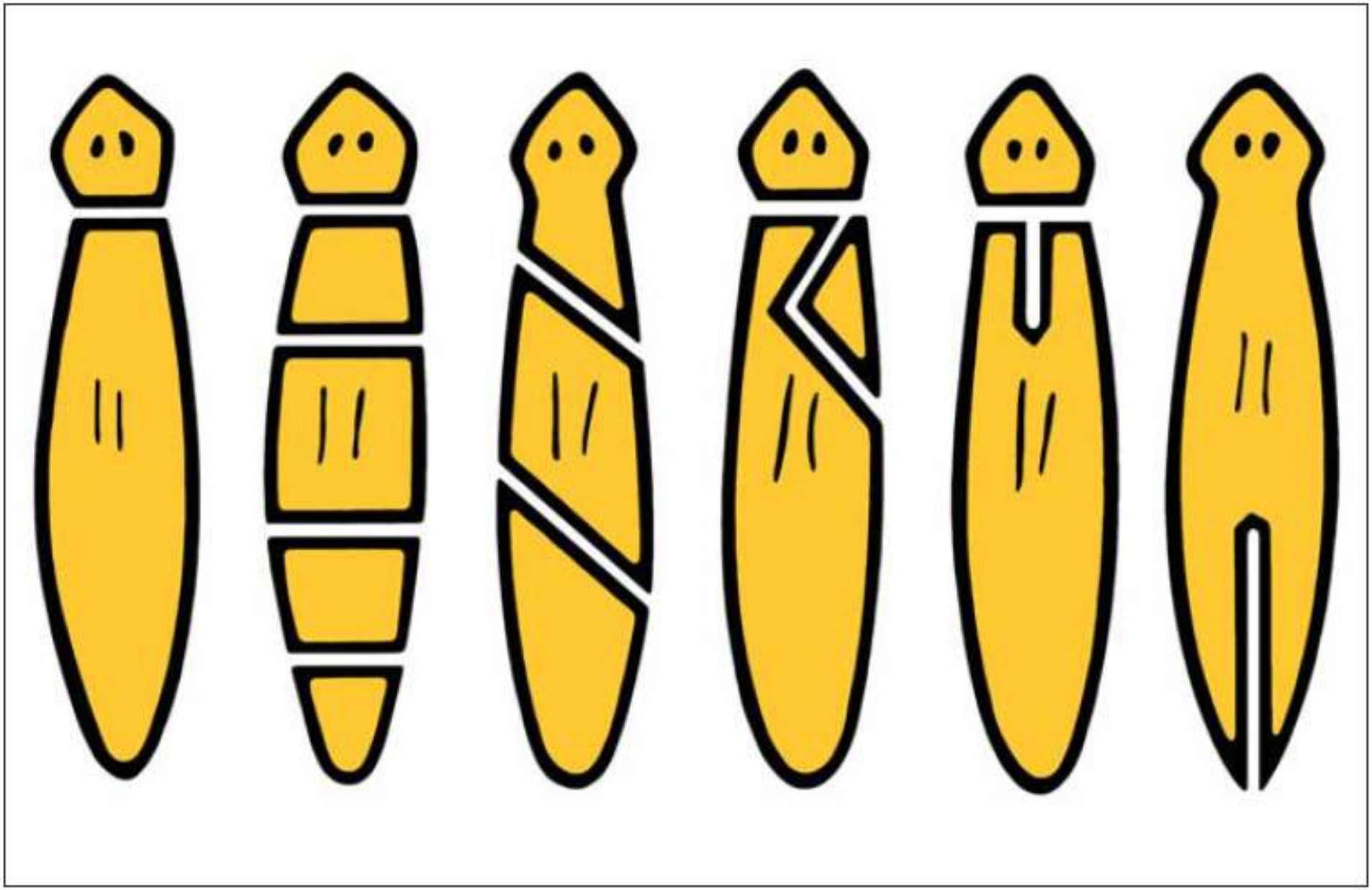
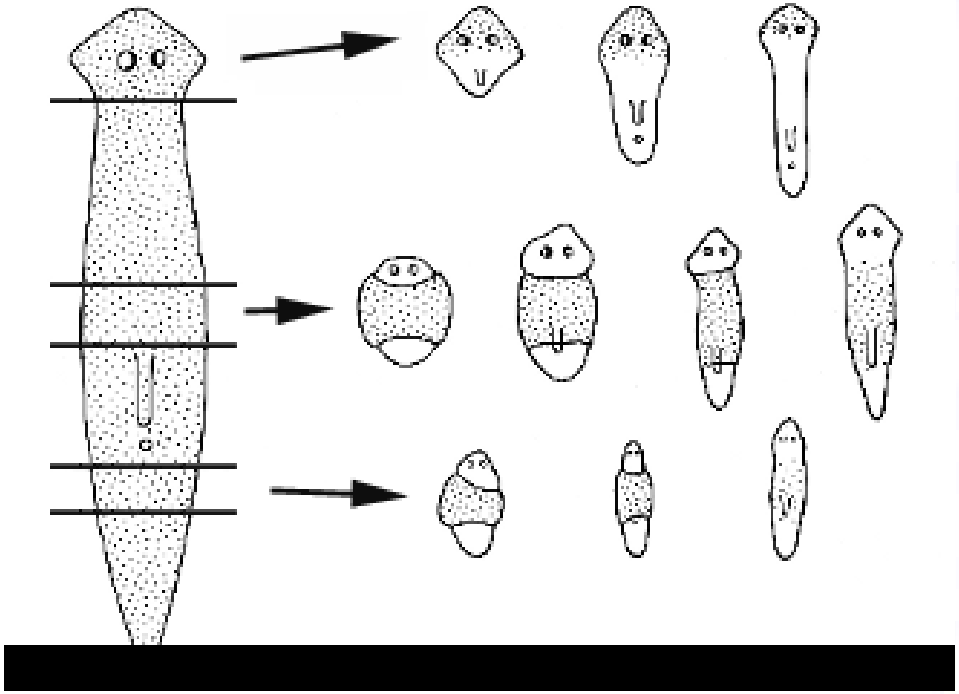
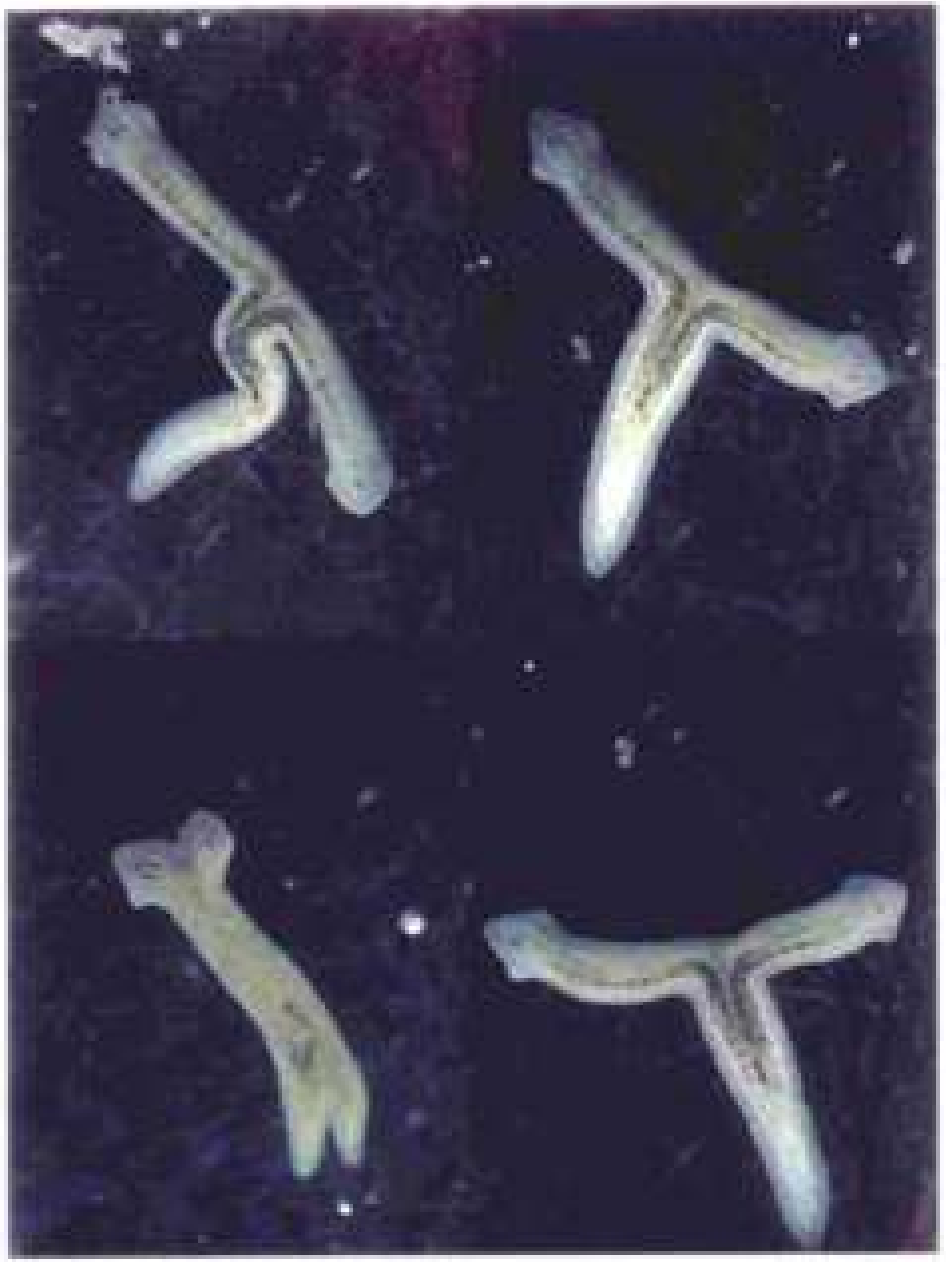
Planaria Regeneration Lab

Day 1

1. Set up your personal paper and follow the directions on the lab sheet.
2. Today, you will be:
   - Observing your worm in its natural state
   - Observing your worm with the lights off
   - Cutting your worm to cause regeneration
   - Creating a hypothesis for which segment will regenerate fastest
   - Observing your worm after the cuts have been made







Stem Cells and Regeneration

- http://www.hhmi.org/biointeractive/planarian-regeneration-and-stem-cells

Day 4 (Monday 10/27/14)

Using a microscope, look at each piece of your flatworm

1. Sketch a picture of each segment
2. Write down observations about the condition, physical shape etc. for each segment
3. Describe the movement of each segment

Day 5 (Tuesday 10/28/14)

Using a microscope, look at each piece of your flatworm

1. Write down observations about the condition, physical shape etc. for each segment

2. Describe the movement of each segment

3. Which segment seems to be growing the most?

- Look at each segment with a microscope. Write down observations about the growth for each segment
- Sketch a picture of each segment
- Look for important features and write down if the segment has any of the following
  - A new mouth?
  - New auricles?
  - New eyespots?

Day 7

- Look at each segment with a microscope. Write down observations about the growth for each segment
- Sketch a picture of each segment
- For each segment write observations like :
  - A new mouth?
  - New auricles?
  - New eyespots?
    - New eyespots indicates a new head is complete!
- Rank them as to how it appears their growth is going

Day 8

- Look at each segment with a microscope. Write down observations about the growth for each segment
- Estimate how much the segment has grown since day 1.
- No need to sketch today
- For each segment write observations like:
  - A new mouth?
  - New auricles?
  - New eyespots?
    - New eyespots indicates a new head is complete!

Day 9

- Test Day
- Look at your worm and see if there is anything else new

Final Day

- **Final Day**
- Look at each segment with a microscope and sketch each worm segment one last time.
- For each segment write your final observations, like:
  - Does it have a mouth? Auricles? Both eyespots?
  - How much bigger is the segment today, compared to day 1?
  - Describe the movement of each segment. How does it compare to Day 1? Does it move more freely, less freely or just about the same.
  - Did each segment completely regenerate? Write down which ones did and which did not.
- Rank each segment in order of how quickly it regenerated.
- How does each segment respond to light? (We will turn the lights off to do this)
- How does the color of the new growth compare to the color of the original worm?

Feeding your worm

- Place a small crumb of egg yolk in the dish. Wait a bit and watch the worm eat.
  - Look for the pharynx if you can!!!
- After feeding, either return your worm to the main pan or leave it on the tray to take home.
  - Main pan: dump the majority of the water from the petri dish into the sink. Transfer the worm using a pipette.

- Review of your hypothesis.
  - Write a paragraph that goes over your hypothesis
    - Was your hypothesis correct? (your original ranking). Describe your results.
    - Try to explain your results: Why do you think one segment regenerated faster than another segment?