Antibiotic resistance is rising and seems unstoppable. CRISPR-designed molecules might offer an answer

In 2019, antibiotic-resistant bacteria directly killed roughly 1.27 million people worldwide and contributed to an additional 3.68 million deaths. In the U.S. alone, drug-resistant bacteria and fungi together cause an estimated 2.8 million infections and 35,000 deaths each year.

And the problem is getting worse: Seven of the 18 concerning bacteria tracked by the Centers for Disease Control and Prevention (CDC) are becoming more resistant to common antibiotics considered essential for maintaining public health. Meanwhile, drug companies have been slow to make new antibiotics capable of beating the microbes. Fewer than 30 antibiotics currently in the development pipeline target “priority” bacteria, as defined by the World Health Organization (WHO), and most of those drugs are still vulnerable to resistance, just like their predecessors.

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So some scientists are looking beyond traditional antibiotics for new weapons that won’t fuel the rise of superbugs. Their emerging arsenal features viruses that kill bacteria; CRISPR; and microbe-slaying molecules. They hope that these experimental treatments, some of which have been tested in patients, will kill superbugs without promoting resistance.

“The vision, for me, is that we move beyond antibiotics and really just see a much broader palate of options,” Chase Beisel, leader of the RNA synthetic biology research group at the Helmholtz Institute for RNA-based Infection Research in Germany, told Live Science.

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