

CRISPR pioneers Emmanuelle Charpentier and Jennifer Doudna awarded 2020 Nobel Prize for Chemistry

The 2020 selection for the Nobel Prize in Chemistry goes to two scientists who share credit for identifying and developing a [revolutionary method](#) of genome editing — one that has allowed researchers to modify and investigate the genomes of microbial, plant and animal cells with an ease, precision and effectiveness that would have been unfathomable even a decade ago.

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[Emmanuelle Charpentier](#) of the Max Planck Unit for the Science of Pathogens Institute for Infection Biology and [Jennifer Doudna](#) of the University of California, Berkeley have been recognized for their work on CRISPR/Cas9 genome editing — a technique routinely called CRISPR for short and often referred to as “genetic scissors.” This award marks the first time that two women have been awarded a Nobel Prize for science.

In [a seminal 2012 paper](#), Charpentier and Doudna showed that key components of the ancient immune system found in bacteria and archaea could be retooled to edit DNA, to essentially “rewrite the code of life.”

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In the eight years since, the discovery has transformed the life sciences, making genome editing commonplace in laboratories around the world. It has enabled researchers to probe the functions of genes at will, pushing the field of molecular biology ahead by leaps and bounds; to innovate new methods of plant breeding; and to develop promising new gene therapies, some now in clinical trials, for conditions such as sickle cell disease.

TIMELINE

→ **1987**

An unusual repetitive structure (later called CRISPR) is found to be widespread in the genomes of prokaryotes.

→ **2005**

Researchers discover that CRISPR structures contain short sequences of DNA from viruses that attack bacteria.

Scientists theorize that CRISPR serve as a form of “memory”

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