The Science Detective's Glossary

Abstract: The short summary paragraph at the very start of a scientific paper. It tells you what they did and what they found. *Warning: Sometimes the abstract promises more than the paper actually proves*.

Conflict of Interest: When the researchers (or the people funding them) make money if the results turn out a certain way. Example: A study saying 'Oil is good for plants,' funded by an oil company.

Control Group: The group in an experiment that does *not* get the treatment. They are used for comparison. If the 'medicine group' gets better, but the 'control group' gets better too, the medicine probably didn't work.

Correlation vs. Causation: Just because two things happen at the same time, it doesn't mean one caused the other.

- *Example:* Ice cream sales and shark attacks both go up in summer. Ice cream does not cause shark attacks (correlation). Summer heat causes both (causation).

DOI (Digital Object Identifier): A unique string of numbers and letters that acts as a permanent ID card for a scientific paper. If you have the DOI, you can always find the paper, even if the website moves.

Open Access: A publishing model where the scientific paper is free for anyone to read immediately. No credit card required.

Open Data: When scientists upload their raw spreadsheets, code and notes to a public website so others can check their maths. This is a sign of high trustworthiness.

OSF (Open Science Framework): A popular online platform where scientists upload their Open Data and pre-register their experiments. If a paper links to an OSF page, that's a good sign!

Paywall: A system that prevents you from reading a paper unless you pay a fee or have a subscription (usually via a university).

Peer Review: The 'marking' system of science. Before a paper is published in a journal, it is sent to 2 or 3 other experts (peers) who check it for mistakes.

Predatory Journal: A fake or low-quality scientific magazine that exists only to make money. They will publish anything (even nonsense) if the author pays a fee, without doing any Peer Review.

Preprint: A version of a scientific paper that has been shared publicly (often on a server like arXiv or bioRxiv) *before* it has been peer-reviewed. It allows science to move fast, but it hasn't been checked for errors yet.

Replication: When a different group of scientists tries to do the exact same experiment to see if they get the same result. If they do, the finding is 'replicable' (and likely true).

Sample Size (*N*): The number of people, animals, or things tested in a study. Generally, a higher number (*N*=1000) is better than a low number (*N*=10).

Sci-Hub: A controversial 'pirate' website that bypasses paywalls to provide free access to millions of research papers. While legally challenged by publishers, it is widely used by researchers worldwide to access knowledge.