Science: Good, Bad, Misused

Aspects of “good” science
- Avoids claims and exaggerations
- Separates what is known from speculations
- Avoids extrapolating about unknown quantities
- Admits to errors in analysis or method
- Admits evidence that contradicts or refutes hypothesis

Criteria for good science
- Clarity
- Good reasons
- Accuracy and precision
- Consistency
- Relevance
- Peer review
- Sound empirical evidence
- Depth, breadth, and fairness
- Standards and protocols
- Patience and humility

Aspects of “bad” science
- Badly controlled or contaminated experiments
- Conclusions drawn solely from unreplicated data
- Reliance on anecdotal evidence, or personal testimonials
- Incompetent or inadequately-skilled researchers
- Researchers who lack depth of specialized knowledge of field
- Unresponsiveness to requested peer review
- Promotion of theories based on poorly understood factors

Misuse of science
- Promoting unfounded and unproven claims
- Questionable priorities: e.g., profit before accuracy
- Fabrication, falsification, and fraud
- Hidden agendas (conflict of interest)
- Abuse of power within scientific hierarchy or by researchers over test subjects