Centauri THERAPEUTICS

PACE Award Profile: Centauri Therapeutics

Optimisation of antimicrobial peptide-sugar conjugates for dual-mode immunotherapy treatment of Gram-negative infections

Project title: Optimisation of rhamnose presentation for next generation Alphamers® for the treatment of Gram-negative infections

Leveraging the body's natural immune response is a very promising approach to treating multi-drug-resistant Gram-negative bacterial infections and has particular relevance to immunocompromised individuals. Centauri Therapeutics is at the forefront of innovation in this field and is developing novel Alphamer® molecules with a dual mode of action: an antimicrobial peptide that binds to targets on the pathogen, linked to a sugar capable of recruiting antibodies and leading to immune clearance.

Previous work carried out at Centauri Therapeutics has identified a promising lead compound, comprising a peptide scaffold and linked rhamnose unit. This has favourable antimicrobial, pharmacokinetic and toxicity profiles.

Funding and support from PACE will allow the team to build on this work, by undertaking further lead optimisation activities. These will be focused on improving linker and rhamnose presentation to maximise immune recruitment, whilst maintaining (or improving upon) the molecule's other properties, and continuing to improve on the therapeutic index. The frequency and duration of dosing, as well as any treatment monitoring and wider impacts on health, will then be determined following assessment of safety in physiological models and human clinical studies.

The team expects that the dual mode of action of such molecules will make them successful in treating difficult, multi-drug-resistant bacterial infections, with patients having hospital- and ventilator-acquired pneumonia being the most likely to benefit.