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Nota di contenuto	A gossypii history -- A gossypii physiology and metabolism -- Optimization of the A gossypii natural metabolism for biotechnological applications -- Metabolic engineering and synthetic biology strategies -- Bioprocess and biosustainable strategies -- Perspectives.
Sommario/riassunto	This book provides a comprehensive overview of the filamentous fungus Ashbya gossypii, an emerging microbial host in industrial biotechnology. Recognized for its natural ability to overproduce riboflavin (vitamin B2), A. gossypii has evolved from a niche model organism into a promising candidate for sustainable biotechnological applications. This book synthesizes decades of foundational research and recent advances to present a complete picture of the organism’s utility in modern biosciences. The book begins with a detailed history

of A. gossypii (Chapter 1), tracing its discovery, early industrial uses, and the scientific milestones that led to its current role in biotechnology. Chapter 2 covers its physiology and metabolism, highlighting the unique features of its multinucleated hyphae, aerobic metabolism, and natural biosynthetic capabilities. Chapter 3 focuses on how A. gossypii's natural metabolism is being optimized for industrial applications. It covers cutting-edge metabolic engineering and synthetic biology strategies, showcasing how genetic tools have been used to redirect carbon flux, enhance product yields, and expand the range of biosynthesized compounds. Chapter 4 addresses bioprocessing innovations and biosustainable strategies, such as using renewable feedstocks, optimizing cultivation conditions, and improving strain robustness for industrial scalability. The final chapter (Chapter 5) offers forward-looking perspectives, identifying future opportunities and challenges in leveraging A. gossypii for green chemistry and biotechnological fields. As sustainability becomes a cornerstone of modern industry, this book positions A. gossypii as a key player in the next generation of microbial production platforms. Targeted at researchers, biotechnologists, and students in microbiology and metabolic engineering, this book is both a foundational reference and a roadmap for innovation in fungal biotechnology.