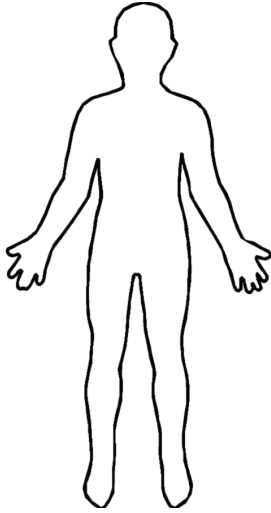


## 2(b): VIRUS PREVALENCE

("how much of it there is")

### VIRUSES ARE UBIQUITOUS (They are everywhere!)

Viruses outnumber all other forms of life. We haven't found any place on the planet that doesn't have viruses. Even water from frozen lakes under Antarctica has viruses! As far as we know, there isn't a plant, animal, fungus or bacteria that doesn't have a virus to infect it. Even large viruses can be infected with smaller viruses!



Almost everyone is infected with this "harmless" virus: \_\_\_\_\_ It has been passed from parent to child for so many generations that we can use it to figure out where people migrated.

95% of all humans are infected with up to a dozen species of: \_\_\_\_\_  
Some species infect us as soon as we are born. Others are acquired during childhood.

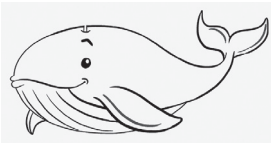
Each part of our body (skin, mouth, intestines, feet, etc.) has \_\_\_\_\_ of viral species in it.  
For every one human cell, we have \_\_\_\_\_ bacteria that live around the cell.  
For every bacteria, there are \_\_\_\_\_ virions (virus particles). Virions outnumber our cells \_\_\_\_\_.

When we eat fruits and vegetables, we ingest \_\_\_\_\_ virus particles (virions).  
(These are mostly viruses that attack the insects that like to eat these plants.)

Human feces have \_\_\_\_\_ virions in them. (mostly plant or insect viruses)

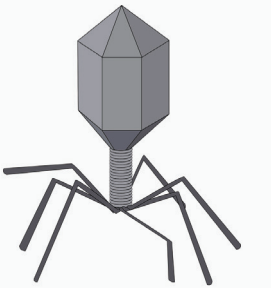
Everytime we take a breath, we probably inhale \_\_\_\_\_ of virions.

The bacteria in your body are called your \_\_\_\_\_. The viruses in your body are called your \_\_\_\_\_.



Whale feces have \_\_\_\_\_ virions, mostly Calici viruses, which are in the same viral family as the ones that cause "cruise ship disease" (diarrhea and vomiting).

Whale breath has been sampled, also, and contains an amazing number of viruses.



Bacteriophages are viruses that attack bacteria, including blue-green bacteria that float in the ocean. These blue-green bacteria (or "phytoplankton") act like plants, using light for photosynthesis.

There are about \_\_\_\_\_  
bacteriophages in the ocean. A teaspoon of ocean water contains \_\_\_\_\_ virions.

If all these phages were end to end, how long would the line be? \_\_\_\_\_

If you collected all the phages on the planet, and weighed them, they would out-weigh all the \_\_\_\_\_ on the planet by \_\_\_\_\_ times!

Examples of "good" viruses:

- 1) A virus that infects \_\_\_\_\_ which live in \_\_\_\_\_ can allow both of them to live at extreme temperatures. (studied in Yellowstone Park)
- 2) A virus that infects \_\_\_\_\_ can restore normal function to injured gut bacteria.
- 3) Viruses that infect \_\_\_\_\_ produce stripes, making them more valuable.
- 4) Bacteriophages that infect diseases-causing bacteria in \_\_\_\_\_ can be used as a treatment for that disease.
- 5) A virus that lives in \_\_\_\_\_ stops them from producing nitrogen-fixing nodules when there is enough nitrogen in the soil, preventing the plant from wasting its energy.
- 6) Parasitic \_\_\_\_\_ carry a virus that gets injected into the \_\_\_\_\_ that their larvae will feed on, increasing the survival rate of the larvae.

How many virions would fit onto the head of a pin?

\_\_\_\_\_

