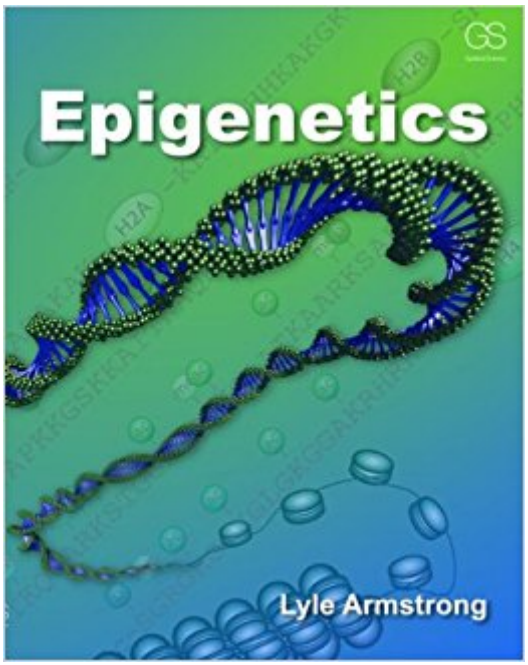
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Epigenetics



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Synopsis

The concept of epigenetics has been known about since the 1940s, but it is only in the last 10 years that research has shown just how wide ranging its effects are. It is now a very widely-used term, but there is still a lot of confusion surrounding what it actually is and does. Epigenetics is a new textbook that brings together the structure and machinery of epigenetic modification, how epigenetic modification controls cellular functions, and the evidence for the relationship between epigenetics and disease. It is a valuable source of information about all aspects of the subject for undergraduate students, graduate students, and professionals. Ã Â

Book Information

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Customer Reviews

"ArmstrongÃ¢â ¬â„¢s Epigenetics textbook is not only timely but also important for introducing scientists, new and seasoned, to the ever-evolving world of epigenetics."- The Quarterly Review of Biology, 2016, Vol. 91, No. 2 "The author has made a very thorough presentation of several areas within the field of epigenetics. The material has been presented in a comprehensive, well-organized and understandable manner. He allows the reader to gain a strong foundation of each subject area by including detailed introductory sections. The coverage of the topics will allow the reader to obtain both general knowledge and also more detailed understanding of the regulating mechanisms involved in epigenetic changes and the consequences of those changes.The content is also relevant to current trends in the field of epigenetics and includes reviews of disease states related to epigenetics, such as cancer, which are actively being researched." - WhatIsEpigenetics "In

summary, Epigenetics provides a convincing overview of epigenetic mechanisms at the molecular and cellular levels. Clearly, such mechanisms are likely to be relevant to many complex human diseases, but the details remain to be elucidated. The enduring impression taken away from this book is of a spectacularly complex and dynamic interplay among different epigenetic factors in the regulation of gene expression and cellular differentiation. Any researcher interested in these phenomena should find this textbook an excellent resource."- International Journal of Epidemiology, 2015, Vol. 44, No. 4

Epigenetics by Armstrong is one of the newer additions to the field of literature on epigenetics. The focus is mostly on methylation and there is some coverage of miRNA and lncRNA but not a great deal. The presentation is superbly structured and it assumes just a reasonable understanding of genetics and embryology.The book is written as an introduction but covers the field in considerable depth. One of the strongest points is the graphical presentations which far exceed any of the other recent texts in the area. The graphical presentations present the complexities of epigenetics quite well.The book starts with DNA architecture including the functions of the histones and then moves to methylation and acetylation. It discusses histone modification in a simple and straightforward manner.The discussion of epigenetic gene control is quite well done and flows very well from the prefatory discussions.The author also presents the issues of imprinting and the embryological changes in methylation patterns. These issues are critical in understanding embryological development and ultimately stem cell dynamics. There is a discussion on the reversal of methylation which is quite useful.The author then discusses several disease states and the impacts of methylation.Overall it is a superb book and one of the best introductions I have yet to see.However there are few observations. These are not negative but they reflect the state of the art in epigenetics.First, there are many hesitant conclusions. This is just the nature of methylation effects. Many things are known but many factors are still to be understood. The author makes certain these hesitations whenever they occur.Second, on the cancer side, it would have been quite interesting to have delved a bit deeper into an example such as Myelodysplastic Syndrome, MDS, which is a methylation disorder and is initially treated as such. MDS is the result of methylation of certain gene segments which result in excess blasts. The initial treatment is demethylation therapeutics. Considerable work has been done here and it would have been a useful exercise to have added it.Third, epigenetics can be considered as any epigenetic mechanism that controls gene expression. Thus miRNAs and lncRNAs and other siRNAs may have been of use to understand in detail. As such the main focus is methylation. There is a putative interaction between the two and perhaps that

could be explored in a second edition.Overall this is undoubtedly the best text on the market at this time and it does a sterling job at methylation. It is useful for both grad students and those seeking to understand this area but who are well founded in the basics.

An exceptionally well-written college-level text that is accessible for college students with a freshman-level knowledge of genetics. As Armstrong details, epigenetic mechanisms are not just another gene regulatory layer but "a versatile mechanism by which the information content of the genome can be used in a selective manner to define cellular phenotypes and respond to environmental influences that cells experience during their lives." Thus, epigenetic mechanisms can be viewed as nature’s interface between DNA sequences and the organism’s outside environment, which provides the organism with a necessary degree of phenotypic plasticity not afforded by the rigid (but more faithfully transmitted) DNA sequence. To his credit, Armstrong only briefly introduces the controversial topic of transgenerational epigenetic inheritance, that is, Lamarck-like inheritance of acquired characteristics that has excited a few evolutionary biologists (e.g., Jablonka and Shapiro). Our knowledge of this possible transmission of acquired information is too scant to give it much more attention than is given by Armstrong. Moreover, where such transmission exists, it does so through reproductive systems that show tremendous species variation. That means what epigenetic transmission of acquired information one finds in plants or C. elegans, for instance, is not necessarily what one will find in mammals.

Excellent text book for students. Lot of pictures and summary after every bigger chapter. I can recommend this book to every novice on the field of epigenetics.

If I had still been teaching I would have chosen this as a starter volume to introduce the topic. A very handy and versatile introduction to the topic of epigenetics which is now becoming increasingly popular as an explanation of many disorders and with indications of strategies of remedies to alter some of those conditions.

It was what I was looking for...

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