Name: **Date:** **Class:**

Optional Assessment Answer Key

Author: Bridgette Clarkston
From: "Got Algae?" A sorting activity for introducing the weird and wonderful diversity of algae

Note: Time estimate provided for each question.

1) **List** three of the **general characteristics** of algae (6 pts; 4 mins)

One point per characteristic, any combination of the following **(3 points total)**

1. Photosynthetic [NOTE: 'plastid' and 'photosynthetic' can only be used for one characteristic, i.e., only 1 point max. for listing both of these.]
2. Aquatic
3. Lack complex body structures (e.g., vascular system, true roots)
4. OTHER OPTION: Lack complex reproductive structures (e.g., flowers, seeds)
5. OTHER OPTION: Polyphyletic

2) From the list below, **identify** a type of algae that is an example of an **exception** to a general characteristic, and **explain** how it is an exception.

Examples of algae
some dinoflagellates
Ulva
filamentous brown algae
Trentepohlia
Polysiphonia

Your chosen example

"some dinoflagellates" or "Trentepohlia" accepted **[1 point]**

[NOTE: can accept their own example if exception fits]

How this alga/this group is an exception [2 points]

Some dinoflagellates are heterotrophic/no photosynthesis.
Trentepohlia lives in the terrestrial environment.

3) [ALTERNATE VERSION OF #2, ASKED ON FINAL EXAM AFTER BRYOPHYTE SECTION OF COURSE] List three features of land plants that algae lack, and for each, briefly explain why the feature is unnecessary in an aquatic environment. (3 pts; 3 mins)

POSSIBLE OPTIONS (There may be others.)

i. No ROOTS (They don't need to draw water from soil.)
ii. No true VASCULAR SYSTEM (They don't need to transport water from soil. Most algae are small enough that photosynthate doesn't need to be transported throughout the thallus.)
iii. No WAXY SURFACES and PORES (Algae are aquatic; their propagules won't desiccate as on land.)
iv. No SEEDS/COVERINGS ON SPORES (Algae are aquatic; their propagules won't desiccate as on land.)

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4) Tree of Eukaryotes (6 pts; 8 mins)

Here is a phylogeny of the Eukaryotes similar to the version presented in class, with 12 names removed (white boxes). Put each of the six algal groups listed below into their correct position in this phylogeny. Note: You will only fill in six of the 12 available boxes.

Algae groups to add to the phylogeny below:	
Florideophyceae	Phaeophyceae
Bacillariophyceae	Charophyceae
Chlorophyta	Bangiophyceae

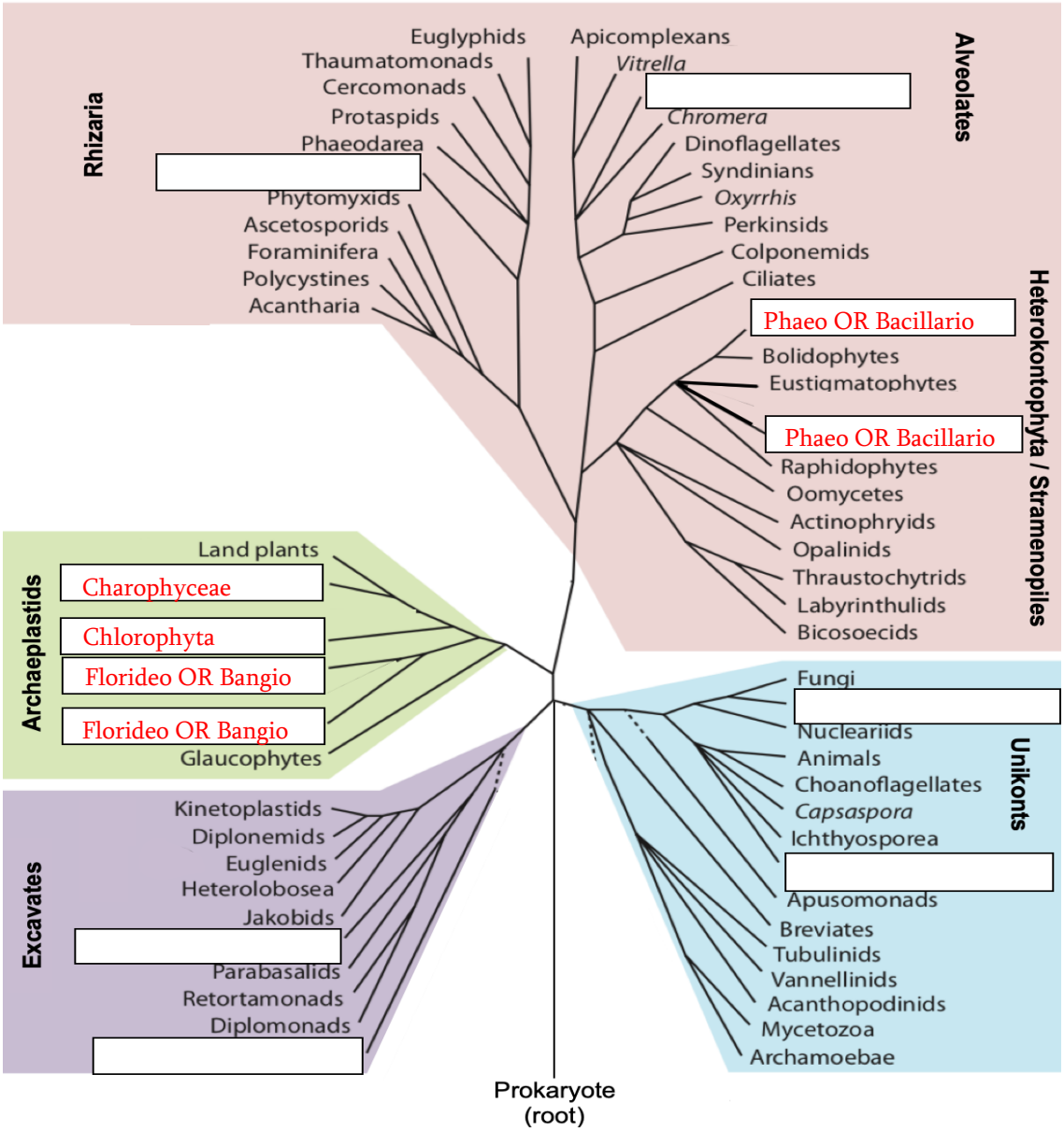

Figure modified from: Keeling, P. J. (2013). The number, speed, and impact of plastid endosymbioses in eukaryotic evolution. *Annual review of plant biology*, *64*, 583-607. Used with permission of P. Keeling.