Bioprobes

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Editor

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Biochemical Tools for Investigating Cell Function

Second Edition

Springer

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Preface

The first edition of this book *Bioprobes* was published in 2000. The term "bioprobe" was introduced then as the name for a chemical tool, a probe, to investigate biological functions. Eventually, the concept of the research inspired by the bioprobe was similar to that of chemical biology and it became familiar to scientists. The epoch-making research results, namely, that FK506 and cyclosporin inhibit the activity of phosphatase calcineurin by forming the ternary complexes FK506- FKBP12- calcineurin or cyclosporine-cyclophilin-calcineurin, opened a new door in chemical biology. It was typical research in basic chemical biology.

The new tide of chemical biology has flowed from the Institute of Chemistry and Cell Biology (ICCB) at Harvard Medical School and has initiated the building of chemical biology-related centers in other parts of the world. One of the main activities of the centers is the screening of small bioactive compounds from chemical libraries. This tide merged into chemical genomics, which deals with the systematic screening on a large scale from chemical libraries to discover lead compounds of drugs.

Based on this background, the present volume describes bioprobes that are mainly isolated from microorganisms, along with some synthetic compounds. Most of the bioprobes are not developed for clinical use yet, but they are useful as chemical probes as well as lead compounds of drugs.

The book consists of six chapters. After a brief introduction of the development of bioprobes, the biological fields in which bioprobes affect the molecular targets are surveyed. These reviews cover the broad, advancing areas of the cell cycle, epigenetics, apoptosis–autophagy, and immunological responses. A final chapter contains important bioprobes that are useful for investigating biological studies.

In this second edition of *Bioprobes*, we deal with small molecules isolated from marine organisms in addition to microbial metabolites. I hope this book will

contribute to the work of both natural product chemists and cell biologists, eventually resulting in the progress of bioprobe research.

Wako, Japan Hiroyuki Osada
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