Instructions: Use whatever format you would like to work on this assignment, but include in the filename *the number of this quiz (i.e., 03) and your last name*.

Homogeneous Kinetics

1) The article that you read in preparation for this discussion section (available here: https://www.annualreviews.org/doi/10.1146/annurev.pc.31.100180.001303) indicated how to analyze bimolecular reaction data using Marcus theory, which assumes a unimolecular reaction. Let's go over what you already learned previously about rate-determining steps.

2) As the experimentalist, what steps would you take to design and execute experiments, and analyze results, in order to evaluate whether a kinetic process follows Marcus theory?

3) While Marcus theory more accurately predicts the dependence of the rate constant on standard driving force than linear free energy relationships that were initially empirically observed (e.g. Tafel relation (1905), Brønsted relation (1924), Hammett relation (1935)), what are some of the limitations of Marcus theory, and how are some of these limitations overcome by use of electrochemistry?