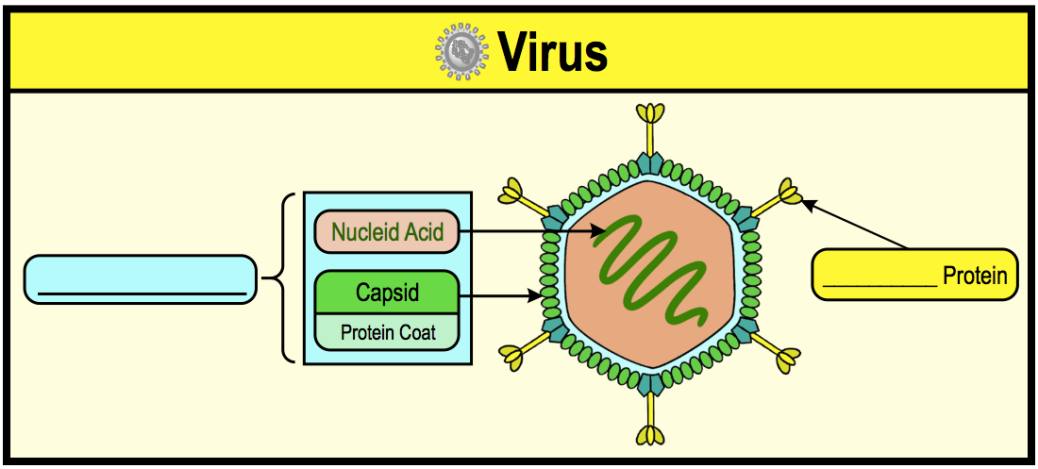
CONCEPT: INTRODUCTION TO VIRUSES

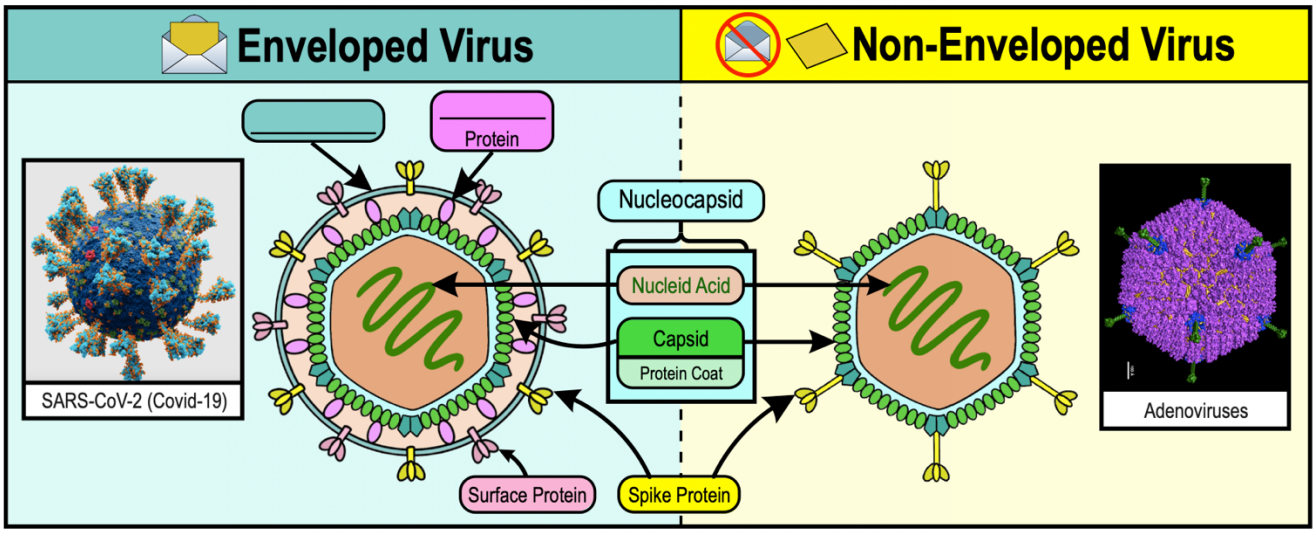
General Structure of Viruses

- *Recall:* **Viruses** are *obligate intracellular parasite* of DNA or RNA packed into a protein coat (sometimes a lipid envelope).
  - □ _____**:** the *protein coat* that protects nucleic acids from environmental toxins & enzymes.
  - □ **Nucleocapsid:** combination of the _____ acids & the capsid.
  - □ **Spikes:** surface proteins that allow viruses to _____ a specific host cell receptor to initiate infection.
- **Virions:** a *complete* virus particle released from the host cell into the _____ *space* (outside cell).



Enveloped vs. Non-Enveloped Viruses

- *Recall:* some viruses have a _____ bilayer on the outside of their structure called an ***envelope***.
- _____ **Viruses:** have an outer lipid bilayer that they obtain from the host cell.
  - □ A **matrix protein** links the envelope to the *nucleocapsid*.
  - □ _____ susceptible to soaps & detergents that damage the envelope making the virus non-infectious.
  - □ COVID-19 virus is *enveloped* which is why washing your hands with soap can _____ spread of disease.
- _____**-Enveloped (Naked) Viruses:** do NOT have an outer lipid bilayer.



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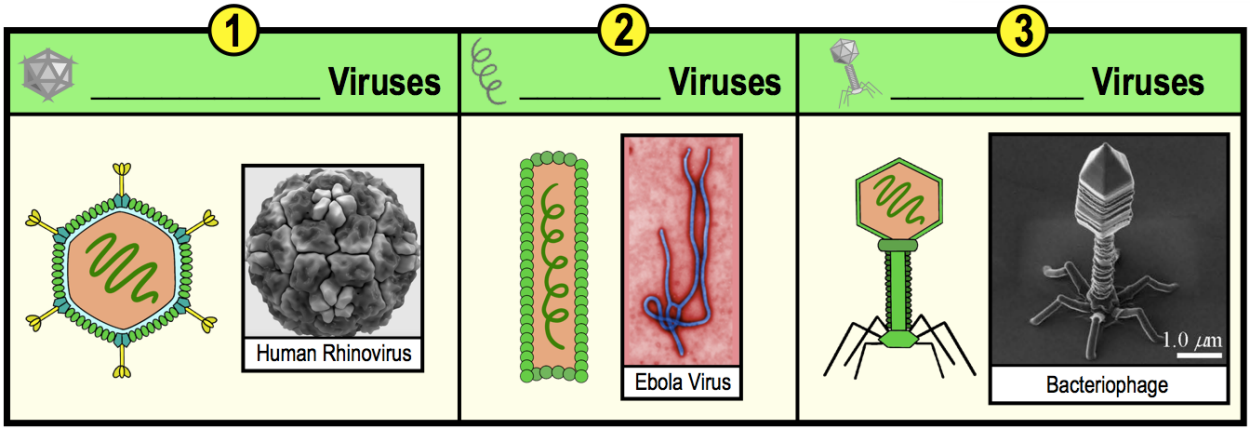
PRACTICE: When packaged in the virus, the complex of nucleic acid and protein is known as the:

a) Capsid.
b) Nucleoplasmid.
c) Nucleocapsid.
d) Envelope.

Three Common Shapes of Viruses

●Viruses can have many different shapes, but the _____ most common are:

1) **Icosahedral:** *spherical*-looking viruses consisting of 20 _____ triangular sides (like a soccer ball).
2) **Helical:** *cylindrical*-looking viruses whose capsids are arranged in a _____ (like a spiral staircase).
3) **Complex:** variation of _____ structures with multiple shapes (ex. phages).



PRACTICE: Which component of a virus allows the virus to bind to and enter the host cell?

a) Nucleocapsid.
b) Viral envelope.
c) Matrix proteins.
d) Spike proteins.

PRACTICE: The SARS-CoV-2 virus (Covid-19) is an enveloped, icosahedral virus. What characteristics does the SARS-CoV-2 virus have?

a) The SARS-CoV-2 virus is round in shape with an outer lipid bilayer.
b) The SARS-CoV-2 virus is a complex-shaped virus with an outer lipid bilayer.
c) The SARS-CoV-2 virus is helical in shape and is considered a “naked” virus.
d) The SARS-CoV-2 virus is round in shape and is considered a “naked” virus.