AI IN
12 MINUTES
FOR BIOTECH

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MOTIVATION - WHY AI?

Accelerating drug discovery and development

Personalizing medical treatments

Enhancing genetic research with AI

Predictive analytics in clinical trials

Automating laboratory processes

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STRATEGIC TRENDS

AI in drug discovery and genomics

Machine learning for personalized medicine

CRISPR and AI in genetic editing

Biotech data analytics

AI-driven agricultural biotech solutions

Industrial biotech process optimization

Environmental monitoring and bioremediation

AI in protein design and engineering

Digital health technologies

AI for biotech supply chain management

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WHY CHANGE?

Speed up R&D processes
Customized healthcare solutions
Advanced genetic research
Efficient biotech production
Addressing global health and environmental
challenges

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LEADING THE CHANGE

Genentech (Pioneer in pharmaceutical biotech)

Monsanto (Agricultural biotech)

Amgen (Biotech therapies and medicines)

Novozymes (Industrial enzymes and biotech)

Illumina (Genomics and genetic research)

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DIGITAL TRANSFORMATION

Deep learning for genomic sequence analysis

AI algorithms in biomarker discovery

Robotics in high-throughput screening

Predictive models in clinical trial success

AI in bioprocess optimization

Data analytics for patient outcomes

Machine learning in environmental biotechnology

AI for diagnostic tool development

Cloud computing in biotech data management

AI in drug formulation and delivery

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AI DISRUPTION

AI-driven precision medicine development

Enhanced drug discovery with machine learning

AI in optimizing agricultural biotech

Predictive analytics for treatment efficacy

Automated lab and biotech manufacturing

AI in genetic disease research

Machine learning for biotech product development

Real-time environmental biotech monitoring

AI applications in regenerative medicine

Personalized health insights using AI

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GREAT EXAMPLES OF AI

DeepMind's AI in protein folding research

AI-driven drug discovery by Atomwise

IBM Watson's AI in cancer research

Monsanto's AI in crop genetic engineering

Novozymes' AI in enzyme production

Illumina's AI for genomic sequencing

23andMe's AI in genetic data analysis

AI in Ginkgo Bioworks' organism design

Editas Medicine's AI in CRISPR technology

BenevolentAI for drug discovery and development

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ECOSYSTEM REQUIREMENTS

Advanced AI and machine learning technology

Skilled workforce in biotech and AI

Collaborative ecosystem with tech and biotech firms

Ethical guidelines and regulatory compliance

Data management and security infrastructure

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10/24
AI ▶▶ SUSTAINABILITY

AI for eco-friendly biotech solutions

Sustainable approaches in biotech manufacturing

AI in reducing environmental impact of biotech processes

Data-driven strategies for conservation biotechnology

AI applications in clean energy biotech

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11/24
NEW RISKS - ETHICAL, LEGAL, SOCIAL

AI accuracy and biases in research

Data privacy concerns in genetic information

Ethical considerations in AI-driven genetic editing

Reliability of AI in critical biotech applications

Cybersecurity threats in biotech data systems

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AI MISUSE EXAMPLES

AI misuse in genetic data handling

Unauthorized use of AI in biotech research

Biased AI affecting drug development

Over-reliance on AI without human oversight

AI in promoting unethical biotech practices

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13/24
THREE
AI DILEMMAS

Balancing AI innovation with ethical considerations in biotech?

Managing data privacy in AI-driven genetic research?

AI's role in enhancing versus replacing human biotech expertise?

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ORGANIZATIONAL REQUIREMENTS

Strategic focus on AI integration in biotech

Continuous investment in AI and digital tools

Ethical frameworks for AI use in biotechnology

Training in AI, data science, and biotech applications

Strong focus on cybersecurity and data integrity

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STEP BY STEP APPLICATION

Identify AI opportunities in biotechnology

Implement AI in research, development, and manufacturing

Train biotech professionals in AI applications

Integrate AI in biotech product development

Continuously evaluate AI effectiveness and adapt strategies

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BEST
PRACTICES

Prioritize ethical AI use in biotech

Maintain transparency in AI-driven processes

Focus on AI for innovation and sustainability

Encourage interdisciplinary collaboration

Adapt AI strategies to evolving biotech needs

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AI TOOLS
& MODELS

Predictive analytics for drug response

Machine learning in genetic data analysis

AI algorithms for bioprocess optimization

Data analytics in biotech market trends

Neural networks for protein structure prediction

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USEFUL
DIGITAL TWINS

Digital twins of biotech processes for strategy optimization

Virtual models of genetic research

AI simulations for biotech product testing

Digital replicas of biomanufacturing facilities

Virtual reality for molecular and cellular biology research

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COOL NORWEGIAN CASES

Norwegian Bioindustry Association (Life sciences and biotech sector)

Nordic Nanovector (Biopharmaceuticals)

BerGenBio (Biotech focusing on cancer treatments)

Vaccibody (Vaccine development)

Algeta (Developed innovative cancer therapies)

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GLOBAL LEADERS

United States (Leader in biotech innovation and AI)

Germany (Advanced in pharmaceutical biotech)

China (Rapid growth in biotech sector)

United Kingdom (Strong in biotech research)

Switzerland (Home to major biotech companies)

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FUTURE JOBS

AI specialists in biotech research

Data scientists in biotechnology

AI-driven bioprocess engineers

Biotech ethics and compliance officers

Personalized medicine consultants
with AI expertise

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22/24
THE FUTURE OF AI

Revolutionizing biotech with AI-driven discoveries

AI in personalized and precision medicine

Advanced AI in genetic and genomic research

AI for sustainable biotech solutions

Integration of AI in all aspects of biotechnology

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RECOMMENDED READING

"Biotechnology for Beginners" by Reinhard Renneberg

"The Biotech Primer" by BioTech Primer Inc.

"Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again" by Eric Topol

"Genentech: The Beginnings of Biotech" by Sally Smith Hughes

"Life at the Speed of Light: From the Double Helix to the Dawn of Digital Life" by J. Craig Venter

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GOOD TED TALKS

"How CRISPR lets us edit our DNA" by Jennifer Doudna

"The potential of AI in biotech" by Nita Farahany

"What the future of biotech looks like" by Ellen Jorgensen

"Biotech is the next computing wave" by Andrew Hessel

"How AI is transforming drug creation" by Alex Zhavoronkov

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WHAT WOULD YOU ADD?

LET ME KNOW!

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