

How does Covid-19 infect lung cells? Why is it so dangerous?

Sharing characteristics and structures similar to the SARS virus that caused the acute respiratory infections pandemic in 2003, but SARS-CoV-2 is even 'wiser' to choose a broad infection strategy with a death rate Low SARS outbreaks in 2003 with a mortality rate of over 10% quickly transformed the S virus

Last week, the World Health Organization (WHO) formally declared Covid-19 a global pandemic. The disease, caused by a strain of corona virus called SARS-CoV-2, has now infected more than 167,000 people in more than 100 countries. 6,506 of them died.

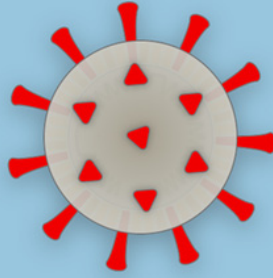
Scientists say the strain of SARS-CoV-2 virus is dozens of times more dangerous than seasonal flu. Sharing characteristics and structures similar to the SARS virus that caused the acute respiratory infections pandemic in 2003, but SARS-CoV-2 was even more " *good-natured*" when choosing a broad-scale infection strategy. low mortality.

The SARS outbreak in 2003 with a mortality rate of over 10% quickly became extinct when it killed most people who were infected and had no hosts left to transmit. Meanwhile, SARS-CoV-2 caused only about 3% of the mortality rate that is still raging around the world.

So what are the characteristics, the weapons that this virus uses to infect humans? Let's find out in the article below:

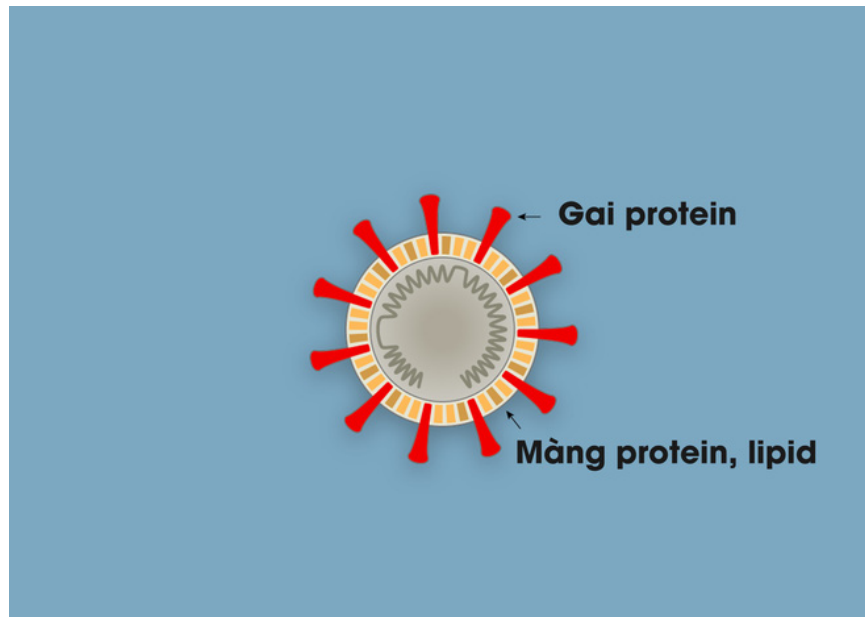
SARS-CoV-2 virus

SARS-CoV-2



It is the official name of the new strain of corona virus that is causing the Covid-19 pandemic worldwide. In addition to this strain, we know at least 6 other strains of corona virus that infect humans. Some corona strains cause only the common cold. But there are two other strains of corona, which previously caused serious epidemics, namely SARS and MERS.

Spikes wrap around the virus



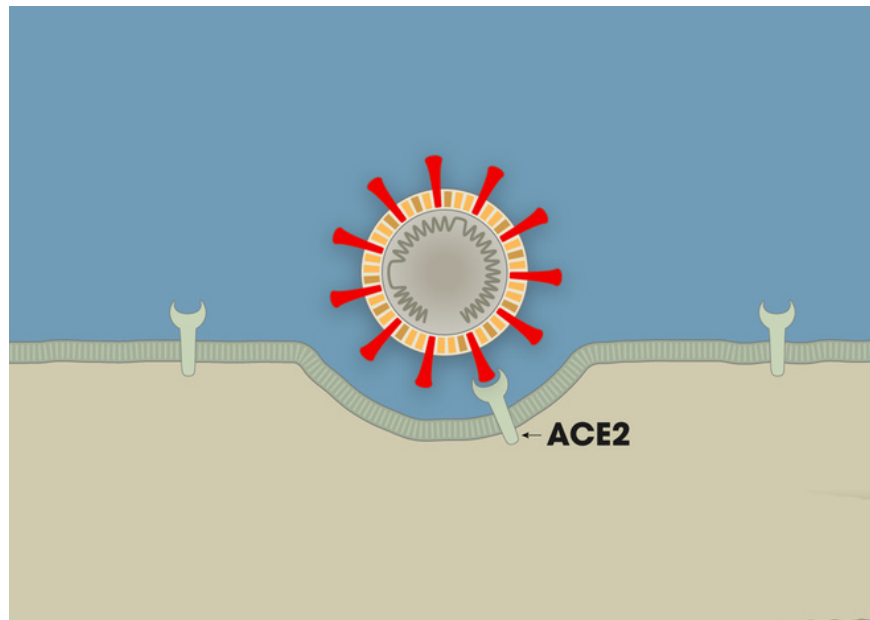
In English, "*corona*" means "*crown*". The virus is called corona because the protein spikes protrude from their surface, forming a shape similar to crowns.

In addition to the outermost layer of thorns, SARS-CoV-2 virus also has a membrane containing lipid molecules. When these molecules come into contact with soap, they melt and cause the virus spikes to follow.

Alcohol-based hand cleaners follow the same principle, as alcohol destroys the lipid membrane of the virus, thereby causing them to lose spines and inactivate.

As long as SARS-CoV-2 retains its thorns, they can still infect the host cell.

Invades a vulnerable cell

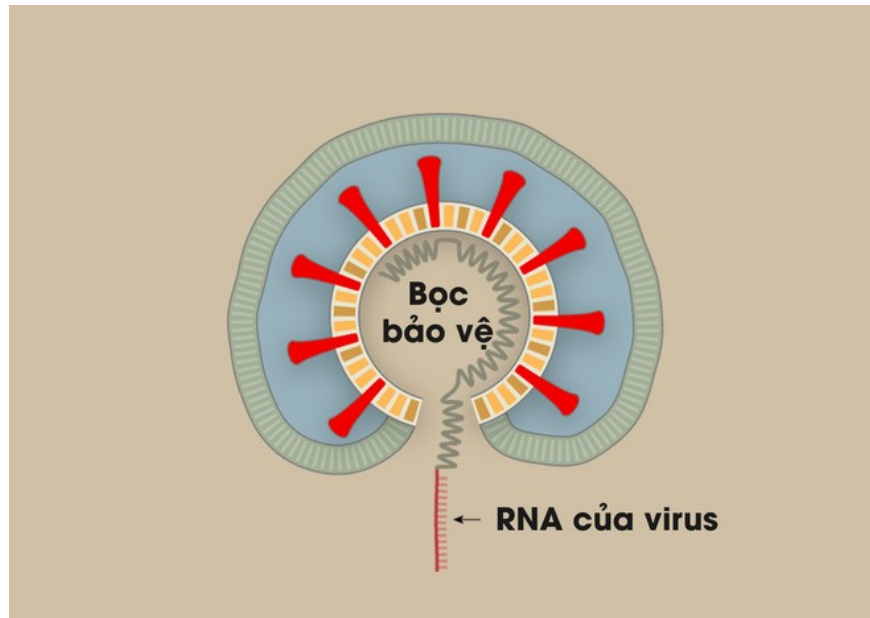


The SARS-CoV-2 virus enters the body through the nose, mouth or eyes. It then attaches its spikes to a receptor called ACE2 to invade the cell. ACE2 receptors are highly concentrated on the surface of lung cells. Therefore, this virus causes acute pneumonia.

In addition to lung cells, ACE2 receptors also occur in the intestines, kidneys, testes, and heart. Oddly, though, the SARS-CoV-2 virus did not attack a patient's heart.

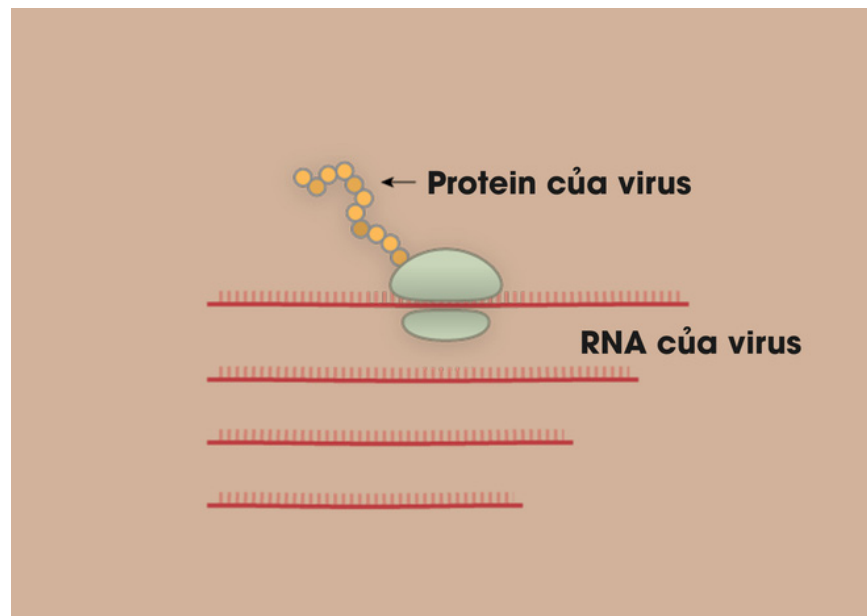
But some fertility experts in China have recommended that patients with Covid-19 who have recovered and been discharged from hospital should still have additional reproductive health tests to make sure it has no sequelae on the testes and testicles. their coincidence.

Release RNA virus



The virus infects a cell by combining its oil film with the lung cell membrane. Once inside, SARS-CoV-2 releases a piece of its genetic material called RNA.

Lung cell manipulation



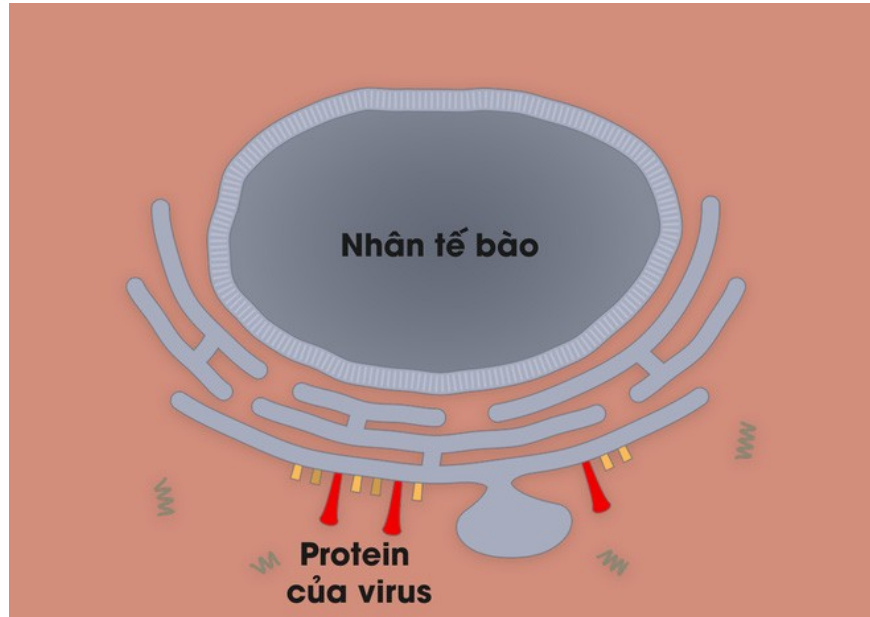
RNA is the entire genome of SARS-CoV-2. It has about 30,000 genetic characters. In comparison with humans, we have up to 3 billion. But after the virus releases RNA into lung cells, our cells read these RNA codes because they thought they were ours.

Next, our lung cells make proteins that stop our own immune system from fighting germs. At the same time, it helps the virus assemble and synthesize identical RNA segments. This is how the virus makes new copies and

replicates.

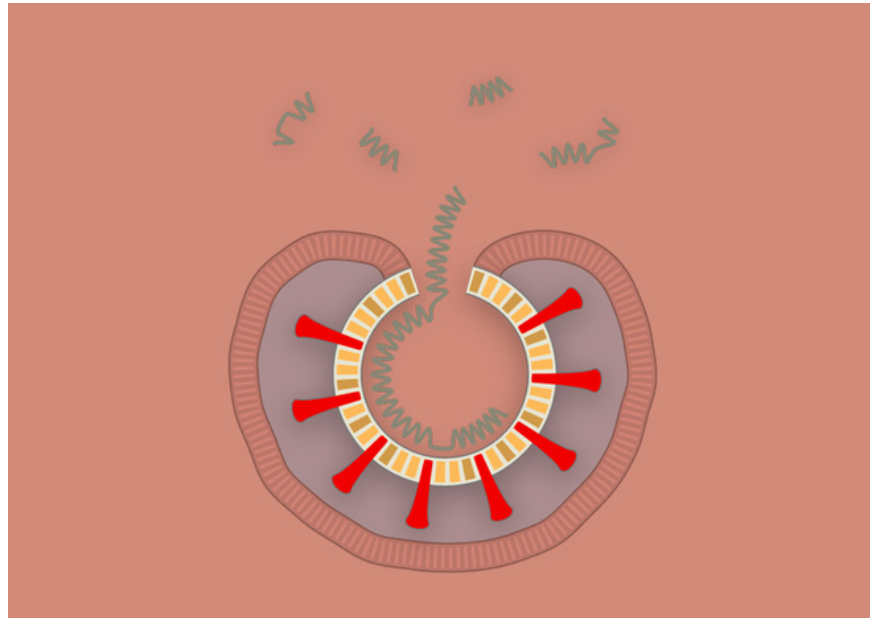
Antibiotics kill bacteria and have no effect against viruses. But researchers are testing antiviral drugs that can inhibit or break down viral proteins and prevent them from taking over our lung cells.

Producing proteins for viruses



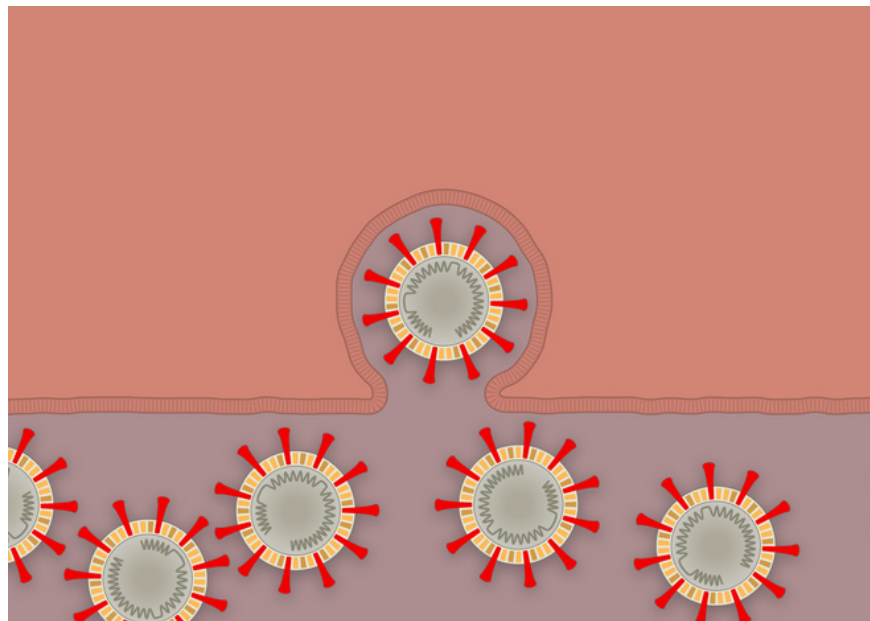
Not only did RNA synthesize for SARS-CoV-2 virus, as the infection progressed, the lung cells also helped them produce new spines and other proteins. Eventually, all will be reassembled into millions of duplicate viruses.

This is how virus copies are assembled in the host cell



So a virus has been born. Not just one, but millions in each lung cell.

Infection continues



Each lung cell after being infected with SARS-CoV-2 can release millions of copies of the virus continuously, before they burst and die. The newly released virus pool continues to infect nearby lung cells, has an ACE2 receptor, and repeats the same cycle.

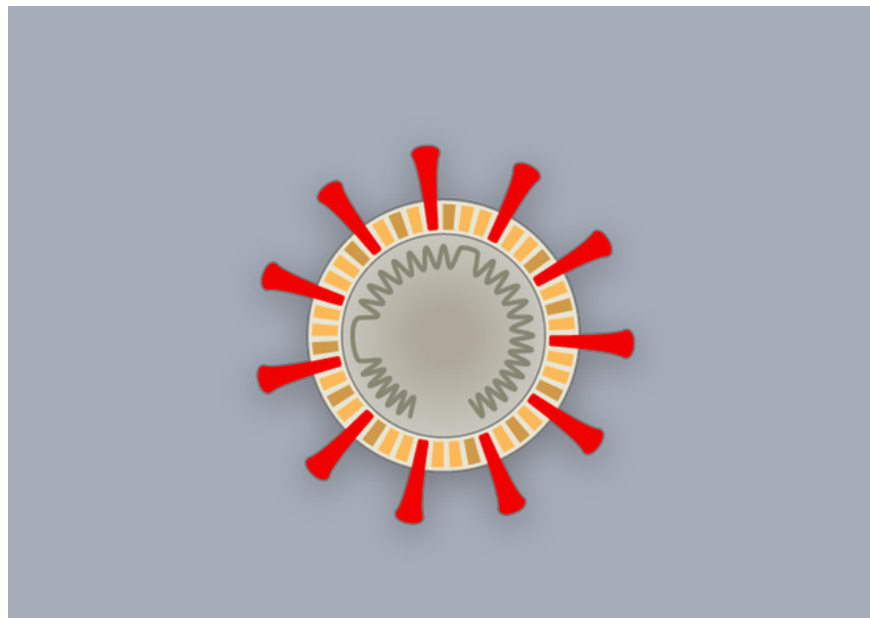
Immune reaction



Most cases of Covid-19 infection have a fever reaction when the immune system fights to eliminate the virus. In severe cases, the immune system may overreact and begin to attack healthy lung cells.

Gradually, the patient's lungs will be blocked by the flow of fluid in the lungs and dead cells. The patient will therefore exhibit dyspnea. A small percentage of patients may develop severe respiratory failure during this process, leading to death.

Leaving the body

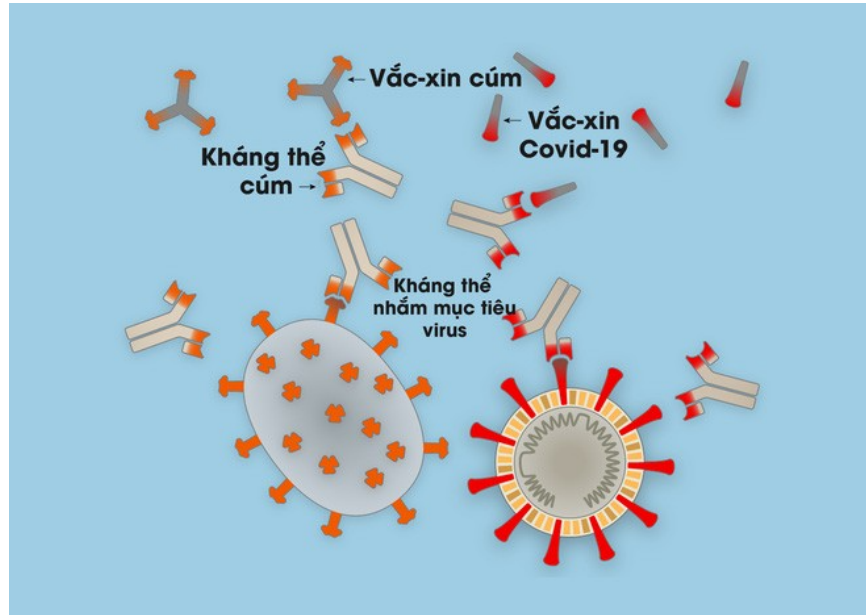


When an infected person coughs and sneezes, they can expel virus-laden droplets to another person or nearby surfaces. On these surfaces, the SARS-CoV-2 virus can last from a few hours to a few days waiting for the

opportunity to touch, then touching their eyes, nose, and mouth.

The virus will now infect new patients again. To prevent virus spread through droplets, people with Covid-19 infection should wear a mask.

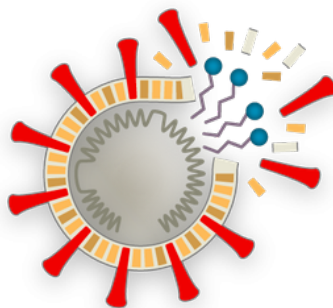
Research on vaccines against Covid-19



A future vaccine could help the body make antibodies that target the SARS-CoV-2 virus and prevent it from infecting human cells.

The flu vaccines we have now work the same way, but the antibodies made by the flu vaccine cannot protect lung cells from SARS-CoV-2 virus.

Wash your hands with soap



Soap destroys SARS-CoV-2 when the ends of the soap molecules attach to the viral lipid membrane and tear it apart.

The best way to avoid getting Covid-19 and other viral illnesses is to wash your hands with soap, avoid touching your face, keep a distance from the sick and regularly clean surfaces that are likely to carry germs. .

Refer to *Nytimes*

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