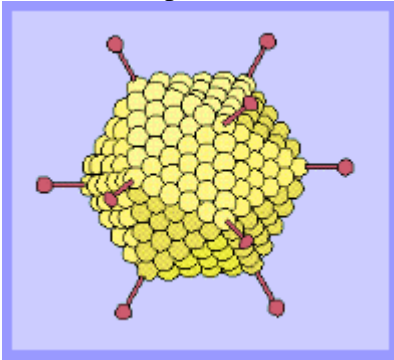


Test for Self-Assembly activity

Name _____ Teacher _____

Date _____ Class _____

1. The shell of a flu virus is a soccer-ball shape made of hundreds of identical proteins. (See picture). Scientists can use a chemical to disassemble (separate the proteins) the flu shell in their laboratory. When they remove the chemical, however, the shell can reassemble in exactly the same shape it started. What properties of the protein and characteristics of the molecular world make it possible for it to reassemble into exactly the same shape?



<http://biology.about.com/library/weekly/aa110200a.htm>

2. Why might the proteins in the flu virus fail to come back together if the sample is too cold?

3. A technician is assigned the task of making a monolayer, which is a sheet of molecules one molecule thick. She has two options for how to create it:

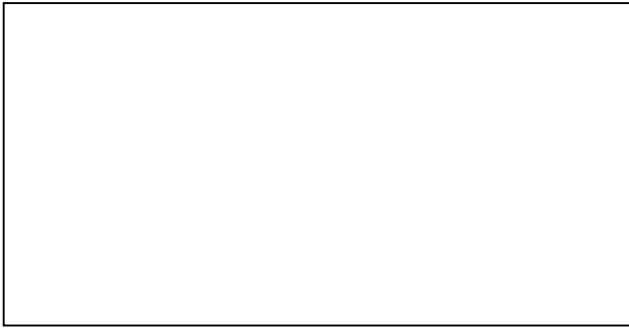
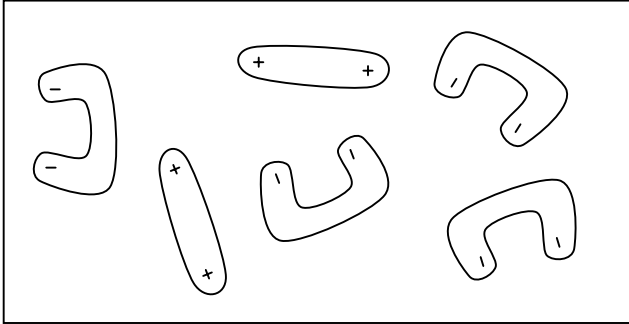
a) Use a special device to push the individual molecules one by one into place.

b) Create complementary charges on a surface and on the molecules, and allow the monolayer to self assemble.

Which method should she use? Explain, giving at least one advantage and one disadvantage of each method.

4. The shapes in boxes A and B represent molecules, with charges shown as + and -. Suppose the molecules in box A have some time to bounce around and stick together. Redraw them in the empty box below, in a configuration you think they will self-assemble into. Then do the same for box B. Make sure your picture includes all the shapes include in the drawings.

A



B

