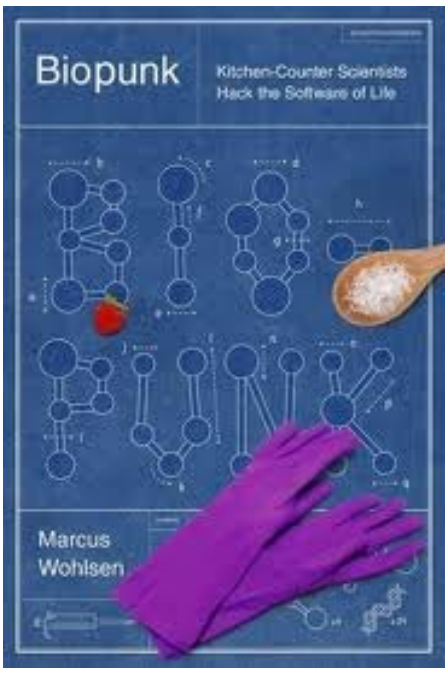

Biopunk: Kitchen-Counter Scientists Hack the Software of Life

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Biopunk: Kitchen-Counter Scientists Hack the Software of Life Details

Date	:	Published April 14th 2011 by Current
ISBN	:	9781617230028
Author	:	Marcus Wohlsen
Format	:	Hardcover 240 pages
Genre	:	Science, Nonfiction, Biology, Technology

From Reader Review Biopunk: Kitchen-Counter Scientists Hack the Software of Life for online ebook

Nicolle says

Just a neat read for a nerd like me. It was a tad eye-opening to realize that I already possess the technical skills necessary to "bio-hack," and that it was possible to conduct experiments I used to do in a lab in my own home. The title of this book is a tad misleading--these biopunks are tackling some of biotech's biggest problems, but the book doesn't reveal any major breakthroughs discovered by them. A quick read for my science-y peeps.

Krista says

This book is full of interesting and well-researched vignettes about scientific mavericks doing high-tech biology in low-tech environments like their kitchens and garages and third-world countries. I worked in biotechnology and it was still a shock to me to find out the level of basement research that is possible (did you know that strands of DNA can be mail-ordered?), especially given the current regulatory environment. But the experimentation is not unprecedented, as the book also profiles important developments by biopunks in history (Mendel, for example). Their excitement for biology is palpable and the book paints a picture of a biopunk’s whole-hearted belief that everyone should have open access to biological and technological advances and current information and affordable materials to understand and tinker with our own biology and test our curiosities. The feasibility of this is not really addressed in the book, outside the context of fears of bioterrorism and Outbreak, but it would be an interesting debate, which makes it a worthwhile read.

What made this book 3 stars rather than 4 for me is that it lacked cohesion. The first third of the book contains the vignettes about particular bio-hackers and their research; the second third of the book ranged from transhumanism to nanotechnology; and the final third of the book skims the risks of DIY biotechnology and the counter-arguments, but not in context with the earlier vignettes.

Margaret Lozano says

I wish there were more books like this one! Biotech fascinates me, as does the entire biohacking/biopunk universe. This book is full of interesting stories about what's happening in biopunk (although some of it is a bit dated already). I found the discussion of companies like 23 & Me the most interesting aspect of the book, closely followed by questions related to personal freedom and collective safety.

The book is written with the interested layperson in mind, so don't be intimidated if you don't have a background in biology. My only real disappointment with the book is that I wish it had gone more into technologies like CRISPR, but I suppose that was either not such a big thing a few years ago, or biopunks just aren't interested in it?

Suz says

I received this book from Goodreads First Reads for free.

I think it's absolutely hilarious that I won this book, because it's about people deciding to do bio-hacking in their own space and time, rejecting the idea that good science has to come from institutionalized academia or biotech companies; I've worked in both.

I initially thought the book would just be a bunch of case studies of people doing wacky experiments in their kitchens in their spare time and I was pleasantly surprised to find that this book is so much more than that. There are several do it yourselfers in the book, and Wohlsen does a great job of describing what they're doing, the science behind it and /why/ they're doing it. Even better, he goes into some of the politics and rigidity presented by academic institutions and biotech corporations and how and why these individuals are working beyond those restrictions. It also deals with the potential consequences and challenges that come with this type of citizen science.

I think he did a great job of describing the motivations behind a lot of the bio-punk/hack/do it yourself movement. Some of it is self-motivated (trying to discover whether or not you have the potential for a deadly disease in your genes without spending the thousands of dollars for a test the insurance companies don't want to pay for) or altruistic (teaching the community about science, or trying to find an inexpensive way to help poor, rural areas detect/differentiate diseases). The ethics and thought processes behind this DIY crowd is quite similar to the rest of the growing DIY movement, but there are more serious ramifications when tinkering with biological systems (especially with fears of bioterrorism abounding) and I think he does do a good job describing them.

The bio-punk/hack movement is intrinsically anti-establishment, and I appreciate that Wohlsen presents the bio-hack vs institutional argument fairly balanced. At first I worried that the book would be very biased against traditional research, but it wasn't and I also feel he could not go into the positives of research in bigger/better funded institutions without removing the focus of the book from biopunks.

What I really enjoyed about the book (and why this book earned an extra star) is that the science in it is fairly solid. As a biologist, I get very tired of uneducated hack-writers making biology (or any science, really) incredibly wrong, either skipping explanations at all or making arguments/explanations wildly inaccurate. The science in this book was not 100% perfect, but it was pretty damn close, and for the lay person, it's probably more than good enough.

I liked this book, it's easy to read, immensely interesting and gratifying if you are a biologist interested in a different side of science. It covers the whole gamut from how someone can build something in their kitchen, how they can fund it, and the dangers and/or inherent risks of doing DIY science. It also debunks hysterical fears and gives a realistic view of what people can really accomplish and how natural curiosity and a drive to do better can turn anyone into a scientist.

Care says

This book definitely has an interesting premise in its theme of do-it-yourself biohackers championing open-sourcing of intellectual property in an effort to pool research regarding DNA. Don’t let the science scare you; author Marcus Wohlsen makes biology and the blueprint of life very accessible. In essence, this work deals

with young, bright individuals who set up biology wet labs in their garages and kitchens and attempt to do for DNA what Bill Gates and Steve Jobs did for computers. They are driven by the belief that free access to one another's findings, as opposed to the strict confidentiality of the major biotech companies, will lead to major discoveries and medical cures. A pooling of intellectual resources, so to speak.

My first thought was concern that while this group is earnestly seeking cures and diagnostic avenues, there is bound to be another group bent on using the same technology with the opposite in mind. While the ethical argument is raised, Wohlsen does not spend any ink on how real and present that threat is-information which I would have appreciated in this age of global terrorism.

A number of interesting people are introduced who are involved in various forms of research and who have a variety of world views. While some have smaller, more attainable goals in mind, such as finding a less expensive early detection test for which insurance companies might be more willing to pay. Others see the end goal as being able to engineer life itself.

Within the narrow scope of those choosing to use their kitchen sink research for what most would view as positive goals, Wohlsen's research is impressive. As I said, the flip side-those who are intent on evil-is not covered at all. However, the book could use a good editor to help with organization (mine was a pre-editing galley, so that issue might well be ironed out) and the ending was rambling with odd, inconsequential references to punk music.

Ranking: I would give this book four stars for the excellent job it does presenting the good side of bio hacking, but I really felt that the opposite side needed to be told as well to lend balance to the ethical questions. So...

☆☆☆☆ I will round to four stars in those venues which do not allow for 1/2 star rankings, but my true rating is ☆☆☆1/2 stars for lack of balance. I am assuming the organizational issues and ending were worked out in the editing phase.

Stephen Sakuma says

I was really unsure how to rate this book. I definitely enjoyed the topic and the writing. The overall progression of the narrative was pretty good but lacked some cohesion.

The topics were discussed with an interesting amount of background that set a solid context for the ideas but were a little unnecessary at times.

That being said I took a lot of notes and learned a lot!

Richard C says

i read this at least 5 or more years ago and was interested in what young people were doing hacking dna. at the time the book was interesting, and served as a good look into the future (now) and most of the book was spot on.

Gustavo Ladeira says

O livro é bem diferente do que eu esperava. A discussão é muito mais filosófica do que prática.
A primeira parte do livro chega a ser um pouco tediosa pra quem já tá mais do que acostumado com a história da ciência (microscopia, evolução, genética, bioengenharia...).
A segunda parte é focada em exemplos de biohack e suas implicações econômicas, políticas e científicas. O autor trata do problema de se concentrar o poder da ciência na mão de poucos (como corporações e governos, famosos por sempre fazerem a coisa certa e ajudarem todo mundo a ter uma vida melhor, né) e mostra como a democratização desse poder é importante para uma sociedade menos desigual e distópica.
O fim do livro é destinado à parte mais atraente ao público geral: os riscos do biohack. Aqui o autor argumenta que não é necessário editar o genoma de seres vivos para criar armas biológicas, e traz vários exemplos de armas biológicas que podem ser feitas com muito menos esforço (como anthrax e ricina). Também mostra que os riscos reais do biohack ainda estão distantes, já que atualmente o esforço se concentra mais em manter as criaturas vivas do que realmente criando coisas novas. Esse argumento me parece meio fraco, porque ele basicamente adia a discussão. Nesse ponto eu senti que o biohack poderia evoluir pra algo semelhante ao que acontece com informática hoje: white hats vs. black hats, mas nesse caso os impactos dos black hats seriam astronomicamente maiores do que dinheiro perdido e computadores estragados.
A conclusão final é de que, como em praticamente todas as tecnologias, existem riscos, mas os pontos positivos superam muito os possíveis pontos negativos.
Ele conseguiu me vender esse argumento tranquilamente. Talvez porque eu também acredite que o poder deve ser distribuído e que a ciência deva ser democratizada. As críticas ao monopólio da ciência e os exemplos de como governos e corporações são ignorantes e opressivos ao biohack só me fizeram gostar mais.

Steve says

AN overview of home brew style, open source, bio-engineering at the time this book was written (2007). It's a good overview, but highly dated, as the field has moved on significantly in the past 11 years. Crispr didn't even exist when this book was written. Still, I'd recommend it as an introduction to the field.

Dustin says

One of my favorite books so far this year has been Steven Levy's Hackers: Heroes of the Computer Revolution. Levy has a talent for humanizing these hackers and forging a narrative from the random hacks that led to the computing revolution, the founding of artificial intelligence, and the information age. By the end of the book, I found myself wishing that I'd been around for a piece of the action. *Want to get into hacking today?*, the afterword solicited. *Try biohacking.*

Biopunk was *Hackers* without the decades of time between action and publication. The biohackers profiled here supply intriguing provocations, but so far they have not become major players in the synthetic bio movement. A theme running throughout the book is the idea that life is less open to the open source movement, that somehow bacteria and brainwaves are sacrosanct where electrical engineering is not. The Steven Kurtz case, where the FBI came after a SUNY Buffalo professor for his biohacking art projects, emphasize not only the ethical but the legal ramifications of DIY Bio. If you want to be a hacker in this space, you gotta have some guts.

According to Wohlsen, the hacker ethic is alive and well in the bio community. I'm inclined to believe him. But will this hacker movement lead to the same revolution and riches as the personal computer? Will personal bio lead to life extension, global pandemics, or will it end with strawberry DNA extractions? The answer probably won't be clear any time soon. But that's part of the appeal.

Forrest says

I first heard about this book on Wisconsin Public Radio's "To the Best of our Knowledge". The idea of an underground movement of geeks and brains working on gene splicing in their kitchens and garages intrigued me and the subject matter dovetailed nicely with my in-progress science fiction novel. In true DIY fashion, I borrowed the book from the library and gave it a read.

The subject of the book is romantic and intriguing: imagine self-trained scientists mimicking and refining larger-scale, more expensive endeavors usually undertaken by well-funded research institutions and corporations. Now imagine that these experiments are done not only on the cheap, but that the greatest desire of these scientists is not to make a profit (though some do) but to share the knowledge they've gained for the betterment of the world. It's like a hippie-biologist utopia.

By and large I enjoyed the book. I did note, however, one chapter that strayed a little too far into the corporate and out of the homegrown science that Wohlsen seems to admire so much. This really tested my patience - just when I thought we would get further down into the specifics of some experiments, the author took what I felt was a side-turn into an example that was largely corporate, rather than DIY.

Other than that one flaw, I greatly enjoyed the book. I'm not a scientist, but would have enjoyed going a bit more in-depth about the specifics of *what* these DIY scientists were doing, rather than dwelling so much on the how or the why, but I was able to learn what I needed to for my own research and with a little poking around on the internet, learned enough to tackle the problems of my own novel. Worth a read, and good for what it is, but to give it five stars it would probably have to be significantly longer, with more examples of what the biopunk movement is *doing* and how their results may or may not affect the larger world. Maybe this is good, since it forces me to extrapolate my own ideas of what might be possible in a world of my own creating.

Addendum: A very interesting article on programming cells' DNA as if it were a circuit. The next frontier in Biopunk?

David says

This is a wonderfully engaging book about amateur scientists and technologists who are developing innovations in biotechnology. The gadgets you have in your kitchen give you better tools than those that were available in a serious laboratory of a hundred years ago. Technologies are developing so fast, and become so much cheaper, that we may be well on our way to the technological "singularity".

You can now buy a device the size of a USB drive, that gets plugged into a USB port on your computer. Put a biological sample in it, and the device can sequence a limited segment of DNA!

On the other hand, you can send in a coded genetic DNA sequence (A,T,C,G) to a company, and they will produce that DNA sequence for the price of 39 centers per letter!

Most amateur scientists don't have the financial backing of an organization, so they figure out how to do things cheaply. They innovate, and sometimes develop tools that do the same job as a store-bought apparatus, for a tenth of the price.

What are they trying to do? They are developing new marker tests for syndromes and diseases. They are searching for cures for cancer and other diseases. They are developing new varieties of vegetables that grow more efficiently, more resistant to pests and drought. They are developing new DNA tests that allow consumers to cheaply send in a fish sample, to verify that it is what a supermarket says it is.

The culture of many of these amateur scientists is very similar to the "open source" culture of some software developers. They contribute selflessly to a common cause. Collectively they achieve things that individuals just cannot achieve alone.

I highly recommend this book to all those interested in biology and the hacking culture.

Patricia Decker says

This book reads like a long fan letter and is far from the "part field guide and part critique" promised by a New Scientist quote on its cover. It is an unbalanced and outdated look at biohacking that often diverges into mundane irrelevant details about people showcased in the book. The author is apparently not familiar with the "Show, Don't Tell" writing technique and is constantly inserting himself unnecessarily into the scene. I could not stand to read more than a few sentences of this poorly written book at a time, so I basically scanned the whole thing in less than an hour. Save your money and time and read articles online instead. You probably have a better chance of finding a less biased perspective on the subject that way.

Tadas Talaikis says

Would rated higher if more stories were researched, but this is not the only one book that tries to make biotech popular, without probably much success, when in reality it's the most important thing to give regulatory freedom on. Problems? Same, like always, religious superstitions and fears. Probably people just love dying and believing it's their "fate".

Rebecca Schwarz says

Despite the two stars (2.5 really), I would recommend this book to anyone looking for a quick introduction to the topic of DIY biology. There's a lot of interesting stuff here about synthetic biology and genetic engineering, and given in a fairly easy to understand format. The book highlights several people and small businesses that are working in the life sciences outside of large corporations or large universities. There are the entrepreneurs working to make small, cheap DNA readers so that doctors can diagnose diseases in rural areas. There's a chapter about how farmers in India hacked GMO seed stock the old fashioned way, by saving the seeds, trading them and crossing them with their own native seeds to create a better plant (and skip paying the licensing fees to boot).

My main issue with this book is that it seemed poorly organized, with more than a little repetition. I felt like I was reading a series of essays that had been published as stand-alones elsewhere, and had now been gathered

and repurposed into one volume. I wish there had been a little less repetition and a little more depth. While it's too much to ask that the author go deep on all of the issues he brings up, I could have read more about the controversy surrounding GMO crops in general, or about the privacy issues that will arise when genome mapping becomes cheap enough that it is available to everyone.
