

# SARS-CoV-2 biology and COVID-19 testing: get the facts

## About SARS-CoV-2

- SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19), contains a linear **RNA** genome at its core
- The coronavirus name comes from the crownlike **spike protein** that protrudes from its surface

### Did you know?

The RNA genome of SARS-CoV-2 codes for as many as 29 different proteins involved in viral assembly, infection, and replication.

## Viral infection

- SARS-CoV-2 enters the body primarily through the nose or mouth
- Its **spike protein** attaches to a **cell** in the airway

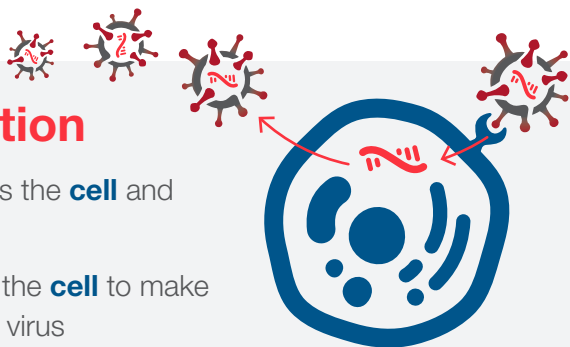


### Did you know?

Mask wearing, hand washing, and social distancing help lower infection rates by reducing the ability of SARS-CoV-2 to enter the human body.

## Viral replication

- SARS-CoV-2 enters the **cell** and releases its **RNA**
- The **RNA** instructs the **cell** to make more copies of the virus

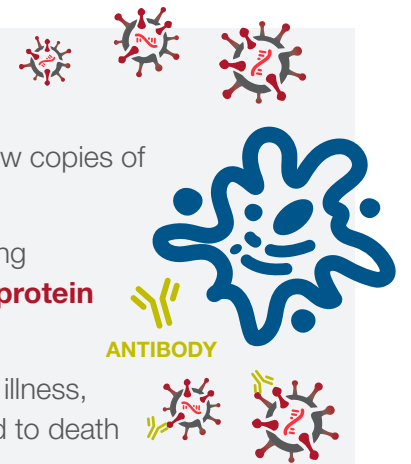


### Did you know?

Viruses constantly change through mutation, and new variants of a virus are expected to occur over time.

## Disease progression

- The **cell** breaks down and dies as new copies of the virus spread to other cells
- The body fights the infection by making **antibodies** that attach to the **spike protein** and inactivate the virus
- Symptoms range from mild to severe illness, including complications that may lead to death



## Spread of COVID-19

- Coughing, sneezing, and talking can expel **droplets** and **airborne particles** containing SARS-CoV-2 that spread through the air and land on surfaces
- On average, 1 person spreads the virus to 2–3 people

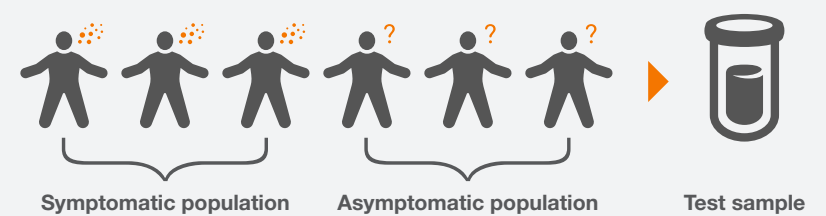


### Did you know?

Not everyone who is infected with SARS-CoV-2 develops symptoms of COVID-19, which may appear 2–14 days after exposure.

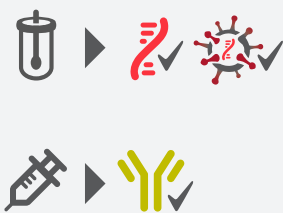
## Importance of testing

- SARS-CoV-2 can be present in respiratory **droplets** and **airborne particles** even if you are asymptomatic
- Testing in asymptomatic populations is critical for a safe return to work, school, and travel



## Types of COVID-19 tests

- A throat swab, nose swab, or saliva sample is used in tests that detect viral **RNA** or **spike protein**
- A blood sample is used for tests that detect **antibodies**

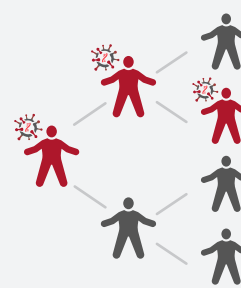


### Did you know?

Tests that detect RNA are based on the highly sensitive polymerase chain reaction (PCR) method, which can amplify specific regions of the SARS-CoV-2 genome a billion-fold or more.

## Slowing the spread

- Test results can be used to guide contact tracing, treatment options, and quarantine recommendations



### Did you know?

Applied Biosystems™ TaqPath™ COVID-19 assays use PCR to detect 3 different regions of the SARS-CoV-2 RNA genome for superior accuracy and to compensate for viral mutations (variants).



Find out more at [thermofisher.com/covid19](https://thermofisher.com/covid19)

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