

## Life's Origins Lab – Experimental Design ANNOTATED

### PURPOSE AND PREDICTION

- Restate the **question**:

*Look at your purpose. What debate are you trying to settle?  
State your goal for the lab, and change that statement into a question.*

- **Hypothesis**:

*This is what you think the answer to your question will be, before conducting the experiment.  
Think of it as a prediction of what your results would look like.*

- Why do you believe your hypothesis is true?

*Look back at biological concepts you have already learned! Support your hypothesis/answer with background information or personal experiences.*

### EXPERIMENTAL DESIGN

- Identifying **Variables**

- **Independent variable**: What was different (varied) in the set up of the experiment? Be as specific as possible. It must be something we **DIRECTLY** varied on purpose.

- **Dependent variable**: What **MIGHT** be different at the end of the experiment as a **RESULT** of changing the IV? What are we observing and/or measuring at the end of the experiment?

- **Control Group(s)** - What will serve as a good comparison group? **Explain.**

*This sample/group does not receive any change or treatment by us, the scientists (e.g. 'no IV') or it's the group that we know exactly what the outcome will come out to be (e.g. no DV change).  
**MUST INCLUDE AN EXPLANATION.** ("Flask B, because...")*

- **Constants** - What factors (at least three) will stay the same?

*Features of the environment and experimental setup that do not change from one experimental group to another (opposite of Independent Variable). At least **THREE** are required.*

### CONDUCTING THE EXPERIMENT

- **Materials** (Be as detailed as possible so the experiment could be repeated.)

*Look at the pictures of the experiment (opposite side). Did you **DESCRIBE** (including numbers) everything we used in the set-up?*

- **Procedure** (Be as detailed as possible so the experiment could be repeated.)

*This should cover everything from the experimental set-up to the method of observing data.*

