

Drug 'shield' helps target antibiotic resistant bacteria

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A new technique which targets antibiotic-resistant bacteria and shields patients from the toxic parts of an antibiotic drug has been developed by Cardiff University scientists.

Dr Elaine Ferguson from Cardiff University's School of Dentistry has utilised a new technique which attaches tiny nano-sized <u>biodegradable</u> <u>polymers</u> to the antibiotic drug - colistin.

Use of the drug colistin to fight infection has been limited as it is known to be toxic to the kidneys and nerves despite the fact that it has been found to be effective against new multi-drug resistant bacteria, like NDM-1.

Cardiff University scientists believe the new technique will help underused <u>antibiotic drugs</u> like colistin to be used to fight against the spread of life-threatening bacterial infections.

"The technology we've developed came as a direct response to an urgent medical need for better antibiotics to safely treat patients with life threatening infections. Very few new <u>antimicrobial drugs</u> have emerged despite intensive research, with only two new classes of antibiotics developed in the last 30 years," according to Dr Ferguson who worked alongside Cardiff University's Professor David Thomas and Professor Timothy Walsh to develop the technique.

"Our new approach allows existing effective therapies to be improved to



help patients with severe infections who may otherwise suffer significant side effects after treatment.

"The polymer shields the drug molecule making it less toxic to the body while, at sites of infection, there is an enzyme present which removes the polymer- specifically activating the drug where it is needed" she added.

The research was supported by The Severnside Alliance for Translational Research (SARTRE) - a major collaboration between Cardiff and Bristol Universities designed to translate medical research to improve lives.

The seedcorn funding for the research from SARTRE, through the Medical Research Council's Developmental Pathway Funding Scheme, helped the project progress quickly to the stage where additional grant funding has been secured.

Ernest Azzopardi, a plastic surgeon studying for his PhD with the group, has also been awarded a Welsh Clinical Academic Training Fellowship and a grant from the EU European Social Fund to continue the work initiated with the seedcorn funding. The team includes materials scientists Dr Peter Griffiths from Cardiff University's School of Chemistry and Professor Terence Cosgrove from the University of Bristol, who have recently secured funding with Dr Ferguson to undertake neutron scattering at the Institut Laue-Langevin (ILL) in Grenoble (France).

Professor David Thomas, who worked alongside Dr Ferguson on developing the new technique, added: "The interdisciplinary nature of our work in drug delivery allows the possibility of developing truly innovative approaches to the management of human disease".



Provided by Cardiff University

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