specifically applied to the unique challenges of studying plants. The book claims to assume no specialized knowledge of plant biology and indeed goes in some detail into necessary background information and terms. And herein lies the problem with this book. By being limited to so few pages, the book at times seems to pick and choose what to focus on, covering in excellent detail and clarity some areas, while giving short shrift to others.

The introduction of the book effectively lays out the plan for the book and most importantly to me, explains why there is value in writing a book specifically devoted to plant genomics. The author explains that some of the unique characteristics of plants, such as the large variability in genome size and the frequent occurrence of polyploidization, provide particular challenges to the application of genomic tools and research. Needless to say, with the growing body of research on plant biology facilitated by genomics, a book to summarize and impose some order on this field is useful. The author also points out the importance of research on crop plants and addresses some of the controversies surrounding genetic manipulation of plants.

Chapter 1 gives a nice overview of the structure of plant genomes and provides an excellent introduction to both what makes plants unique and different from other frequently studied non-plant organisms. The following chapters take the reader on an informative tour of the field of genomics covering topics such as sequencing strategies, acquiring functional information, gene discovery, and the use of microarrays. There are some areas that read more like an introduction to genomics in general, with few references to plants in particular.

The last few chapters focus in more on plants in particular with a chapter on interactions with the external environment and a discussion of traits that are controlled by multiple genes. These chapters cover information on research quite relevant to plant research and provide lots of information clearly and concisely. The section on plant resistance is particularly noteworthy. The last chapters cover resources in bioinformatics that are available to researchers and a short section on some bioethical concerns that plant biotechnology has raised.

Overall, the author does an admirable job of summarizing a large and growing field. I also appreciate his attempts to explore the ways in which genomics are applied to plant research and some of the recent advances in this area. However, my greatest complaint is that the author seems to have been forced to pick and choose areas to focus on, rather than giving a more general summary. Perhaps less detail and a broader paintbrush would have been more successful. Also, dare I say, the book could have also benefitted from a few more pages.

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The Science and Ethics of Engineering the Human Germ Line: Mendel's Maze. By Jon W. Gordon. Hoboken, New Jersey: Wiley-Liss, 2003, 266 pp. $49.95.

One can't usually judge a book by its cover, but this might be an exception. On the cover of The Science and Ethics of Engineering the Human Germ Line, the bright yellow word "Science" dwarfs the rest of the plain white words. The content of the book reflects this emphasis. Dr. Gordon is a professor of Geriatrics and Adult Development and of Obstetrics, Gynecology and Reproductive Medicine at Mount Sinai. He was also the first person to create a transgenic mouse. He wrote this book in order to integrate the relevant science, provide a sufficient scientific understanding for the public, develop a framework for thinking about ethics and biotechnology and, finally, shed some
light on some of biases against women in thinking about these areas.

On the whole, the book is a success. The first three-fifths of the book attempts to inform the reader of pertinent science in the fields of molecular biology, genetics, developmental biology, and reproductive biology. This is directed not only at the lay public, but also at other scientists who, in Gordon’s opinion, can be rather misinformed about scientific fields outside their own specialties. He cites one example of a colleague arguing that because a man died of a brain tumor and his twin didn’t, they could not be identical. Gordon’s book provides enough information to prevent not only such blatant mistakes, but more subtle ones as well. Even for the scientifically trained, this book is instructive. Gordon’s distillations are simple, effective, and have surprising depth. Unfortunately, a late publishing decision to not run the figures in black and white without correcting the text creates some confusing, but this is only a minor complaint. His impulse to involve every citizen is in the best tradition of American politics, and his skill in making this possible is remarkable.

Gordon’s ethical analysis, however, is somewhat uneven. As for some of the strenghts, he emerges as a strong defender of women’s welfare, and highlights the emotional trauma and compromised position of women in both sides of the debates on cloning, genetic engineering, and all of reproductive technology ethics. This is a very welcome addition to these weighty considerations. Restricting a woman’s control over her own body certainly can cause suffering, but so can rushing forward with technologies that depend on surrogate mothers, egg donors, and all of the other roles that women will be expected to play — roles that typically involve invasive medical techniques and other emotionally trying experiences.

Additionally, Gordon uses his strong scientific insights to slice through some of the Gordian knots of reproductive ethics. He argues that many concerns are based on scientific impossibilities, or, at the very least, scientific longshots. Genetic engineering will only allow the control of traits to the degree that identical twins are similar. Any chaotic developmental process, like personality traits, will always be beyond the reach of genetic replacement. Moreover, by placing emerging technologies, including embryonic stem cells, in the context of extant therapies, and rating across safety, cost, efficacy and morbidity, he shows that it will almost always make the most sense to use natural conception, followed by standard genetic screening and possible abortion, than to involve complicated, invasive, expensive and often dangerous technologies.

In his final chapters, however, his pragmatism does a disservice. His disdain for ethics surfaces in his use of quotation marks for: “ethics,” “morals,” “deep” philosophy. This kind of thinking, he writes, is “fun” and requires “a license to be silly.” The intensely clear thinking stops here. Instead the reader receives superficial — it is my turn to employ ironic quotes — “legal” analysis, as well as rare moments of confused logic: “We can distinguish ‘elective’ from ‘therapeutic’ gene transfer [...] because none of the great geniuses in history, from Leonardo da Vinci to Goethe to Einstein, was produced by genetic engineering.” His legal argument essentially maintains that unless objective fact or social consensus exists, no prohibitive law is warranted. Laws based on moral values are to be avoided. These standards would have prevented laws against incest as well as most of our civil rights legislation. It would have been impossible to assert the inalienable rights of minorities or women as a fact, especially at a time where denial of access to resources made their achievements and status appear inferior to white males. And certainly no social consensus
existed at these pivotal and revolutionary parts of our history.

In his defense, Gordon believes all ethical discourse should wait until the technology arrives, as the debate will turn on real details, not speculations. Other inconsistencies and difficulties plague these last chapters, but to dwell on them is to do an injustice to an otherwise wonderful and much-needed contribution to the contemporary fears about biomedical science. Gordon's basic message, and the source of his antipathy to legal intervention, is that biotechnology, like every extension of human power over other humans, can obviously serve to promulgate the inequities of race, class, and sex, but it also can challenge society to live up to its ideals, and provide the impetus for progressive change. We cannot only invent new technologies, we must also reinvent society to be worthy of them. This powerful ethical message, combined with Gordon's scientific acumen, make for a simultaneously accessible and thoughtful book. This book, and others like it, will serve a vital role in enabling a democratic resolution of these contentious issues.

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_Signal Transduction and Human Disease. Toren Finkel and J. Silvio Gutkind, Editors. Hoboken, New Jersey: John Wiley & Sons; 2003, 488 pp. $99.95_

In _Signal Transduction and Human Disease_, Drs. Finkel and Gutkind have attempted to produce the first text to their knowledge that "straddle[s] the productive interface between modern biology and modern medicine." It is an entirely worthy goal, and their note that this is but a first edition suggests that they are willing to grapple with the Sisyphean task of capturing the dynamic field of signal transduction in successive static snapshots. Their clear commitment to the inclusion of recent data is evident by endnotes in several of the chapters apparently added subsequent to the receipt of galley proofs.

In a nod to standard medical textbook practice, they have chosen to partition their text into chapters based on specific diseases and disease processes, fully cognizant that this scheme slights and fragments treatment of complex signal transduction pathways such as MAPK, JAK/STAT, NF-kB, and NO. The targeted areas include cardiology, oncology, endocrinology, infectious disease, rheumatology, neurology, and psychology. They elected to subdivide some of these areas further, such as in endocrinology, with a single chapter devoted to the molecular basis of diabetes, while the next focused on the endocrinological sequelae of dysregulated G-protein coupled receptor (GPCR) function.

Each chapter is structured much along the lines of a review article in a basic science journal, but augmented with clinical correlations. Individual authors have chosen to integrate their clinical correlates in a variety of fashions, with varying degrees of success. Unfortunately, a common approach was the rather pedestrian tactic of reserving clinical observations for the end of the chapter, and give the impression of adding clinical notes only for effect. Such an uninspired approach tends to subvert the unique opportunity that this text provides, leading to a mere juxtaposition of disciplines rather than a true integration of them.

This text otherwise suffers on several fronts, not least of which is poor proof-reading coupled with the indiscriminate and overzealous use of automated spell-checking, most evident in the introductory pages. One of the more egregious examples would have us believe that Nobel laureates are really "Noble" laureates. The quality of the figures also varies immensely between authors and chapters, with