

Journal of Investigative Dermatology press release



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This press release contains the following item(s):

- ▶ [Antibacterial proteins keep us germ-free](#)
[DOI: 10.1038/sj.jid.5700861](#)
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Antibacterial proteins keep us germ-free
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Scientists have discovered the protein that helps keep skin cells free from infection despite daily bombardment by harmful pathogens, according to a study published online this week in the *Journal of Investigative Dermatology*. Thanks to the release of the bacteria-killing human beta defensin-3 (HBD3) protein, our skin cells help us ward off unsightly menaces such as sores, ulcers and boils, commonly caused by the *Staphylococcus aureus* bacteria.

Donald Leung and colleagues found that the protective mechanism involves initial association with bacteria at the cell surface, followed by immediate secretion of a variety of germ-killing proteins known as antimicrobial peptides. Of these peptides, HBD3 is the only peptide that is expressed in skin cells at levels sufficient for killing bacteria. The authors provide further evidence of its key role as a bacterial assassin from antibody experiments - when antibodies bind to HBD3 they prevent the death of bacteria, by tying up the protein's site of action.

This study shows that unlike bacteria-killing cells of the immune system, the skin cells don't need to internalize whole bacteria, as they are killed outside the cell shortly after contact. Following bacterial death, skin cells internalize fragments of the degraded bacteria presumably to sequester harmful bacterial molecules and limit further exposure to inflammation-causing agents.

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