Science Writing Checklist

[Point 1] In science writing, we use the Oxford (serial) comma.

e.g. I have a dog, a cat, and a tornado.
I ate a grape, a pineapple, or a worm.

Without this comma, you get confusion

I went to the mall with the surgeons, Janet and Jim.

Did I go to the mall with a bunch of surgeons as well as with Janet and Jim, or are the surgeons named Janet and Jim? You can't tell… And since science aims to be precise, you should use this comma.

[Point 2] That vs Which. I suggest visiting this link. If it should disappear, just know that "which" is used with non-defining clauses and generally requires a comma before it. This means that you use "which" when you can remove the clause with destroying the sentence. You use "that" when the clause is defining (or essential).

e.g. My chair that has a broken leg is in the trash.
This sentence suggest that the speaker has multiple chairs, but they are referring to the one with the broken leg.
My chair, which has a broken leg, is in the trash.
In this sentence, the speaker is suggesting that they only have one chair and one of its features is a broken leg.

[Point 3] Transitions: The sentence you are writing must relate to the previous sentence and the following sentence. I like to read sentences out loud to myself slowly, and see if the sentence before, and the sentence after it, make sense logically. Maybe you need to add a word or two to transition between the two ideas.

[Point 4] Commas are tricky. Generally, I add a comma when I take a breath when reading a sentence slowly aloud..

e.g. "In the beginning of the day, I always go to school."
In this case, you could convince yourself that you don't need a comma, and that would still be correct.
"In the beginning of time, before there were archae or bacteria, there was water."

[Point 5] A mix of short and long sentences. In general, we want to mix short sentences and long sentences. Think of your writing like music. If you just have short sentences, it is like only having high pitched notes. The song is not so exciting. But if you mix shorter sentences with longer sentences, you create something more beautiful. The exception here is if you are writing in a non-native language. In that case, it is always best to start with short sentences that you are sure transmit your idea.

[Point 6] Organization of a paragraph. Paragraphs should generally start with an introductory sentence. The next few lines should build on that introductory line and provide information about the topic described in that first sentence. The final sentence of a paragraph should provide some sort of closure to the ideas you just built, and gently transition to the next paragraph or topic. When there is no transition, then there is no flow and your reader is generally unhappy.

[Point 7] Titles are important! Titles of figure legends or subsections (not introduction or results or discussion) should be brief statements that tell you the take-home message.

e.g. Phagocytosis assay for mutants. **[BAD]**

This doesn't tell us the point.

Mutants play role in preventing phagocytosis. **[GOOD]**

[Point 8] Be careful with "affect" and "effect". Affect is a verb, effect is a noun. If you don't know what a noun or a verb is, you should start by learning more about those essential features of language.

[Point 9] Acronyms and abbreviations. Organisms should be written in their full latin name in italics at their first use (*Aspergillus fumigatus*). After the first use, the genus should be abbreviated for all further uses (*A. fumigatus*). Acronyms should also be defined at first use and then abbreviated in the remainder of the text (transmission electron microscopy =TEM). You should not go back and forth between full name and abbreviated name. Also, generally, the fewer abbreviations the better. So only abbreviate if it makes the paper easier to understand or saves a significant amount of space.

[Point 10] Selecting the right units. I would argue that consistency is a big factor here. If you use "h" as the abbreviation for "hours", try to stick with it throughout the text. Don't switch from "h" to "hr" to "hrs" to "hours". Units of measurement can be complicated. Look up how they are used in your field and how you should use them as nouns versus adjectives ("A twelve-hour time point").

[Point 11] Introductions should start broad and get more specific. The discussion starts fairly specific and gets more broad, usually ending with some information about how your work fits into the field.

[Point 12] Hyphens and compound adjectives! Compound adjectives have hyphens when they describe a noun as a single idea. As an example, the term wild type can be a noun (notice that there is no hyphen), but when it describes a noun, it gets a hyphen. "A wild-type strain" is a single idea describing strain.

[Point 13] Be aware of plagiarism. When you cite someone else's work, that does not give you the right to copy their work. We cite in science to allow us to paraphrase (summarize briefly in different words) the work of someone else. You should never be able to google your sentences and find the source. The best way to think of this is write with your own "voice". If a reader can hear someone else's voice, then you are probably plararising the source.

[Point 14] Be consistent and pay attention to detail. You should be consistent with line spacing, units, the way you reference figures (Fig. 1), whether or not you indent paragraphs, everything! Scientists notice details, and when the details are mixed up, then it is hard to take the science seriously. Do yourself a favor and make sure the details are pefect.

[Point 15] Mutant vs knockout vs deletion. People will argue this, but at least be aware that a knockout and a deletion are types of mutations. I generally write knockout or deletion mutant, rather than just mutant, for clarity.

[Point 16] Genes vs Proteins. It differs from organism to organism, but genes are generally lowercase and italicized, with a final capitalized letter (*rodA*), whereas proteins are not italicized and usually at least partially capitalized (RodA, or in human DICER).

[Point 17] Indentation of paragraphs. In english, you have three options.

1. You can indent to ~1 cm the first line of every paragraph.
2. You can indent to ~1 cm all paragraphs after the first paragraph of a section, but leave the first line unindented.
3. You can indent nothing, and leave an empty line between each paragraph.

Option 1

Let's pretend that we have three short paragraphs. The content of the paragraphs does not matter for these examples. We have a few different options on how to indent the paragraphs. We could do this first option, which is where we indent each paragraph, throughout our entire text.

Maybe the second paragraph is on pies. Apple pie, peach pie, or pumpkin pie for example. It doesn't really matter. I am just trying to fill space so you can see the way this would work. Sharks have fins. Trees are taller than me.

Finally, a third paragraph with an indent. So, as you can see in this example, each paragraph is indented. There are no extra spaces between paragraphs, we just use the indent to say that we are starting a new paragraph, and a slightly new topic.

Option 2

We can do the same thing with the second type of option, where we don't indent the first line of the first paragraph, but we indent all of the following paragraphs. Remember that each paragraph should be centered on an idea or concept. So really, these are paragraphs that I wrote, but they fill some space.

Maybe the second paragraph is on birds. Storks, pigeons, or ravens for example. It doesn't really matter. I am just trying to fill space so you can see the way this would work. Fish have fins. Mountains are tall.

Finally, a third paragraph with an indent. So, as you can see in this example, each paragraph after the first paragraph of a section (think Introduction or Discussion) is indented. There are no extra spaces between paragraphs, we just use the indent to say that we are starting a new paragraph, and a slightly new topic.

Option 3

We can do the same thing with the third type of option, where we don't indent any paragraph, but we put a blank line between each paragraph. This helps us see the transitions.

Maybe the second paragraph is on fungi. *Aspergillus*, *Cladosporium*, or *Candida* are types of fungi. It doesn't really matter. I am just trying to fill space so you can see the way this would work. Mushrooms are tasty, but they are not always edible.

Finally, a third paragraph with no indent. So, as you can see in this example, no paragraphs are indented. There are extra spaces between paragraphs to show that we are starting a new paragraph, and a slightly new topic.