

Weight-loss drugs, malaria vaccines and more: CRISPR innovations headline the science breakthroughs of 2023

In the 1980s and early 1990s, scientists in Spain and Japan [found](#) strange, repeating patterns in the DNA of certain bacteria. Researchers eventually linked these sequences to an immune defense system that they named “clustered regularly interspaced palindromic repeats”—or CRISPR. In the following decades, scientists found clever ways to build on CRISPR to edit genes in plants, animals, and even humans.

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1. CRISPR’s Triumph: A Possible Cure for Sickle-Cell Disease

In December, the FDA [approved](#) the world’s first medicine based on CRISPR technology. Developed by Vertex Pharmaceuticals, in Boston, and CRISPR Therapeutics, based in Switzerland, Casgevy is a new treatment for sickle-cell disease, a chronic blood disorder that affects about 100,000 people in the U.S., most of whom are Black.

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2. GLP-1s: A Diabetes and Weight-Loss Revolution

In the 1990s, a small team of scientists got to know the Gila monster, a thick lizard that can survive on less than one meal a month. When they studied its saliva, they found that it contained a hormone that, in experiments, lowered blood sugar and regulated appetite. A decade later, a synthetic version of this weird lizard spit [became](#) the first medicine of its kind approved to treat type 2 diabetes.

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5. Malaria and RSV Vaccines: Great News for Kids

Malaria, one of the [world’s leading causes of childhood mortality](#), killed [more than 600,000 people](#) in 2022. But with each passing year, we seem to be edging closer to ridding the world of this terrible disease. Fifteen months ago, the first malaria vaccine, [developed](#) by University of Oxford scientists, [was found to have up to 80 percent efficacy](#) at preventing infection.

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