Wnt Signaling

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METHODS IN MOLECULAR BIOLOGY™

Wnt Signaling

Volume 1
Pathway Methods and Mammalian Models

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Humana Press

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ISBN: 978-1-58829-912-3 e-ISBN: 978-1-59745-249-6
ISSN: 1064-3745 e-ISSN: 1940-6029
DOI: 10.1007/978-1-59745-249-6

Library of Congress Control Number: 2008936263

Cover illustration:

Printed on acid-free paper

9 8 7 6 5 4 3 2 1

springer.com

Preface

Since their discovery some 20 years ago, Wnt signaling molecules have been shown to control key events in embryogenesis, maintain tissue homeostasis in the adult and, when aberrantly activated, promote human degenerative diseases and cancer. Elucidation of Wnt signaling mechanisms has relied on both biochemical methodologies and vertebrate and invertebrate model systems. Therefore, I felt that an issue dedicated to Wnt signaling had to include both assays (biochemical readout) and model systems (functional readout) of Wnt signaling. It is not an exhaustive catalog, but rather a point of reference to current molecular protocols and the diverse model systems employed to study this signaling pathway. The issue is divided into two volumes. The first volume includes assays to measure activation of the diverse Wnt signaling pathways as well as models and strategies used to study mammalian Wnt/FZD function (from protein–protein interaction and simple cell line models to organoid cultures and mouse models). The second volume is dedicated to the diverse vertebrate and invertebrate models that have shaped the Wnt signaling field. It provides an entry point for the novice and an overview of the unique properties of each organism with respect to studying Wnt/FZD function (for example asymmetric cell division in *Caenorhabditis elegans*, epithelial morphogenesis in *Dictyostelium* and so on). Given the collective expertise and knowledge of the contributors, I anticipate that this two-volume issue will be an invaluable resource.

The Wnt field advances at an exceptionally rapid rate for several reasons. First, diverse fields of research converge on this pathway. Second, the Wnt community is very generous: reagents, knowledge, and ideas are shared freely. This is facilitated by informative web sites and regular Wnt meetings that are packed back-to-back with cutting-edge research. The "no-frills" approach to these meetings means that the whole community, including students, can participate. Equally important is the elusive nature of the Wnt pathway itself, which continues to intrigue and fascinate both novice and veteran researchers alike. This book is a testament to all these. It was steered by the generosity and enthusiasm of contributors from diverse fields. I thank them all. Special thanks to Randall Moon and Stefan Hoppler; their suggestions for authors and chapters helped shape this issue.

On a personal note, I would also like to take this opportunity to acknowledge Bill Boyle for being an inspirational mentor during my formative years; his infectious enthusiasm for research set me on this exciting and rewarding career path. I am indebted to Bob Thomas and Rob Ramsay for generously supporting my research into FZD7 function in colon cancer when funding in Australia for the Wnt field was scarce in the early years. Most importantly, I thank my very patient and accommodating children for allowing me to indulge myself!

I thank Tony Goodwin, Scott Bowden, and the University of Melbourne—without their assistance this book would not have been possible. John Walker and all at Humana Press, especially David Casey and Amina Ravi, for their generosity and for the opportunity to edit this issue—a truly rewarding experience.

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