

Transmembrane Signaling Protocols

SECOND EDITION

Edited by

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University of Louisville, Louisville, KY***From Reviews of the First Edition...**

"...well put together...covers a range of signaling protocols and would serve well as a reference for what methods are currently being used in the field." —**MOLECULAR BIOTECHNOLOGY**

"...a good book for a non-specialist entering the field and specialists looking for well-described techniques." —**MICROBIOLOGY TODAY**

The complete sequencing of the human genome and many new microarray and proteomic methods for analyzing global changes in both gene expression and protein profiles have greatly increased our ability to understand transmembrane signaling processes in close detail. In this fully updated and expanded second edition of *Transmembrane Signaling Protocols*, leading experts demonstrate the use of such techniques as single-cell imaging, bioluminescence resonance energy transfer, and global proteomics in the study of transmembrane signaling events. Highlights include the functional expression and genetic selection of mutant mammalian transmembrane receptors in yeast, real-time analysis of transmembrane receptor signaling in live cells, and bioluminescence energy transfer to monitor protein-protein interaction. Additional chapters use state-of-the-art methods to analyze gene expression and proteomic profiles related to transmembrane signaling events, as well as to genetically reconstitute bone marrow for the study of signal transduction *ex vivo*. Introductory chapters provide a wide-ranging perspective, including an overview of the many recent advances in our understanding of signal transduction pathways. The protocols follow the successful *Methods in Molecular Biology*™ series format, each offering step-by-step laboratory instructions, an introduction outlining the principles behind the technique, lists of the necessary equipment and reagents, and tips on troubleshooting and avoiding known pitfalls.

Cutting-edge and highly practical, *Transmembrane Signaling Protocols, Second Edition*, makes available to novice and experienced researchers alike the readily reproducible techniques needed to advance the study of signal transduction pathways today.

FEATURES

- Genetic selection of signaling mutants for mammalian receptors in yeast
- Genomic and proteomic approaches to the analysis of transmembrane signaling events
- *Ex vivo* analysis of primary cells from transgenic mice
- Fluorescence microscopy in live single cells
- Real-time analysis of transmembrane receptor signaling in live cells
- Bioluminescence energy transfer to monitor protein-protein interaction
- Introductory survey of recent advances in signal transduction pathways

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