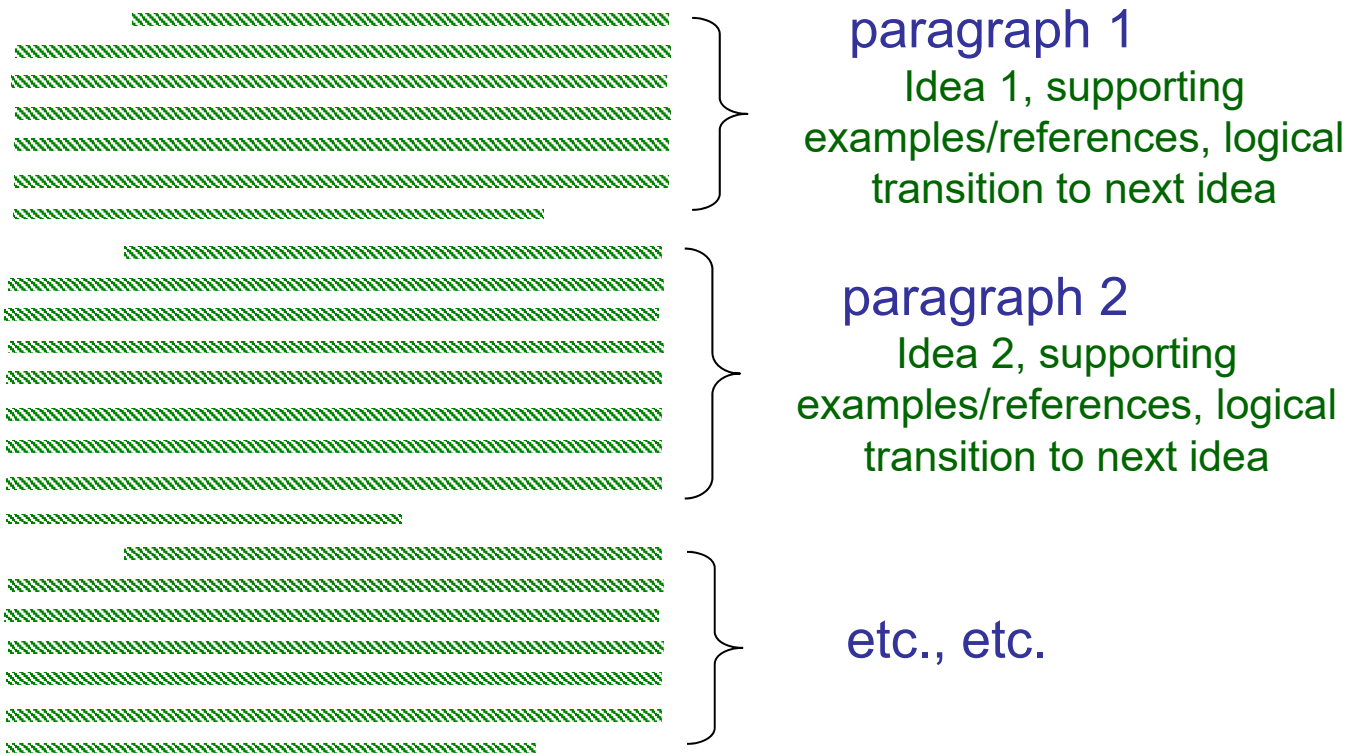
Things to keep in mind so that your scientific writing is logically structured, precise, and concise:

(1). Use paragraphs to maintain a logical structure

Every paragraph should contain roughly one idea + supporting evidence for that idea, if possible, and ***this idea should be presented as concisely as possible***



(2). Effective science communication is precise and concise

Avoid unnecessary background information: Ask yourself, "Do I really need this extra sentence, paragraph, or clause to explain my results or main point?"

Keep sentences short: Avoid lengthy and complex sentences (>25 words with long strings of modifiers). Ideally, each sentence contains one idea

In terms of writing efficiently, it is easier to start by writing concise, short sentences that convey your main ideas – that you can judiciously build upon later -- than to start with complex prose that you have to trim!

Write simply and clearly! Avoid colloquial phrases, technical jargon, slang words and phrases, and complex words

Avoid subjective statements:

"We felt that the diffractometer was misaligned, because we were unable to observe the Bragg peak,"

is more appropriately written,

"The Bragg peak was not observed, suggesting a problem with the sample or the diffractometer's alignment."

Avoid useless adjectives and quantify:

"We observed an incredibly large increase in scattering intensity when the temperature was lowered,"

is more appropriately written,

"There was a three-fold increase in resonance A's scattering intensity when the temperature was lowered below the transition,"

Minimize use of weak verb phrases: These are dull and tend to unnecessarily lengthen sentences.

"The Acton 800 spectrometer is equipped with two stages, the first of which is known as the filter stage, and the second of which is known as the dispersive stage," (30 words)

is more succinctly written,

"The Acton 800 spectrometer has both filter and dispersive stages." (10 words)

Other Weak verb phrases	Strong verbs
"made a determination"	determined
"performed a measurement"	measured
"conducted an analysis"	analyzed

See Celia's lecture on verb usage:
http://people.physics.illinois.edu/Celia/Lectures/Verbs.pdf

Don't use ambiguous pronouns: Avoid vague pronouns like "it", "this", "that", etc.

"Bob wanted to help John measure the resistance of the sample in the laboratory, but he couldn't find it."

What does "it" refer to in this sentence? Who is "he"?

Don't anthropomorphize: Most of the things you will probably study in your careers will not have either feelings or free will, so avoid statements like,

"The myosin wants to move along the actin protein strand…"

Be specific about the mechanisms causing the phenomena you describe: inanimate objects don't "want" or "need" anything

(3). Effective communication requires “parallel structure” to help the reader navigate complex sentences…Think writing computer code!

“My goals in this class are:

-- to learn how to write more effectively

-- expressing myself better in presentations

-- the scientific proposal review process”

Parallel structure in sentences

"My goals in this class are to learn how to write more effectively, expressing myself better in presentations, and the scientific proposal review process"

Using the same verb form in a complex sentence helps the reader navigate a complex sentence with multiple elements:

"My goals in this class are to learn how to write more effectively, to express myself better in presentations, and to understand the scientific proposal review process"

Parallel structure in sentences

"My goals in this class are to learn how to write more effectively, expressing myself better in presentations, and the scientific proposal review process"

Using the same verb form in a complex sentence helps the reader navigate a complex sentence with multiple elements:

"By taking this class, I am interested in learning how to write more effectively, expressing myself better in presentations, and understanding the scientific proposal review process"

“Which” vs “That”

Use “that” to specify a specific class of something:

“The books that have a red cover are new”

Use “which” (followed by a comma) to provide additional information about something:

“The books, which have a red cover, are new”

"Due to" vs "Because of" vs "Caused by"

"Due to" is ***not*** interchangeable with "Because of"

"Due to" functions as an adjective and modifies nouns and pronouns. "Due to" is interchangeable with "Caused by"

"Because of" functions as an adverb and modifies verbs and adjectives

A trick you can use to see if "due to" is appropriate:
Replace "due to" with "caused by"…if the sentence still makes sense, you're probably OK

If the sentence doesn't make sense, "because of" is probably more appropriate