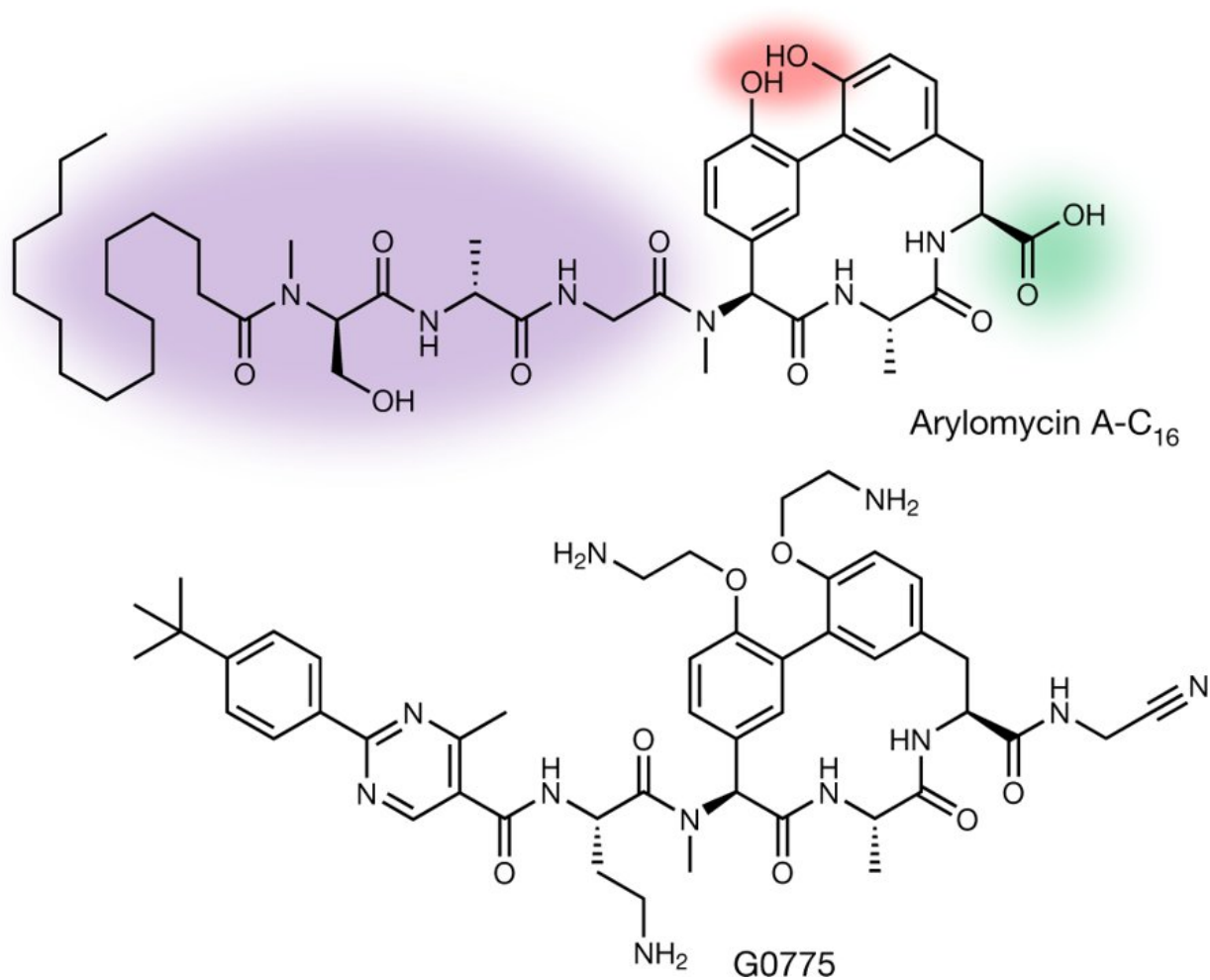


Modified arylomycin found to be effective against drug-resistant bacteria

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Chemical structures of arylomycin A-C₁₆ and G0775. Credit: *Nature* (2018).
 DOI: 10.1038/s41586-018-0483-6

A team of researchers working at Genentech with assistance from groups at RQx Pharmaceuticals and Wuxi AppTec has modified an arylomycin in a way that makes it effective against many drug-resistant bacteria. In their paper published in the journal *Nature*, the group describes their work and how well the new compound worked when tested under lab conditions.

The researchers note that it has been nearly a half-century since a new drug was approved for use against [gram-negative bacteria](#)—over that time span, many gram-negative and other types of bacteria have evolved to make them resistant to conventional treatments. Because of that, scientists around the world have been working to prevent a medical crisis. In this new effort, the researchers have modified an arylomycin in such a way as to make it effective against gram-negative bacteria.

Gram-negative bacteria are named for the way they look when stained and studied under a microscope. They have a dual outer membrane that does a good job at keeping out pathogens, which makes them more difficult to kill than other types of bacteria. Arylomycins are natural compounds that have an antibacterial component. In their search for a new way to battle gram-negative bacteria, the researchers studied an arylomycin called G0775 found in common soil. They found it to be more effective against gram-negative bacteria than other agents. After assessing its capabilities and its makeup, the team made some tweaks to the compound to make it even more effective at killing gram-negative bacteria. Testing showed that it was effective in killing both *Escherichia coli* and *Klebsiella pneumonia* in cells in a petri dish and in mouse models.

The researchers note that the new compound does its work in a different way than other antibacterial agents—instead of weakening cell walls or disabling production of certain proteins, it inhibits an enzyme in the cell membrane that the [bacteria](#) need to secrete important proteins.

Much more work will need to be done before a new drug is created from the compound for use in humans, the team acknowledges—but they are optimistic that they are on the right track.

More information: Peter A. Smith et al. Optimized arylomycins are a new class of Gram-negative antibiotics, *Nature* (2018). [DOI: 10.1038/s41586-018-0483-6](https://doi.org/10.1038/s41586-018-0483-6)

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