

Study details how good bacteria might help prevent middle ear infections and pneumonia

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A new study from the Forsyth Institute is helping to shed more light on the important connections among the diverse bacteria in our microbiome. According to research published in *mBio*, scientists at Forsyth, led by Dr. Katherine P. Lemon, along with their collaborator at Vanderbilt University, have demonstrated that a harmless bacterium found in the nose and on skin may negatively impact the growth of a pathogen that commonly causes middle ear infections in children and pneumonia in children and older adults.

This study provides the first evidence that *Corynebacterium accolens*, a harmless bacterial species that commonly colonizes the nose, can help inhibit *Streptococcus pneumoniae* (*S. pneumoniae*)—a major cause of pneumonia, meningitis, [middle ear infection](#) and sinusitis. According to the World Health Organization, *S. pneumoniae* leads to more than 1 million deaths each year, primarily in young children in developing countries. Although most people that host *S. pneumoniae* do not develop these infections, colonization greatly increases the risk of, and is a prerequisite for, infection and transmission.

The study, titled, "*Corynebacterium accolens* (*C. accolens*) Releases Antipneumococcal Free Fatty Acids from Human Nostril and Skin Surface Triacylglycerols," is published on January 5, 2016 in *mBio*. In this study, first-author Dr. Lindsey Bomar and her colleagues show that *C. accolens* are overrepresented in the noses of children that are not colonized by *S. pneumoniae*, which is commonly found in [children's](#) noses and can cause infection. In laboratory research, the team further

found that *C. accolens* modifies its local habitat in a manner that inhibits the growth of *S. pneumoniae* by releasing antibacterial [free fatty acids](#) from representative host skin surface triacylglycerols. The team went on to identify the *C. accolens* enzyme needed for this. These results pave the way for potential future research to determine whether *C. accolens* might have role as a beneficial bacterium that could be used to control pathogen colonization. This research is authored by Lindsey Bomar, Silvio D. Brugger, Brian H. Yost, Sean S. Davies and Katherine P. Lemon.

Provided by Forsyth Institute

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