

## OVERVIEW of INFECTIOUS DISEASES

Everyone in the class will work through the stations on *Microbial Evolution*, *Where are They?* *Global Burden of Disease*, and *Public Health*. The following questions will guide you through these first four stations. Feel free to start at any station - you need not answer questions in any specific order.

### MICROBIAL EVOLUTION

1. Watch the microbial evolution video and pay close attention to the graph as time passes. Which colored line best represents a strain of bacteria that is resistant to more than one drug?
2. Look at the tubes containing marbles, representing bacterial growth. How many hours does it take to generate 65,536 bacteria from 1 original bacterium?
3. What two factors combined lead to microbial evolution?

\_\_\_\_\_ + \_\_\_\_\_ = Evolution

### WHERE ARE THEY?

4. Use the sliding screen and side panel to discover how **bacteria**, **viruses**, **fungi** and **parasites** differ as you complete the following chart:

Source	Fungus	Parasite	Bacteria	Virus
Associated Disease				
Disease Location on Body				
Pathogenic? Commensal? Harmless? Unknown?				
Typical Size (From side panel)	micrometers	micrometers	micrometers	micrometers

**GLOBAL VIEW**

5. Using the "Developing Stories in Infectious Disease" interactive, identify one emerging disease hotspot and the disease outbreak that occurred there.

Disease \_\_\_\_\_ Hotspot Location \_\_\_\_\_

6. Using the "Global Distribution of Infectious Diseases" interactive, choose one disease and describe where in the world it is most widespread.

Disease \_\_\_\_\_ Where is it most widespread? \_\_\_\_\_

**PUBLIC HEALTH**

Looking at the two public health graphs, notice that **both** life expectancy (blue) and mortality rates (yellow) have **improved** in the United States from 1900 to 2000. Life expectancy at birth has increased (people live longer) and mortality rates have decreased (less people are dying from infectious diseases).

7. Gather data on the change in mortality rate over two 40 year periods:

<b>Mortality Rate</b>	<b>Drop in Mortality Rate</b>
1900: _____/100,000	1900-1940 = _____/100,000
1940: _____/100,000	1940-1980 = _____/100,000
1980: _____/100,000	

8. Based on the data you gathered in question #7, did mortality rates drop most **before** or **after** antibiotics and vaccines were first used (around 1940)?

Before antibiotics and vaccines (1900-1940) - or - After antibiotics and vaccines (1940-1980)

(CIRCLE ONE)

9. List two public health measures that resulted in improved life expectancy in the U.S. before 1940. (Many answers are possible.)

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