# Book Reviews

**Pharmacologic Analysis of Drug-Receptor Interaction (2nd Edition).** By Terry Kenakin. Raven Press, New York. 1993. xii + 483 pp. 16 × 23.5 cm. ISBN 0-7817-0065-5. $95.00.

Having come to scientific age during the birth of receptor binding techniques, I have always kept selected volumes on theory and practice close at hand. Limbird's *Cell Surface Receptors* was one, Kenakin's first edition of "Pharmacological Analysis" was another. These issues were complementary and both have time and again proven useful as ready references. Kenakin's second edition provides an update to students and practitioners of drug–receptor interactions and pharmacology in general and will undoubtedly serve a similar purpose.

Continuing with the approach of the first edition, Kenakin views drugs as a tool or "key" to unlock the secrets of physiology and function. It is only by intrinsically understanding the properties of drugs themselves that pharmacology is useful and thus, "It is the major thesis of this book that pharmacologists should be concerned primarily with the discovery of and quantification of the properties of drugs, not the physiological systems with which they interact". This is a refreshing remainder to field which today is often caught up in defining the secondary, tertiary, or even quaternary physiologic responses to drugs while ignoring the primary event of the drug-receptor interaction.

Kenakin begins with a fundamental review of the theory and mathematics of the ligand–receptor interaction, leading the reader through a consideration of the original occupation and rate theories to more recent postulates as the operational, inactivation, and two-state models. From the first to the last chapter, the author hammers home the postulate of drug "specificity" versus "selectivity" (*to paraphrase, the difference between a drug and a poison is quantity*) while readily acknowledging "the mathematical representations of drug–receptor interactions ... are based on a number of assumptions". Without being arcane, Kenakin guides the reader (in individual chapters) through discussions of stimulus–response mechanisms as well as through such oft forgotten topics such as the diffusion of drugs through aqueous microenvironments and in the receptor compartment. Other topics include "agonism" (introduced by the "Molecular Nature of Affinity"), efficacy (intrinsic activity vs intrinsic efficacy vs negative efficacy), competitive antagonists (including a section on "Antagonism of Indirect Agonists"), allotropic, noncompetitive and irreversible antagonism, methods of drug and receptor classification ("Possible Pharmacological Significance of Differences"), the fundamentals of ligand binding and considerations of kinetic influences of drug action. Whereas the final chapter (14; Drug Design and Discovery) tends toward speculation, earlier sections (e.g., Drug Response Systems) are replete with such seldom taught topics as, for example, the design of, and rationale for the use of, particular types of chambers for tissue bath experiments. Chapter 6 (Analysis of Dose-Response Data; "*If your experiment needs statistics, you ought to have done a better experiment*"; Rutherford) was an elegant and refreshing presentation of statistical methods useful to analyze drug–receptor interactions.

The 14 chapters of "Pharmacological Analysis" offer the reader an expansive and graceful blend of examples taken from the literature intermixed with a comparison of data to theoretical models. In keeping with the premise that models "are based on assumptions", Kenakin is neither conciliatory nor predatory to the final outcome of these comparisons. The number of exemplary figures in the book is overwhelming, and it is doubtful the author has failed to include a fundamental equation, or derivation thereof, within the appropriate section. Literature citations for each chapter are complete and current.

In summary, this is a timely and outstanding text and reference well worth the cost. As a scientist, teacher, and (foremost) a pharmacologist, I consider this to be a superb volume written by an experienced and well-versed expert. The book should be required reading for any pharmacology graduate student or fellow and would be a more than useful adjunct in the office of any scientist engaged in receptor research.

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