Q6-1: Watch the video: http://www.jove.com/video/50800/waste-water-derived-electroactive-microbial-biofilms-growth

a) How do they inoculate their reactor in the video?
b) How many possible extracellular electron transfer sites do they identify using cyclic voltammetry?
c) Why is the voltammogram S-shaped during turnover conditions?

Q6-2: If you use cyclic voltammetry to study an electrochemically active biofilm, it is important to choose the appropriate scan limits.

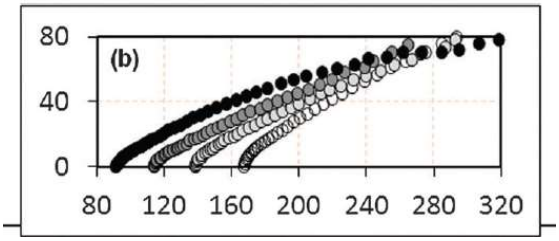
a) What reactions could take place on the electrode surface if the upper scan limit is too high, and how could this affect the biofilm?
b) What reactions could take place on the electrode surface if the lower scan limit is too low, and how could this affect the biofilm?

The reactions I ask for above would also occur in non-microbial electrochemical systems with an aqueous electrolyte.

Q6-3: A cyclic voltammetry experiment was carried out and the following peak currents were obtained for different scan rates. Is the redox active component diffusing through the electrolyte or is it bound to the electrode surface?

Scan rate (mV/s)	Peak current (mA/cm^2)
1	0.009
5	0.023
20	0.042
50	0.3
100	0.8
200	3.9

Q6-4: EIS was used to study the effect of ionic strength on the ohmic resistance associated with the electrolyte. Experiments were conducted with ionic strengths of 0.037M, 0.093M, 0.19M, and 0.37M. The following Nyquist plots were generated. Which data series corresponds to which ionic strength? Why?



The x-axis show real part of the impedance, the y-axis shows the negative of the imaginary part.