Discovery of a Potential New Antibiotic Case Study

Nearly all the antibioticsused to stop bacterial infections are natural compounds that come from microbes themselves. For example, penicillin is derived from a fungus, while vancomycin, the antibiotic used when bacteria are resistant to many other drugs, comes from a bacterium. Furthermore, although many antibiotics are chemically synthesized to resemble natural antibiotics, the “models” for them are natural products of microbes themselves.

As more bacteria become resistant to traditional antibiotics, alternative drugs must be found. Recently, scientists discovered a completely new type of antibiotic that comes from *Hydra,* pictured above, a small freshwater creature famous for regenerating itself when its tissues are severed. While investigating defensive mechanisms on the skin of hydras in 2008, scientists at the University of Keil in Germany came across a protein that is active against both gram-negative and gram-positive bacteria. Most importantly, it works against some drug-resistant strains of bacteria. They named this protein hydramacin.

* Can you imagine why microbes produce chemicals that are inhibitory to other microbes?
* What enables a new drug to be effective against bacteria that are able to resist old drugs?
* How do you suppose the scientists figured out that the compound in *Hydra* acts against both gram-negative and gram-positive bacteria?