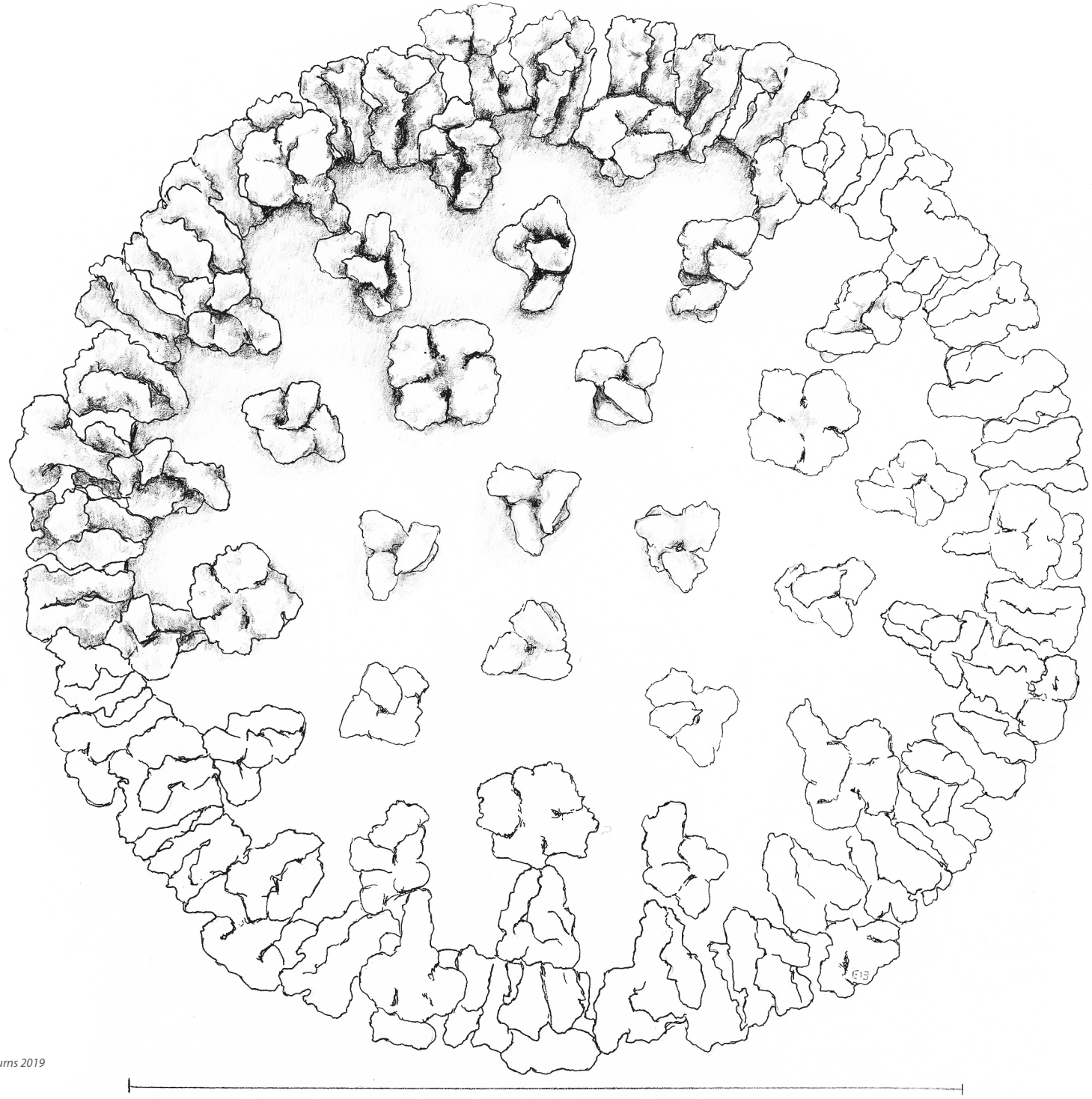
Ever changing flu

Viruses are tiny biological entities that are mostly harmless. Your body protects itself in many ways, including by using antibodies and white blood cells (your immune system) to destroy the harmful viruses. Mostly this works but sometimes we can become unwell.

This drawing reveals the structure of a flu virus, (influenza). There are lots of different types of flu viruses, known as strains. They can change very quickly. Flu vaccines are made to help protect us from new strains.

The outside of the virus is covered with an envelope of lipids taken from the cell where it was made. It is decorated with a mixture of proteins linked to sugars, called glycoproteins. The spikes with patterns of three are called haemagglutinin, which enables the virus to stick to cells. Those with patterns of four, that look like mushrooms from the side, are called neuraminidase and are active enzymes that help viruses enter and be released from cells. The outside spikes can vary, allowing them to change and evolve.

Below the outside envelope is a rigid layer of proteins and, inside that, instructions similar to DNA to make the virus, called RNA. Add different colours to the outside membrane and decorate the flower-like patterns. The bar at the bottom represents 100 nanometres (one millionth of a millimetre). Around 1,000 viruses would fit across the width of a human hair.



Virology
Flu virus

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