

# Scientists identify mechanism responsible for spreading biofilm infections

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Scientists from the National Institutes of Health have discovered how catheter-related bacterial infection develops and disseminates to become a potentially life-threatening condition. The study, which included research on *Staphylococcus epidermidis* in mice implanted with catheters, could have important implications for understanding many types of bacterial biofilm infections, including those caused by methicillin-resistant *S. aureus* (MRSA).

Biofilms are clusters of [microbes](#) that almost always are found with healthcare-associated infections (HAIs) involving medical devices such as catheters, pacemakers and prosthetics. Most often biofilms that develop on such devices consist of Staph bacteria. Because biofilms inherently resist antibiotics and immune defenses, treating patients with biofilm-associated infections can be difficult and expensive. An estimated two million HAIs, most of which are associated with biofilms, occur in the United States annually, accounting for about 100,000 deaths.

Although biofilm-related infections result in significant numbers of deaths, scientists still have a limited understanding of how biofilms develop at a molecular level. But now scientists from NIH's National Institute of Allergy and [Infectious Diseases](#) (NIAID) have identified a specific *S. epidermidis* protein, called phenol-soluble modulins beta (PSM-beta), that biofilms use for multiple purposes: to grow, to detach from an implanted medical device, and to disseminate infection. Antibodies against PSM-beta slowed bacterial spread within the study mice, suggesting that interfering with biofilm development could provide a way to stop the spread of biofilm-associated infection.

Similar proteins also are found in *S. aureus*, and the research group now plans to study their role in biofilms of MRSA and other bacteria.

**More information:** R Wang et al. *Staphylococcus epidermidis* surfactant peptides promote biofilm maturation and dissemination of biofilm-associated infection in mice. *The Journal of Clinical Investigation* 121(1): [DOI:10.1172/JCI42520](https://doi.org/10.1172/JCI42520) (2011).

Provided by National Institutes of Health

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