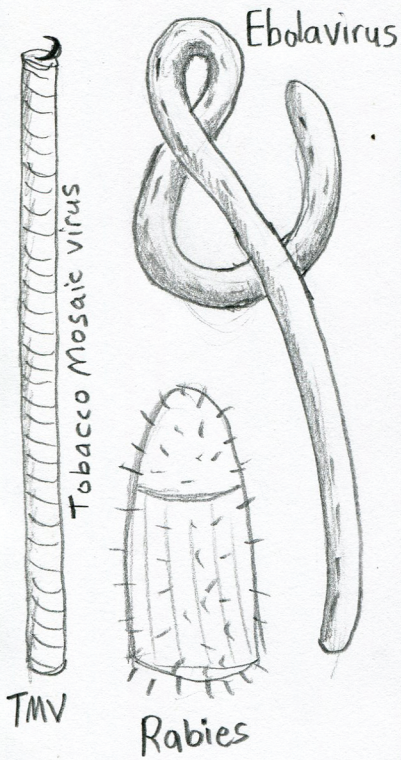
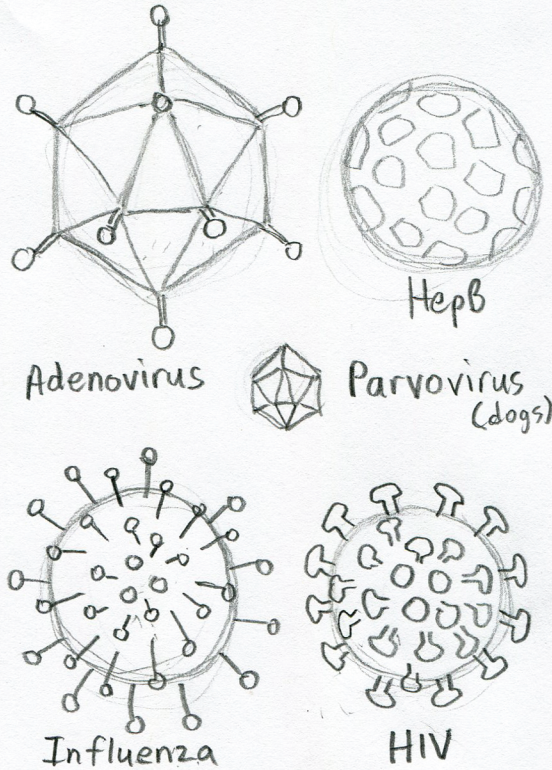


1: VIRUS MORPHOLOGY and ANATOMY

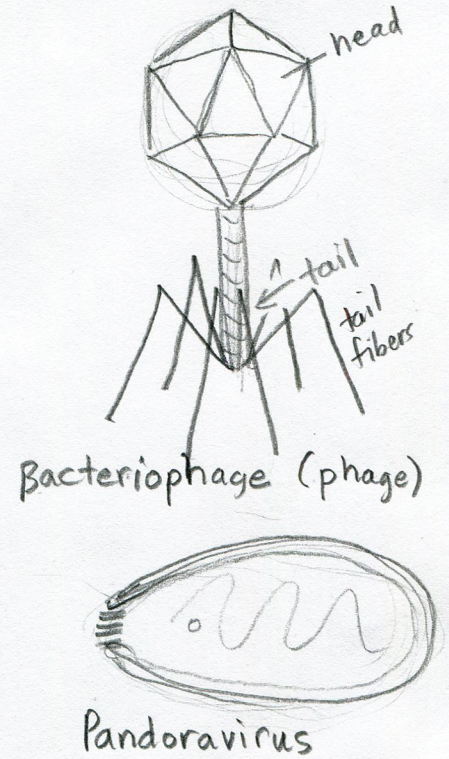
RODS ("Helices")



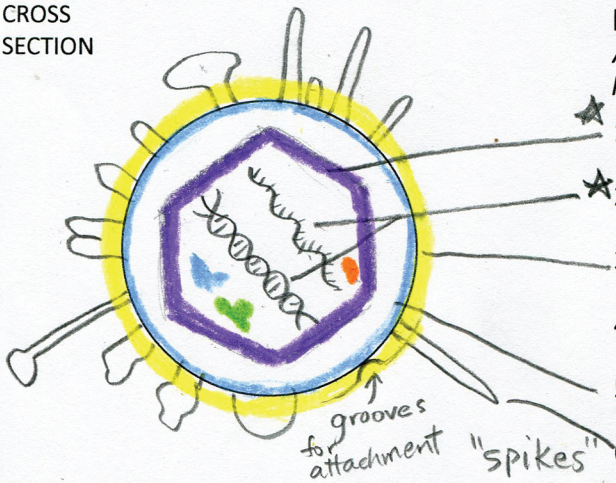
ICOSAHEDRONS (includes spheres)



COMPLEX shapes



CROSS SECTION



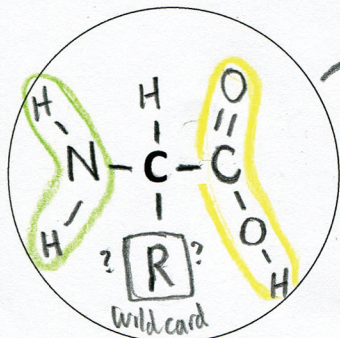
POSSIBLE PARTS of an ICOSAHEDRAL virus

All viruses have the first two. The others are options that might be present. There are also lots of variations within each option!

- 1) capsid (shell made of protein)
- 2) genome ^{DNA} _{RNA} (genetic material with instructions)
- 3) envelope (made of lipid [cell] membrane)
- 4) proteins (needed for making messenger RNA)
- 5) matrix (a bit of extra protein under envelope)
- 6) glycoproteins (for attaching to cell)

WHAT IS PROTEIN?

A long chain of amino acids is called a polypeptide.

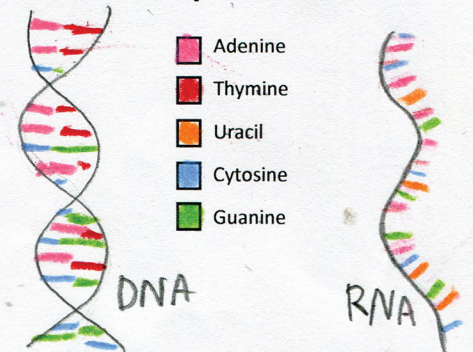


The basic unit of protein is the amino acid. It is made of atoms, but the shortcut is to draw a circle.



The polypeptide folds up to become a structural protein.

WHAT IS DNA/RNA made of?



The sides are made of ribose and phosphate. The rungs are made of nucleic acid bases.
 DNA: Adenine, Thymine, Cytosine, Guanine
 RNA: Adenine, Uracil, Cytosine, Guanine