

## Book review

### Principles of Cell Proliferation

JK Heath  
Blackwell Science Ltd., Oxford; 2001. 137 pp. £22.50,  
paperback. ISBN 0-632-04886-7

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This publication is a comprehensive and up-to-date resource for students embarking on cell proliferation studies or research. All the key concepts and theories involved in cell proliferation are explained with clarity and a dry realism reflected by the phrase in the preface 'many confident statements will soon be rendered irrelevant by new developments'.

No prior knowledge is required. Those new to the field can start at the beginning of this book and learn about normal growth factors, receptors, cytoplasmic signal transducers and transactivation factors. Oncogene and tumour suppressor gene function are related back to these components. The author's writing style is easy to follow and his enthusiasm is transparent. The student will soon understand the interactive pathways involving genes such as *myc*, *ras*, *fos* and *jun*.

The first chapter describes the biology of the cell cycle and the basic concepts involved in cell kinetics. The reader is introduced to tissue culture; the useful applications of immortalised cells in the study of the underlying mechanisms involved in senescence, quiescence, transformation and growth of cell populations and the shortcomings and limitations of *in vitro* research.

Growth factors are described as the 'key orchestrators of cell multiplication' that act, in teams in a context dependent manner, to control the size of cell populations.

The student is then guided through the complexities of ligand/receptor binding, formation and destruction of protein complexes, signal transduction, mediation by protein 'switches' and mitogenic signalling. Repeatedly, the author enhances learning by clarifying and simplifying key research findings and relating them to current concepts. The author explains that the inherent diversity and complexity within cellular signalling is facilitated by the ubiquitous application of combinatorial logic.

The end products of growth factors, described as the 'early' genes, are introduced together with the dimerisation of Fos and Jun in the leucine zipper. Subsequently, events that occur after the G1 phase restriction point are elaborated in the chapter aptly titled 'The cell cycle engine'. This completes the overview of the normal cell cycle.

The book's final chapters address dysregulation of the cell cycle and the role of oncogenes and tumour suppressor genes in multi-step carcinogenesis. Using now familiar categorisations, the author identifies and details the functions of oncogenes by relating them to the level at which they act in the signalling process. The last chapter on cell survival summarises the intricacies of apoptosis. This book is worthy of a place on the shelf of all cancer research laboratories because it will inspire future scientists to challenge today's knowledge.

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