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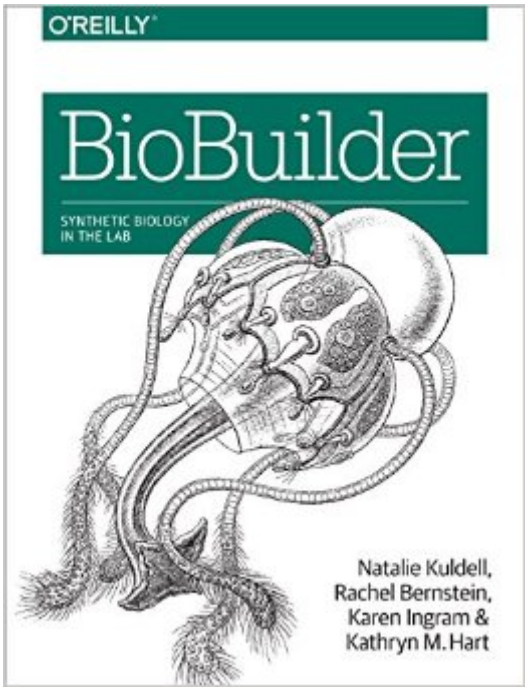

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Synopsis

Todayâ ™s synthetic biologists are in the early stages of engineering living cells to help treat diseases, sense toxic compounds in the environment, and produce valuable drugs. With this manual, you can be part of it. Based on the BioBuilder curriculum, this valuable book provides open-access, modular, hands-on lessons in synthetic biology for secondary and post-secondary classrooms and laboratories. It also serves as an introduction to the field for science and engineering enthusiasts.Developed at MIT in collaboration with award-winning high school teachers, BioBuilder teaches the foundational ideas of the emerging synthetic biology field, as well as key aspects of biological engineering that researchers are exploring in labs throughout the world. These lessons will empower teachers and students to explore and be part of solving persistent real-world challenges.Learn the fundamentals of biodesign and DNA engineeringExplore important ethical issues raised by examples of synthetic biologyInvestigate the BioBuilder labs that probe the design-build-test cycleTest synthetic living systems designed and built by engineersMeasure several variants of an enzyme-generating genetic circuitModel "bacterial photography" that changes a strainâ ™s light sensitivityBuild living systems to produce purple or green pigmentOptimize bakerâ ™s yeast to produce ?-carotene

Book Information

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Customer Reviews

This is probably the best book for anyone trying to understand modern developments in synthetic biology. Whether you are an engineer, a student or simply a responsible citizen in modern day, you

will benefit immensely by reading this book.In this day and time when you hear one new buzzword or "great genetic engineering discovery" producing another "miracle" (new organs, fossil fuels) or -- of course -- genetic engineering producing "Frankenstein GMOs destroying" our society (basically antipodal views our media likes to sensationalize), I believe we need a book that provides:(a) a Framework that reduces the entropy in the noise of buzzwords and accentuates the signal of science (in electrical engineering parlance -- amplify signal/noise ratio): clears the "vocabulary"/taxonomy of the meta data (what is synthetic biology versus genetic engineering versus..,.) and sets a framework to understand these advanced topics better and consistently. This itself is a major contribution, and the authors do a superb job in introducing the vocabulary and connecting to real world (synthetic biology world) objects in a concrete manner.(b) an Engineer's view & and experimenter's (hands-on) view of synthetic biology: from both an experimental science perspective and from an engineer's view perspective (plan-build-test cycle) this provides a consistent and in depth descriptions of famous experiments (iGEM case-studies). The "Plan-BUILD-TEST" is paradigm used to describe these experiments is similar to the famous "Plan - Do -- Check -- ACT" cycle popularized by Deming as a part of engineering Quality control (QC) -- and not surprisingly QC plays a big part of synthetic biology.

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