

# Disease Lab

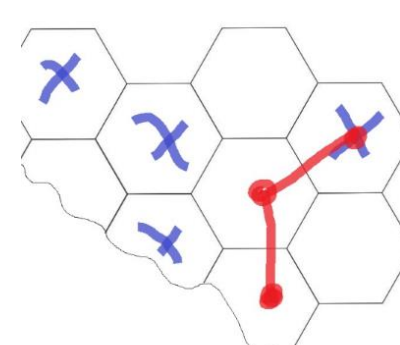
## Laboratory Experiences in Mathematical Biology



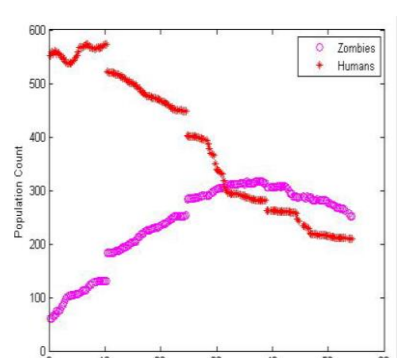
**Overview:** Gaining hands on experience with diseases in a mathematics classroom is typically not possible and likely not appropriate. In the Disease Lab students collect data from a simulated ``zombie virus'' outbreak and then fit a given model to the data. Students are then challenged to create and simulate a new virus outbreak and create and fit a model to the new data.



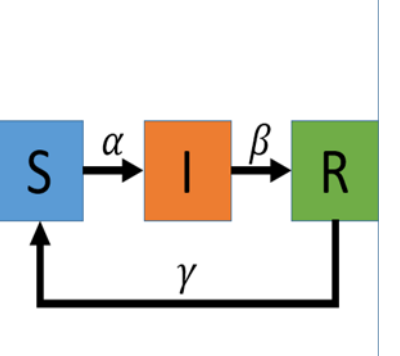
**Lesson Outline:** The outlined expectations and agenda are geared for classes consisting of mathematics, statistics, biology, natural resources and biological engineering students with calculus and differential equations experience. See [Pedagogical Resources](#) for teaching and scaffolding suggestions.



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



**Data and Examples:** Data along with some student approaches from an introductory mathematical biology course and an ODE course are presented to illustrate some common student approaches and to help prepare teachers to scaffold student thinking.



**Background and Extensions:** At Utah State University the Disease Lab is often built around the Humans vs Zombies game of moderated tag played on campus. The game is briefly described here along with some student approaches to modeling the data.



**Assessment Items:** Primary assessment of student learning is taken from students' written reports. Additional assessment items targeting lab objectives are included here along with their targeted learning levels (see [Pedagogical Resources](#) for additional discussion of leaning levels).