

Opioid Research

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Methods and Protocols

Edited by

Zhizhong Z. Pan

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and Biochemistry and Molecular Biology,
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Preface

Opioid research is one of the multidisciplinary research areas that involve advanced techniques ranging from molecular genetics to neuropharmacology, and from behavioral neuroscience to clinical medicine. In current opioid research, it has become increasingly important to use multiple approaches at molecular, cellular, and system levels for investigations on a specific opioid-related target system. That often requires understanding and applying cross-field techniques and methods for the success of one's research projects. Through its broad spectrum of coverage, *Opioid Research: Methods and Protocols* provides a comprehensive collection of major laboratory methods and protocols in current opioid research, covering topics from molecular and genetic techniques to behavioral analyses of animal models, and then to clinical practice. It will serve as a convenient reference book from which those involved in opioid research will learn or perfect the necessary cross-field techniques.

The detailed methods and protocols described in *Opioid Research: Methods and Protocols* have each been successfully applied in current opioid research. Part I provides molecular techniques for the cloning and expression of opioid receptors, and for the quantitative characterization of their signaling pathways. Part II includes primary techniques for mapping the distributions and detecting the expression levels of opioid receptors, opioid peptides, and their messages in brain tissues and in individual cells. Part III deals with methods for creating in vitro receptor models and in vivo animal models to study opioid functions. Part IV describes practical applications of opioids in clinical medicine for the treatment of pain and opioid addiction.

Zhizhong Z. Pan, PhD

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