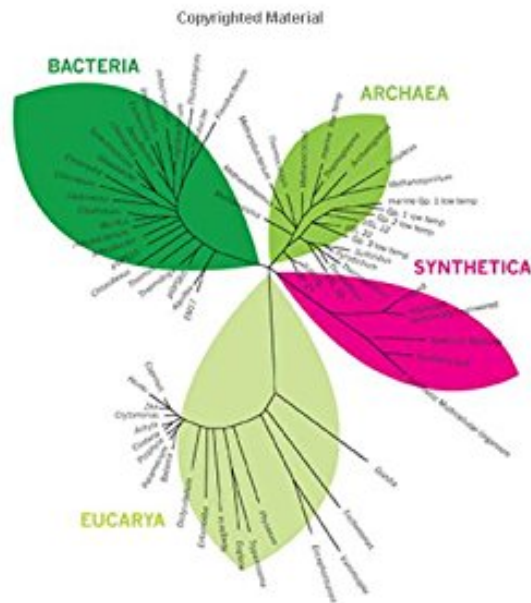


Synthetic Biology - A Primer: Revised Edition

Geoff Baldwin

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SYNTHETIC BIOLOGY

A PRIMER Revised Edition

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Geoff Baldwin : Synthetic Biology - A Primer: Revised Edition before purchasing it in order to gage whether or not it would be worth my time, and all praised Synthetic Biology - A Primer: Revised Edition:

Synthetic Biology - A Primer (Revised Edition) presents an updated overview of the field of synthetic biology and the foundational concepts on which it is built. This revised edition includes new literature references, working and updated URL links, plus some new figures and text where progress in the field has been made. The book introduces readers to

fundamental concepts in molecular biology and engineering and then explores the two major themes for synthetic biology, namely 'bottom-up' and 'top-down' engineering approaches. 'Top-down' engineering uses a conceptual framework of systematic design and engineering principles focused around the Design-Build-Test cycle and mathematical modelling. The 'bottom-up' approach involves the design and building of synthetic protocells using basic chemical and biochemical building blocks from scratch exploring the fundamental basis of living systems. Examples of cutting-edge applications designed using synthetic biology principles are presented, including: the production of novel, microbial synthesis of pharmaceuticals and fine chemicals the design and implementation of biosensors to detect infections and environmental waste. The book also describes the Internationally Genetically Engineered Machine (iGEM) competition, which brings together students and young researchers from around the world to carry out summer projects in synthetic biology. Finally, the primer includes a chapter on the ethical, legal and societal issues surrounding synthetic biology, illustrating the integration of social sciences into synthetic biology research. Final year undergraduates, postgraduates and established researchers interested in learning about the interdisciplinary field of synthetic biology will benefit from this up-to-date primer on synthetic biology.

From the Inside Flap Synthetic Biology A Primer (Revised Edition) presents an updated overview of the field of synthetic biology and the foundational concepts on which it is built. This revised edition includes new literature references, working and updated URL links, plus some new figures and text where progress in the field has been made. The book introduces readers to fundamental concepts in molecular biology and engineering and then explores the two major themes for synthetic biology, namely 'bottom-up' and 'top-down' engineering approaches. 'Top-down' engineering uses a conceptual framework of systematic design and engineering principles focused around the Design-Build-Test cycle and mathematical modelling. The 'bottom-up' approach involves the design and building of synthetic protocells using basic chemical and biochemical building blocks from scratch exploring the fundamental basis of living systems. Examples of cutting-edge applications designed using synthetic biology principles are presented, including: the production of novel, microbial synthesis of pharmaceuticals and fine chemicals the design and implementation of biosensors to detect infections and environmental waste. The book also describes the Internationally Genetically Engineered Machine (iGEM) competition, which brings together students and young researchers from around the world to carry out summer projects in synthetic biology. Finally, the primer includes a chapter on the ethical, legal and societal issues surrounding synthetic biology, illustrating the integration of social sciences into synthetic biology research. Final year undergraduates, postgraduates and established researchers interested in learning about the interdisciplinary field of synthetic biology will benefit from this up-to-date primer on synthetic biology.