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Nota di contenuto	Introduction to Biotechnology: Technological Convergence and Information Hazards -- A Brief Introduction to the Convergence of Artificial Intelligence and Biotechnology -- Safeguarding the Responsible Use and Equitable Benefit-Sharing of Biotechnology in an Age of Scientific Modernization -- Information Hazards and Biotechnology -- Risk Culture in a Time of Biotechnological Convergence: Implications for Regulatory Divergence and Bioeconomic Development -- Governance Frameworks and Scenario Evaluation Exercises on AI and SB Ethical Dilemmas -- Ethical Implications and Governance Solutions for the Convergence of AI and Synthetic Biology in Healthcare and Agriculture -- Assessing Governance and Regulatory Frameworks for Converging Technologies: The Case of Artificial Intelligence in Biological Engineering and Design Technologies -- Non-

genetic Optoelectronic Biointerfaces -- AlphaFold and the Protein-folding Problem -- Bridging the Biotechnology Valley of Death: Modernizing the TRL-MRL-IRL Acquisitions Process for Accelerated Technology Modernization -- Synergizing Minds and Machines: Harnessing Generative AI for Transformative Biotechnology Education -- Data Diversity and Sequence Length: Key Levers for Powerful Biological AI.

Sommario/riassunto

This book offers a forward-looking perspective on the convergence of artificial intelligence (AI) and biotechnology, and its transformative impact on synthetic biology. As these fields evolve rapidly, their integration is reshaping science, industry, and society in profound ways. Through a collection of rigorously researched chapters, the volume provides a comprehensive analysis of this dynamic relationship, offering valuable insights for researchers, practitioners, policymakers, and educators.

I Convergence of AI and Biotechnology An overview of how AI-driven analytics and machine learning are revolutionizing biotechnological applications, enabling innovative solutions and breakthroughs in synthetic biology.

II Modernization of Biotechnology A comparative look at traditional methods versus AI-enhanced approaches in areas such as drug discovery, genetic engineering, and bioinformatics, highlighting increased precision and accelerated progress.

III Governance, Risk, and ELSI Examining the ethical, legal, and social implications (ELSI) of AI-biotech integration, this section discusses frameworks for responsible innovation, emphasizing transparency and public engagement.

IV Information Hazards A critical exploration of data privacy, security risks, and ethical dilemmas arising from the convergence of these technologies, with strategies to mitigate potential harms while maximizing societal benefits.

This book is an essential resource for understanding the evolving landscape of synthetic biology and the broader implications of AI-biotech convergence.
