**Model It - Virus**

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.

**QUESTION:** What is the structure of a virus?

**MATERIALS:**
- art supplies
- clay
- construction paper
- drinking straws
- foam balls
- pipe stem cleaner
- transparent tape
- Virus Information Sheet
- wood dowels

**PROCEDURE:**
1. Look over the Virus Information Sheet to review the sizes and shapes of viruses. Use the internet and library resources to find more examples of viruses.
2. Choose 3 of the viruses listed below to make 3-dimensional models.
   - Poliomyelitis
   - Influenza
   - Yellow Fever
   - Mumps
   - Bacteriophage
   - HIV
3. Use the scale below to determine the relative size of your model (the virus’ overall size and the size of its components).
   
   $1 \text{ mm} = 1 \text{ nm}$

4. Use the clay, pipe cleaners, and other art supplies to build your models.
5. Compare your finished virus model with those created by your classmates.

**DATA:** Your models are your data
LS – Activity #28

QUESTIONS:

1. Label the parts of the viruses illustrated below.

2. Why are viruses considered non-living?

3. What is the difference between an RNA virus and a DNA virus?

4. How do scientists use the structure of viruses to classify them?
VIRUS INFORMATION SHEET

Virus sizes and shapes - What’s 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

Some common viruses
Poliomyelitis (20-27nm)
Yellow fever (22nm-30nm)
Bacteriophage (60nm x 90nm)
Influenza (100nm)
Mumps (100 nm)
HIV (110 nm)

Sample Viruses