



Ask a Question:

Example - What factors affect planarian regeneration?

What is your objective in this experiment?

Example - To examine the effects of RNA interference (RNAi) targeting beta-catenin or APC on the regeneration of planaria.

Formulate a hypothesis:

What do you predict will happen within your experiment?

Design your experiment:

What are your independent variable(s)? What are your dependent variable(s)?

What are your experimental negative controls?

What materials are required?

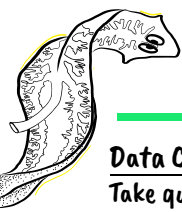
- Petri dishes (at least 2 per experimental condition)
- planaria
- Planarian water
- Cover slips (for cutting worms)
- Transfer pipettes
- Dissection microscope
- Permanent marker (for labeling dishes)
- Notebook or Excel document to record phenotypes

Experimental protocol:

How are you going to test this question?

Safety and Considerations:

- Handle planaria gently to avoid injury.
- After completing the experiment, dispose of planarian waste and water properly by adding to a container of 10% bleach.
 - Do not dispose of planarian down the drain.



PLANARIAN OUTREACH PROGRAM

Student Lab Handout

Name: _____ Class: _____ Period: _____

Data Collection:

Take qualitative (how do they look?) and quantitative (how many?) notes on morphology and any abnormal regenerative patterns.

days post amputation (dpa)	Qualitative notes: What features are regenerating? What new tissue has formed?	Quantitative notes: How many planarians have survived? How many planarians have lysed?

Critical Thinking Questions:

Answer these questions during each day of data collection.

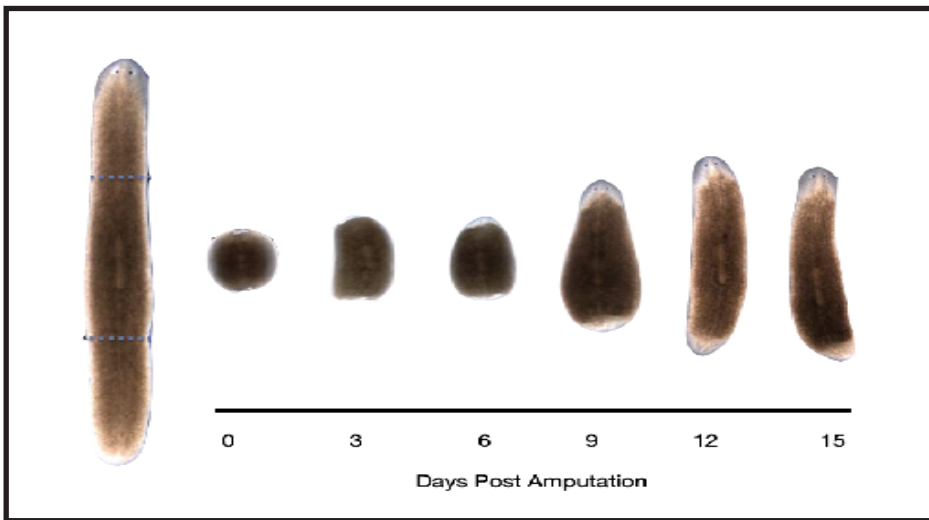
1. What role do neoblasts play in the regeneration process of planarians?
2. How do planarians detect and respond to light despite lacking complex eyes?
3. How do planarians reproduce asexually, and what advantages does this provide?
4. If a planarian is exposed to a toxin that specifically affects its neoblasts, what would be the likely consequences for its regeneration ability?
5. How could studying planarian regeneration contribute to advancements in human medicine, such as tissue engineering or wound healing?




Summary Report:

Write a Summary of your Results. The summary should be concise, well-organized, and clearly present the experimental outcomes.

Normal Regeneration Time Course:



Common Phenotypes of Healthy and Unhealthy Planaria:

Healthy	c 	Unhealthy
Phenotype: <ul style="list-style-type: none"> • Fully formed • Edges of animal appear smooth • Pigment: Brown Behavior: <ul style="list-style-type: none"> • Motility: Glides & elongates body 		Phenotype: <ul style="list-style-type: none"> • Regression • Lesions • Lysis Behavior: <ul style="list-style-type: none"> • Motility defects • No response to food • No response to light

Check out this youtube video!

