

EXPLAINED: 2020 NOBEL PRIZE IN CHEMISTRY

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Emmanuelle Charpentier and Jennifer Doudna

Emmanuelle Charpentier and Jennifer Doudna were awarded the [Nobel Prize in Chemistry 2020](#) for discovering one of gene technology's sharpest tools: the CRISPR/Cas9 genetic scissors.

Using components of the CRISPR system, researchers can add, remove, or even alter specific DNA sequences. This technology has introduced new opportunities in cancer therapies, curing inherited diseases and also in plant inbreeding.

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Emmanuelle Charpentier who was studying a bacteria called *Streptococcus pyogenes*, noticed a previously unknown molecule called tracrRNA. Further studies revealed that this tracrRNA was part of the bacteria's immune system and it helps the bacteria destroy viral DNA. She published this discovery in 2011.

The same year, along with Jennifer Doudna, she succeeded in recreating the bacteria's scissors and reprogramming it. Charpentier and Doudna then proved that they can now use these scissors to cut any DNA molecule at a required site.

Nobel Prizes 2020

CRISPR is an abbreviation for clustered regularly interspaced short palindromic repeats.

These sequences are a part of the bacteria's immune system. Bacteria that have survived a virus infection add a piece of the genetic code of the virus into its genome as a memory of the infection. In addition to these CRISPR sequences, researchers discovered special genes called CRISPR-associated, abbreviated as cas.

Also read: [How safe is CRISPR](#)

In 2018, a geneticist from China, He Jiankui claimed that he [altered the genes of twin girls](#) born this month to create the first gene-edited babies. He said that he used the CRISPR-Cas9 gene-editing technology to edit the genes of twin girls. The editing process, which he calls gene surgery, "worked safely as intended" and the girls are "as healthy as any other babies", he said in a video.

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