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Titolo	Synthetic Biology // edited by Anton Glieder, Christian P. Kubicek, Diethard Mattanovich, Birgit Wiltschi, Michael Sauer
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ISBN	3-319-22708-4
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (371 p.)
Disciplina	570 660.6
Soggetti	Systems biology Biochemical engineering Biomaterials Genetic engineering Systems Biology Biochemical Engineering Genetic Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Xenobiotic life (artificial cells and cell like structures, biological nanostructures, XNA) -- Novel DNA and RNA (synthetic promoters, riboswitches, small RNAs, ribozymes, adaptamers, DNA walker, DNA machines) -- Expansion of the genetic code and protein building blocks (orthogonal mRNA-ribosome pairs, non canonical amino acids) -- DNA logics and circuit design (including sensors, TALORs, genome rewiring repressilator, oscillator, metabolator, „Multicellular circuits“) -- Protein engineering (directed evolution, domain engineering) -- Synthetic metabolic pathways (engineered pathways, non natural pathways, scaffolding) -- Reengineered chassis cells (minimal organisms, platform hosts, minimal genomes, synthetic genomes) -- In silico simulation and design of complex metabolic and signalling networks -- Novel synthetic biomaterials -- Key methods for synthetic biology (assembly technologies, genome engineering technologies,

DNA synthesis, Standardization) -- Public awareness and risk management.

Sommario/riassunto

The emerging field of synthetic biology employs biotechnological approaches to recreate and enhance basic biological structures, intracellular processes and whole organisms. This book provides a comprehensive, up-to-date overview of the opportunities and challenges of this complex field of biotechnology, which combines various scientific disciplines. It addresses a broad range of topics, including redesigning complex metabolic pathways, DNA/RNA and protein engineering, as well as novel synthetic biomaterials. It discusses both “bottom up” and “top down” approaches and presents the latest genome engineering tools with predictions about how these could change our way of thinking and working. Since the use of synthetic biology raises a number of ethical questions, a chapter is devoted to public awareness and risk management. The book is of interest to scientists from both academia and industry, as well as PhD students and postdocs working in the field.
