HW6. Multicellular Design

Name_____ Due Friday 3/11/2011

Names of other group members:

Please remember that these questions are intended for group discussion, and you should meet before completing the assignment. However, you must write your answers Independently as each other.

"I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."

Signature:

1A. Diagram the life cycle of a typical unicellular protist. Show both the asexual cycle that produces haploid vegetative cells and the sexual cycle including meiosis and fertilization. Be certain to indicate the ploidy level (1n or 2n) of all cells in your diagram. You can refer to Figure 29.20A on p. 613 in Freeman for assistance. The dinoflagellate cycle on the top part of this figure represents the typical protist life cycle. (Do not use the diatom cycle on the bottom part, because it is an unusual diploid protist.) (3 pts)

1B. What are the roles of the following processes in the life cycle in 1A? (3pts)

1B1. Mitosis:

1B2. Fertilization:

1B3. Meiosis:

2. Describe several constraints acting on unicellular organisms that limit their sizes. (3pts)

3. Some eukaryotes have evolved multicellular haploid stages. How could these eukaryotes have modified the asexual stage of the unicellular life cycle in 1A to become multicellular? In other words, describe one cellular mechanism for the origin of multicellularity. (3pts)

4. Animals (including humans) have evolved a life cycle that diverges greatly from the typical unicellular protist life cycle in 1A. List several differences between the typical protist and animal life cycles. (3pts)