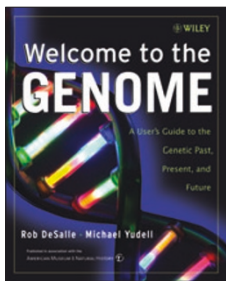


The genome for the masses



Welcome to the Genome: A User's Guide to the Genetic Past, Present and Future

By Rob DeSalle and Michael Yudell

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Reviewed by Misha Angrist &
Huntington F Willard

Now that the human genome sequence is all but complete, we may finally be in a position to contemplate exactly what it means. We know that it has been a boon to life scientists—even the most recalcitrant ones we know have come around and acknowledged that having the human genome no further than a mouse click away has been useful to them, whether they traffic in evolution, signal transduction or protein biochemistry.

But what about ‘civilians’, whose tax dollars helped pay for the sequence in the first place? How will access to the full sequence of human DNA affect everyone else’s lives? Now that the initial wave of books devoted to the play-by-play of the race between the public and private efforts to decode the sequence has subsided, popular accounts of genomics and its meanings are beginning to appear. Among the first and the most promising of these is Rob DeSalle and Michael Yudell’s book *Welcome to the Genome: A User’s Guide to the Genetic Past, Present and Future*.

As the subtitle suggests, *Welcome to the Genome* is organized chronologically. The first section (‘Discovery’) examines how we got to where we are, beginning with Mendel and classical genetics and proceeding to completion of the first draft of the human sequence. The second section (‘Information’) is somewhat more current, although here, too, the authors dip freely into the past as they outline debates on eugenics, genetic discrimination and race. ‘Information’ also segues from a discussion of the Scopes trial to a thoughtful consideration of evolution and comparative genomics.

The book is at its best in this section. The authors offer cogent explanations of the science that are simple without being patronizing and then forge ahead to explore real-world applications of that science. Case in point: genome technology used in underwater wildlife conservation. The authors interweave a cursory examination of DNA fingerprinting with DNA testing of fish eggs used to determine whether caviar is being made illicitly from protected sturgeon species. Similarly, they explore DNA typing of the alga *Pfiesteria piscicida*, which has caused

fish die-offs in the Chesapeake Bay and also poses a health threat to humans. A DNA signature assay now allows public health officials to determine when large quantities of algae are present and, if necessary, close waterways or take other steps to protect the community. This is the Genome Revolution in action.

The last section (‘Advancement’) is speculative, examining the prospects of genomic medicine and current impacts of genome technology on agriculture. The agriculture chapter presents a clear and concise look at the issues surrounding agricultural biotechnology, including genetically modified food, animals and microbes. The authors begin with a brief description of *Agrobacterium tumefaciens*-mediated transformation of commercial crop species and go on to address the impacts of Bt corn, Roundup Ready soybeans and the nutritional potential of vitamin A-fortified golden rice. The ‘Issues and Ethics’ section of this chapter confronts the possible consequences of environmental escape of genetically modified organisms, their medical and nutritional utility, intellectual property ramifications, safety issues and the controversy over whether genetically modified foods should be labeled. It is a lucid, up-to-date tour de force.

Unfortunately, the entirety of the book is not up to this standard. The opening section (‘Discovery’), in particular, is weighed down by the same ponderous, reverent histories of genetics and molecular biology that continue to cure insomnia among first-year graduate students everywhere. The history (from Mendel to Venter) is not without interest. But if the goal is to entice the genomically naive, leading off with Mendel’s Law of Segregation is hardly an original or seductive come-on.

Welcome to the Genome’s attempt to serve two masters represents its most serious problem. The foreword implies that the book is intended both for those new to genomics and for those who already have training and expertise in the field. Some explanation of the science is necessary to tell the story and exploit the ‘gee whiz’ factor to the fullest. But rudimentary explanations of genome technology do little to engage the scientist, whereas high-level explanations lose the lay reader. One wonders, for example, which readers truly benefit from detailed discussions of phosphodiester bonding or Southern blotting. We don’t need to know the intricate details of how a combustion engine works to appreciate the pleasures of driving a car or the untoward effects of carbon dioxide on the earth’s temperature. This balancing act between content for the specialist and the casual reader, though an admirable goal, rarely results in a book that best serves the interests of either one.

DeSalle and Yudell should be applauded for their ambition. They’ve produced a timely and readable book that packs an extraordinary amount of information into less than 170 pages of text (although forensic DNA and stem cells might have earned more than a few scant paragraphs each). It is beautifully appointed and includes a number of striking images and apt historical photos (a tribute to the authors’ skills as museum exhibit curators, no doubt). Much of *Welcome to the Genome* captures the excitement and potential peril of the Genome Revolution with aplomb. In future editions, one hopes that the authors will better define their intended audience, thereby freeing themselves of the burden of trying to cater to both scientists and our public benefactors. ■

Misha Angrist and Huntington F. Willard are with the Duke Institute for Genome Sciences & Policy, Durham, North Carolina 27708, USA.
e-mail: misha.angrist@duke.edu.