Brine Shrimp Lab
Laboratory Experiences in Mathematical Biology

Lesson Outline:
1. Students measure and record the distances brine shrimp travel in a petri dish and determine whether the shrimp move in a random walk. Concepts include distance and linear relationships and are applied in non-linear modeling with PDEs.

2. In algebra and statistics courses, the lab requires students to create a line-of-best-fit to match displacement data. The expectations and lab agenda below are geared towards an introductory mathematical biology course comprised of senior-level mathematics, statistics, biology, and biological engineering students with some calculus experience.

Lab Setup:
Students study the movement of brine shrimp using readily available materials.

Data and Examples:
Data observed and recorded by students along with their results from fitting the diffusion equation to the data is presented in order to highlight student reasoning and methods.

Background and Extensions:
Introductory material describing the basic mathematics of diffusion is discussed.

Assessment Items:
The following assessment items were written to target learning objectives for the Brine Shrimp Lab in a beginning PDE or Applied Mathematics in Biology course setting:

Overview:
Students measure and record the distances brine shrimp travel in a petri dish and determine whether the shrimp move in a random walk. Concepts include distance and linear relationships and are applied in non-linear modeling with PDEs.