How AI is helping to tackle antimicrobial resistance

The Global Antibiotic Research & Development Partnership (GARDP)

Switzerland

Google DeepMind

"Our collaboration with Google DeepMind has revealed valuable new insights, enabling us to better prioritise our target proteins. It has also accelerated our assessment, saving us several years of experimental structural biology. As a result, we are closer to the next phase of our project - in which we will identify small molecules that could form the basis of new and effective antibiotics."

Laura Piddock
Scientific Director, GARDP

Challenge

Antimicrobial resistance (AMR) – the ability of microorganisms, such as bacteria, to resist medicines like antibiotics – is an escalating global health crisis. Researchers must identify vulnerabilities within the most dangerous bacteria, then find molecules that interfere with critical functions, ultimately killing the bacteria.

Solution and partner

Using AlphaFold, GARDP and Google DeepMind have been working together on advanced modelling and analysis of several proteins identified as promising, but unrealised, targets for new antibiotics. These proteins are promising because they are important to certain multidrug-resistant bacteria, which the World Health Organization says critically require new treatments.

Impact

The collaboration has enhanced GARDP's understanding of the proteins and accelerated the timeline for assessing them as possible drug targets, bringing us closer to developing new antibiotics for the most dangerous multidrug-resistant bacteria.