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Soggetti	Biotechnology Proteins Biochemical engineering Analytical chemistry Chemical Bioengineering Bioprocess Engineering Analytical Chemistry
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Nota di contenuto	Cell-free biomanufacturing by purified cascade multi-enzymes -- Hydrogel based multi-enzymatic system for biosynthesis -- Cofactor synthesis and regeneration for cell-free enzymatic cascades -- The evolution with cell-free system -- Cell-free synthetic biology at the interface between biology can chemistry -- Rapid and finely-tuned production for deployable sensing applications -- Transcriptional regulation in cell-free systems and artificial cells -- Cell-free synthesis and electrophysiological analysis of multipass voltage-gated ion channels tethered in microsomal membranes -- Compartmentalized cell-free expression systems for bottom-up synthetic biology -- Exploring the arcane – cell-free as a tool to study prokaryotic and eukaryotic systems.
Sommario/riassunto	This book reviews the development of cell-free production platforms and offers an authoritative perspective of the latest advances and methodologies in cell-free production systems. Readers will discover the biomanufacturing potential of in vitro biotransformation (ivBT)

employing purified cascade multi-enzymes, the development of hydrogel-based multi-enzymatic systems for biosynthesis, and novel insights into the optimization of biocatalytic processes. Additionally, the book explores the cell-free production and regeneration of cofactors, shedding light on strategies to enhance the efficiency and sustainability of cellular processes. In this book, particular attention is given to the progress of cell-free in vitro evolution techniques for optimizing enzyme performance, and the book also presents the integration of rapid and finely-tuned expression systems for deployable sensing applications, revolutionizing the field of biosensing. The synthesis and electrophysiological analysis of multipass voltage-gated ion channels tethered in microsomal membranes are explored, providing a deep understanding of cellular function at the molecular level. Lastly, the book covers compartmentalized cell-free expression systems for building synthetic cells, showcasing the potential for constructing artificial cellular systems with unique functionalities. Given its breadth, this book appeals to academics, researchers, and professionals interested in the forefront of biotechnology, and together with the companion volume “Cell-free Macromolecular Synthesis”, both books highlight the research progresses on the basic and applied research of cell-free production systems in the last few years, being invaluable resources in the field. Chapter “Cell-free synthesis and electrophysiological analysis of multipass voltage-gated ion channels tethered in microsomal membranes” is available open access under a Creative Commons Attribution 4.0 International License via link. springer.com.
