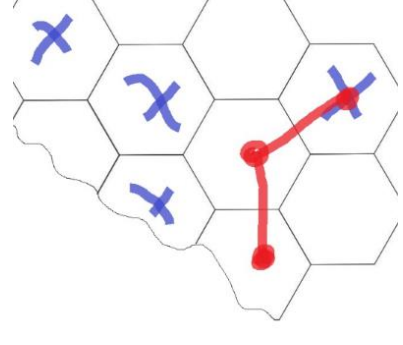


Disease Lab

Laboratory Experiences in Mathematical Biology

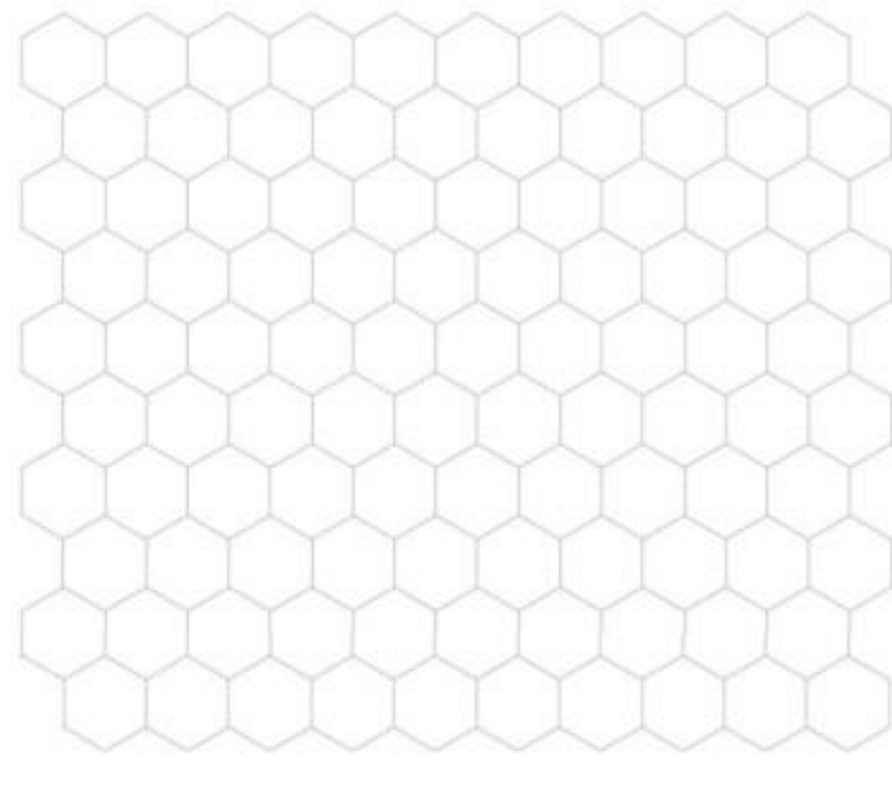


Lab Setup: Diseases are simulated using transparencies and dry erase markers.

Materials

The following materials are needed for each group:

- 2 hexgrid transparencies

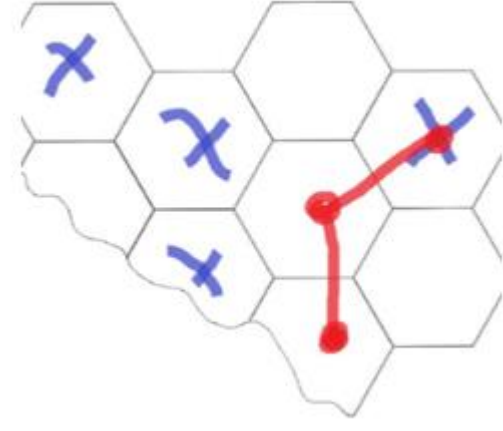


- 2 dry-erase markers (different colors)

Methods

Basic Zombie Game

To generate data for the basic zombie game one team member directs the zombie population (Zombie Master), one leads the human population (Humanoid King/Queen) and one judges results and records data. Zombies and humans are drawn by their respective rulers on separate hex transparencies using dry-erase markers of different colors beginning with 1 zombie and 49 humans. For the basic zombie virus each zombie occupies three consecutive hexes, one for its huge head and one for each of its attacking arms, while humans fill only one hex each. Once the Zombie Master and Humanoid King/Queen have secretly placed their respective players on the hex arenas, one determines which humans have been successfully attacked by counting the hexes that are occupied by a human and a zombie arm or head when the transparencies are superimposed as seen in the figure below. These new zombies are added to the zombie population and transparencies are then erased for the subsequent turn. The game is over once the entire population has been zombified.



Example from basic zombie game where the zombie population would increase by one.

Student Adjusted Disease

Students alter the basic zombie virus to create a new disease. Changes students frequently make:

- Allow for recovery
- Expand or contract the “radius of infection”
- Allow for an infected, but not contagious period