

# Scientific Method/ COL Review

## What are the steps of the scientific method?

- ▶ Observation/ Question
- ▶ Research
- ▶ Hypothesis
- ▶ Experiment
- ▶ Analyze results

## What is a hypothesis?

- ▶ Testable
- ▶ Unbiased
- ▶ Possible explanation for your observation

## What is data?

- ▶ Information gathered from an experiment.

## How do you "prove" a hypothesis?

- ▶ Unbiased testing to ensure the experiment is valid.

## What is a theory?

- ▶ Hypothesis that is supported by data and repeated testing over time.

## What is biology?

- ▶ Study of life.



## What is homeostasis?

- ▶ A state of biological balance.
- ▶ Conditions are kept fairly constant.



## What is the control group in an experiment?

- ▶ Group that is not tested, doesn't receive the variable.



## What is a variable?

- ▶ Condition that is being tested.



## What is the experimental group?

- ▶ Group that receives the variable, is tested.



## What is quantitative data?

- ▶ Numbers



## What is qualitative data?

- ▶ Facts, information, surveys, verbal descriptions.



## What is an independent variable?

- ▶ One that you, the researcher changes or controls.



## What is the dependent variable?

- ▶ The one that changes as you adjust the independent variable.



## What does unicellular mean?

One cell



## What does multi cellular mean?

- ▶ More than one cell.



## What are the COL's

- ▶ Move
- ▶ Reproduce
- ▶ Grow
- ▶ Develop
- ▶ Metabolize
- ▶ Adapt
- ▶ Respond



To be alive which COL's do you  
HAVE to HAVE?

- ▶ All of them!



What is asexual reproduction?

- ▶ One parent



Describe Francisco Redi's  
Experiment.

- ▶ Hint: meat and flies



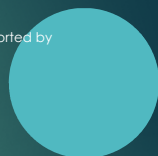
Describe Pasteur's Experiments.

- ▶ Hint: s curved neck on flask



What is the difference between a  
theory and a hypothesis?

- ▶ Hypothesis is an educated guess, theory has been supported by repeated testing over time.



Is fire alive? Why or why not?



How many variables are tested at one time in a controlled experiment?

- ▶ 1

Are theories always true?

- ▶ No
- ▶ They can be revised or replaced.

What does a hypothesis come from?

- ▶ Observations
- ▶ Prior knowledge
- ▶ Imaginative guesses
- ▶ Logical inferences

What do you call a well tested explanation?

- ▶ Theory

What is another name for a proposed solution to a scientific problem?

- ▶ Hypothesis

A factor that affects the outcome of an experiment is called?



- ▶ variable

Ideas that are supported by facts and evidence are called?

- ▶ Theories



Explain how a hypothesis is different than a theory.



Good Luck!

