

Building a Virus

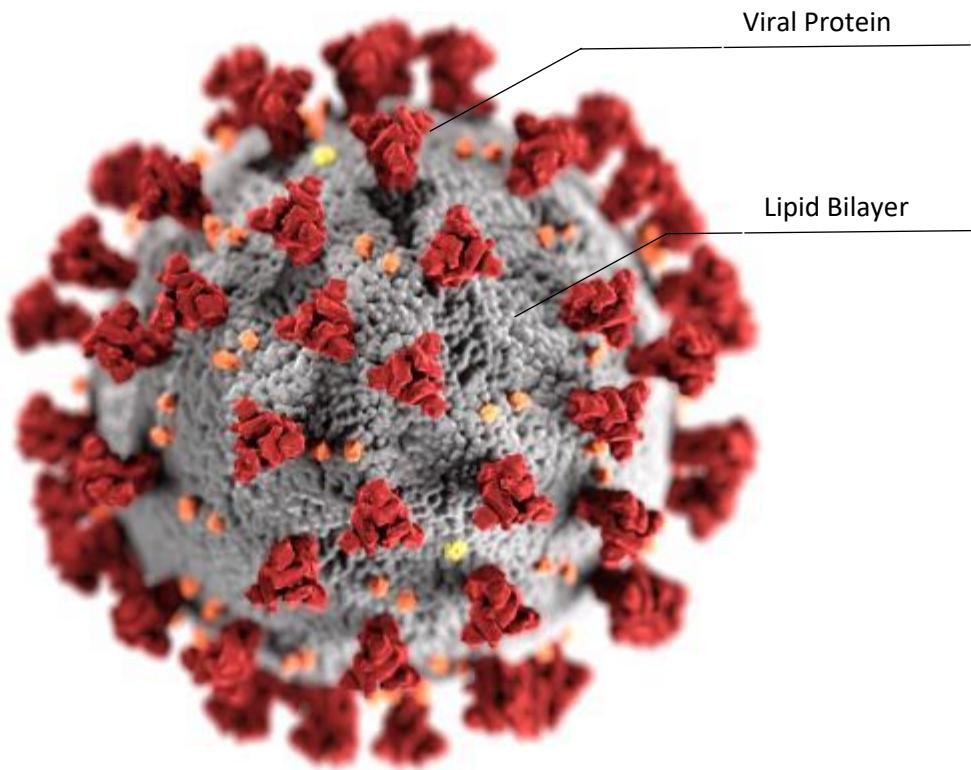
Overview:

While viruses are too small for us to see with our eyes, they can have a big impact on our health. Doctors and scientists use microscopes and other tools to visualize these viruses. Seeing the shape of a virus can tell us a lot about how it works and possibly how to treat it. Today we are going to look at a picture of a coronavirus and make our own 3d virus models.

Background:

Viruses come in many shapes and sizes. Some viruses infect plants, some viruses infect bacteria, and some viruses can infect us. Even though there are many different types of viruses most have the same basic parts. All viruses have a genome which acts like a set of instructions telling the virus how to make more of itself. Viral genomes can be made of DNA (like the human genome) or it can be made of another molecule called RNA. Viruses also often have a protein capsid which surrounds the viral genome and helps protect the genome. Many viruses that infect humans and other animals also have an additional structure called a lipid envelope. This lipid envelope surrounds the protein capsid and forms the outer surface of the virus. This lipid envelope is made up of viral proteins made by the virus and a lipid bilayer that the virus takes from infected cells. These viral proteins help the virus stick to and infect host cells.

Have you ever wondered what a virus looks like? Here is a model of a coronavirus:



What you need:

- Play dough
 - One cup of flour
 - A half cup of salt
 - One third cup water
- Q-tips
- Scissors

Procedure:

If you are making your own playdough start here. If you are using store bought playdough skip ahead to building the model.

- Set out a large mixing bowl.
- Add one cup of flour and a half cup of salt to the mixing bowl.



- Gradually mix in one third cup of water.



- Once combined, knead mixture by hand.
 - If the mixture crumbles or falls apart it is likely too dry. Simply add more water.
 - If the mixture is too runny, add more flour.

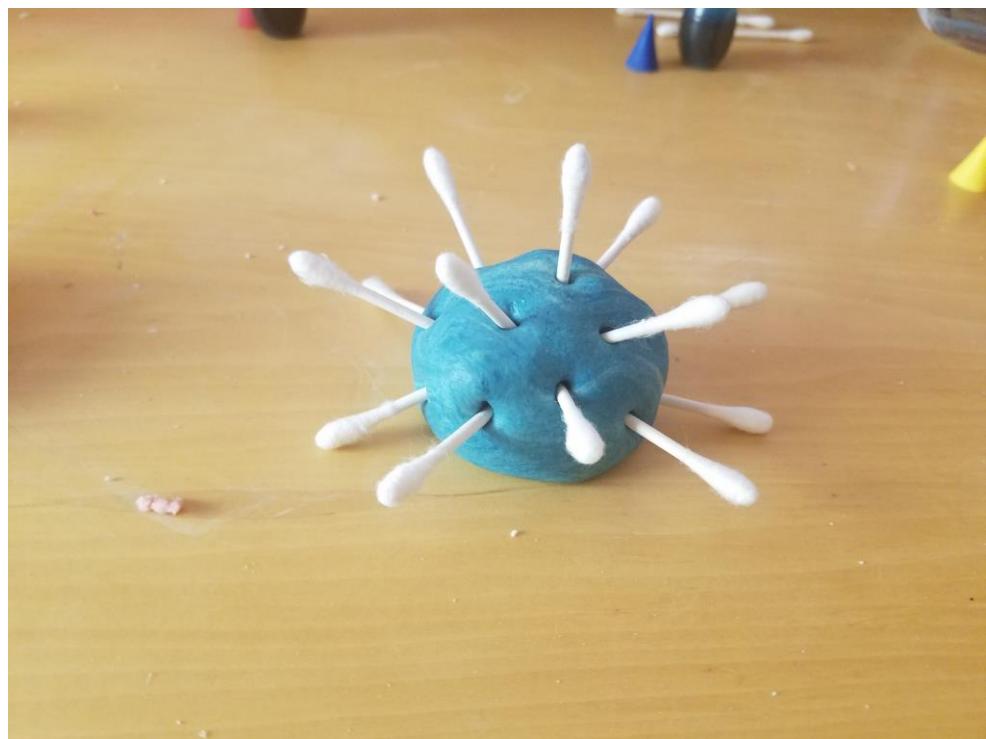


- (Optional) Add food coloring or washable paint to color the play dough.



Building the model

- In this model the play dough will act as the body 'or lipid envelope' of the virus. Use the play dough to form the shape of your virus. Your virus could be round like a ball, long and thin like a rod, or in any other shape you'd like.
- Use scissors to cut the Q-tips in half. Stick the Q-tips on the outer surface of the play-dough ball. The Q-tips will act as the viral proteins of the virus. The type, arrangement, and number of viral proteins helps determine what cells your virus can infect.



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