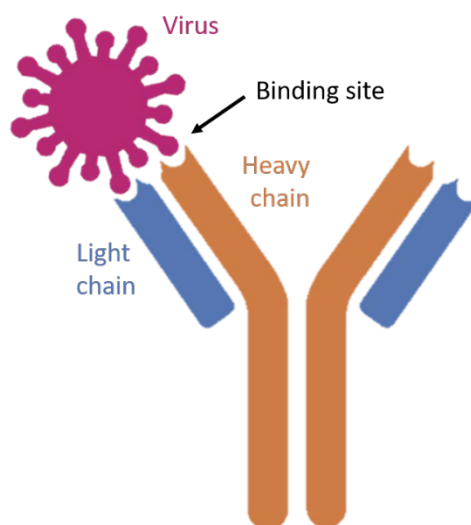


VirusSCOPE – Inside a virus testing lab

Viruses are too small to be seen. There are different kinds of tests to find out whether someone has a virus in their body. These tests are carried out in specialized laboratories. One kind of test uses so-called antibodies. Antibodies are tiny recognition tools, which our body uses to recognize and fight viruses. Each antibody has a different shape, which makes it recognize a certain virus. In the lab, such antibodies are used to find and distinguish viruses in patients. Now, this is your task! Can you find out, which viruses are in your patients' bodies?



Here's what you'll learn:

In the lab, people find out which virus someone has by using antibodies. The shape of these antibodies matches perfectly with one specific virus. Antibodies have several parts.

Material for print-out (4 pages):

- Viruses (16 purple fields)
- Antibodies (4 red and 4 blue parts with QR-Codes and letters) – cut these out!
- Samples from 9 patients (green flasks with QR-Codes and numbers)
- Laboratory report

You can play this game on your own or in pairs. If you play this game in pairs, one person can find the matching parts, while the other documents your findings in the laboratory report. Alternatively, print out the materials twice and compete against each other to diagnose all patients correctly as quickly as possible!

Note: The QR-Codes are not needed in this game. If you have access to a 3D-printer you can also 3D-print the parts of this game:

<https://www.prusaprinters.org/prints/28554-viruscope-educational-game-about-covid-19-diagnos>

1st step: Assign antibodies to viruses

Each antibody consists of two pieces, a „light chain“ (red) and a „heavy chain“ (red). Only in combination do they match exactly one virus.

- Find a name for your laboratory and enter it in the protocol.
- For each of the 16 viruses, find the matching combination of a light and a heavy chain.
- Enter the antibody letters in the upper part of your laboratory report.
- Once you are sure that everything is correct, confirm this with your signature.

Now you know, which antibody parts recognize which virus.

2nd step: Diagnosing patients

Samples from different patients arrive at your laboratory (green flasks).

- Test different antibodies.
- Once you find the two antibody parts matching your sample, check in your table which virus is hidden in your patient sample.
- Enter the virus that you found in the lower table.
- Once you are sure that everything is correct, confirm this with your signature.

Congratulations! You diagnosed all patients! Some of the viruses are harmless, whereas others are pretty dangerous. Now your fellow doctors know how to treat their patients. Find out more about the viruses that you found on the internet!

Background for the curious:

Real laboratories also use antibodies to identify infections. Antibodies are even smaller than viruses, so you cannot see them either. However, there is a trick to make them visible. The laboratory antibodies are bound to certain substances, which change the color of a sample or even make it glow! The change in color or the light can be seen easily.

The laboratory antibodies in the current coronavirus tests however don't search for viruses directly. Instead, they look for antibodies, which are produced by our immune system, when we have the virus. So the tests use antibodies to find antibodies! When the test finds an antibody, you know that patient has had the virus very likely. Ideally, this person is now protected from getting the virus again.

Laboratory Name	Reagent Batch	Date	Approval Signature
	V225192344		

Antibody Assignment

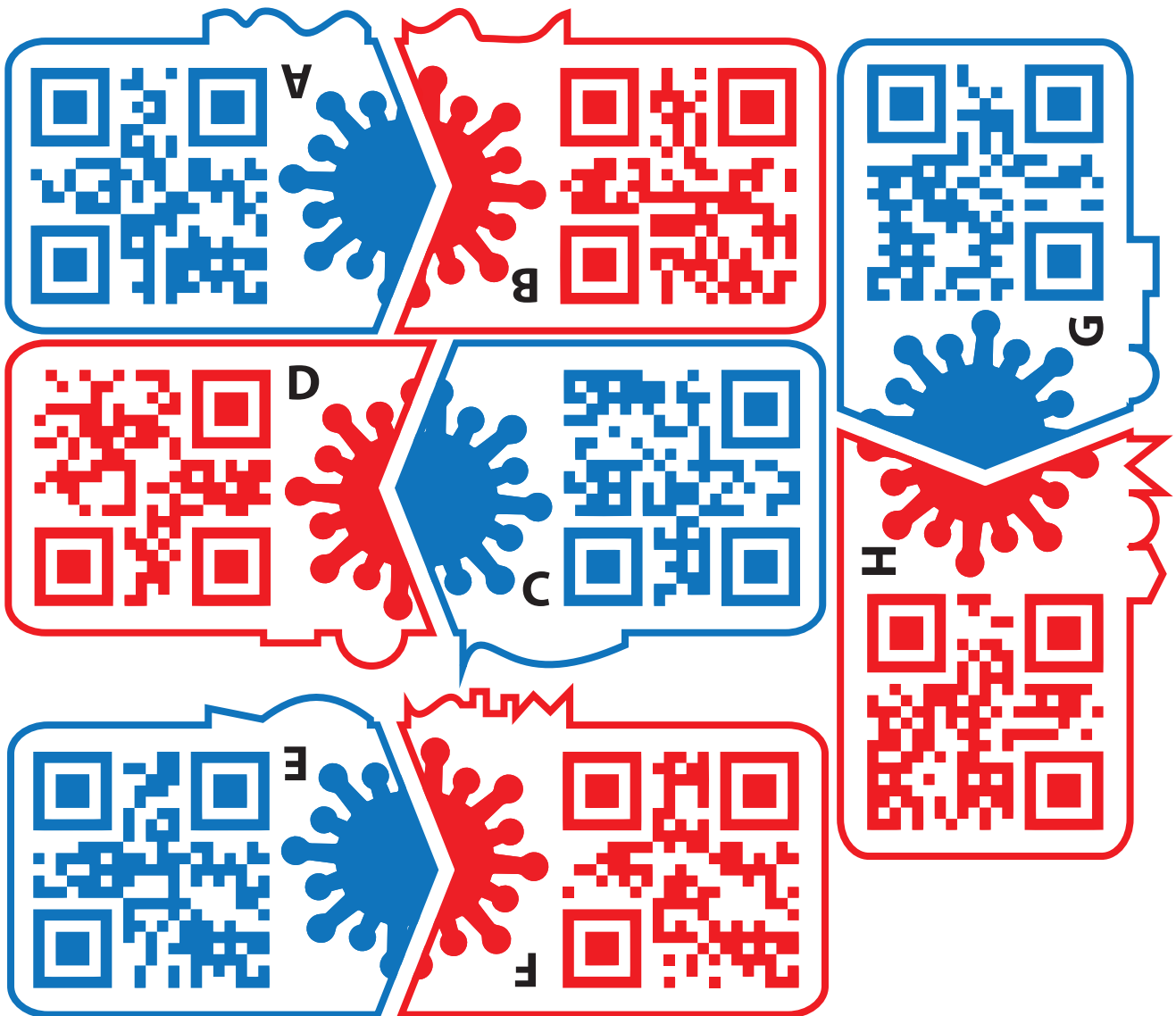
	Light	Heavy		Light	Heavy
SARS-2-Coronavirus	<input type="checkbox"/>	<input type="checkbox"/>	Enterovirus	<input type="checkbox"/>	<input type="checkbox"/>
Dengue Virus	<input type="checkbox"/>	<input type="checkbox"/>	Cytomegalovirus	<input type="checkbox"/>	<input type="checkbox"/>
Norovirus	<input type="checkbox"/>	<input type="checkbox"/>	Rabies Virus	<input type="checkbox"/>	<input type="checkbox"/>
Herpes Simplex Virus	<input type="checkbox"/>	<input type="checkbox"/>	Rotavirus	<input type="checkbox"/>	<input type="checkbox"/>
Influenza Virus	<input type="checkbox"/>	<input type="checkbox"/>	Rhinovirus	<input type="checkbox"/>	<input type="checkbox"/>
Measles Morbillivirus	<input type="checkbox"/>	<input type="checkbox"/>	Rubella Virus	<input type="checkbox"/>	<input type="checkbox"/>
Poliovirus	<input type="checkbox"/>	<input type="checkbox"/>	Marburg Virus	<input type="checkbox"/>	<input type="checkbox"/>
Chickenpox Virus	<input type="checkbox"/>	<input type="checkbox"/>	Ebola Virus	<input type="checkbox"/>	<input type="checkbox"/>

Patient diagnostics

	Light	Heavy	Virus
Patient 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Approval Signature

Antibodies



Viruses



Patient Samples

