

A hypothesis is a possible explanation for an observation

A hypothesis

- Must be tested to determine its validity
- Is often tested in many different ways
- Allows for predictions to be made

Iterative

- Hypotheses can be changed and refined with new data

Experiment

Tests the hypothesis

Must be carefully designed to test only one variable at a time

Consists of a test experiment and a control experiment

Predictions

Hypotheses should make predictions

Predictions provide a way to test the validity of hypotheses

Hypothesis must be rejected if the experiment produces results inconsistent with the predictions

The more experimentally supported predictions a hypothesis makes, the more valid the hypothesis

Never say prove

Philosophical approaches to science

- Reductionism
 - *To break a complex process down to its simpler parts
- Systems biology
 - *Focus on emergent properties that can't be understood by looking at simpler parts

Models in science

- Way to organize thought
- Parts provided by reductionist approach
- Model shows how they fit together
- Suggest experiments to test the model