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Book Reviews

The Biology of Death: Origins of Mortality. By Andre Klarsfeld, Frederic Revah, and Lydia Brady (Translator). Ithaca, New York: Cornell University Press; 2003, 211 pp. $29.95.

Written by two accomplished French neurobiologists and translated by an experienced scientific and technical translator, this book explores various ideas concerning death in living organisms. The book focuses on the reasons an organism stops living and takes a scientific approach toward understanding the causes of death.

The book describes in detail the varying lifespans of different organisms and even discusses statistical analyses regarding the probability that an organism will reach a certain age. The simple fact that certain organisms age at seemingly different rates is a key issue in this book. The authors point out examples of organisms with life spans ranging from minutes for some insects to millenniums for certain types of trees such as sequoias. A key concept addressed in this book is the idea that death is something that occurs inevitably in all living organisms whether by being killed by another organism or by natural aging. They also touch on current research on aging in yeast (*Saccharomyces cerevisiae*) and examine the possible links between death and sexual reproduction. The authors do an excellent job in looking at death from all aspects of nature whether in yeast or mammals, which is why this book will have something for everyone.

Anyone who has studied science will find this book an easy read. The translation of this book was done relatively well, but there were some grammatical errors found in the book that could have been easily located if edited more thoroughly. All in all, this book takes the sometimes morbid subject of death and does a good job of analyzing it from an objective scientific viewpoint.

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The Cell: A Molecular Approach. 3rd edition (with attached CD-ROM). By Geoffrey M. Cooper and Robert E. Hausman. Washington, D.C.: A.S.M. Press/Sunderland, Massachusetts: Sinauer Associates, Sunderland, Massachusetts; 2004, 713 pp. $104.95.

This is the third edition of a book that has by now become a classic. It has been extensively updated and revised since the second edition was published in 2000.

The Cell: A Molecular Approach consists of four parts, each of which is self-contained, so that the order and emphasis of topics can be easily varied. The four parts are: I, "Introduction;" II, "The Flow of Genetic Information;" III, "Cell Structure and Function;" and IV, "Cell Regulation." Each part is divided into three to five chapters, which are also subdivided into headings. In addition to the text and illustrations there are special highlighted features entitled "Key Experiments," describing landmark experiments in cell biology, and "Molecular Medicine," dealing with important molecular aspects of pathology, diagnosis and therapy. Each chapter ends with a summary and review questions. The references at the end of each chapter are carefully

selected and contain recent review articles in addition to significant original papers.

The book has been designed to be an accessible text that can be covered in a single semester and assumes that most readers/students will have some background knowledge in biology and general chemistry. The text is clear and succinct, and the illustrations are of excellent quality. While this is overall a very readable and well-written book, I particularly enjoyed the chapters on "Replication, Maintenance and Rearrangements of Genomic DNA" and on "Cell Signaling." The "Key Experiments" put things into historical perspective and help the reader understand how the field evolved. I didn't find the "Molecular Medicine" sections very interesting, but they may be more appealing to readers who have no medical background.

The attached CD-ROM, *Understand! Biology: Molecules, Cells & Genes* retains the general structure of the book. It is a complementary instruction tool, which contains short text passages as well as thousands of illustrations, microphotographs and movies. The text is full of hyperlinks and clicking on terms in the text opens a list of definitions of the respective term and of related terms. The illustrations are of excellent quality, but overall the CD-ROM navigation is a little cumbersome and the presentations could be more interactive.

In summary, this is an excellent text for students taking early courses in cell biology and molecular biology and will serve as an admirable introduction to this interesting field. I can recommend the book wholeheartedly, and I think that the authors fully achieved the goal stated in the preface, namely to: "…convey the excitement and challenges of research in [the] field." The CD-ROM is an added bonus and can serve as a useful teaching aide or as a study guide/review tool.

Similar textbooks are: *Molecular Biology of the Cell*, edited by B. Alberts et al. New York, Garland, 2002, and *Molecular Cell Biology*, edited by H.F. Lodish, 2003. Both are excellent, somewhat more detailed textbooks and the choice between these and the *The Cell: A Molecular Approach* will be largely a matter of personal preference.

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How to Write and Illustrate a Scientific Paper. By Björn Gustavii. New York: Cambridge University Press; 2003, 152 pp. $55.00 (Hardcover); $19.00 (Paperback).

It is no coincidence that Björn Gustavii's book's title immediately recalls Robert Day's *How to Write and Publish a Scientific Paper*. *How to Write and Illustrate a Scientific Paper* is intended to complement Day's book, Edward Tufte's *The Visual Display of Quantitative Data*, and other classic works on scientific writing and illustration. It is not meant to be an exhaustive reference but rather a well-organized overview of all aspects of the publication process and an in-depth resource on some areas neglected in other works.

Gustavii successfully distills his twenty years of teaching scientific writing in a Swedish medical school into this slender and approachable volume. Despite its small size, *How to Write and Illustrate a Scientific Paper* presents all steps in the writing, submission, and editing process with numerous good and bad examples from the biomedical literature. Most of these examples are reprinted in the text of the book, with a few examples of overall paper formatting given as references for the reader to find and examine separately. Though the specific examples and much of the formatting advice in the book is most applicable to biomedical researchers, the general wisdom in the book can be applied by all scientists.

In the second chapter and throughout the book, Dr. Gustavii identifies common problems of non-native English speakers, a topic overlooked in Day's book. Even native English writers will benefit from his clarifications and suggestions, such as avoiding the use of "respectively" and "and/or." Another strength of the book is the cogent discussion of which researchers on a project deserve authorship. While that chapter does not solve this growing dilemma, it will help young PIs and graduate students form their own standards. The longest chapter in the book justifiably pertains to figure design and annotation. Dr. Gustavii advocates figure titles that are descriptive of the outcome or conclusion drawn from the figure, a view that is contrary to the neutral titles suggested by older scientific writing books.

How to Write and Illustrate a Scientific Paper is a worthwhile addition to a scientist's bookshelf. It is especially useful for non-native English speakers, who will appreciate the author's own instructive anecdotes on his first forays into English writing. It would also be an unintimidating, shorter guide to give a younger science writer before they read Day's *How to Write and Publish a Scientific Paper*.

Siobain Duffy
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MRI: Basic Principles and Applications. 3rd edition. By Mark A. Brown and Richard C. Semelka. Hoboken, New Jersey: Wiley; 2003, 210 pp. $62.95.

The concept of a basic text in MRI is fraught with misconception. What is basic to a student in physics may be advanced to a clinician. I doubt whether any text can make the complex physics of MRI simple and those looking for an "MRI for dummies" approach will be disappointed — this book requires a quiet room and full concentration powers. However, novices in MR physics who are willing to give this text their full attention will find it rewarding. The authors of *MRI: Basic Principles and Applications* assume that the reader is familiar with what an MRI image is and its clinical application yet have no grounding in the mechanics of producing that image. The book lays out the basic physics of nuclear magnetic resonance and demonstrates its use in obtaining basic MRI sequences. Sections on angiography, artifacts and, in particular, techniques to reduce artifacts will also serve as useful references for those in clinical practice. This text gives the novice an understanding of the fundamental sequences that made up original MRI studies and still underpin current MRI studies. More advanced sequences and research techniques are covered succinctly, yet in sufficient detail to provide the clinician with a basic grasp of techniques like perfusion and spectroscopy.

Unfortunately, the book does not give a concise description of the newer variant sequences that have replaced the earlier spin echo sequences (fast spin echo and flair in particular) and are now the staple of any clinical MR practice. High-field imaging (3T and beyond) and the protocols suggested for clinical imaging are also poorly covered. Another problem is that some of the information is dated. The book opens its discussion of high-field scanning with a statement that at the time of writing, the maximum approved field strength for clinical magnets is 2T. This suggests a long lead time between writing and publishing as 3T scanners have been available in routine clinical practice for two years. The long delay between publishing is also evident in the sequences suggested for clinical scanning in the final chapter that are outdated. It's a pity that a few pages were not dedicated to the new hybrid fast sequences that are now used in

clinical imaging and the new high field magnets entering clinical practice.

Overall, this is a good text for those with a limited physics background who are in need of grounding in MR physics. It will be of benefit to technologists as well as radiology fellows. If read from cover to cover, it will reward the reader with an understanding of the principles underpinning nuclear magnetic resonance. The book will also find use with radiologists in practice as a reference guide and to other non imaging specialists who are involved in image analysis (e.g., neurologists and orthopedic surgeons).

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Receptor Localization: Laboratory Methods and Procedures. By Marjorie A. Ariano. Hoboken, New Jersey: Wiley; 1998, 250 pp. $195.00 (Hardcover); $99.95 (Paperback).

Studying neurotransmitter receptor biology is crucial to understanding nervous system architecture, function, and dysfunction. Marjorie Ariano has edited a gem of a manual of laboratory methods and procedures. Despite its slimness, the book addresses a plethora of techniques: radiolabelled and fluorescent immunostaining, electron microscopy, infrared video microscopy, *in-situ* hybridization, PET, and SPECT. Each discussion of these methods has the right amount of detail, authoritative references, and troubleshooting hints that a beginning graduate student studying neurotransmitter receptor biology would find invaluable.

The section I found most interesting was detection of receptor mRNA using fluorescent *in situ* transcription. Originally, *in situ* transcription was developed to shorten exposure time of autoradiographic ISH. Low levels of receptor mRNA could be amplified sufficiently and detected in a fraction of the time required with standard ISH. Fluorescence decreases the amount of time necessary to complete an experiment because amplification of the isotopic emission is not necessary. The instructions are lucidly written. The pictures that accompany this technique for localizing dopamine 1A receptor are beautiful demonstrations of the technique. The next time it is necessary to visualize mRNA and protein, I would no doubt turn to this section as an excellent starting point.

In sum, *Receptor Localization*, is an excellent reference handbook for the budding neuroscientist and should deserve attention for its conciseness and clarity.

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Rosalind Franklin: the Dark Lady of DNA. By Brenda Maddox. New York City: HarperCollins Publishers; 2003, 413 pp. $29.95 (Hardcover); $15.95 (Paperback).

Since the 1968 publication of *The Double Helix*, some scientists have argued with James Watson's one-dimensional and often false portrayal of Rosalind Franklin, his unwitting collaborator in the discovery of the structure of DNA. Essays published by those who worked with Dr. Franklin and a biography published in 1975 by her friend Anne Sayers deconstructed Watson's picture of a bull-headed bluestocking. These accounts put Rosalind Franklin's name into high-school biology textbooks, but most scientists and laymen are still unaware of who Franklin really was and exactly what her contributions to the structure of DNA were. The recent, excellent biography of Dr. Franklin by Brenda Maddox should correct these deficiencies for both biologists and the interested public.

While Anne Sayre's biography, *Rosalind Franklin and DNA*, reveals that Rosalind did not know how directly her

work had influenced Watson and Crick, *Rosalind Franklin: the Dark Lady of DNA* presents evidence that Rosalind likely wouldn't have cared; she was a bedrock empiricist who would not have attempted model-making while there were still more X-ray photos to be taken. Though she had many details of the Watson-Crick model nearly a year before the famous 1953 paper, her scientific philosophy prevented her from immediately declaring a structure. In addition, the well-documented antagonism she experienced at King's College and from her funding agencies further complicated her situation, causing her to both abandon the B form of DNA (later revealed to be the dominant form) and eventually the DNA project altogether. The political problems she encountered during her scientific career, both because of her position as a soft-money researcher and her gender, were petty, incomprehensible and a hindrance to scientific progress.

Where Anne Sayre's biography is largely an explanation of what was wrong in *The Double Helix* and an apology for how Rosalind Franklin could have been so isolated from her fellow researchers, Brenda Maddox takes a different approach. Through Rosalind's own letters and recollections of childhood and college acquaintances, a picture of a very self-possessed and self-motivated scientist comes into focus from as early on as her undergraduate years. Her love of mountain climbing and her fearlessness of traveling alone as a female — even as a single Jewish woman in Palestinian towns — are tacit metaphors for her scientific accomplishments and contentment to work alone. She appears as an opinionated, spirited person, but also as a kind, considerate collaborator and friend. She seems to have been the kind of scientist who was very popular at conferences — acquainted and friendly with everyone and an intelligent discussant on a variety of scientific areas.

While more aspiring scientists will likely read *The Double Helix* than *Rosalind Franklin: the Dark Lady of DNA*, Brenda Maddox's writing style will engage even the skeptical reader. Her book does not mimic the frantic, partially-fictional pace of Dr. Watson's search for the structure of DNA. Instead it gives a full portrait of a highly analytical and thoughtful woman who felt more at home with numbers, facts, and married friends than with possible model structures, religion, or romance. The experimental scientific style exemplified by Rosalind Franklin was a complement to James Watson's, and young researchers can benefit from reading accounts of both approaches. This book not only provides another perspective on the construction of the double-helix model but is a reflection on the scientific cultures in England and France at a time when female scientists were rarer. It also provides a portrait of a successful scientist who would have had an even greater impact on biophysics had she not succumbed to cancer at 38 years of age.

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