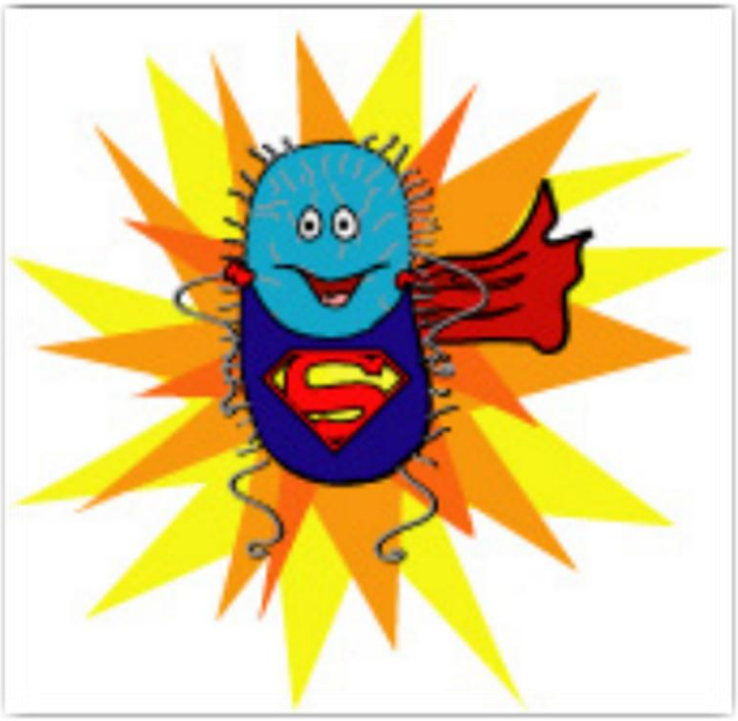

# Plague: Super Agent

## Plague App Questions and Write Up

# Mission Debriefing

## Background

Infectious diseases are caused by the invasion of infectious agents or pathogens. The invading pathogen begins to grow within the host and, as a consequence, tissue function is impaired. Each infectious agent has developed, through time, its own distinctive traits that allow it to live and prosper in the host. Even if the host is able to mount an attack against the invading pathogens, the infectious agents have ways to avoid these attacks.

## Bacteria

Bacteria are unicellular prokaryotic organisms that have no membrane-bound organelles. Their genomes (genetic material) are circular, double-stranded DNA, and most divide by binary fission. Despite these characteristics, there is a wide range of diversity among the bacteria. This diversity helps bacteria avoid attack from the host. Other examples of structures that help bacteria survive are the cell wall, plasmid DNA, and flagellum.

# Procedure

**Using the app Plague, you will design an infectious bacterium. You will need to keep track of it's name, characteristics, adaptations, and route of transmission.**

1. Log into the app and create an infectious disease name.
2. Select the location where you want it to start. (This must be recorded).
3. Keep track of the rate of infection. (This must be recorded).
4. Keep track of the DNA you earn as well as how you spend them. (This must be recorded).

# Super Agent Log

| Adaptation | Countries/ Continents Spread | Transmission | Symptoms | Abilities |
|---|---|---|---|---|
| Automatic: yes/no<br>Name:<br><br>Function: | 1. (Start Country):<br>2. First Spread Country:<br>3. First Entire Continent:<br>4. Second Entire Continent:<br>5. Last Country:<br>6. Last Entire Continent: | Write down, in order, your transmission evolution. This should include method, cost (DNA Points), and level. | Write down, in order, your symptoms progression. This should include name, cost (DNA Points), and level. | Write down in order, your abilities progression. This should include name, cost (DNA Points), and level. |

## Questions

1. What was your strategy for taking over the world? (i.e., Did you focus on transmission or resistance?)

2. Of your disease characteristics, which was higher: infectivity, severity, or lethality? What factor do you believe contributed the most to that characteristic?

3. Was a cure developed? If so, what county was developing it and did it kill your disease? If not, what percentage did it get to?

4. Name two things you learned about the spread of disease in this app.

# Diary of a Disease

Nobody wants an infectious disease. They can be painful, dangerous, and even deadly. But how do infectious diseases feel about us? Using the disease you created on Plague, writing a story from the disease's point of view. You will need to include at least **5** of the following facts:

- infectious agent that causes the disease
- method of spread (water, food, insect, or person)
- risk of infection
- symptoms
- body's defenses to fight the disease
- method of diagnosis
- treatment
- prevention
- who discovered it

## Write the Story

Write a story from a disease's point of view. Here are some suggestions about how to begin:

1. Write a diary entry of an infectious agent entering its host.
2. Write a story about how the disease progresses once inside the host.
3. Write a story about how the body fights the infectious agent when it enters the body.
4. Write a news article of how an infectious agent successfully infected many people.

**Use your imagination! Be creative! Add drawings or pictures!**

# EXAMPLE STORY

**The Adventures of Bert the Bacterium**

**By Rebecca Tuuri**

Hi my name is Bert, short for Borrelia burgdorfer. It's a family name. I was born after my parents had a long argument. I think it was somewhere around 14 hours! Then they split up. Oh well, they sure did produce one handsome bacterium! The lady bacteria love my spiral shaped physique and especially my eight flagella. Of course, my shape and size not only make me handsome, but make me good at infecting different animals.

I was born inside the gut of a tick. When I was a teenager, I stayed inside and got strong. One day, I was hanging out when I got the call from the command center saying that the tick that I was traveling in had bitten a little boy named Jimmy. Here was my chance! I wiggled as fast as I could towards the tick's mouth. I wiggled for close to 37 hours (It's a long way from the stomach to the mouth!). I was almost there, faster and faster I swam towards the tick's mouth. Closer, closer . . . WHEW! I was through. Right behind me, I heard the cry of the tick, my first host, scream as my Jimmy picked him off with tweezers, but left behind his mouth, still sucking to the skin. I just made it through.

And now I am just waiting for a few days while I get big and strong. After about seven days, I should be able to make a rash on Jimmy's skin. I hope that I can be as great of a rash artist as my Aunt Martha. She used to make the most amazing red radial patterns on her victim's skin.

Wait, one of my buddies from a neighboring blood vessel just came by yelling something…Oh no! The human took the dreaded antibiotics doxycycline and amoxicillin. The medicine is marching quickly towards our blood vessel. It has already killed hundreds of my next door bacteria neighbors.

Here they come, there are so many . . . Jimmy must have taken the medicine for two weeks already, there are so many here. Closer, closer. AAAACK! The pain has gotten to me - it won't be long now. I wish I could have lived to see the rash that I was preparing to make on the skin. It would have been so beautiful. But it's too late.