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2010-03-26: Discovery on the path to new antibiotics

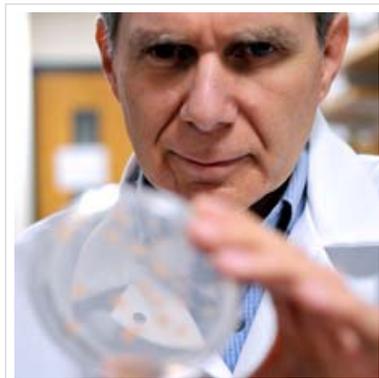
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Discovery on the path to new antibiotics



Professor Lewis and colleagues have made a major discovery that could lead to new antibiotics. Photo by Craig Bailey.

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Scientists at Northeastern University have taken a major step towards being able to grow previously uncultivable bacteria in the lab, the potential key to developing a new generation of highly effective antibiotics.

Examining bacterial communities enveloping particles of sand, the Northeastern researchers identified chemicals — called siderophores — produced by cultivable bacteria that act as growth factors for distantly related strains of uncultivable bacteria. When the two types of bacteria were placed in close proximity in a Petri dish, the uncultivable bacterium grew.

The finding, the cover story in the March 26 issue of the journal *Chemistry & Biology*, “opens a new chapter in the century-old

quest to access a major source of biodiversity on the planet,” said Professor of Biology **Kim Lewis**, who led the research.

The discovery represents the first identified mechanism governing the growth of uncultured bacteria in the lab, said Lewis, who directs Northeastern’s **Antimicrobial Discovery Center (ADC)**. “This provides us with a general approach to finding other types of growth factors that will give us access to additional classes of uncultured bacteria.”

Most antibiotics, which treat infections by killing the bacterial cells or inhibiting their growth, have been discovered from bacteria that readily grow in the lab. But more than 99 percent of all species of bacteria cannot be grown in a lab, and attempts to replicate these uncultivable bacteria have been unsuccessful up until this point.

“This is just the tip of the iceberg and could lead to the development of new ways to treat bacterial infections,” said Anthony D’Onofrio, the paper’s first author and postdoctoral research associate at the ADC.

Researchers from Harvard Medical School collaborated with Northeastern scientists on the project. The other Northeastern collaborators included Professor of Biology Slava Epstein; and biology research professor Eric J. Stewart, postdoctoral research associate Ekaterina Gavrish and student researcher Kathrin Witt, all working in the ADC.

The Antimicrobial Discovery Center was founded in 2006 to translate basic science discoveries into novel antimicrobial therapies to combat biowarfare and conventional pathogen threats. The interdisciplinary center, funded by grants from the National Institutes of Health, National Science Foundation and Department of Energy, draws faculty members from biology, chemistry, physics and pharmaceutical sciences.

To read the entire paper, [click here](#).

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