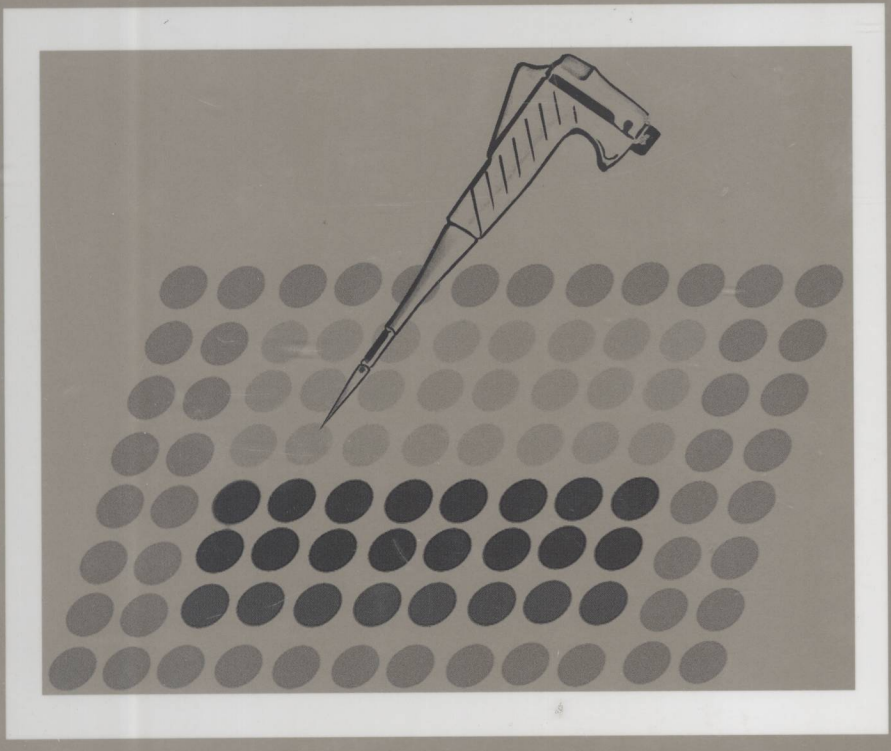
Pharmaceutical Bioassays

Methods and Applications

Shiqi Peng • Ming Zhao



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PHARMACEUTICAL BIOASSAYS

PREFACE

Twenty years ago when I did my research work as a Humboldt Fellow in Prof. Dr. Dr. h.c. Winterfeldt's laboratory at Hannover University, I clearly perceived a trend that chemists were focusing attention on bioassays corresponding with states of disease free, disease onset, and disease progression, which trend pushed our synthetic chemistry to combine with pharmaceutical bioassay. Ten years ago when I was engaged as the dean of the College of Pharmaceutical Sciences in Peking University, pharmaceutical bioassay was considered as one of the platforms in our postgraduate education. Five years ago when I was engaged as the dean of the College of Pharmaceutical Sciences at Capital Medical University, pharmaceutical bioassay became a platform of chemistry, pharmacy, biology, and medicine and was extensively reflected in our undergraduate and postgraduate education.

The trend of chemistry, pharmacy, biology, and medicine to focus attention on bioassays corresponding with states of disease free, disease onset, and disease progression continues today and leads the discovery of efficacious new human and animal therapeutic agents, one of humanity's most vital tasks. The development of pharmaceutical bioassays is an enormous, demanding activity that requires creativity, a vast range of chemical, pharmaceutical, biological, and medical knowledge, as well as great persistence. Nowadays, no education and research would be complete without some exposure to the ways in which bioactive agents and new medicines are defined, discovered, and developed with the support of pharmaceutical bioassays. For those people interested in chemistry, pharmacy, biology, and medical sciences, such knowledge is arguably mandatory.

Pharmaceutical Bioassay: Methods and Applications represents a unique attempt to describe assays to evaluate the bioactivities of therapeutic moieties resulting from chemical, biological, and natural processes and to explore the mechanism of action of therapeutic moieties in the cells, tissues, and organs of living beings, as well as in living beings themselves. Such assays are highly important in the pharmaceutical industry and are the prime engine for the advancement of chemistry, pharmacy, biology, and medicine.

It would be impossible to be comprehensive in a book of this size, although hopefully there are no important omissions. I apologize that due to the rapid increase of new

knowledge, I have had to omit some assays, and due to the limit of my appreciation or ability, some topics have not been treated with the depth that they may deserve. The emphasis, in general, has been on the procedures and applications of pharmaceutical bioassays. I hope that the selection and the arrangement of the material may be found satisfactory and useful to all those working in or entering this field.

I am grateful to the Beijing Municipal Commission of Education, which established the Beijing Area Major Laboratory of Peptide and Small Molecular Drugs for us, and also am grateful to the leaders of Capital Medical University, who provided me with excellent equipment, sufficient funds, and had high confidence in my research related to pharmaceutical bioassays; therefore, I hope that this book may be dedicated to the fiftieth anniversary of the founding of Capital Medical University. I am also indebted to my current co-workers and students who help to keep pharmaceutical bioassay alive for me with their enthusiasm for our research. Finally, I am especially grateful to my wife, who has not complained about the extra time I have needed to work during the past decades.

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CONTENTS