Technical Terms in Biology 2

Words we need in scientific writing

Contents

1. Systematics:

In the arrangement or disposition of people or things in relation to each other according to systematics we can find these terms: Order, Genius, Family, Species...

The classification of these words in systematics is fixed and ordered.

Example: Figure 1

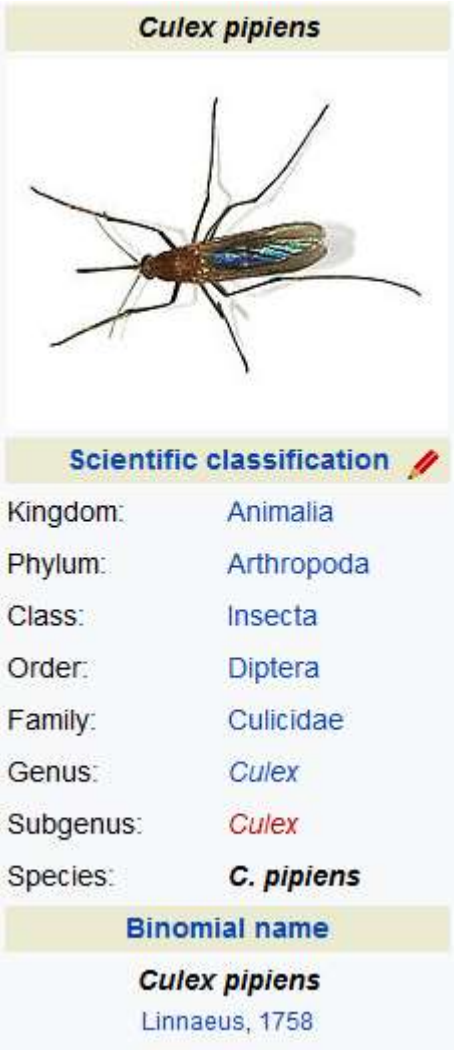

Figure1: Scientific classification of *Culex pipiens*

2. Experiment

The Experiment is something fundamental in biological sciences, when we write an experiment, we need some key words:

- **Experiment:** a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact.

- **Hypothesis:** a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.
- **Extract:** remove or take out, especially by effort or force.
- **Evaporate:** turn from liquid into vapour.
- **Solid:** firm and stable in shape; not liquid or fluid.
- **Liquid:** a substance that flows freely but is of constant volume, having a consistency like that of water or oil.
- **Vapour:** a substance diffused or suspended in the air, especially one normally liquid or solid.
- **Test:** a procedure intended to establish the quality, performance, or reliability of something, especially before it is taken into widespread use.
- **Analyse:** examine (something) methodically and in detail, typically in order to explain and interpret it.
- **Substance:** a particular kind of matter with uniform properties.

➢ **Examples**

1- **Hypothesis** generation in molecular and cellular biology is an empirical process in which knowledge derived from prior **experiments** is distilled into a comprehensible model

2- How to Test Essential Oils for Purity: Essential oils are **extracted** by steam distillation

3- Below the critical temperature and below the critical pressure we have a phase change directly from **solid** to **vapour** or vapour to solid

4- The importance of the role **of analysis** of drugs and other toxic **substances** in biological samples (bioanalysis) in medicine, toxicology,

3. Key words

When we write a Scientific text; we need to use particular terms (Verbs and adverbs).

3.1. Verbs:

➢ **Examples**

- **To conduct**

The studies included in the review were conducted between 2006 and 2011 mostly at colleges and universities in the Anglophone world.

- **To describe**

Another transformation that can be used to describe disease

- **To study**

Several different models have been used to study the remarkable ability of the liver to regenerate.

- **To demonstrate**

These mutations were used to demonstrate that three sequential bases of the DNA.

- **To intend**

It was not intended to be used as a diagnostic assay

- **To establish**

We can treat and maybe even cure already established infection in multiple animal models.

- **To interpret**

I'm trying to interpret the results of the bio-scan

3.2. Adverbs

Most students and researchers find it easy to collect information from the literature for the introduction or discussion section of their manuscript.

However, linking different facts together to produce logical, clear text is often difficult, especially if you do not have English as first language.

There are many groups of adverbs can be used.

Adverbs to :

Link similar facts or related ideas

- Similarly : in a way that shows a general but not exact resemblance.
- Additionally : we use additionally to introduce something extra such as an extra fact or reason.
- Moreover : also and more importantly
- Furthermore : in addition to what precedes
- In addition : you use in addition when you want to mention another item connected with the subject you are discussing.

- In agreement : If you are in agreement with someone, you have the same opinion as they have

Examples :

- In this study, GRT gene expression was upregulated in the leaves of Arabidopsis plants after exposure to salinity. **In agreement** with this finding, GRT protein expression is upregulated in the leaves of wheat plants exposed to salinity.
- Lung cancer is the leading cause of death in smokers. **Additionally**, smokers have a 10-fold increased risk of developing cancer.

Move between two different ideas or results that don't agree

- However : but
- In contrast : If one thing is in contrast to another, it is very different from it.
- Conversely : is in a contrasting or opposite way—used to introduce a statement that contrasts with a previous statement

Examples :

- Rats administered 5 mg/kg DBMA orally developed liver tumours within six weeks. **However**, rats subcutaneously injected with 5 mg/kg DMBA did not develop any tumours.
- Rice is the major food crop in Asia. **Conversely**, rice comprises only 5% of total crop production in Europe.

Indicate the order or timing of events and discoveries

- Initially : at the beginning
- Recently : during a *recent* period of time
- Subsequently : at a later or *subsequent* time.
- Finally

Examples :

- The structure of DNA was initially solved in 1953 by Watson and Crick. **Subsequently,** Meselson and Stahl and confirmed the semi-conservative mechanism of replication in 1958.

Indicate the order of your experimental methods and results

- Initially
- Firstly
- Secondly
- Subsequently
- Next
- Finally
- Lastly : final thing

Examples :

Firstly, we sequenced the YRX gene from each mutant. **Next**, we measured the expression levels of YRX expression in each mutant using qRT-PCR. **Lastly**, we used Western blotting to measure YRX protein expression.

Link two sentences or sections of text

- Hence : for this reason
- Consequently : as a result
- Accordingly : used to introduce a fact or situation which is a result or consequence of something that you have just referred to.
- Therefore : we use therefore to introduce a logical result or conclusion.
- Since : starting at point in past and continuing; used for explaining why situation exists.
- As

Examples :

- **As** the factors which regulate the development of astrocytoma are poorly characterised, we performed an immunohistochemical study of ten antigens in human astrocytoma and normal brain tissues.

- The factors that regulate the development of astrocytoma are poorly characterised; **therefore**, we performed an immunohistochemical study of ten antigens in human astrocytoma and normal brain tissues.
- Sequencing indicted the presence of a *YUH* mutation in patient 1; **hence**, we sequenced the *YUH* gene in the siblings of patient 1.
- I prefer the latter **since** the bacteria have grown equally well.
- Bacteria are often found on surfaces in association with organic matter. **Accordingly**, we performed similar experiments with two different seeding densities of bacteria.
- Most research on plant viruses to the present has focused on agricultural systems (agronomic and horticultural) and viruses that are pathogenic. **Consequently**, there is a dearth of fundamental information about plant virus dynamics in natural ecosystems

To emphasize a point, provide more evidence to support it. Avoid unnecessary words and in particular, adverbs. Instead, choose more precise verbs.

An adverb modifies or describes:

- A verb (e.g. He runs *quickly*.)
- An adjective (e.g. His writing is *extraordinarily* descriptive.)
- Another adverb (e.g. He runs *extraordinarily* quickly.)

Often, but not always, adverbs in English end in –ly. Here are 50 adverbs we can avoid and the writing will be stronger:

1. Adroitly
2. Amazingly
3. Awesomely
4. Badly
5. Basically
6. Carefully
7. Clearly
8. Completely
9. Convincingly
10. Deftly
11. Desperately

12. Dexterously
13. Effortlessly
14. Extremely
15. Faithfully
16. Fundamentally
17. Generally
18. Goodly
19. Honestly
20. Inherently
21. Instantly
22. Interestingly
23. Narrowly
24. Naturally
25. Nearly
26. Necessarily
27. Obviously
28. Precisely
29. Previously
30. Preposterously
31. Quite
32. Really
33. Relentlessly
34. Simply
35. Spectacularly
36. Successfully
37. Suddenly
38. Surely
39. Truthfully
40. Ubiquitously
41. Unequivocally
42. Ungodly
43. Unnecessarily
44. Unquestionably
45. Utterly

46. Unwittingly
47. Usually
48. Very
49. Widely
50. Zealously

3.3. Other words:

Above ("the above method," "mentioned above," etc.) -- Often, you are referring to something preceding, but not necessarily *above*; a loose reference, convenient for writers, but not for readers. Be specific. You know exactly what and where, but your readers may have to search (sometimes through much preceding material).

Affect, effect -- Affect is a verb and means to *influence.* Effect, as a verb, means to *bring about* ; as a noun, effect means *result.*

All of, both of -- Just "all" or "both" will serve in most instances.

Alternate, alternative -- Be sure which you mean.

Alternate : occur in turn repeatedly

Ex: *Alternate* shades of wood formed a pattern around the window.

Alternative: available as another possibility or choice.

Ex: Scientists are developing *an alternative* approach to treating the disease.

Alternate refers to an action of rotating or taking turns while alternative usually refers to another option or choice.

And : "and" or "but" may be used to begin complete sentences. And both are useful transitional words between related or contrasting statements.

Apparently (apparent) -- means *obviously, clearly, plainly evident*, but also means *seemingly* or *ostensibly* as well as *observably.* You know the meaning that you intend, but readers may not. Ambiguity results. Use *obvious(ly), clear(ly), seeming(ly), evident(ly), observable* or *observably,* to remove all doubt.

Appear, appears -- Seem(s)? "He always *appears* on the scene, but never *seems* to know what to do."

We mostly use appear to talk about facts and events. We use seem to talk about facts, but also to talk about personal feelings and ideas.

As -- Dialectal when used in place of *that* or *whether*; do **not** use "*as"* to mean *because*

At the present time, at this point in time -- Say "at present" or "now" if necessary at all.

Below -- See comment about "*above".*

But --

By means of -- Most often, just "by" will serve and save words.

Compare with, compare to -- Compare *with* means to examine differences and similarities; compare *to* means to represent as similar.

Comprise -- comprise means to contain, include, or encompass (not to constitute or compose)

Correlated with, correlated to -- Although things may be *related to* one another, things are *correlated with* one another.

Different from, different than -- Different from! Also, one thing *differs from* another, although you may *differ with* your colleagues.

> **"Different from" and "different than" are both standard, but some guides frown on "different than."** If you want to be safe, use "different from."

Due to -- Make sure that you don't mean *because of.* Due is an adjective modifier and must be directly related to a noun, **not** to a concept or series of ideas gleaned from the rest of a statement.

During the course of, in the course of -- Just use "during" or "in."

Either....or, neither...nor -- Apply to no more than two items or categories. Similarly, *former* and *latter* refer only to the first and second of only two items or categories.

Etc. – Use at least two items or illustrations before "and so forth" or "etc."

Following -- "After" is more precise if "after" is the meaning intended.

High(er), low(er) -- Much too often used, frequently ambiguously or imprecisely, for other words such as *greater, lesser, larger, smaller, more, fewer*; e.g., "Occurrences of higher concentrations were lower at higher levels of effluent outflow." One interpretation is that greater concentrations were fewer or less frequent as effluent volume(s) increased, but others also are possible.

In order to --

Irregardless -- No, *regardless*. But *irrespective* might do.

Emphasized give special importance or prominence to (something) in speaking or writing.

To confirm

Less(er), few(er) -- "Less" refers to quantity; "fewer" to number.

Percent, percentage -- Not the same; use percent only with a number.

Predominate, predominant -- *Predominate* is a verb. *Predominant* is the adjective; as an adverb, *predominantly* (not "predominately").

Principle, principal -- They're different; make sure which you mean.

A principle is a rule, a law, a guideline, or a fact. A principal is the headmaster of a school or a person who's in charge of certain things in a company.

Prior to, previous to -- Use *before, preceding*, or *ahead of*. There are *prior* and *subsequent* events that occur before or after something else, but *prior to* is the same kind of atrocious use that attempts to substitute "subsequent to" for "after."

Proven -- Although a *proven* adjective, stick to *proved* for the past participle.

Provided, providing -- *Provided* (usually followed by "that") is the conjunction; *providing is the* participle.

Reason why -- Omit *why* if reason is used as a noun. The reason is...; or, the reason is that... (i.e., the reason is the why).

Similar…as – No! If things are similar, they are *similar to* one another

Since -- has a time connotation; use "because" or "inasmuch as" when either is the intended meaning.

Small in size, rectangular in shape, blue in color, tenuous in nature, etc. -- Redundant.

That and which -- Two words that can help, when needed, to make intended meanings and relationships unmistakable, which is important in reporting scientific information. If the clause can be omitted without leaving the modified noun incomplete, use *which* and enclose the clause within commas or parentheses; otherwise, use *that*.

To be -- Frequently unnecessary. "The differences were [found] [to be] significant."

Varying -- Be careful to distinguish from *various* or *differing*. In saying that you used varying amounts or varying conditions, you are implying **individually changing** amounts or conditions rather than a selection of various or different ones.

Under way – two words except as adjective (e.g., “Further work on development is *under way*, but the problem of *under way* repair has not be solved.”).

Where -- Use when you mean *where*, but not for "in which," "for which," etc.

Which is, that were, who are, etc. -- Often not needed. For example, "the data that were related to age were analyzed first" means that the *data related to age* were analyzed first. Similarly, for "the site, which is located near Ames," try "the site, located near Ames" or "the site, near Ames." Rather than "all persons who were present voted," just say that "all persons present voted." Rephrasing sometimes can help. Instead of "a survey, which was conducted in 1974" or "a survey conducted in 1974," try "a 1974 survey."