and for daily practice.

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**PROGRESS IN RADIO-ONCOLOGY II.** K. H. Kärcher, H. D. Kogelnik, G. Reinartz, Eds. New York, Raven Press, 1982, 510 pp, \$60.00

The articles in this volume originate from the "Second International Meeting on Progress in Radio-oncology" held by the Austrian-International Club for Radio-oncologists. Over 100 participating radiotherapists and radiobiologists from 17 countries presented papers in four major areas: particle beam therapy (15 chapters); radiosensitizers and radioprotectors (14 chapters); altered fractionation (14 chapters); and hyperthermia (nine chapters).

The volume is superbly presented in English on very high-quality paper with numerous clear illustrations and tables. Although the book is aimed at the practicing radiation therapist and active radiobiologist, it does present information for medical and surgical oncologists who wish to keep abreast of the cutting-edge of radiation oncology.

The papers on neutron therapy indicate that although neutrons may show a small advantage over conventional treatment, this may only be true for a few major sites. In addition, it is difficult to establish a clear-cut advantage for neutrons, as patient numbers in most series are relatively small, and there is no way to account for physical differences between the various neutron beams. Ongoing and recently completed randomized clinical trials comparing neutrons (neutrons only and mixed beam) with megavoltage beams will hopefully guide the application of particle-beam therapy. It will be essential to carefully assess whether the late complications following neutron irradiation seen in some studies are worthwhile in terms of a therapeutic advantage of fast neutron over photon therapy.

The chapters on radiosensitizers represent a good mixture of *in vitro* studies and clinical experience.

There is ample discussion of methods that have been used to reduce the neurotoxicity seen with the most widely used hypoxic sensitizers. Radioprotectors, essentially WR-2721, are briefly discussed and it is noted that significant protection from radiation is seen in animal studies for bone marrow, skin, salivary glands, and mucous membranes. It is too early to determine from the results of early clinical trials presented in this volume, whether any advantage will be seen from the use of hypoxic cell sensitizers. However, much important information, which can be applied to trials using the next generation of sensitizers, is being gathered from performing these trials.

The chapters on unconventional fractionation schemes illustrate that there is an opportunity to improve the therapeutic ratio and obtain improved normal tissue tolerance by using hyperfractionation and accelerated fractionation techniques. It appears clear, on radiobiological grounds and from clinical studies, that replacing conventional fractionation by fewer larger dose fractions can lead to more severe late effects despite adjustment of the total dose to give equivalent acute effects. Other data suggest that using doses of the order of one half of the conventional fraction size may allow tolerable late effects doses for some tissues that may be 20-30% higher than for conventional schemes. Several chapters deal with pilot clinical studies using multiple daily fraction radiotherapy. Early studies have shown that two fractions of radiation per day at less than conventional fraction size can be given without severe reaction or late sequelae and may in fact result in superior local tumor control compared with conventional photon treatment.

It is clear from the review of the nine chapters dealing with hyperthermia as adjuvant therapy that temperature measurement is extremely important, and there is room for improvement in standardizing equipment and techniques. Control studies in animal systems and in patients are being seen in increasing numbers, however, and suggest biological bases for combined treatment with hyperthermia and radiation. Small clinical studies using whole-body hyperthermia highlight the investment of disproportionate numbers of man-hours per patient treated.

This volume will provide an excellent resource for radiation oncologists and radiation biologists and also summarize for the medical and surgical oncologist where progress is being made and new scientific avenues explored in radiation oncology.

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**LASERS AND OPTICAL RADIATION (ENVIRONMENTAL HEALTH CRITERIA 23).** World Health Organization. Geneva, Switzerland, World Health Organization, 1982, 154 pp.

This brief monograph is one of a series authored by World Health Organization (WHO) committees on environmental health criteria. An international group of 14 members contributed to this document that considers the potential hazards of optical radiation from wavelengths between 100 nm and 1 mm, i.e., ultraviolet radiation (UVR), visible light, and infrared radiation (IR). The emphasis is on laser radiation, but those of other sources, including lamps, welding arcs, furnaces, and solar radiation are mentioned.

The text, divided into 21 sections, briefly summarizes the sources and types of optical radiation, its measurement, biological effects on the eye and skin, exposure limits, radiation protection, and safety standards. A bibliography with more than 150 references is included, as is a glossary of laser and optical radiation terminology.

The monograph is primarily intended for manufacturers and