

# AlphaFold 3: The future of AI in biotechnology is here

Published June 5, 2024

**Mobeen Tahir**

Director, Research

## Key Takeaways

- AlphaFold 3 is a groundbreaking new AI tool which will help discover better drugs at faster speeds.
- The bio revolution extends beyond healthcare into many different sectors.
- Markets get excited about the biotech sector when there is a breakthrough. The AlphaFold 3 announcement could start a new wave.
- Related Products WisdomTree Artificial Intelligence UCITS ETF – USD Acc, WisdomTree BioRevolution UCITS ETF – USD Acc Find out more

Google DeepMind and Isomorphic Labs have recently unveiled an exciting new breakthrough, AlphaFold 3, set to transform our understanding of molecular biology and drug discovery. This artificial intelligence (AI) powered software goes beyond predicting protein folding – a process that laid the groundwork for understanding protein structure, a key aspect in drug design – now revealing how proteins interact with DNA, RNA, and other molecules, facilitating much better drug design<sup>1</sup>. AlphaFold 3, building on AlphaFold 2's success, employs advanced AI algorithms to accurately model molecular structures and interactions. Its predictions surpass existing methods in accuracy, accelerating scientific research by enabling faster hypothesis testing and drug target exploration<sup>2</sup>.

A standout feature of AlphaFold 3 is its precise prediction of interactions between proteins and small molecules, holding immense potential for drug discovery. To facilitate its adoption, Google DeepMind has launched the AlphaFold Server, offering free access to researchers worldwide. This democratisation of cutting-edge computational tools empowers scientists to accelerate discoveries and advancements.

Beyond drug discovery, AlphaFold 3's predictions illuminate the molecular basis of diseases, incorporating biochemical modifications into its models to understand their impact on protein function. This insight could lead to novel therapies targeting disease-causing molecular alterations.

AlphaFold 3 represents a leap forward in understanding and manipulating the molecular machinery of life. With unparalleled accuracy and accessibility, it promises to revolutionise drug discovery and deepen our understanding of biological processes. It also sheds light on how AI will create a tectonic shift in the world of biotechnology, creating an exciting new megatrend for investors seeking long-term growth.

## How investors can access the opportunity

[WisdomTree Artificial Intelligence UCITS ETF](#) has been built in partnership with NASDAQ and the Consumer Technology Association (CTA) with the aim of embedding AI industry expertise into an investment solution. CTA's input into the stock selection process facilitates the curation of a pure AI exposure that is differentiated and evolves along with the underlying technologies. The ETF provides a direct way to capture the most exciting trends, technologies, and companies that stand to benefit from the explosion of interest in the AI megatrend.

[WisdomTree BioRevolution UCITS ETF](#) has been built in partnership with a leading technology futurist, Dr Jamie Metzl, known for his book *Hacking Darwin: Genetic Engineering and the Future of Humanity*. Revolutionary strides in computer science, AI, big data analytics, automation, chemistry, biology, and engineering are opening unprecedented opportunities to reshape biological systems, poised to revolutionise healthcare, agriculture, manufacturing, energy, consumer services, and data storage. The ETF offers direct access to the most promising companies driving this bio revolution.

## Healthcare and beyond

The revolution is broad and spans many different sectors. Within healthcare, AlphaFold 3 is a promising new advancement in drug discovery. However, AI is also being used in many other areas, such as how Illumina uses it to predict disease-causing genetic mutations.

The bio revolution also has numerous applications beyond healthcare. In agriculture, Bayer is using smart drones and in-field sensors to collect data about the soil and plants, which is then monitored in digital farming platforms using AI tools. This endeavour is aimed at maximising the yield of agricultural production.

In materials, Schrodinger is employing AI to model and develop synthetic materials that can add sustainability to the manufacturing of products in numerous industries ranging from automobiles to consumer-packaged goods.

In biological machines, DNA data storage is an awe-inspiring new field. According to an article in *Scientific American*, humanity will generate an estimated 33 zettabytes of data by 2025—that's 3.3 followed by 22 zeroes. DNA storage can squeeze all that information into a ping-pong ball, with room to spare<sup>3</sup>.

## The revolution has exciting applications across many sectors

- Drug discovery
- Diagnostics and surveillance
- Precision health/Gene therapies
- Regenerative medicine
- Vaccines
- Precision agriculture

- Plant-based meats
- Cellular agriculture
- Synthetic manufacturing
- Precision fermentation
- Biofuels
- DNA data storage
- Biological computers
- Brain machine interfaces

*Source: WisdomTree, Jamie Metzl.*

## **An underappreciated story**

Markets get excited about the biotechnology sector when a breakthrough is announced. 2021 was an especially strong year for the sector when COVID-19 vaccines saved the world. AlphaFold 3 could usher in a new wave of interest in the sector. With AI, the sector will likely make more breakthrough announcements for tackling diseases, hunger, and potentially even climate change – things that will certainly get markets very excited.

1 Deoxyribonucleic acid (abbreviated DNA) is the molecule that carries genetic information for the development and functioning of an organism. Ribonucleic acid (RNA) is a molecule that is present in the majority of living organisms and viruses.

2 Google Blog, AlphaFold 3 predicts the structure and interactions of all of life's molecules, May 2024.

3 DNA: The Ultimate Data-Storage Solution, BY LATCHESAR IONKOV & BRADLEY SETTLEMYER, Scientific American, May 2021.

## Important Risks Related to this Article

### Important Information

**Marketing communications issued in the European Economic Area (“EEA”):** This document has been issued and approved by WisdomTree Ireland Limited, which is authorised and regulated by the Central Bank of Ireland.

**Marketing communications issued in jurisdictions outside of the EEA:** This document has been issued and approved by WisdomTree UK Limited, which is authorised and regulated by the United Kingdom Financial Conduct Authority.

WisdomTree Ireland Limited and WisdomTree UK Limited are each referred to as “WisdomTree” (as applicable). Our Conflicts of Interest Policy and Inventory are available on request.

**For professional clients only. The information contained in this document is for your general information only and is neither an offer for sale nor a solicitation of an offer to buy securities or shares. This document should not be used as the basis for any investment decision. Investments may go up or down in value and you may lose some or all of the amount invested. Past performance is not necessarily a guide to future performance. Any decision to invest should be based on the information contained in the appropriate prospectus and after seeking independent investment, tax and legal advice.**

The application of regulations and tax laws can often lead to a number of different interpretations. Any views or opinions expressed in this communication represent the views of WisdomTree and should not be construed as regulatory, tax or legal advice. WisdomTree makes no warranty or representation as to the accuracy of any of the views or opinions expressed in this communication. Any decision to invest should be based on the information contained in the appropriate prospectus and after seeking independent investment, tax and legal advice.

This document is not, and under no circumstances is to be construed as, an advertisement or any other step in furtherance of a public offering of shares or securities in the United States or any province or territory thereof. Neither this document nor any copy hereof should be taken, transmitted or distributed (directly or indirectly) into the United States.

Although WisdomTree endeavours to ensure the accuracy of the content in this document, WisdomTree does not warrant or guarantee its accuracy or correctness. Where WisdomTree has expressed its own opinions related to product or market activity, these views may change. Neither WisdomTree, nor any affiliate, nor any of their respective officers, directors, partners, or employees accepts any liability whatsoever for any direct or consequential loss arising from any use of this document or its contents.