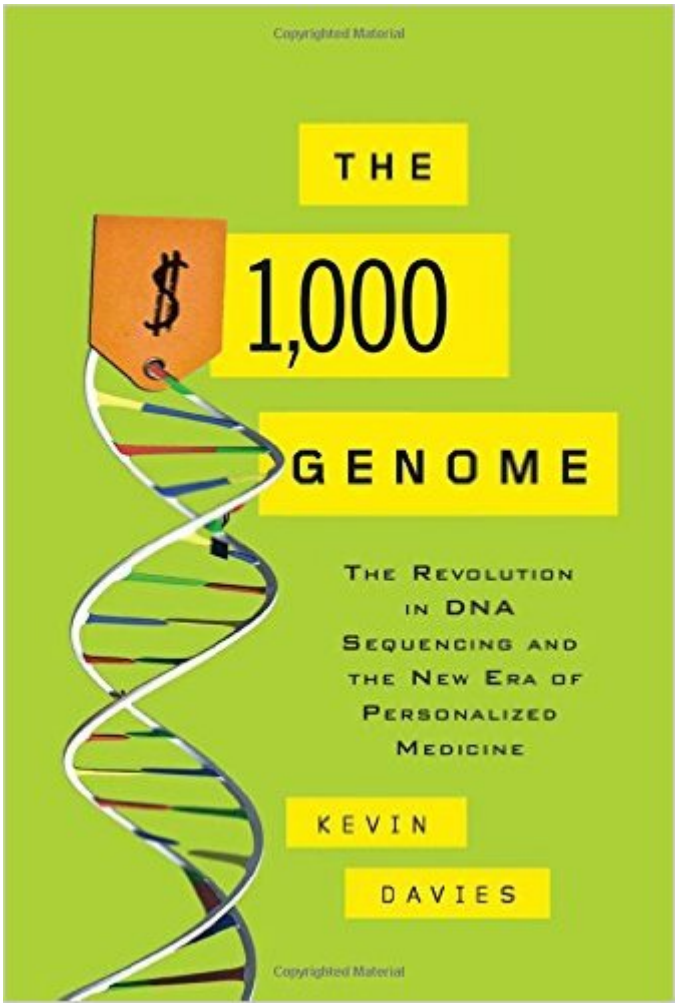
The $1,000 Genome: The Revolution In DNA Sequencing And The New Era Of Personalized Medicine



Synopsis

Since the conclusion of the Human Genome Project in 2003, scientists have been racing towards a grand goal: offering individuals a decoding of their complete genetic makeup for just $1,000. As Kevin Davies reveals in this exquisitely reported account, the $1,000 genome will be a reality by 2011 and it will usher in a whole new era of personalized, genomic medicine. Capable of presenting much more advanced information than the current crop of cheek-swab services, the $1,000 complete genome raises some extraordinary possibilities. We will be able to learn if we have genes that predispose us to a host of diseases, and to take a wide range of preventative measures. Drug companies may be able to create versions of drugs tailored specifically to our individual DNA. But we may also face the psychological burden of learning that we have the gene for an incurable disease, such as Parkinsonâ ™s. Acclaimed author Kevin Davies introduces the pioneers of this medical revolution and probes deeply into both the medical benefits and ethical issues of personal genetic testing, also exploring the psychological complexities of learning oneâ ™s DNA results, based on both his own experience of being tested and that of a number of others. The $1,000 Genome is an indispensable guide to the new era of personalized medicine.

Book Information

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Customer Reviews

Back in 2000, when the draft sequence of "the" human genome was announced, hopes were high that a genetic understanding of common diseases would soon follow. This anticipated revolution in genomic medicine hasn’t happened yet. However, a very different kind of revolution has happened,

namely the development of fundamentally new and much more efficient methods to sequence huge amounts of DNA. As a consequence, the cost of sequencing a human genome has fallen faster than that of computer hardware. In order-of-magnitude terms, the first human genome (2000) cost around $ 1 billion, James Watson's (2007) $ 1 million, and this year many individual human genomes will be sequenced for not much more than $1000 per head.This very real genome revolution has been underreported in the general media. Worse, it hasn't yet influenced the thinking of many medical professionals, even though it is bound to change the ways in which they will be able to prevent and treat disease. Kevin Davies, who has followed these developments closely as the editor of the magazine BioIT World and has interviewed many of the main protagonists over the years, now aims to popularise the new genome revolution in this very readable book.Along with the progress in sequencing technology and personal genomes, Davies also covers the work of direct-to-consumer companies such as 23 and me, and also reports his own experience gained with these services. It emerges, however, that these companies are already at risk of becoming obsolete if they keep looking for simple answers from single base mutations (single nucleotide polymorphisms, or SNPs) although the large-scale view of the complexity of entire genomes is becoming more and more important.This is a well-informed and very accessible account of the fast-moving developments that will change medical and pharmaceutical world very soon. Naturally, it will become dated very soon, so read it now.

The title of this review would be an alternative suggestion for the book title.Don't read this looking to find more about sequencing technology or uses. The book has about the technical content of a USA today article.Here's the full description of the rise of Curagen: "He invented a patented method for studying gene expression by looking up activity patterns in a database, which he dubbed "GeneCalling". Two sentences later the company "had raised some $600 million" and it's "estimated that his major investors each made $100 million". They made money by raising money? Or does the paragraph intend to say that Curagen was *sold* for $600M? Somebody paid $600M for a method of looking up patterns in a database? Really?This is the book for you if you want descriptions of colorful characters and what they say about each other, reporting on parties and publicity events, anecdotes about genetic defects in the relatives of people involved in the companies, ethical issues in consumer sequencing, and other such human interest flotsam.Not for you if you'd like to learn what the technology is and what can be done with it.

I'm a biology illiterate excited by the prospects of genetic research and future genetic engineering. I

was hoping that Davies' book would educate me in the basics, especially since his day job involves editing a periodical on the topic and he has a PhD in the subject. Unfortunately, Davies' book didn't do it. "The $1,000 Genome" focuses more on the key companies and leaders in the field, than explaining what's happening to neophytes. (Articles such as "The $100 Genome" in the 4/17/2008 "Technology Review" are more helpful.) As a result, the material jumps from one approach to another, and lacks a simple, structured approach. I also didn't appreciate Davies' wild numbers in some instances - eg. the U.S. spending $5 trillion on 4 million with Alzheimers.Davies should also have devoted much more space to BGI (formerly Beijing Genomics Institute), which with its 126 new top-of-the-range sequencing machines added to an existing 31 will have supposedly more DNA-sequencing capacity than the entire U.S. Also important is what it is likely to accomplish, at least in the area of human intelligence, an area that it is focusing on. (2,000 Chinese children will have their genes sampled, and the results correlated with their test scores at school - the largest examination to date of the idea that differences between individuals' IQ scores are partly due to DNA differences.)Nonetheless, it is impossible not to be impressed by the speed of improvement in the field - from taking 13 years and $2.7 billion to decade the first human genome , to 14 days and $1,500 by 2009. That's improvement by a factor of 10/year, far faster than even Moore's Law (doubling the number of transistors on a chip every 12-18 months). (The problem is, however, that given how Davies switches from sampling to partial DNA to entire DNA analysis, the reader is never certain whether these comparisons involve apples to apples.)I also didn't appreciate the time Davies devoted to ethics and privacy concerns, vs. outcomes and methods.

Kind of bummed out because I spent a lot of money on test for all my family, only for the FDA to come in, analyze the data that they had from breast cancer, with the data from 23andme.Also the ancestral reports are incorrect, they need to look at all the chromosomes not just XX and XY. A lot of historical data is missing.

Personalized Medicine (FT Press Science) Power Laws, Scale-Free Networks and Genome Biology (Molecular Biology Intelligence Unit) Molecular and Genome Evolution Genome: The Autobiography of a Species in 23 Chapters The Spiritual Genome (Middle English Edition) Molecular Biology: Principles of Genome Function Battletech Era Report 3062 (Clan Invasion Era Sourcebooks) Turning Off Breast Cancer: A Personalized Approach to Nutrition and Detoxification in Prevention and Healing Acoustic and MIDI Orchestration for the Contemporary Composer: A Practical Guide to Writing and Sequencing for the Studio Orchestra Modern MIDI: Sequencing and Performing Using Traditional and Mobile Tools Designing Adaptive and Personalized Learning Environments (Interdisciplinary Approaches to Educational Technology) Sweet Potato Power: Smart Carbs; Paleo and Personalized Lifetime Physical Fitness and Wellness: A Personalized Program Lifetime Physical Fitness and Wellness: A Personalized Program (Available Titles CengageNOW) The Finish Rich Workbook: Creating a Personalized Plan for a Richer Future (Get out of debt, Put your dreams in action and achieve Financial Freedom Creative Sequencing Techniques for Music Production: A Practical Guide to Pro Tools, Logic, Digital Performer, and Cubase