

# New paradigm launched for antibiotic discovery and production

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Credit: National Physical Laboratory

Scientists from the National Physical Laboratory (NPL), biotechnology company Ingenza and Plymouth University have joined efforts to develop a discovery and production platform for a new family of antibiotics.

The three-year project, co-funded by Innovate UK, will focus on epidermicins, a class of bacteriocins (naturally-occurring toxins produced by bacteria to kill other, closely-related strains) recently discovered by researchers at Plymouth University and the University of Manchester. The narrow range of bacteria that native bacteriocins target typically means these peptides have yet to find applications in the clinic.

But if a systematic approach can be found to adapt bacteriocins into more broadly effective or even more potent antibiotics, these molecules could effectively challenge the growing problem of antibiotic resistance and the threat this poses to human health.

The team will use artificial intelligence tools developed in collaboration with IBM and the Science and Technology Facilities Council's (STFC) Hartree Centre, which, together with experimental validation by NPL, will enhance the performance of selected bacteriocins in terms of their range of action, stability and potency. The goal is to generate a pipeline of candidate molecules with the maximum therapeutic response while minimising any potential side effects. Within the same project, the team will also apply and further enhance Ingenza's highly-efficient manufacturing platform to scale up production of each promising new antimicrobial candidate for further testing and clinical trials.

Ian Fotheringham, Managing Director of Ingenza, said: "We are very excited about this opportunity and grateful to Innovate UK for the timely support of this work. NPL's biometrology expertise provides crucial support for the UK biotechnology industry, placing us in an excellent position to accelerate antimicrobial discovery and manufacture."

Currently, it is estimated that around 700,000 deaths worldwide are attributable to [antimicrobial resistance](#) each year, according to Lord O'Neill's Review on Antimicrobial Resistance. Unless action is taken, this is projected to rise to 10 million lives each year by 2050. In response to this challenge, NPL's Biotechnology group is developing measurement approaches to discover, screen and validate new classes of antimicrobials that exhibit effective and selective mechanisms against pathogens.

Provided by National Physical Laboratory

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