

## Animals steal antibiotic genes from microbes

Life on this planet has existed for at least 3.5 billion years. For most of that time, it was microscopic. Bacteria and other microbes had the world to themselves, but since they still had to compete, they evolved a wide arsenal of weapons for scuppering and killing their rivals. Humans have spent the last century plundering these arsenals. The vast majority of our antibiotics come from chemicals that microbes use on each other.

But you don't need Alexander Fleming, the scientific method, or a pharmaceutical industry to exploit a microbe's antimicrobial weapons. All you need is time and a little luck.

Seemay Chou and Matthew Daugherty from the University of Washington School of Medicine have found that one group of antibiotic genes have repeatedly jumped from bacteria into eukaryotes—the catch-all term for complex life forms, including animals, plants, fungi, and more. The genes made these crossings on at least six separate occasions, and they are now part of their hosts' immune systems.

In an instant, these hosts acquired what scientists take decades of research to develop: a new tool for controlling microbes and protecting against infections.

Chou and Daugherty made their discovery by accident. They were studying the *tae* genes, which make proteins that can digest a bacterium's outer wall, causing it to leak and rupture. These are weapons built by bacteria, for use against bacteria. So why, when Chou and Daugherty searched for these genes, did they find them all over the tree of life? Why were these bacterial genes also in ticks, mites and scorpions? In limpets, water fleas, sea slugs, oysters, and sea anemones? In the [lancelet](#), a close relative of back-boned animals like us? In weird single-celled pond creatures like [Naegleria](#) and [Oxytricha](#)?

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