Botany 330 essays—Editorial issues

The assigned essays were designed to mirror the characteristics of written reports that you might provide to peers in a future professional situation. So the comments I've made on your drafts are related to writing for a professional reader. For each essay, I've commented on content, length, English usage, and organization. The following numbers refer to common issues.

1. Avoid the imprecise pronouns "it" or "they," especially at the beginning of a sentence, unless the previous sentence is quite clear about the identity of the subject.

2. Aim for concise language. You will often be required to express your thoughts in a limited number of words; writing the abstract for an NSF grant proposal would be an example. So don't use superfluous words when you could use the space to instead propose even more great ideas. Evaluate the need for each and every word. Try to construct the most concise language possible.

3. Aim for precise language. Avoid imprecise words like "quite," "very," "huge." Use biological terms (your peers will likely have taken a college bio course), for precision and economy of expression. One precise term can take the place of a long string of words (see #2 above).

4. Closely focus your writing on the question or issue at hand. Don't add unnecessary material even if you think it will make you appear knowledgeable. In a professional context, your reader will not appreciate having to read through a lot of introductory material that he/she already knows, or being led away from the main topic.

5. Avoid constructing complex sentences having more than one major point.

6. Don't mix multiple topics in the same paragraph. Start each paragraph with a topic sentence that alerts the reader to the paragraph's subject and stick to that subject.

7. Define critical terms–those forming the main topic of a paragraph–especially if the terms will not be widely understood by your readers.

8. Construct transitional sentences at the ends of paragraphs to link to the next.

9. Use proper singular and plural forms of the words important to our field: bacterium, bacteria (there is no such word as bacterias!); alga, algae (no such word as algaes!); genus, genera (no such word as generas!); mitochondrion, mitochondria. Use the adjectival form of these words when appropriate: bacterial decomposition, algal ecology, generic name, mitochondrial genome.

10. Match singular subjects with singular verbs, and match plural subjects with plural verbs.

11. “Phosphorus” is an unusual word. As the result of its origin, the most appropriate use for the spelling “phosphorus” is as a noun, and the most appropriate use of the spelling “phosphorous” is as an adjective. Examples: Photosynthetic organisms require phosphorus for producing NADP, as well as ATP and DNA. Phosphorous concentrations can be determined by colorimetric methods.

12. Cite references within the text of your writing.

13. Avoid overly colloquial, informal language. In writing for a professional audience, use professional expressions, with few exceptions.

14. Use your word processor’s spell-checker and grammar checker!

15. Try to use active voice more often than passive voice. Passive voice is more acceptable in professional scientific writing than in general writing, however.

16. “It’s” is a contraction and means only “it is.” “Its” (without an apostrophe) is a possessive; do not use “it’s” as a possessive. Examples of correct use: The heterokont cell uses its longer, hairy flagellum for propulsion. It’s not possible to see the hairs on this flagellum without using an electron microscope.

17. “Affect” is a verb (not used as a noun). In contrast, “effect” is mostly used as a noun, though sometimes also as a verb meaning “cause or produce” as in “to effect a change.” Example of appropriate uses: The concentration of carbon dioxide in the water will affect phytoplankton photosynthetic rate. The hurricane had a devastating effect on coastal wetlands.

18. The appropriate use of “which” and “that” is a common problem. I recommend checking a reliable usage reference. “Which” typically follows a comma, while “that” does not.

19. Despite the fact that many scientists conflate the terms “theory” and “hypothesis,” these terms are not synonyms. An hypothesis is a tentative explanation (an educated guess) that requires testing before it can be accepted. A scientific theory is a broad explanation that is widely accepted among qualified scientists because it is strongly supported by experiment and/or observation. For example, the Cell Theory (the cell is the basic unit of living things and arises from preexisting cells) is not a hypothesis. It is important not to mistakenly give your reader the impression that an explanation is widely accepted when it is not by describing an untested hypothesis as a “theory.”

20. The expression ‘et al.’ means “and others;” al. is short for “alia.” It is therefore important to place a period after ‘al.’(but not after ‘et’).

21. When forming a sentence with several clauses, ensure that they are of the same form. For example: Algae are defined as organisms that are generally photosynthetic, primarily live in aquatic habitats, and are structurally and reproductively simpler than land plants. Test such complex sentences by considering each part independently to see if it makes sense: algae are organisms that are generally photosynthetic; algae are organisms that primarily live in aquatic habitats; algae are organisms that are structurally and reproductively simpler than land plants.

22. Be sure to use the terms "population" and "community" appropriately; these terms are not synonyms. Check the definitions in your general biology/botany texts if necessary.

23. In evolutionary explanations, use the language of selection and adaptation. For example, the sentence "Diatoms produce chitin fibrils *in order to* stay afloat in well-lit surface waters" is not quite accurate because individual diatoms can't consciously choose to produce the fibrils or not. "Chitin fibrils are adaptations that allow diatoms to remain afloat in well-lit surface waters" is more accurate because this expression uses the language of selection and adaptation. An ancestral diatom acquired a mutation that allowed it to produce chitin fibrils, which aided photosynthesis, thus fostering reproduction and persistence of the mutation in the population.