

World's first AI-designed vaccine developed by UK scientists enters human trials



World's first AI-designed vaccine trial begins at Oxford

A vaccine designed with the help of artificial intelligence has entered human trials in what scientists are calling a world-first moment for medical research and drug development.

The vaccine, developed by researchers at the University of Oxford in partnership with biotechnology company Basecamp Research, is being tested against a disease

known as Crimean-Congo haemorrhagic fever (CCHF), a potentially deadly virus spread primarily through tick bites.

Researchers believe the project could demonstrate how AI can dramatically accelerate the process of creating vaccines and treatments for emerging infectious diseases.

The trial marks a significant step forward for a technology that many experts believe could reshape the future of medicine, reducing years of laboratory research to months while helping scientists respond more quickly to global health threats.

The vaccine has been developed to protect against Crimean-Congo haemorrhagic fever, a disease that causes severe bleeding, organ failure, and in some cases, death.

The virus is found across parts of Africa, Asia, the Middle East and Eastern Europe and is considered by the World Health Organization to be one of the priority pathogens with epidemic potential.

Mortality rates can reach as high as 40% in severe outbreaks, and there is currently no widely approved vaccine available for human use.

Researchers chose CCHF because it represents exactly the type of emerging infectious threat that can be difficult to tackle using conventional vaccine development methods. The virus also evolves and varies across regions, making it a challenging target for scientists.

The Oxford-led team hopes the new vaccine can provide broad protection against multiple strains of the virus, improving preparedness for future outbreaks.

Unlike traditional vaccine development, which often relies on years of laboratory experimentation, the new approach used artificial intelligence to analyse vast amounts of genetic and biological data.

Basecamp Research, which specialises in using AI to study biological information, supplied one of the world's largest databases of genetic sequences gathered from ecosystems around the globe. Machine-learning systems then examined these datasets to identify parts of the virus most likely to trigger a strong immune response.

Scientists used those insights to design vaccine components capable of targeting multiple versions of the virus at once.

Researchers say AI was not responsible for manufacturing or testing the vaccine but played a critical role in identifying promising targets far more quickly than conventional methods would have allowed.

The project demonstrates how artificial intelligence can act as a powerful research tool, helping scientists discover patterns hidden within enormous datasets that would be difficult for humans alone to analyse.

The first phase of the clinical trial is now under way at the [Oxford Vaccine Group](#), part of the University of Oxford.

The study will primarily examine whether the vaccine is safe and whether it generates the desired immune response in healthy volunteers. Early-stage trials are designed to assess safety before researchers move on to larger studies that test effectiveness.

Professor Dame Sarah Gilbert, whose work on the Oxford–AstraZeneca Covid-19 vaccine made her internationally known during the pandemic, has highlighted the potential of AI-assisted vaccine development to speed up responses to future disease outbreaks.

Researchers involved in the project say the trial represents the first known instance of a vaccine designed through this type of AI-driven biological discovery process reaching human testing.

Scientists believe the significance of the project extends far beyond a single disease.

Traditional vaccine development can take years of laboratory work, data collection and testing before a candidate reaches human trials. By identifying promising biological targets much earlier, AI could help reduce both costs and development timelines.

Researchers say the technology may prove particularly valuable in responding to emerging diseases, pandemic threats and viruses that currently receive limited scientific attention because of funding or logistical challenges.

The experience of the Covid-19 pandemic demonstrated the importance of rapid vaccine development. Many experts now see artificial intelligence as one of the most promising tools for preparing the world for future health emergencies.

While the Oxford trial remains in its earliest stages and many hurdles remain before any vaccine reaches approval, the project has already achieved something significant. For the first time, a vaccine designed with the assistance of artificial intelligence has moved from computer models and biological databases into the arms of human volunteers.

If successful, it could mark the beginning of a new chapter in medicine, one where algorithms help scientists design the vaccines that protect future generations.

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