Molecular Biology: Principles of Genome Function

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The biological world operates on a multitude of scales - from molecules to cells to tissues to organisms to ecosystems. Throughout all these levels runs a common thread: the communication and onward passage of information - from cell to cell, from organism to organism and, ultimately, from generation to generation. This information is stored, at the most fundamental level, in each living cell in our body. But how does this information - no more than a static repository of data -
come alive to govern the processes that constitute life?

The answer lies in the concerted action of molecular components which cooperate in a series of ingenious processes to bring the information deposited in each of us, in our genome, to life. These components and processes lie at the heart of one of the most endlessly fascinating subjects to engage the minds of scientists today: molecular biology.

Molecular Biology: Principles of Genome Function offers a fresh, distinctive approach to the teaching of molecular biology. It is an approach that reflects the challenge of teaching a subject that is in many ways unrecognizable from the molecular biology of the 20th century - a discipline in which our understanding has advanced immeasurably, but about which many intriguing questions remain to be answered.

It is written with several guiding themes in mind:
· A focus on key principles, rather than an attempt to offer exhaustive detail, provides a robust conceptual framework on which students can build a solid understanding of the discipline;
· An emphasis on the commonalities that exist between the three kingdoms of life, and the discussion of differences between the three kingdoms where such differences offer instructive insights into molecular processes and components, gives students an accurate depiction of our current understanding of the conserved nature of molecular biology, and the differences that underpin biological diversity;
· An integrated approach demonstrates how certain molecular phenomena have diverse impacts on genome function by presenting them as themes that recur throughout the book, rather than as artificially separated topics.

At heart, molecular biology is an experimental science, and a central element to the understanding of molecular biology is an appreciation of the approaches taken to yield the information from which concepts and principles are deduced.

However, a mass of experimental evidence can make the grasping of the central ideas and paradigms that the experimental evidence has allowed us to elucidate more difficult. Molecular Biology responds to this challenge by complementing its coverage of key concepts in the main body of the text with separate Experimental Approach panels, which branch off from the text in a clearly-signposted way. These Experimental Approach panels describe pieces of research that have been undertaken, and
which have been particularly valuable in elucidating difference aspects of molecular biology.

Beyond this, Molecular Biology further enriches the learning experience with full-colour, custom-drawn artwork; end-of-chapter summaries; relevant suggested further readings grouped by topic; and an extensive glossary of key terms.

Among the students being taught today are the molecular biologists of tomorrow; these individuals will be in a position to ask fascinating questions about fields whose complexity and sophistication become more apparent with each year that passes. Molecular Biology: Principles of Genome Function is the perfect introduction to this challenging, dynamic, but ultimately fascinating discipline.

Online Resource Centre
The Online Resource Centre to accompany Molecular Biology: Principles of Genome Function features
For registered adopters of the book:
Figures from the book in electronic format, ready to download.
Figures in PowerPoints, for use in handouts and presentations.
Map of key themes, to show how key topics are blended throughout the book.
Journal club, suggested papers and discussion questions linked to topics covered in the book.

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