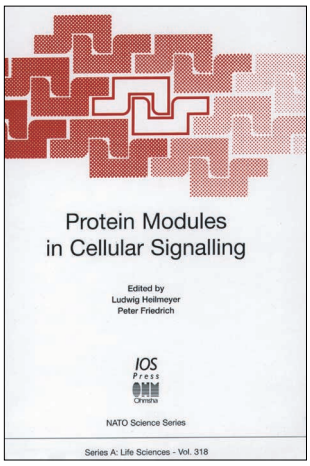
Signal transduction according to the book



Protein Modules in Cellular Signaling
edited by Ludwig Heilmeyer and Peter Friedrich
IOS Press · 2001
Hardback £60/$90

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One thing to do on a long trip is to read a good book. So, on a recent flight from San Francisco to Hong Kong I read *Protein Modules in Cellular Signaling*, a compendium of 43 articles on various aspects of signal transduction, edited by Ludwig Heilmeyer and Peter Friedrich. This book focuses on recent advances in understanding the cellular signalling pathways that relay information from the cell surface to target proteins located at discrete sites within the cell. An enigmatic yet fundamental principle of signal transduction is that parallel signalling pathways operate with a common repertoire of enzymes to propagate diverse physiological responses. One explanation is that signalling cascades are highly organized into localized transduction units, each tailored to respond optimally to a particular signal. As the title of the book suggests, the integrity of these multi-enzyme complexes is maintained by conserved protein modules that bind to short linear sequences on their partner proteins. However, the emergence of protein modules as the molecular glue of signalling complexes is only one of the themes covered in the book's 395 pages.

The articles were solicited from participants in a recent NATO Advanced Study Institute held in St Martin de Londres, France, in September 2000. Each chapter covers a different aspect of molecular or cellular signal transduction. Thus, the reader will find fairly up-to-date information on research developments in the study of protein kinases, phosphatases, phospholipid-signalling enzymes and signalling domains. Other sections deal with particular physiological processes controlled by signal-transduction enzymes, such as glycogen metabolism, vesicle transport and apoptosis. Most chapters are between six to eight pages long and the more useful ones are written as easily digestible minireviews. While this format has enabled the editors to cover the vast subject matter of cellular signalling, the limited number of pages for each chapter prevents authors from developing a detailed analysis of their chosen topics. In my opinion, therefore, the book represents a pot-pourri of personal views on many aspects of cell signalling rather than an authoritative work on hot topics in the field.

The rather eclectic organization of the chapters might be viewed as a limitation, but I found that the short format entices the reader to delve into chapters that they might not normally read. Somewhere between Honolulu and the International Date Line, I was intrigued by an excellent review of the implications of protein kinase B/Akt signalling by Brian Hemmings and co-workers. They succinctly present their view of this important subject and interject a few insightful comments on recent developments in the field. They also manage to say where they think this research will lead us in the future. By the time we were over Tokyo, I was on to an interesting chapter on the biochemical and genetic analysis of the PPP family of protein phosphatases by Victor Dombradi and colleagues. They have compiled a useful list of mammalian phosphatase targeting subunits and their lower vertebrate orthologues, thus providing a useful source of reference for those interested in the structure of these protein families.

In conclusion, *Protein Modules in Cellular Signaling* successfully covers the vast field of signal transduction by providing the reader with a series of short personal perspectives on individual aspects of the field. However, with the exception of one excellent chapter from Jim Hurley and colleagues, there is a surprising lack of structural biology. The inclusion of additional chapters on the spectacular advances in our understanding of kinase and phosphatase structures and the molecular organization of adaptor protein signalling complexes might have been prudent. Nonetheless, there is something for everybody here and it should prove a useful collection of short reviews on the many aspects of cellular signal transduction.

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Other signalling books

Cell Signalling
by John Hancock
Longman, £25.99/$

Models and Methods in Cell Signalling and Gene Expression
edited by Tammy Bray and Norberta Schoene
OICA International (UK) Ltd, £40/$

The Biochemistry of Cell Signalling
by Ernst Helmrich
Oxford University Press, £29.95/$

Cell Signalling
by N. G. Moran
John Wiley and Son Ltd, £100/$

Cytoskeleton: Signalling and Cell Regulation
edited by Kermit Carraway and Coralie Carraway
Oxford University Press, £31.95/$

Cell Signalling
edited by P. Parker and T. Pawson
Cold Spring Harbor Laboratory Press, £70/$

Interactions Among Cell Signalling Systems
edited by Y. Nishizuka
John Wiley and Sons Ltd, £75/$

From DNA Damage and Stress Signalling to Cell Death
edited by Gilbert De Murcia and Sydney Shall
Oxford University Press, £70/$