Dictyostelium chemotaxis and modeling path finding

Dictyostelium rely on chemotaxis to form the advanced, multi-cellular structures when they need to locate food. This study is to look at how they determine where to go if they run into an obstacle. For APh 162, the dictyostelium are to be monitored on a microfluidics chip. A chemical stimulus is to be applied behind a diffusion membrane or other barrier. As the dictyostelium search for the stimulus, how will they react to the barrier? I would like to determine if they exhibit chemotaxis in reverse and travel down a concentration gradient to search for a way around a barrier or stay at the location of highest concentration. In addition, I would like to see if this behavior changes if cAMP is used as the chemoattractant versus a nutrient. For APh 161, this behavior is to be applied to a computer program to see how much of an influence the reaction to the barrier is when they are exhibiting collective behavior. Dictyostelium encounter barriers in relation to other cells when it forms a multicellular slug. Seeing how fast and what direction a cell reacts to a chemoattractant can determine how it works on a larger level and can be used to predict the pressure inside the multicellular slug.

Questions:
1) What's involved for the lab component (for 162) and how long would it take to carry it out?
2) What chemoattractants are on hand to use?