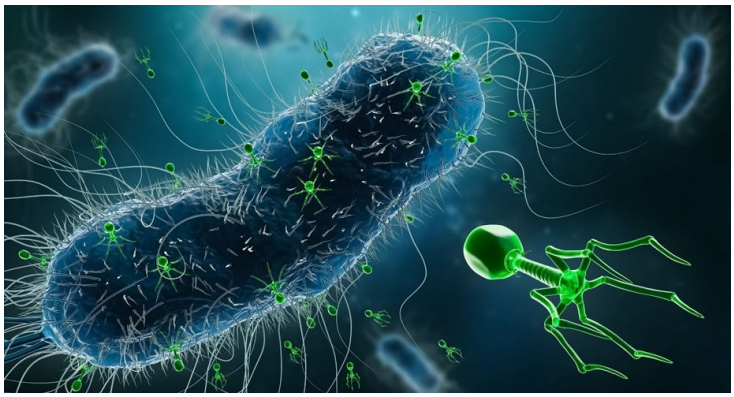
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ASIA EDITION

Singapore advances phage therapy in fight against antimicrobial resistance

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New study identifies how Mycobacterium abscessus evades treatment and proposes a strategy to overcome resistance



Scientists from A*STAR Infectious Diseases Labs (A*STAR IDL), Nanyang Technological University, Singapore's Lee Kong Chian School of Medicine (LKCMedicine), the National University of Singapore (NUS), and international collaborators have uncovered how *Mycobacterium abscessus* – a bacterium that causes serious lung infections – can evade bacteriophage (phage) therapy, and demonstrated a combination strategy to overcome this resistance, offering a pathway towards more effective and durable treatments.

M. abscessus infections are challenging to treat due to their intrinsic resistance to many antibiotics and are increasingly recognised as a significant public health threat. The researchers found that "smooth" strains of M. abscessus, which are more commonly observed in Asia, respond to phage therapy by switching to a "rough" form, both in the laboratory and pre-clinical models. This transition is linked to mutations in genes responsible for producing glycopeptidolipids, which shape the bacteria's outer surface.

By revealing how phage resistance happens, and how it can be mitigated, this study strengthens the ongoing efforts to develop novel therapeutics against AMR.

The findings may also inform future diagnostic and monitoring approaches, such as tracking bacterial form changes and resistance-associated mutations. This could help clinicians tailor treatments and adjust therapeutic strategies more responsively.