Signal Transduction: Pathways, Mechanisms and Diseases

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Preface

Teaching a graduate course on signal transduction in the fall of 2007 was very enjoyable. Each week, my students and I discussed a recently published research paper in some area of signaling, argued about the appropriateness of the methodology used in the research, the design of the experiments, and whether the conclusions drawn were supported by the results presented. Finally, each student was asked to list what was good and what was deficient in the paper and whether she/he would have accepted or rejected it had she/he reviewed it for publication. For a good number of recent papers, a consistent complaint of the students was that the background to the research was not adequately described. It can of course be argued that students should research the background. Either way, the need for a good source of background material in order to appreciate the research presented in a paper became apparent to me and was the inspiration for developing this book.

The goal in bringing this book was to provide students with a review of recent developments in specific areas of current interest in signal transduction, sufficiently in depth to make recent research publications accessible. However, given the wide range of research topics being investigated today in signaling, a choice had to be made to focus on a select few. This choice was made not only keeping the current research interest in mind, but also with the anticipation that these areas will continue to be of interest over the next several years.

In choosing papers for discussion in my class, I look for health-relatedness of the research, and that is reflected in the list of the broad areas covered in this book – G protein coupled receptors, growth factors, nuclear receptors, reactive oxygen and nitrogen species, cell cycle and cancer; the emphasis has been on areas of signaling research with immediate clinical significance. I believe this book will serve well as supplemental reading material for undergraduate and graduate students with similar interest.

Another area covered in this book, one not often highlighted in signal transduction books, is that of signaling platforms, which is emerging as a significant area of research relevant to cellular metabolism, cell proliferation, differentiation, apoptosis, neurodegenerative diseases, and cancer. The authors contributing to this book

are experts and active contributors to research in their specific areas of signaling. I would like to thank them for their contributions and their suggestions in the development of the book. I would like to acknowledge the help of Frank Tedeschi, a student in my department, who assisted in editing the manuscripts and in preparing the index. I would also like to thank Dr. Sabine Schwarz, Life Sciences Editor at Springer Verlag, and Dr. Jutta Lindenborn who have been very helpful at every stage of production of this book.

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