To help you prepare for the lectures on water and salt balance, I have designed this worksheet to refresh your memories on what you already have learned about the concept of osmolarity and the language involved. It also introduces the two extreme physiological responses to osmoregulatory challenges: osmoregulation and osmoconformation. This jump-start will allow us to spend more time on the physiology of water and salt balance.

Reading: Chapter 25, focus on pp. 665-669, skim pp. 669-673.

1. When physiologists speak of body fluids, what are they referring to?

2. What is the definition of “osmolarity” and how does this differ from “molarity”? What are the units of osmolarity?

3. What is the osmolarity of freshwater? sea water?

4. What is the difference between the osmoregulatory response of an animal who is an osmoregulator and one who is an osmoconformer to changing environmental osmolarity?

5. On graph A below, illustrate the osmotic response of (a) a perfect osmoregulator and a (b) perfect osmoconformer to changing environmental osmolarities. For reference, the dashed lines on both graphs indicate isosmolarity (i.e., when the osmolarity of body fluids equals environmental osmolarity).

6. On graph B, illustrate the osmotic response of an animal that is a hyperosmoregulator when environmental osmolarities are < 350 mOsmol and an osmoconformer when environmental osmolarities rise above 350 mOsmol.

** Feel free to work with others, but write out the answers for yourself and be prepared to answer these questions in class the day we begin discussing water and salt balance.