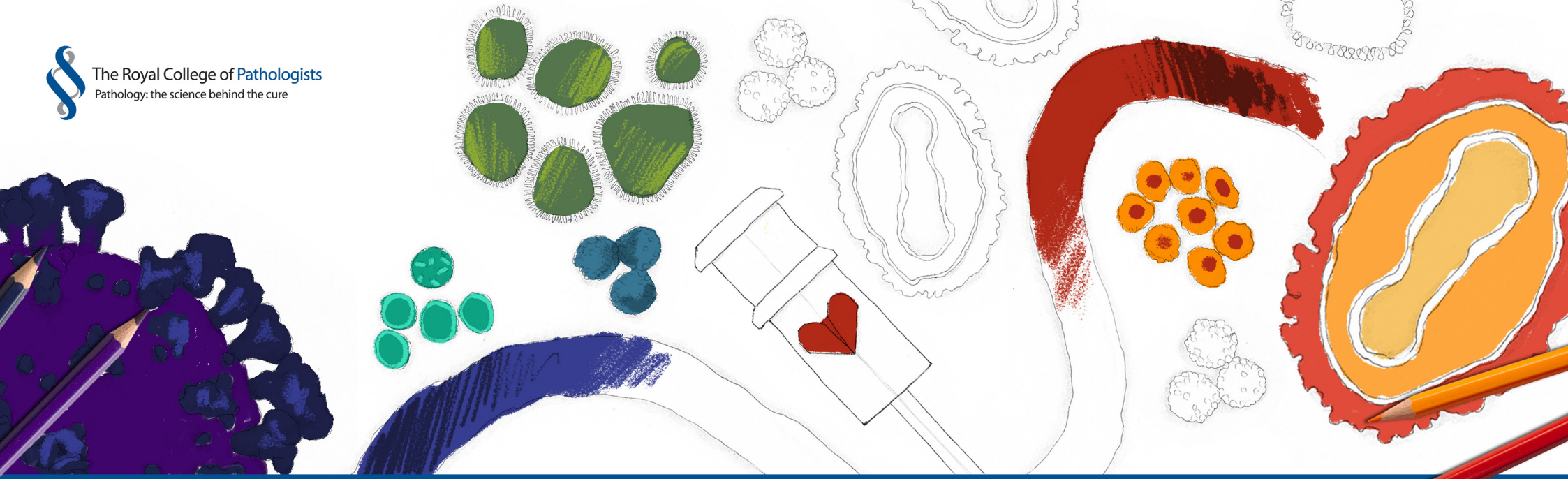
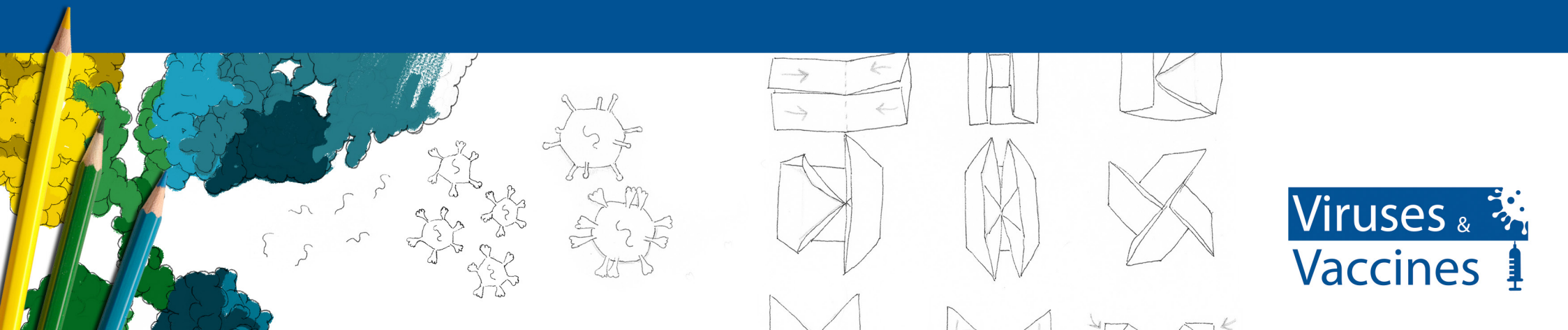
The Royal College of Pathologists
Pathology: the science behind the cure



Our hero: the antibody



Viruses & Vaccines

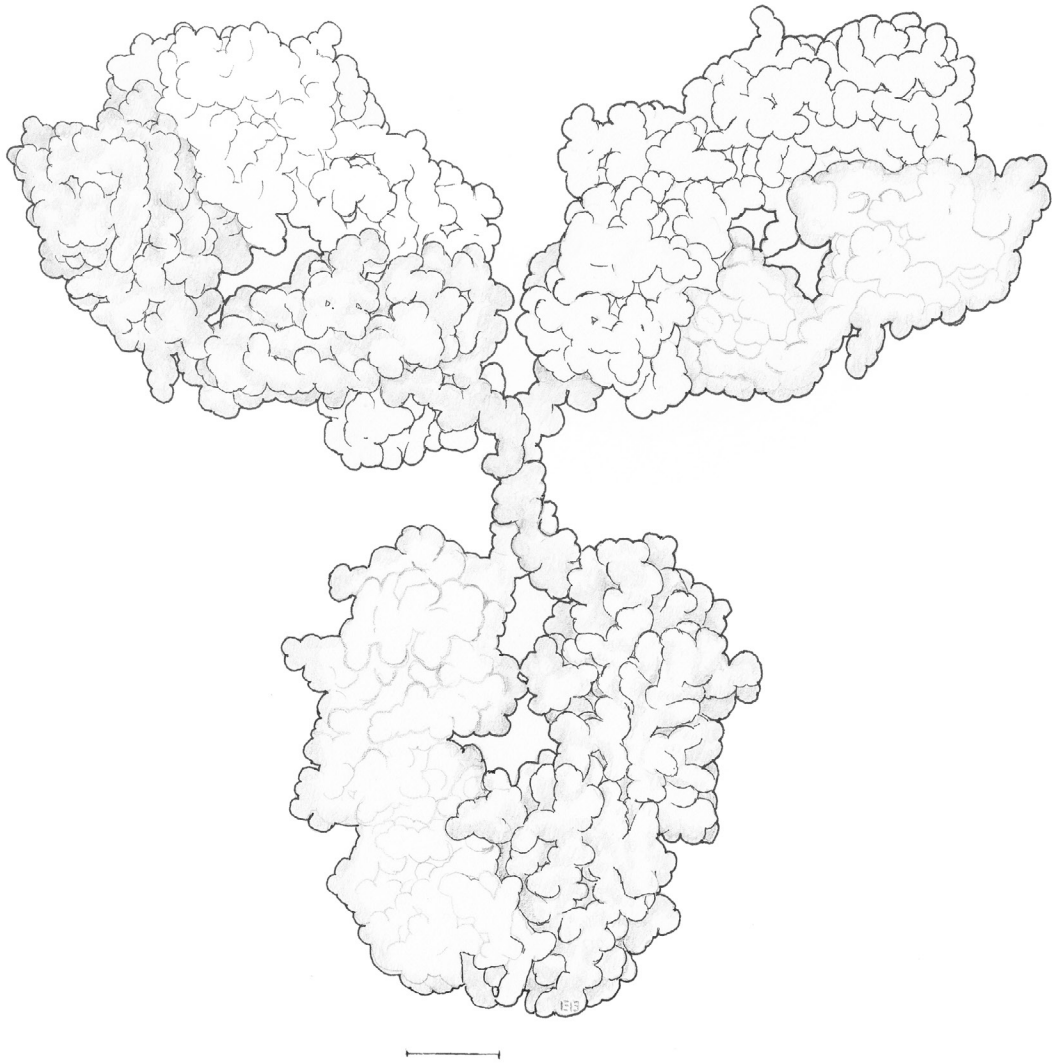
Our hero: the antibody

Our body is extraordinary, constantly defending itself from viruses and bacteria that can make us unwell. Most of the time our body works so well we would never realise how much we constantly save ourselves from disease.

The way our body can spot an invader is through a special protein called an antibody. This 'Y' shaped protein has two arms, each of which can stick to an intruder. When an antibody sticks onto a virus spike, the virus can't bind to a cell to infect it and is left powerless, waiting to be destroyed by our immune system. Colour in your own heroic antibody.

In more detail: Antibodies are made by white blood cells (B cells). Once a B cell starts to make an antibody specific to an intruder, it can 'remember' the intruder, so in future it can make more antibodies quickly (called 'adaptive immunity'). When we have a vaccine, we encourage our body to form memory B cells so we make antibodies quickly. Vaccines also encourage memory T cells which encourage B cells to make antibodies (T helper cells) and directly kill infected cells (killer T cells). It is utterly remarkable that the body can generate enough different antibodies to recognise so many viruses.

The bar represents 1 nanometre (millionth of a millimetre). Around 10,000 antibodies would fit across the width of a human hair.



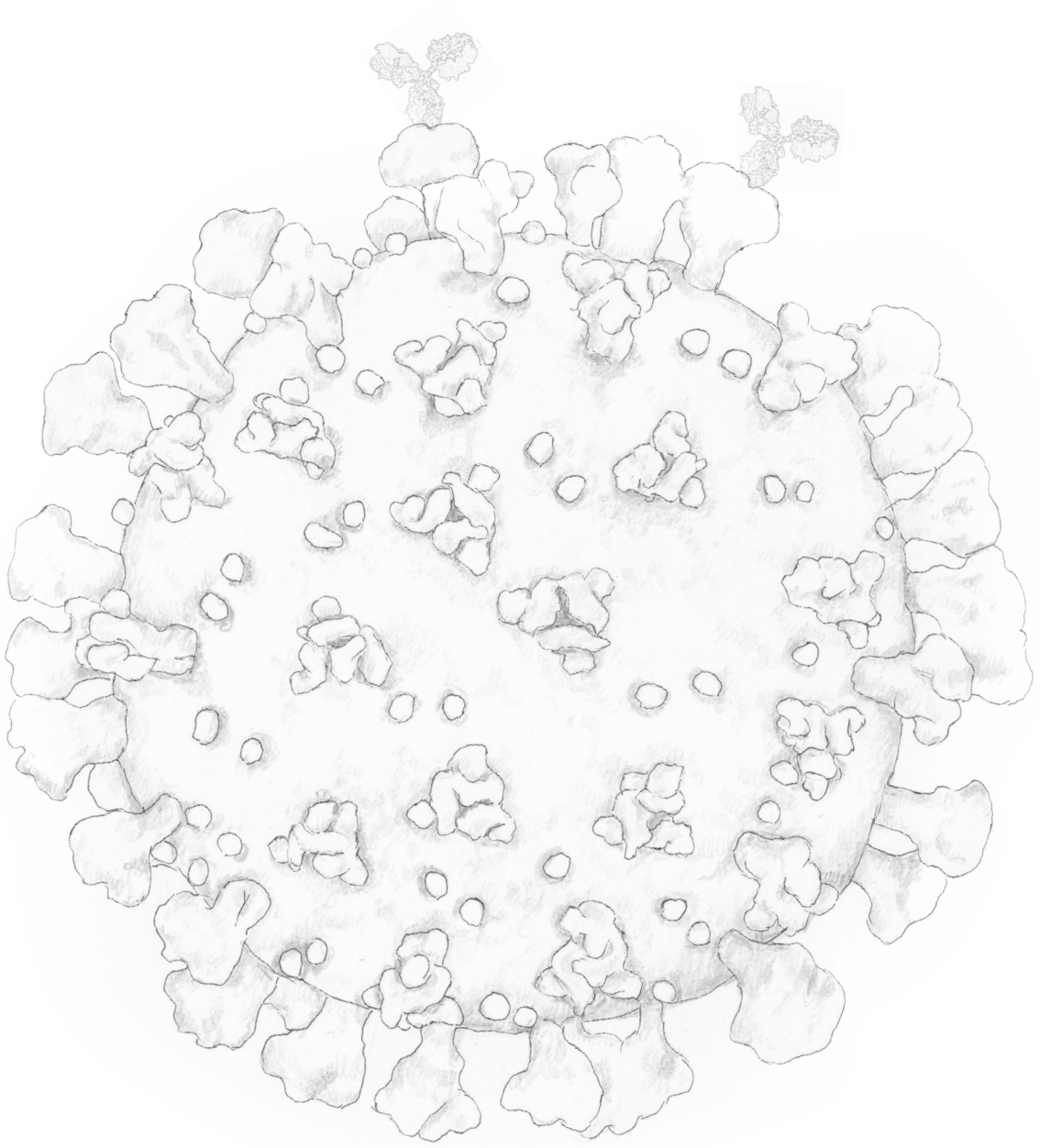
This activity is accompanied by a video. Visit ***https://youtu.be/Glaoc2YdaGI***

Add antibodies

Antibodies can stop a virus by sticking to its spikes.
Once disabled, the virus cannot infect a cell.

Decorate this drawing of a coronavirus with more antibodies.
Cut out the antibodies below and use glue to stick them onto the spikes. Add bright colours to make a colourful picture celebrating the body stopping a virus in its tracks.

In more detail: Antibodies recognise spike proteins.
Here, they are seen to scale.



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