**Instructions for COMSOL Modeling Project Part 1**

***Make sure you read all the instructions before you start (or else you will have to do a lot of backtracking and ultimately more work).***

1. Download the COMSOL instructions for this part and complete the step-by-step guide to modeling the work.
2. Alter the model by adding additional “blockades” within the grid. Essentially, I want you to build a maze where there is only one way from the left edge to the right edge (be creative). Run a simulation showing how the solute can show the correct path. You can adjust the boundary conditions on the left edge and the right edge and the initial conditions.
3. Write a short report that includes the following (be sure to provide a brief caption and comment for each figure):
4. 2D concentration map profiles with added flux streamlines for the times of 10 ms, 30 ms, and 70 ms. (porous matrix)
5. 1D plot of molar flux vs. time. (porous matrix)
6. 1D plot of concentration profile (concentration vs. length) at 10 ms intervals between 0 and 100 ms. (unidirectional diffusion)
7. Geometry map of your maze (no solute concentration; use geometry tab to show shape)
8. 2D concentration map showing progressing of concentrated solute through your maze at 3 times (beginning, middle, and end)
9. Concluding paragraph discussing how we can model a complex geometry as a uniform block using an effective diffusion. Also discuss how Fick’s Laws demonstrate a solute’s ability to navigate a fluidic maze.