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New antibacterials being developed to tackle MRSA superbug

Wellcome Trust Seeding Drug Discovery

A novel antibacterial medicine that kills the superbug MRSA is being developed under a new scheme launched by the Wellcome Trust. The Seeding Drug Discovery initiative is aimed at catalysing the development of new drugs in areas of unmet need.

Prolysis, an R&D company based in Oxford, has received one of three inaugural Seeding Drug Discovery awards for its new antibacterial compounds aimed at tackling life-threatening, drug-resistant infections caused by staphylococci, including MRSA.

The bacterium *Staphylococcus aureus* can infect wounds, including those resulting from medical procedures conducted in hospitals. It may then spread further into the body and cause serious infections such as blood poisoning. Methicillin-resistant *Staphylococcus aureus*, or MRSA, is a form of the bacterium that is resistant to the drug methicillin and a number of other antibiotics and tends to be more difficult to treat.

"The so-called superbug MRSA is fast becoming untreatable with the currently available antibiotics," says Dr Ted Bianco, Director of Technology Transfer at the Wellcome Trust. "We urgently need a new generation of antibacterial medicines to stop its spread through hospitals, nursing homes and the wider community."

The compounds being developed by Prolysis under the award from the Wellcome Trust block the ability of the MRSA bacteria to divide and multiply. They do this by inhibiting the function of the bacterium's FtsZ protein, which is essential for cell division. FtsZ is not found in humans so targeting a unique protein like this should reduce the likelihood of side-effects in patients. Because of the novel mode of action of the new class of compounds, the levels of resistance in the bacterial population should be extremely low if a new drug was to emerge from this programme.

"The antibiotic that we are developing is far more selective than those currently in use, targeting only staphylococcal infections," says Dr Lloyd Czaplewski, Director of Research at Prolysis. "Other, broad-spectrum antibiotics tend to kill the patient's natural bacteria, leaving them open to secondary infection by other pathogenic bacteria, for example Clostridium difficile."

Given the urgent need for new antibacterials to tackle staphylococcal infections, Dr Czaplewski believes that the research, supported by this £3.48 million, 33 month award, could result in a new medicine being fast-tracked into clinical evaluation by 2009.

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The Wellcome Trust's Seeding Drug Discovery initiative aims to bridge the funding gap in early-stage drug discovery, assisting researchers to take forward projects in small molecule therapeutics that will be the springboard for further R&D by the biotech and pharmaceutical industry.
