

Commonly misspelled, miscapitalized, mis-auto-corrected, confused and/or misused biochemistry terms

Be sure to look for these when editing!

- Commonly misspelled

- "con**for**mation" vs "con**firm**ation"

- Con**for**mation is used to describe the 3D “pose” of a molecule (conformations can be interconverted without breaking any covalent bonds).
 - Con**firm**ation is when you verify something.
 - *Structural biology can provide confirmation that a protein is in a particular conformation.*

- "p**ro**te**as**ome" not "p**ro**te**os**ome"

- I think this is because a proteasome is a “body” (“-some”) that acts as a protease (protein cutter).

- Commonly miscapitalized

- “R**N**ase" not "R**NA**se" (as well as DNase not DN**A**se)

- If you think about what it’s short for, it makes more sense: RiboNuclease, not RiboNucleic Acidase. RNase is a nuclease, which is a distinct type of enzyme, one that hydrolyses (uses water to break down) nucleic acids. So, the RNase spelling is most appropriate.

- “w**es**tern blot” not “**W**estern blot”

- Unlike “Southern blots,” named for Edwin Southern, western blots (also northern blots etc.) shouldn’t be capitalized as they aren’t proper nouns, but rather a play on words given Southern blots

- Commonly confused and/or misused:

- Terminal vs terminus

- Use “**terminus**” as a noun (e.g. N-terminus, C-terminus) and “**terminal**” as an adjective (*The N-terminal region of a protein contains the N-terminus*).

- Homolog vs. analog

- **Homologs** are genes/proteins that look &/or act similar because they share an evolutionary origin.
- **Analogs** are genes/proteins that look &/or act similar but do not share an evolutionary origin. They can arise due to convergent evolution - different evolutionary paths stumble upon similar useful things.

- Homology vs identity vs similarity

- **Homology** is a yes/no: sequences either share a common evolutionary ancestry (are homologous) or they don't*
- "Percent homology" is often used incorrectly to refer to sequence similarity. How similar two sequences are can be expressed as:
 - **Percent identity:** % of identical residues OR
 - **Percent similarity:** % of biochemically-similar residues (e.g. substituting one positively-charged amino acid for another one)

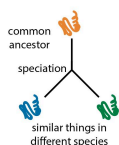
homologs

genes/proteins that look &/or act similar because they share an evolutionary origin

can be further classified as:

orthologs

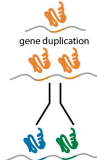
speciation after the evolution of a gene/protein leads to there being versions of it in different species



Homologous genes/proteins may have **various degrees of functional similarity** - sometimes they do very similar things and can compensate for one another; other times they do really different things. **What defines them is having shared ancestry.**

paralogs

genetic *duplication* leads there to be multiple copies of a gene that can then evolve separately - can be in the same species or in different species



don't confuse them with: **analogs**

genes/proteins that look &/or act similar but do not share an evolutionary origin
can arise due to convergent evolution - different evolutionary paths stumble upon similar useful things

~~percent homology~~

homology is a yes/no sequences either share a **common evolutionary ancestry** (are homologous) or they don't*
“percent homology” is often used incorrectly to refer to **sequence similarity**

how similar two sequences are can be expressed as

percent identity
% of identical residues
(same letters)

percent similarity
% of biochemically-similar residues

or

homologous genes/proteins often, but not always, have high sequence similarity

genes/proteins with high sequence similarity often, but not always, are homologous

*it is possible for only some regions of sequences to be homologous, while others aren't, but that's due to evolutionary origin, not based on sequence similarity

e.g. substituting one positively-charged amino acid for another one

- Commonly Mis-auto-corrected

- "misfiled" from "misfolded"
- "assets" or "asses" (quite unfortunately) from "assays"...
- "cry" from "cryo"