

Team Number: MELHS3 School Name: Melrose High School

Area of Science: Epidemiology, Biology

Biological Warfare

Problem Definition: Our team originally planned on doing a project over the tracking of breeding heifers, we decided to completely change the direction of our project. We started doing research on Bioterrorism and Biological Warfare. What is biological warfare? Biological warfare is the use of toxins of biological origin or microorganisms as weapons of war. How can it be applicable to our world today? Our world today is constantly looking for technological advances in biological studies and systems of defense. What if we were to combine the two? Biological warfare has been in used in previous days and has worked very well but was not easily contained. If we could learn to contain and spread them only to desirable places we could spend less federal money looking to expand our systems of defense. It has been said that biological weapons are so cost efficient that if a conventional weapon were to cost two thousand dollars, a biological weapon would do the same amount of damage for one dollar. Some of the main concerns are how ethical and moral bioterrorism is. This can be a legitimate concern, but if we can learn to contain and control the spread of these microorganisms we could help diminish these concerns as well as benefit the United States Armed Forces tremendously.

Problem Solution: We are using NetLogo to develop our program. We will be developing a program that mimics the spread of communicable diseases with varied contagious life spans. This will be displayed with a slider that allows a variety of diseases and microorganisms such as enteroviruses (Hand Foot and Mouth Disease, Viral Meningitis, etc.) to be shown with only one program.

Progress to Date: So far we have started doing research about communicable diseases and prior use of viruses and microorganisms as bioterrorism in history. We have also started making a program to display an example of a city, a school, and an air force base. These settings provide examples of how these diseases would spread between people in various settings with different traffic through the environment.

Expected Results: We are hoping to get a program that adequately displays various diseases and microorganisms that could be used in biological warfare. Ultimately we hope to find a good way to control the epidemic if there was to be an outbreak in the United States. We hope to be able to find an adequate way for us to utilize this information to the advantage of the United States Armed Forces.

Gucci Gang

Team Members: Mackenzie Perkins, Hannah Wofford, Shannon May, Rebecca Rush

Sponsoring Teacher: Alan Daughtery

Citations: Personal interview: Randall Rush

<http://www.acphd.org/measles.aspx>

https://www.cia.gov/library/reports/general-reports-1/iraq_wmd_2004/chap6.html

<http://telemedicine.org/biowar/biologic.htm>

<https://www.express.co.uk/news/world/863586/north-korea-world-war-3-biological-warfare-plague-missile-attack-usa>