Finding new antibiotics to fight superbugs [1]

Discovery [2]
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Video of The War Against Superbugs

It's a battle for survival—humans versus the “bugs” behind some of the worst diseases in history, including pneumonia, tuberculosis and the bubonic plague. Researchers have tried to stay a step ahead of infectious bacteria, but the battle rages on.

Humanity scored a major blow against bacteria about a hundred years ago with the invention of antibiotics. Since then, science has given us an armory of weapons: beta-lactams, aminoglycosides, tetracyclines, carbapenems and more.

Unfortunately, bacteria have proven to be wily adversaries, developing resistance to many of these weapons. Infections caused by antibiotic-resistant bacteria—aka “superbugs”—are on the rise and are one of the greatest healthcare challenges today.

How have bacteria become resistant to antibiotics? Several types of genetic changes have allowed them to thwart antibiotics. Sexually active bacteria are sometimes to blame, because their mating can transfer resistance genes to other bugs. Bacteria also carry viruses that can harbor resistance genes and spread them to other bacteria.

The Novartis Institutes for BioMedical Research (NIBR) and other research organizations have been dissecting the mechanisms by which superbugs evade drugs. NIBR’s Infectious Diseases group in Emeryville, CA, includes a team focused on discovering antibiotics to combat gram-negative bacteria. These are difficult bugs to treat, with notorious dual membranes that serve as armor.

NIBR scientists are looking for ways to penetrate the membranes and overcome resistance mechanisms inside bacterial cells. They’re studying genomes of the bugs to find out how they keep drugs out, aiming to uncover vulnerabilities that will lead to the discovery of new antibiotics.

Novartis is committed to the battle against gram-negative bacteria. Watch the animated video about the problem, and share it on social media to help raise awareness about the need to research superbugs. Help us #FightSuperbugs.

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