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1. Why do valid experiments require a control group?
2. What do control groups allow us to do?

# Hypothesis #1: Vaccines cause autism

1. What is the independent variable?
2. What is the dependent variable?
3. What is the experimental group?
4. What is the control group?
5. Based on the hypothesis above, predict the outcome of the Denmark study.
6. What was the result of the experiment?
7. Was the hypothesis supported?

# Hypothesis #2: Too many vaccines given too early in development and too close together causes autism

1. What is the independent variable?
2. What is the dependent variable?
3. What is the experimental group?
4. What is the control group?
5. Based on the hypothesis above, predict the outcome of the Japanese study.
6. What was the result of the experiment?
7. Was the hypothesis supported?

# Hypothesis #3: The preservative thimerosal, which contains ethyl mercury, causes autism

1. What is the independent variable?
2. What is the dependent variable?
3. What is the experimental group?
4. What is the control group?
5. Based on the hypothesis above, predict the outcome of the Denmark study.
6. What was the result of the experiment?
7. Was the hypothesis supported?
8. What is the relationship between the plural of anecdote and data?
9. Where would you place the certainty of a scientific theory on the scale below?

10

5

0

Absolutely certainly wrong

Absolutely certainly right

1. Fill in the diagram below with the following words and phrases: laws, facts, hypotheses, patterns, observations, theories; explain facts, observations, and patterns. A hypothesis can become a theory; Explain related facts, hypotheses, and laws; Say what happened under specific conditions. They describe patterns, but they do not explain.
2. What is a controlled study and why are they essential for good science? Your answer must reference the Andrew Wakefield induced vaccine scare.