Receptor Binding
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Foreword

Techniques in the neurosciences are evolving rapidly. There are currently very few volumes dedicated to the methodology employed by neuroscientists, and those that are available often seem either out of date or limited in scope. This series is about the methods most widely used by modern-day neuroscientists and is written by their colleagues who are practicing experts.

Volume 1 will be useful to all neuroscientists since it concerns those procedures used routinely across the widest range of subdisciplines. Collecting these general techniques together in a single volume strikes us not only as a service, but will no doubt prove of exceptional utilitarian value as well. Volumes 2 and 3 describe all current procedures for the analyses of amines and their metabolites and of amino acids, respectively. These collections will clearly be of value to all neuroscientists working in or contemplating research in these fields. Similar reasons exist for Volume 4 on receptor binding techniques since experimental details are provided for many types of ligand-receptor binding, including chapters on general principles, drug discovery and development, and a most useful appendix on computer programs for Scatchard, nonlinear, and competitive displacement analyses. Volume 5 provides procedures for the assessment of enzymes involved in biogenic amine synthesis and catabolism.

Volumes in the NEUROMETHODS series will be useful to neurochemists, -pharmacologists, -physiologists, -anatomists, psychopharmacologists, psychiatrists, neurologists, and chemists (organic, analytical, pharmaceutical, medicinal); in fact, everyone involved in the neurosciences, both basic and clinical.
Preface

The purpose of this volume, which is part of a series on "Neuromethods," is to critically review the contribution of receptor binding studies to the fields of neuropharmacology and neurochemistry. Emphasis is being placed on the methodological aspects of these studies and on the problems in integrating the binding data with the function of receptors in physiological or pathological processes.

Current trends in receptor research aim at (i) correlation of receptor binding with the electrophysiological, biochemical, or behavioral responses, (ii) adaptive changes in the state of receptors reflected in altered binding, and (iii) the search for endogenous ligands for binding sites characterized by drugs. All this is reflected in individual chapters of this book. They are not proceedings of a symposium or a workshop. The contributors were selected on the basis of their work in a particular field. The chapters share a common organizational scheme in order to provide the reader with a familiar pattern of information when searching through various topics. The introductory chapter is intended as a brief review of general principles in receptor binding assays for uninitiated readers. It is complemented by the last chapter on the role of receptor binding in drug discovery and development. Examples of computer programs for estimation of binding parameters are given in an appendix to chapter 10. Reasonable attempts were made to minimize unnecessary repetition and overlap. However, some overlap was unavoidable, particularly where assays for various neurotransmitters are described in detail.

This volume reviews the current state of knowledge of receptor (recognition) sites in the brain that mediate the action of putative neurotransmitters or modulators such as GABA, excitatory amino acids, dopamine, noradrenaline, serotonin, acetylcholine, purines, and opioid and nonopioid peptides, and of some psychotropic drugs such as antidepressants, amphetamine, phencyclidine, and benzodiazepines. It will be of interest particularly to
neuropharmacologists, neurophysiologists, neurobiologists, neurochemists, neurologists, and biological psychiatrists, but also to researchers or physicians in other fields of biology and medicine interested in receptor-mediated events.

Pavel D. Hrdina
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