

Antibodies trick bacteria into killing each other

November 14 2011

The dominant theory about antibodies is that they directly target and kill disease-causing organisms. In a surprising twist, researchers from the Albert Einstein College of Medicine have discovered that certain antibodies to *Streptococcus pneumoniae* actually trick the bacteria into killing each other.

Pneumococcal vaccines currently in use today target the pneumococcal capsular [polysaccharide](#) (PPS), a sort of armor that surrounds the bacterial cell, protecting it from destruction. Current thought hold that PPS-binding antibodies protect against [pneumococcus](#) by inducing opsonic killing, a process in which pathogens are coated with a substance called opsonin, marking the pathogen out for destruction by the immune system.

While such antibodies are an important part of how [pneumococcal vaccines](#) protect against disease, there are PPS-specific antibodies that do not promote opsonic killing but are protective nonetheless.

In the study, Masahide Yano and his colleagues identify one of mechanisms these non-opsonic antibodies use. They increase the rate of communication between the [bacterial cells](#) as well as competence-induced killing, or fratricide, where the bacteria naturally kill each other off because of overconcentration.

"These findings reveal a novel, previously unsuspected mechanism by which certain PPS-specific antibodies exert a direct effect on

pneumococcal biology that has broad implications for bacterial clearance, genetic exchange and antibody immunity to pneumococcus," says Yano.

More information: Antibodies to *Streptococcus pneumoniae* Capsular Polysaccharide Enhance Pneumococcal Quorum Sensing, 13 September 2011 mBio vol. 2 no. 5 e00176-11. doi: 10.1128/mBio.00176-11

Provided by American Society for Microbiology

Citation: Antibodies trick bacteria into killing each other (2011, November 14) retrieved 23 April 2024 from <https://phys.org/news/2011-11-antibodies-bacteria.html>

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