

## Preface

“Molecular Pharmacology” gives an approach to the mode of action of bioactive compounds on a molecular level. It concerns a great variety of pharmacodynamic agents. In this volume the actions of odorants, of chemotherapeutics used in the fight against cancer, and the interaction of substrates and enzymes will be dealt with in detail.

Part I (Volume I) describes how, in many cases, the effect of a drug on a biological object may be accounted for in terms of an interaction of drug molecules with specific target molecules, molecule complexes, or parts of them. They are called the specific receptors for the drug with respect to the particular effect. The activity of a drug—as far as the drug-receptor interaction is concerned—is determined by (a) the affinity between drug and receptors, i.e., their tendency to interact, and (b) the intrinsic activity of the drug, i.e., the ability of the drug, once it interacts with the receptors, to contribute to the induction of a stimulus and thus to the effect.

As long as no exact data are available on the chemical properties of the receptors and the type of chemical processes involved in the induction of the effect, the operational concepts—receptor, affinity, and intrinsic activity—are indispensable in the discussion of drug action. As more information becomes available on the infra structure of the receptor or active site and on the specific processes in drug-receptor interaction, the need for the operational concepts just mentioned will decrease.

The degree to which this has already taken place varies with the type of drug and biological object studied. The topics dealt with in this volume are chosen in such a way that three different stages of development are represented.

Part II in this volume “A Molecular Approach to Olfaction” deals with the mode of action of odorants. In this case the anatomical and, to a certain degree, the histochemical location of the receptors is known. Nevertheless, hardly any information is available on the molecular processes involved in olfaction.

Part III, “A Molecular Approach to the Chemotherapy of Cancer,” deals with various types of chemotherapeutics used against cancer, such as the radiomimetics and antimetabolites. For these drugs more information is available concerning the biochemical processes involved. In many cases the specific steps are known in the sequence of biochemical processes with which the antimetabolites interfere. Information on the molecular level is given in detail here.

Part IV, “Receptor Theory in Enzymology,” deals with the interaction of substrates and enzymes. A good deal is known about the structure of chemical groups which constitute the receptors and the active sites on the enzymes.

In a number of cases information is available on the type of forces acting between the various chemical groups of the substrate molecule and those of the active site

The progress illustrated in the three parts of this volume is indicative of the development of the whole field of molecular pharmacology. Since the infra structure of drug and receptor and their interrelationship form essential entities in the considerations, the approach to the field of study has progressed from a molecular to a submolecular level.

E. J. ARIËNS