

Name: _____

Period: _____

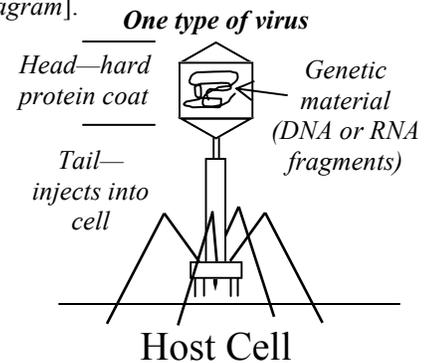
Day 13—Viruses and Bacteria

A Little About Bacteria (which are very little, themselves)...

- ...living, single-celled organisms.
- ...have cell membrane, actual DNA and ribosomes, but no organelles. (prokaryotes [no nucleus]).
- ...cause diseases such as **streptococcus** (strep throat; pneumonia) and **diphtheria** (rare in US).
- ...killed by **antibiotics**, but they adapt quickly, so overuse of antibiotics is bad.
- ...Spread by contact between people. Stopped by washing hands; hand sanitizer; coughing into your elbow; staying home when sick.
- ...are necessary for good health, especially in digestion (we can't digest plant matter [cellulose] without them).
- ...being "too clean" (or overusing antibiotics) can kill good bacteria (but they can be repopulated, like with yogurt).

Viruses

- ...surrounded by hard protein coat with DNA or RNA fragments (no genes) [see diagram].
- ...can't make their own energy or proteins and need a host cell to reproduce, **so VIRUSES ARE NOT ALIVE!**
- ...**CANNOT BE KILLED WITH ANTIBIOTICS** (which attacks cell membranes).
- ...cause **AIDS**: attacks helper T-cells [white blood cells]
- ...cause **smallpox**: like chickenpox, but more dangerous; eradicated throughout the world; US hasn't vaccinated for it since 1972.
- ...cause warts, common **cold**, influenza (**flu**) - again, antibiotics will not help. (Taking antibiotics for a cold will only help bacteria become resistant.)
- ...stopped by prevention (hand washing), antiviral medication, or **vaccines** (injection of weakened virus so immune system learns to fight it).



1. Virus or bacteria?

- | | |
|--|--|
| A. _____ Has genetic material. | I. _____ Are in yogurt. |
| B. _____ Are alive. | J. _____ Can replicate if given nutrients. |
| C. _____ Help us with digestion. | K. _____ Takes over a cell. |
| D. _____ Needs a host cell to reproduce. | L. _____ Has complete DNA. |
| E. _____ Have hard protein coating. | M. _____ Has a nucleus. |
| F. _____ Have a cell membrane. | N. _____ Can make its own proteins. |
| G. _____ Can cause diseases. | O. _____ Killed by antibiotics. |
| H. _____ Can be beneficial. | P. _____ Causes colds and flu. |

2. Give three ways to help prevent the spread of viruses or bacteria.
3. Give two ways that viruses "seem" to be alive.
4. Give proof that virus are not alive.
5. You feel ill, go to the doctor, and ask for antibiotics. What should the doctor do?
6. Why can the overuse of antibiotics be harmful to us?
7. Bacteria cause disease. As a result a friend of yours says that all bacteria should be eliminated. Respond.
8. Give three diseases that cannot be cured by antibiotics.