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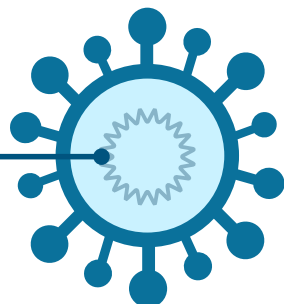
CHEM VS. COVID TIMELINE

Researchers share the SARS-CoV-2 genetic sequence

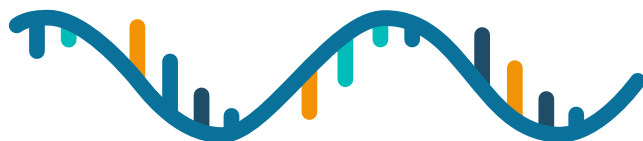
What is the genetic sequence?

SARS-CoV-2

Genetic material
The virus's genetic material. Contains instructions for making proteins.



The SARS-CoV-2 genetic material, RNA, is built up from a chemical 'alphabet' of four different nucleotides.



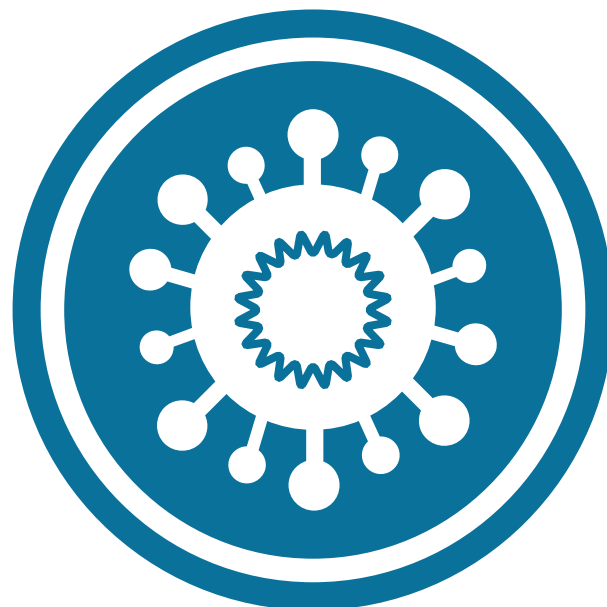
A Adenosine

G Guanosine

C Cytidine

U Uridine

The genetic sequence of the virus contains the instructions for the proteins that help it invade our cells. The instructions also help it make copies of itself (replicate) so it can infect new hosts.



A Chinese-led consortium published a genetic sequence for the SARS-CoV-2 virus, making it free for scientists across the world to analyse and share.



How did it help?



Vaccine design

Some of the COVID vaccines use parts of the genetic sequence of the virus. These include the approved Pfizer & BioNTech and Moderna vaccines.



Testing

The tests to detect if someone is currently infected with COVID-19, such as PCR and antigen tests, rely on identifying the genetic sequence of the virus in samples.



Monitoring mutations

Knowing the genetic sequence of the virus allows scientists to track changes to the genetic sequence as the virus spreads, and understand how these affect the virus.

Determining the genetic sequence

The SARS-CoV-2 RNA is first converted to DNA. The method used to determine the SARS-CoV-2 genetic sequence involves making copies of short DNA sections.

original DNA section



copied DNA section

The genetic sequence is built up one nucleotide at a time for each of its approximately 30,000 nucleotides. The fluorescent tag identifies which nucleotide was added after each step.



DAYS FROM VIRUS ISOLATION TO GENOME SEQUENCING