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Scientists at the forefront of fighting superbugs

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Researchers at Newcastle University are part of a multi-million pound flagship project looking at antimicrobial resistance and the development of new antibiotics.

Experts in the North East will work with leading academics throughout the country to tackle the growing threat of superbugs as part of a co-ordinated effort to fight their prevalence and ensure treatments continue to work.

More than £3m has been awarded to the UK team by the Medical Research Council (MRC) and the Biological Sciences Research Council (BBSRC), marking one of the largest UK public grant investments in antibiotic resistance.

The problem of antibiotic resistance has become a global health issue and Newcastle University will get approximately £1m of the funding to help investigate a vital link in the chain of antimicrobial resistance – the bacterial cell wall. The main component of the wall is called peptidoglycan, which is the key target of penicillin and other similar antibiotics.

Despite its important role, little is known about how peptidoglycan is made and how antibiotics interfere with it at the biochemical, structural and cellular levels. Without this knowledge, researchers say they are unlikely to understand how to develop new, effective antibiotics in the future.

Professor Rick Lewis and Professor Waldemar Vollmer, from Newcastle University's Institute for Cell and Molecular Biosciences, are part of the pioneering five-year project.

"We will be applying biochemical and structural biology techniques to the problem of antibiotic resistance," said Professor Lewis.

"We will also be providing cutting-edge training opportunities for graduates who are interested in developing new antibiotics. The threat posed by antibiotic resistance is a real public health challenge and we hope that by ensuring we develop links between academia and the pharmaceutical industry our research can make a real difference in the quest for new antibiotics."

The project is being led by Warwick University and will bring together a group of leading experts, from institutions including the Universities of Oxford, Sheffield and Southampton, in the fields of bacterial chemistry, genetics, physics and physiology.

Antibiotic resistance is a significant problem for healthcare and agriculture. Antibiotics have been used to treat bacterial infections in humans and animals for 70 years, but these medicines are becoming less effective. Worryingly no new classes of antibiotics have been discovered for 25 years and some strains of bacteria are now not killed by the drugs designed to destroy them.

Dr Des Walsh, head of infections and immunity at the MRC, said: "It's only with the best researchers working together on the highest quality research, with the financial muscle to make it all happen, that we will truly make headway in the battle to stop the spread of superbugs.

"It's exciting that the UK houses such scientific talent and the skills to bring them all together. Looking at how superbugs affect our lives across

the chain, from our farms to our pharmacies, is really important. This needs a cross-academia, cross-industry, and cross-continent approach."

Further to academic collaborations, the pharmaceutical industry and charities will also work hand in hand with the researchers on a global scale with the aim of unlocking new types of antibiotics.

Professor Chris Dowson, at the University of Warwick, said: "Antibiotic resistance needs to be viewed as a long-term problem with no quick fix. It will be with us for many generations to come. To 'beat the bug' we need to accelerate discovery activities in partnership with industry. Our multidisciplinary team will develop new insight to key targets to help accelerate this discovery and will provide a platform upon which to train the next generation of researchers."

Provided by Newcastle University

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