

QUESTION ONE: Please explain *Diffusion to Capture* and the role of advective flow so that even your professor will understand it. That is, the explanation should be at a level that is understandable to a second year science student. Your explanation should be *grounded* in the seminal paper by Berg and Purcell (1977) (Physics of chemoreception. Biophysical Journal 20:193–219) and Chapters 2 and 3 in Berg (1993) *Random Walks in Biology* (pp. 25–47).

Ground Rules: I expect students to work independently on this assignment. So, please ensure that the work you hand in is your own. You will need to select just a few ideas that you think are important (explaining why you think so). **Excessive length is not encouraged.** I think that 4 to 6 pages are sufficient. Handwritten is preferred to typewritten, because hand-drawn diagrams will be helpful. I am especially interested in your ability to make the ideas understandable. Stating ‘the fluxes are described by this equation’ is not helpful, unless you explain what the equation means or what it implies. Finally, clarity of explanation will be very important in grading of the assignments.

