

## Common Mistakes in Scientific Writing

Certain mistakes show up repeatedly in scientific writing. Here, I have compiled the most common writing mistakes that I have found. They are worth paying attention to, as getting these details right will allow the reader to focus on what you want to say, without being distracted by simple, avoidable errors. While some of these pertain to writing in the sciences, many are relevant to writing in any field.

### Formatting Conventions

- Pages should be numbered; the first page usually does not have a number because it is understood that it is page one.
- Avoid series of parentheses, such as: (Davis 1999)(Figure 1). Combine the information: (Davis 1999; Figure 1).
- In-text citations are always inside end punctuation: "...higher fitness (Lewontin 1976)." Not "...higher fitness. (Lewontin 1976)"
- Each in-text literature citation must have a full citation in the References section and *vice versa*.
- Figures and tables should be numbered in the order they appear in the text.
- Figures should be cited as (Figure 1) or (Fig. 1), not (see Figure 1) nor (see Figure 1 attached), *etc.* The same rules apply for references to tables.
- If you use an abbreviation, you should define it after its first use in the paper. For example, "The vomeronasal organ (VNO)..." After this, simply use VNO.

## Scientific Usage Rules and Conventions

- Gene names and their abbreviations, as well as Latin words and their abbreviations, should be in italics, *e.g., Ultrabithorax, Ubx, ergo, in situ, et al., etc.* Note that some journals choose to ignore these rules.
- “Data” is the plural of “datum.” Therefore, “...the data were collected...” not, “the data was collected.”
- The plural of species is species; the plural of genus is genera.
- The word “prove” is generally avoided outside of mathematics. In science, you cannot prove a hypothesis. The best you can hope for is that your hypothesis *is supported* by the data, or that your data *are consistent* with your hypothesis. If an idea repeatedly stands up to experimental scrutiny and is consistently not disproved, then it becomes relegated to the status of a theory, such as the Theory of Evolution or the Chromosome Theory of Inheritance.
- Be careful of attributing intent to organisms when talking or writing about evolution. Birds did not evolve wings in order to fly. Natural selection does not work with a particular goal in mind, such as flight. Instead, it works through random variation followed by differential survival and reproduction. While suggesting that birds evolved wings in order to fly is a convenient shorthand, it misses the fundamental principle of evolution by natural selection.
- Be aware of tense. The results of others are usually discussed in the past tense, “Smith and colleagues (1998) found that...” The Methods section of a research paper

is also written in the past tense (it has already been done by the time the paper is being written). However, the results section of a paper is written in present tense. Grant proposals describe procedures that have not yet been done, and should be written in future tense.

- A scientific name is composed of two words: a genus name and a species epithet. The first letter of the generic name is always capitalized and the specific name is not capitalized. Both words must be written in italics or underlined. Generic names should be written out in their first appearance in the title, abstract, and main text. If they are subsequently mentioned in one of these locations, they may be abbreviated. It is also advisable to mention the English name for your organism. For example, “Caterpillars of the lycaenid butterfly *Jalmenus evagoras* were studied...” Later, “*J. evagoras* caterpillars were studied...” While most scientists know that *C. elegans* is a nematode worm, it is helpful to provide a common name for lesser known organisms. The generic names of some common model organisms, *e.g.*, *Drosophila* and *Arabidopsis*, are now used as common names, too. When these names are written in isolation, they are being used as common names and are not italicized. In conjunction with a specific epithet they are scientific names and must be italicized. A final note: *Jalmenus* sp. refers to a single unspecified species in the genus *Jalmenus*. *Jalmenus* spp. refers to two or more species in the genus *Jalmenus*. Note the use of italics on these intentionally ambiguous names.

## General Comments

- “Between” is used for two things; “among” for three or more. So, “the caterpillars were distributed *among* the three plants,” not “the caterpillars were distributed *between* the three plants.”
- Do not use “however” as a conjunction, as “Doxorubicin is a useful chemotherapeutic agent, however severe cardiotoxicity limits its use.” This sentence is a run-on. “However” requires a semicolon or period preceding it, as “Doxorubicin is a useful chemotherapeutic agent; however severe cardiotoxicity limits its use.” The same holds true for “therefore.”
- Be careful with word pairs that are often confused: that/which, affect/effect, its/it’s, choose/chose, advice/advise, accept/except, proceed/precede; between/among; less/fewer.
- The words “who” and “whom” refer to people; they do not refer to animals.
- It is not appropriate to use first person *plural* in a single authored work. For a single authored work, use “I.” For two or more authors, use “we.”
- Avoid strings of prepositional phrases: “Several regions of the brain have been implicated in the recognition of kin,” might be written, “Several brain regions have been implicated in kin recognition.”
- Avoid overused expressions and clichés.
- Strive for verbal variety; do not begin every sentence in a paragraph with “I.”