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Scientists discover promising target to block Staphylococcus infection

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National Institutes of Health (NIH) scientists have identified a promising lead for developing a new type of drug to treat infection caused by *Staphylococcus aureus*, a bacterium that frequently resists traditional antibiotics.

The researchers discovered a system used by *S. aureus* to transport toxins that are thought to contribute to severe staph infections. These toxins—called phenol-soluble modulins (PSMs)—have gained much attention in recent years, but their multitude and diversity have hindered efforts to target them for drug development.

Expanding on work that first described *S. aureus* PSMs in 2007, scientists at the NIH's National Institute of Allergy and Infectious Diseases found that the transport system, which they call Pmt, is common to all *S. aureus* PSMs and critical for bacterial proliferation and disease development in a mouse model. Their experiments suggest that a drug interfering with Pmt's function could not only prevent production of the PSM toxins, but also directly lead to bacterial death.

Although their study focused on *S. aureus*, the scientists suspect that Pmt performs the same role in other staphylococci, such as *S. epidermidis*, the leading cause of hospital-associated infections involving indwelling medical devices such as catheters, pacemakers and prosthetics. They plan to continue their studies to improve the understanding of how PSMs function and to learn how to interfere with the Pmt transport system to block disease.

More information: S Chatterjee et al. Essential Staphylococcus aureus toxin export system. *Nature Medicine*, DOI: 10.1038/nm3047 (2013).

R Wang et al. Identification of novel cytolytic peptides as key virulence determinants of community-associated MRSA. *Nature Medicine*, DOI: 10.1038/nm1656 (2007).

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