

Tick protein does the trick to fight infection

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A protein in ticks that protects them against the cold could inspire a new class of antibiotics for humans, according to a Yale University study.

Scientists discovered that IAFGP, an [antifreeze protein](#) in ticks that kicks in during winter, also fights infection. Synthesizing such a protein may offer new therapies and medical applications to ward off [dangerous pathogens](#) such as MRSA.

"We wanted to know if this protein also has an anti-microbial function. Lo and behold, it does," said Erol Fikrig, the Waldemar Von Zedtwitz Professor of Medicine and chief of the Infectious Diseases Section at Yale School of Medicine, who was the study's principal investigator. "It prevents [bacterial growth](#) quite successfully."

The findings were published online Oct. 16 in the journal *Cell Reports*.

The protein does not kill bacteria, Fikrig explained. Instead, it prevents the formation of bacterial biofilm, a slimy substance that covers and protects bacteria. The protein comes from the tick *Ixodes scapularis*, which is a vector for Lyme disease and other microbes.

Researchers found that a structurally similar, synthetic peptide, called P1, was effective in resisting pathogens in mouse and insect models. The peptide also worked well at stopping the spread of infection when scientists coated catheters with P1.

"This [protein](#) could lead to a new class of antibacterial agents to use against diverse bacteria, either alone or in conjunction with other [antibiotics](#)," Fikrig said.

Fikrig's Yale lab conducted the study, with support from co-authors Richard Flavell, of the Department of Immunobiology at Yale; Lynn Cooley, of the Department of Genetics at Yale; and Herve Agaisse, of the Department of Microbial Pathogenesis, at Yale. Fikrig and Flavell also are investigators with the Howard Hughes Medical Institute.

Provided by Yale University

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