

Common Elements of Pseudoscience
Dr. Douglas Duncan
University of Colorado

Not all characteristics are always present, but many often are. If you see them, watch out! Without proper scientific skepticism you may well get fooled, sometimes jeopardizing you money or your health. Remember, “Science is a Way of Trying not to Fool Yourself!” – Nobel Prize winner - and character - Richard Feynman.

How to tell if something is Pseudoscience. *Beware if it...*

- Is based on **Post**-diction, not **Pre**-diction (story is made up after the fact)
- Explains things people care about that may not have other explanations (avoids the scientific response, “We don’t know,” which people often find unsatisfactory)
- Uses scientific-sounding language and jargon (often incorrectly; e.g. “energy flows”)
- Does **NOT** use the scientific method of clearly stating the hypothesis and *then* making a test
- Usually has an explanation even when the idea fails (e.g. “astrology is only a tendency,” “the faith-healing treatment must have been started too late,” etc.)
- If it contradicts known scientific principles or is not generally accepted, the originator of the theory claims to be “persecuted by the scientific (or other) establishment,” is not recognized because “the jealous establishment,” or is opposed by a conspiracy.
- If it “screams,” tells you it is the only true story, or is “fair and balanced,” these are all bad signs. Good science presents the data and results, and lets them speak for themselves.

Scientific papers and books often end with a chapter or explanation of what we don’t know. I rarely if ever have seen a pseudoscientific work that discusses what the author *doesn’t* know.

I hope after taking a good science class you realize how much isn’t known in science, and that rather than a deficiency, this is a normal part of investigation of our universe. In fact, the unknown is one of the coolest parts of science. Good scientists always admit what is unknown as well as what is known. The idea of scientist as “know-it-all” is false☺