

## Model Viruses: Hands-On Activity

### Background Information

Viruses come in many shapes and sizes—all so small they are measured in nanometers (nm). Many viruses, such as the polio virus, are shaped like an isohedron, a polyhedron that has 20 triangular faces. Rod-shaped viruses, such as the tobacco mosaic virus, have spiral strands of nucleic acids that run through a spiral-shaped protein coat. In this activity, you'll create a larger-than-life virus model.

### What You Need

Get art supplies to make your viral model. You may not use anything edible (or sticky). Think about using items like pipe cleaners, Styrofoam balls, wood, model magic, recycled objects, etc.

### What to Do

1. Research your assigned virus and create a fact sheet: Use the headings below
  - a. Appearance
  - b. Size and Shape
  - c. Diseases it causes
  - d. Virus's affect on the host organism
  - e. Mode of replication
2. Using the following scale, figure out how large your model of the virus must be (the virus' overall size and the size of its components): **1 mm = 1 nm**. If your virus is so small that you are not able to clearly label or show the parts you can make a scale version of the outside AND a larger version.
3. Using your art supplies, build a scale model of your virus. **Hang** your fact sheet from your model.
4. Label your model with type of genetic material, capsid, & envelope.
5. Compare your finished virus model with those created by your classmates.
6. Describe the range of sizes and shapes in this sampling of viruses. Describe the affect other viruses have on host organisms.

### How small is a nanometer?

Viruses are so small that they are measured in nanometers, the smallest unit of measurement in the metric system. There are 10 million nanometers in a centimeter.

To get some sense of how small nanometers are, refer to the scale below.

1,000 nanometers = 1 micrometer

1,000 micrometers = 1 millimeter

10 millimeters = 1 centimeter

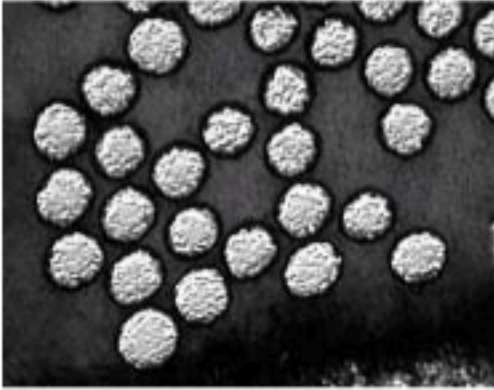
10,000,000 nanometers = 1 centimeter

### Rubric

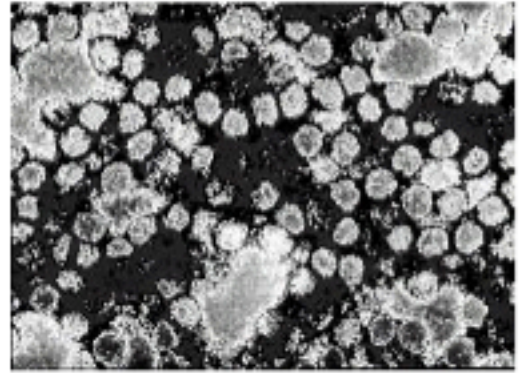
Topic:	Points
Neatness	5
Creativity of the appearance of the Virus	5
Size and Shape of the Virus (to scale)	5
Accuracy of information on fact sheet (disease, affect, mode, lytic vs lysogenic)	10
Detailed report on information from other viruses	5
<b>TOTAL</b>	<b>/30</b>

Some Common Viruses

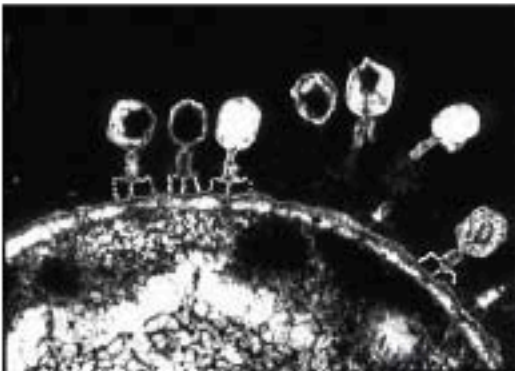
Poliomyelitis (20-27nm)



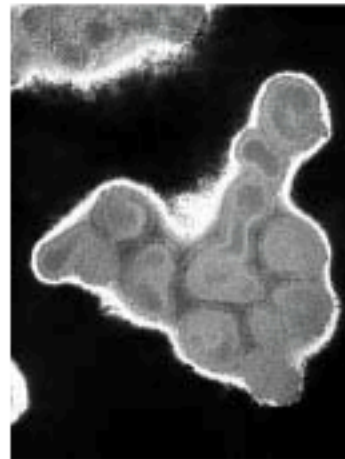
Yellow Fever (22nm-30nm)



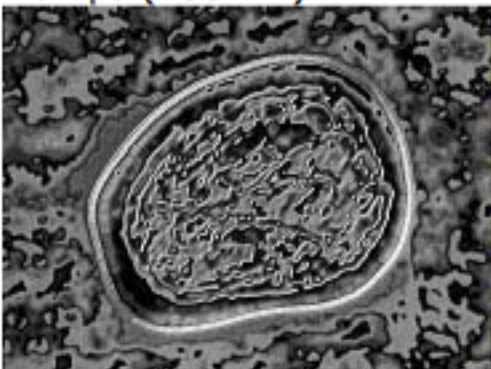
Bacteriophage (60nm x 90nm)



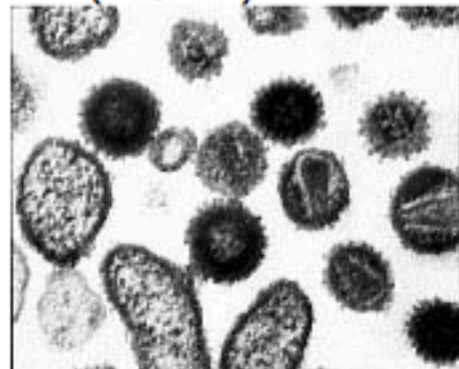
Influenza (100nm)



Mumps (100 nm)



HIV (110 nm)



Potential Virus Ideas:

Ebola virus

Cucumber mosaic virus

Tobacco mosaic virus

Fiji Disease

Human papilloma virus

Small pox virus

Chicken pox virus

Influenza virus

Herpes Simplex Virus

Hantavirus

T4 Bacteriophage

Rhinovirus

Orf virus

Flexuous-Tailed Bacteriophage

Polio virus

Rabies virus

West Nile virus

Parvovirus