You Give Me Fever!  
**Microbiology Unit Project Fall 2014**

Learning Targets:

* Students will understand the spread, treatment, and prevention of various diseases that have caused historical and current epidemics in human populations.
* Students will also understand and be able to explain the difference between viral, bacterial, and protist pathogens.
* Lastly, students will understand how biotechnology and advances in medicine have affected our prevention and treatment strategies for disease.

Procedures:

1. Students will work in 4 different groups. Each will focus on one of the following diseases: Ebola, Yellow Fever (*Flavivirus febricis*), Malaria (*Plasmodium spp.*), and MRSA (*Methicillin-resistant Stapholococcus Aurea*).
2. Students will research each disease to answer the following questions:

**Biology of the Disease**

* 1. What type of pathogen is it (Virus, bacteria, protist, fungi, parasite, etc)?
  2. How does it infect its host? Draw a diagram of how it infects a human.
  3. Does it use a vector? (Mosquito, tick, flea, etc) If so, how does it use that vector? Draw a diagram.
  4. What are the symptoms of the disease?

**Epidemiology**

* 1. Why does your pathogen cause epidemics? What features does it have that keep us from stopping it easily? Are their social or political factors that keep it alive (e.g. poverty and lack of education)?
  2. Where did the disease originate and where is its current range? Find a map with its current range and infection rates if possible.
  3. How many people are infected with it per year? How many of them die (mortality rate)?
  4. Have there been any historic outbreaks? When, where, and why? How did those outbreaks end?
  5. How are outbreaks of your pathogen contained by humans?
  6. How does it spread? How has it spread historically? (E.g. Slave trade brought Yellow Fever from Africa to the Americas)

**Medicine**

* 1. How do we treat the disease?
  2. How do the treatments affect the pathogen?
  3. Are there any side effects of the treatment? What are they?
  4. How can we prevent the disease?
  5. Why does the prevention strategy work?
  6. Are there side effects? What are they and why do they occur?
  7. Are there social factors that keep us from preventing it?

1. After completing the research, your group will create an interactive exhibit to teach the public about the spread, treatment, and prevention of your pathogen. Your exhibit will also include the research you will complete in your Social Studies and Math class. The exhibit should have the following characteristics:
   1. Excellent visuals that present your information clearly, accurately, and attractively
   2. An interactive component that invites the public to learn through experiencing your exhibit, not just reading it.
   3. At least one group member there to help interpret the exhibit to visitors.

**Assessment:**

Information: 25%  
Presentation: 25%  
Group Evaluation: 25%  
Effort: 25%

**Due Dates**

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| **Benchmark** | **Due Date** |
| Student teams outline ideas | **9/16/14** |
| Research complete | **9/24/14** |
| Exhibit idea first draft | **9/23/14** |
| Exhibit idea final draft | **9/25/14** |
| Visuals completed | **10/1/14** |
| “Dress rehearsal” of interactive exhibits | **10/2/14** |
| Museum Exhibit @ Art Walk | **10/3/14** |