

The logo consists of the word "SKILLPILLS" in a bold, white, sans-serif font. The text is contained within a red rounded rectangle that has a white rectangular cutout on its right side, through which the word "PILLS" is visible.

SKILLPILLS

Skill Pill+: Evolutionary Genomics

Morphological Analysis

December 2018

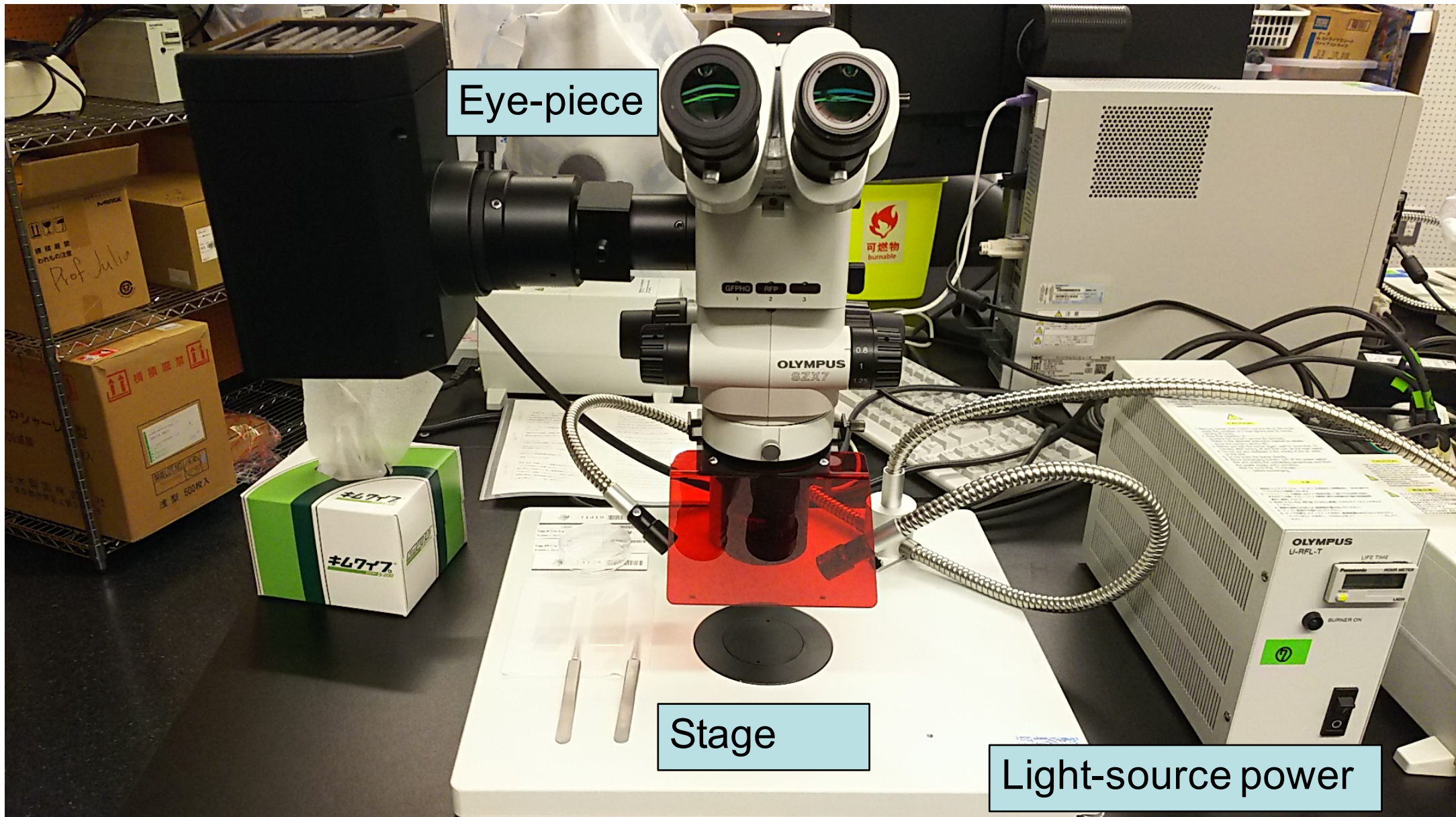


OIST

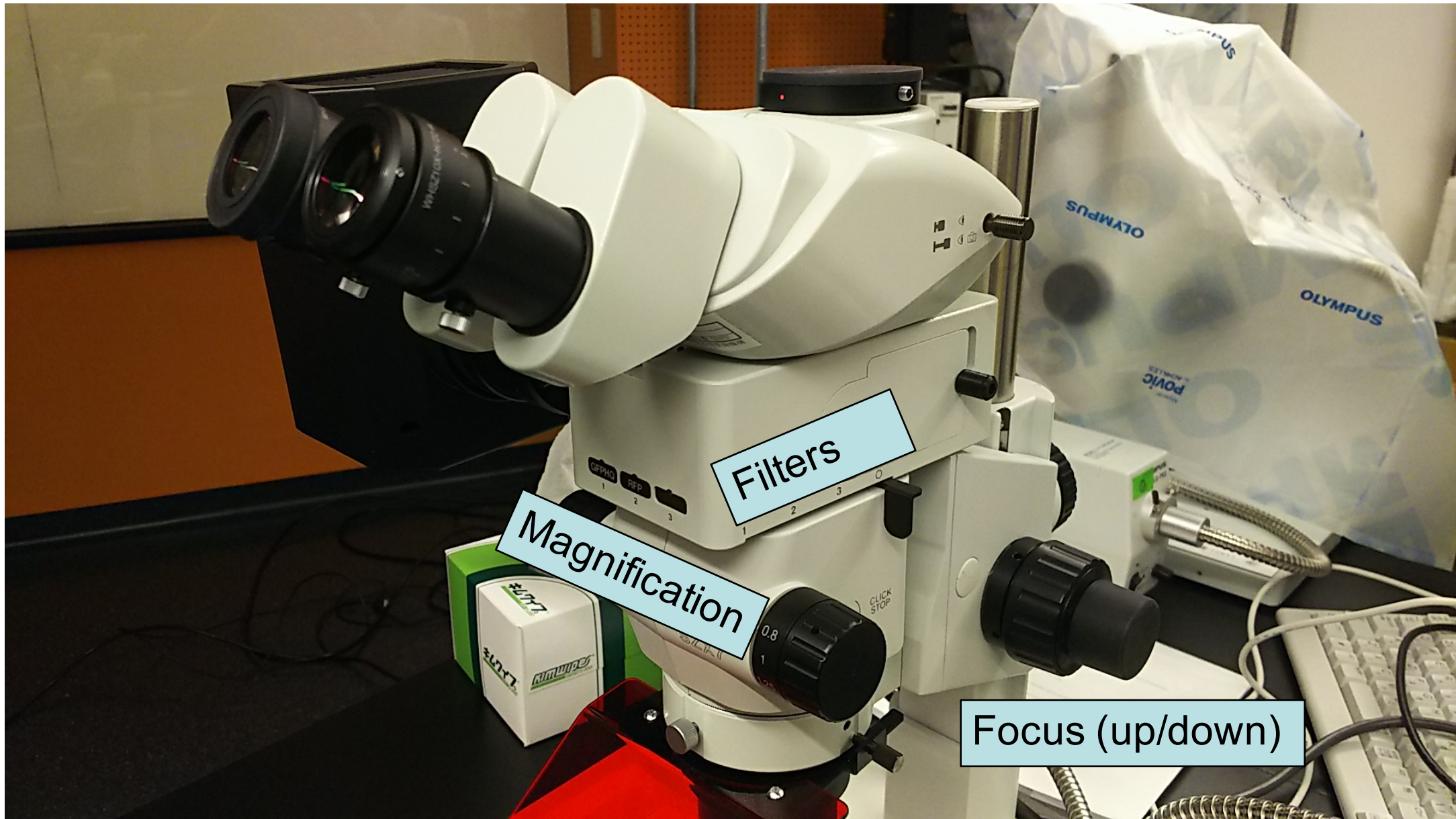
Basic Microscopy



The Dissecting Microscope



The Dissecting Microscope



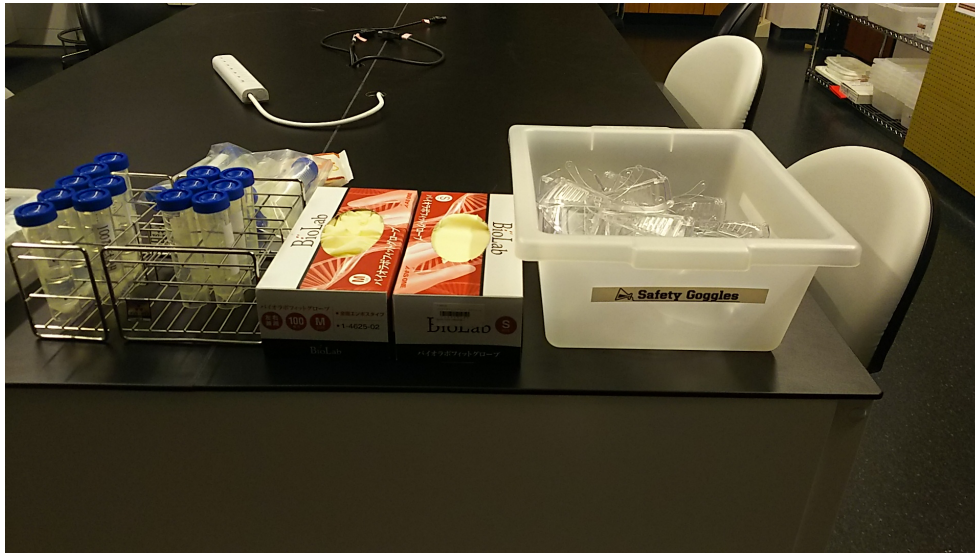
In General, with Microscopes

- Always start with a low magnification
- Then focus
- Repeat
- Increase Magnification, Focus, Repeat
- Until desired level of detail is visible



The workflow

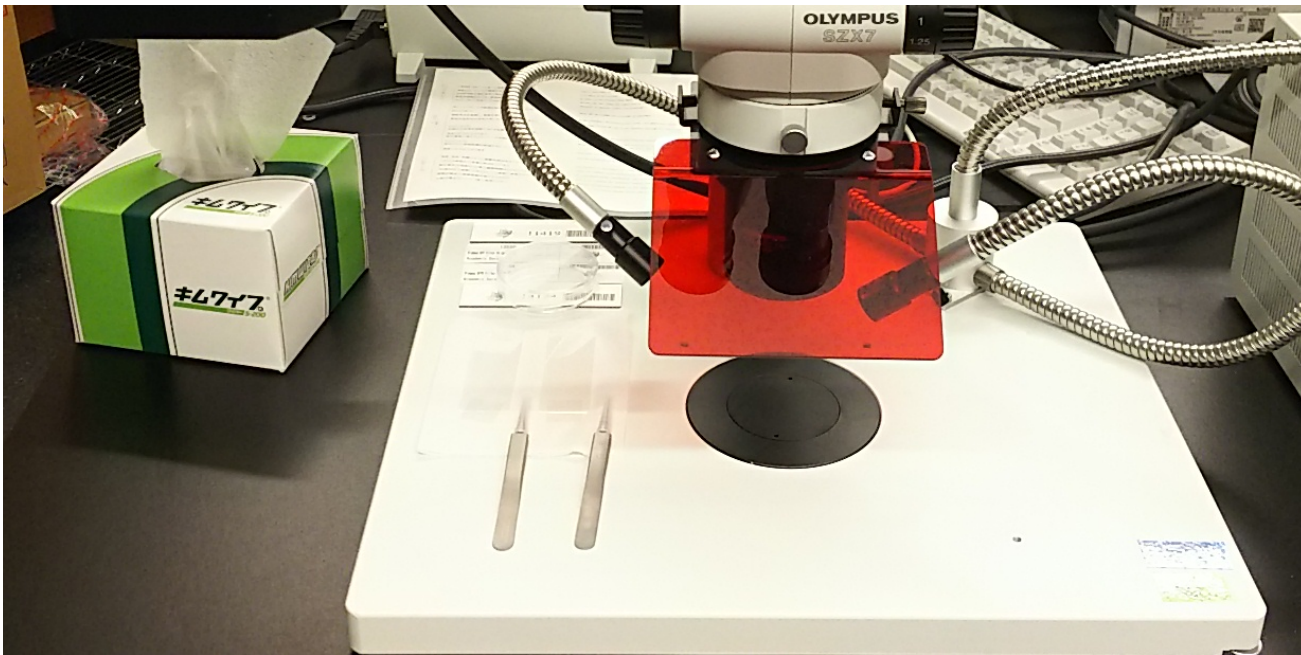
- First: Please use PPE!



- Clean the bench with 70% ethanol and tissue
- Clean the microscope lens and platform with 70% ethanol and kim-wipe (as the lens is sensitive).

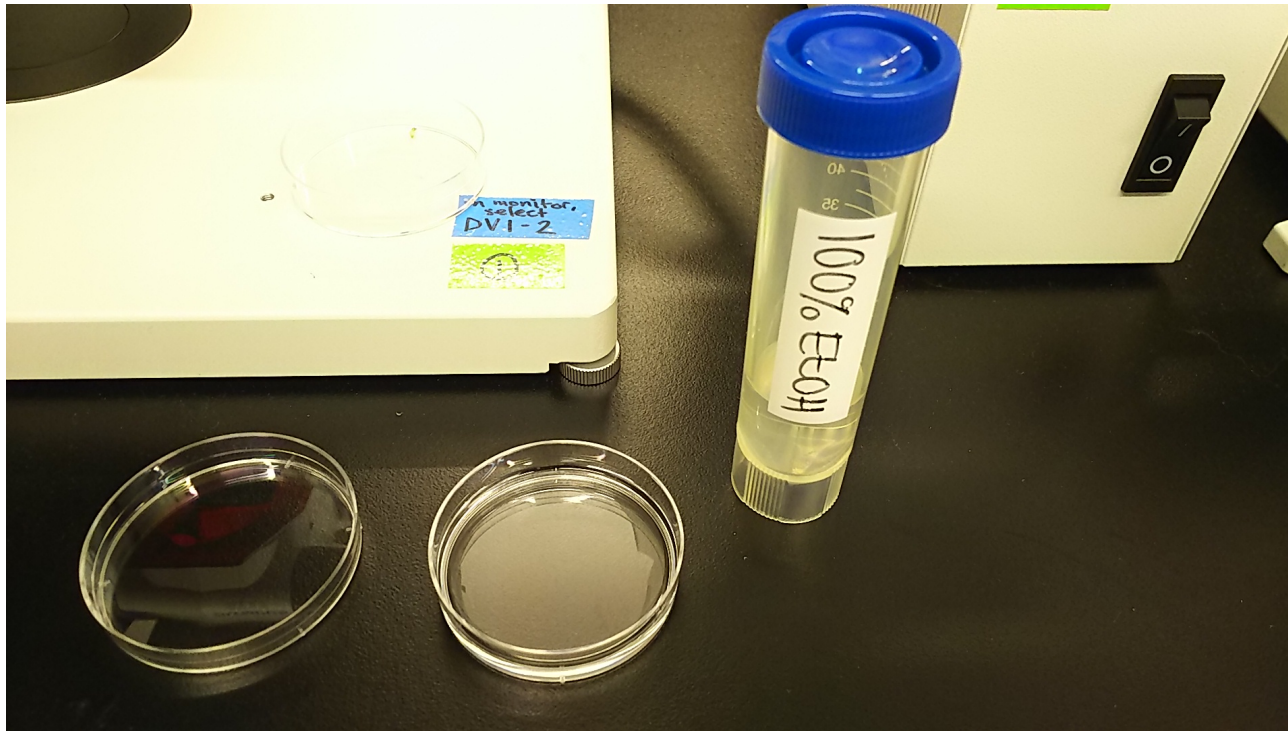
The workflow

- Clean the bench with 70% ethanol and tissue
- Clean the microscope lens and platform with 70% ethanol and kim-wipe (as the lens is sensitive).
- Be careful of the glass slides!



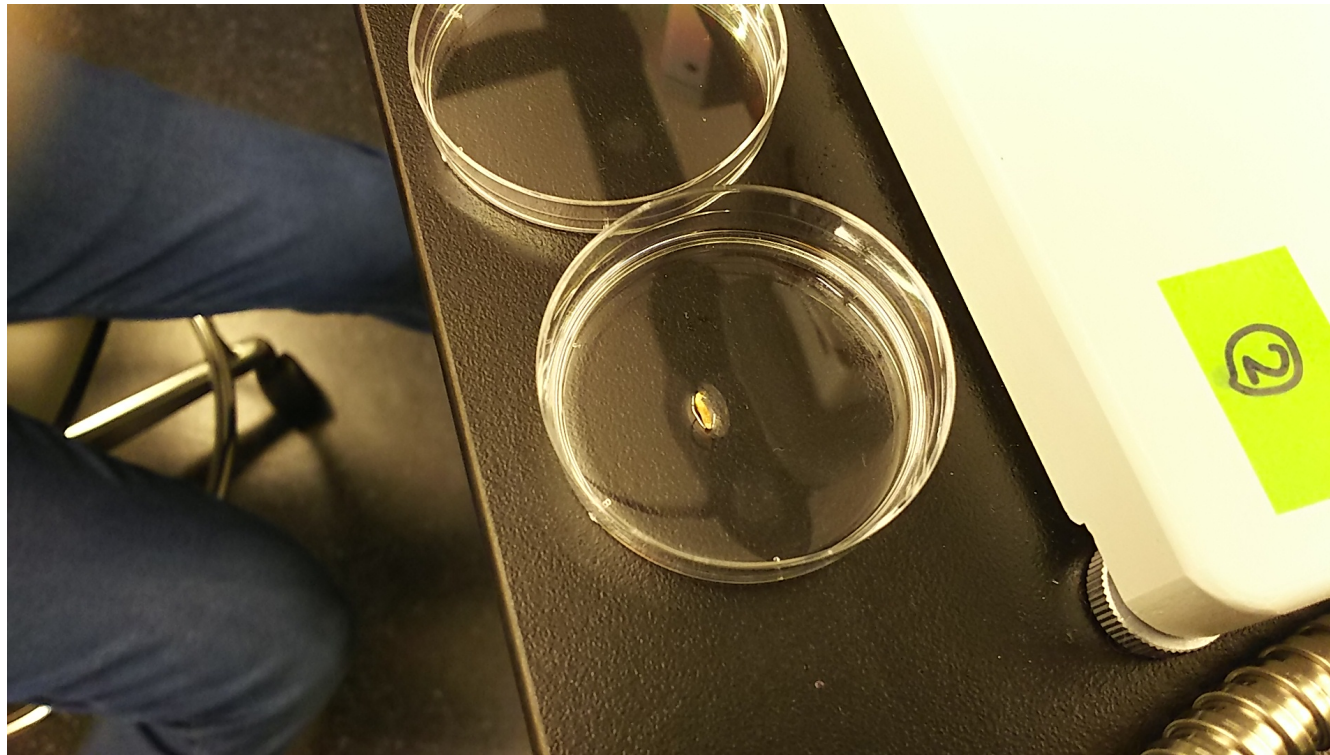
The workflow

- Pour ~2ml of 100% ethanol into a petri plate.
- Add two drops of Solution U to the slide using 1ml pipette.



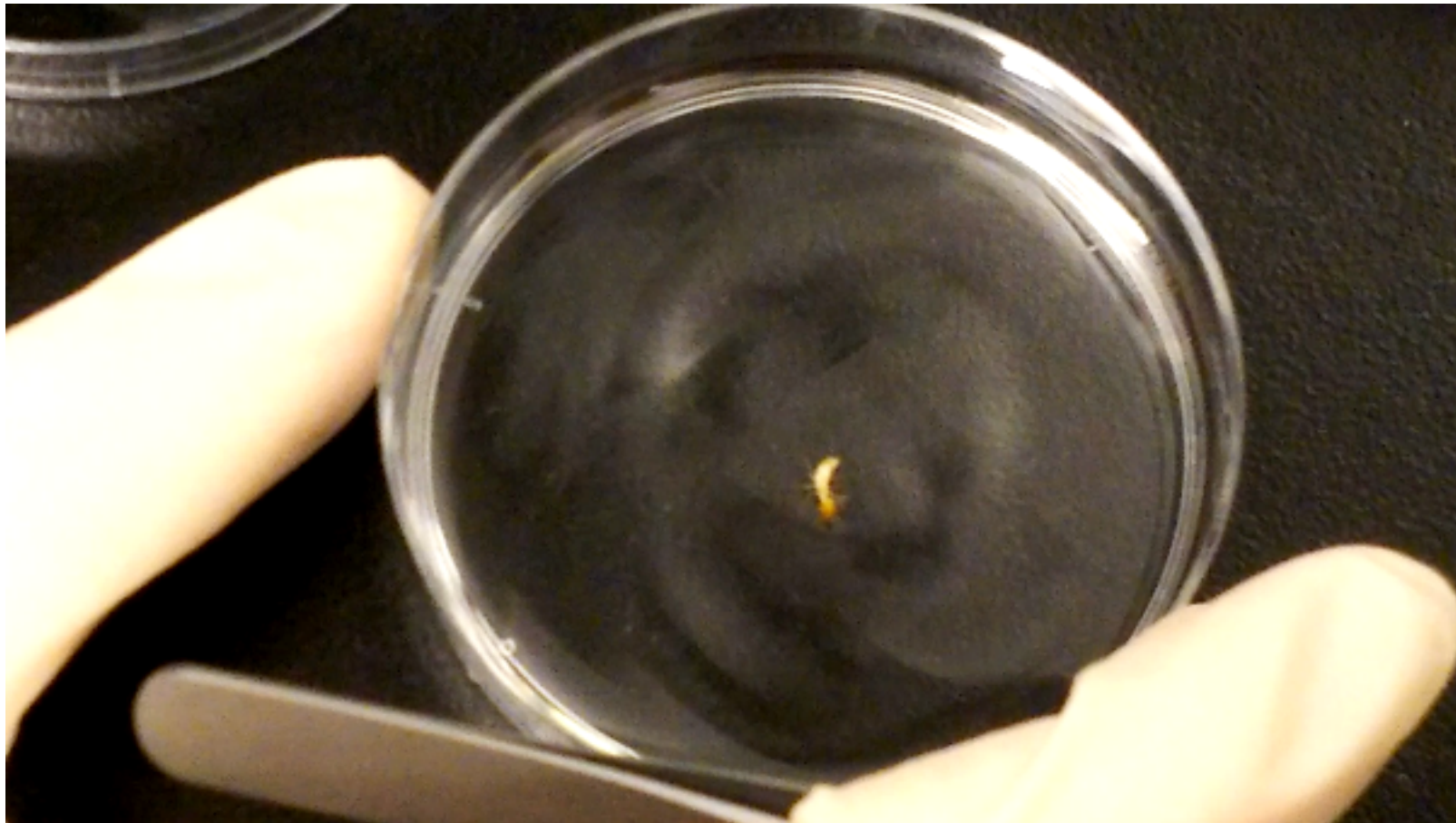
The workflow

- Transfer the termite to the petri plate containing ethanol for a few seconds to clean the termite.
- Remove the termite from petri plate, transfer it to the cover of the petri plate (or any clean surface). Move under the dissection microscope, and focus a magnified image of the termite to help with dissection.



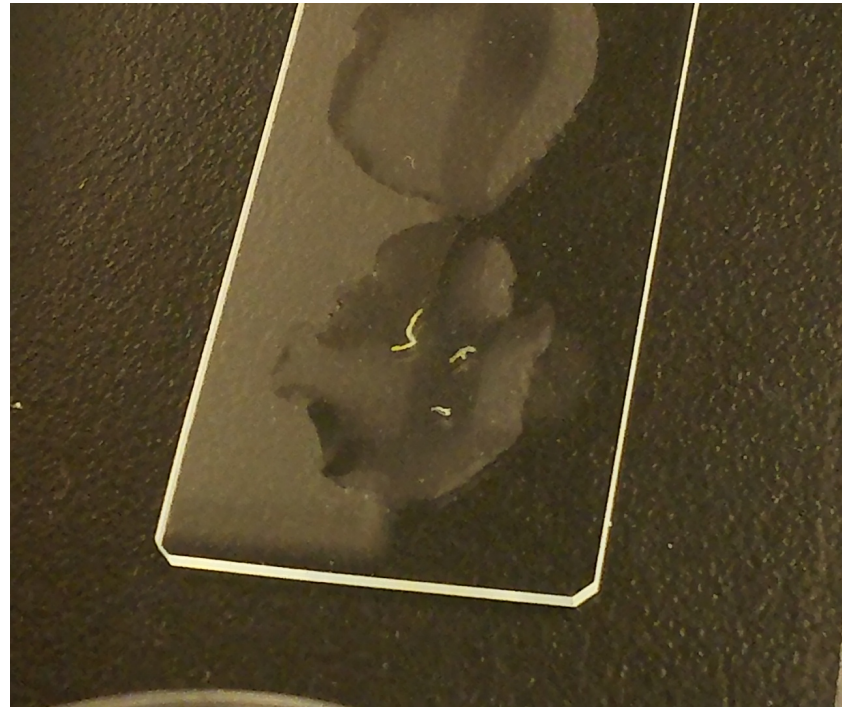
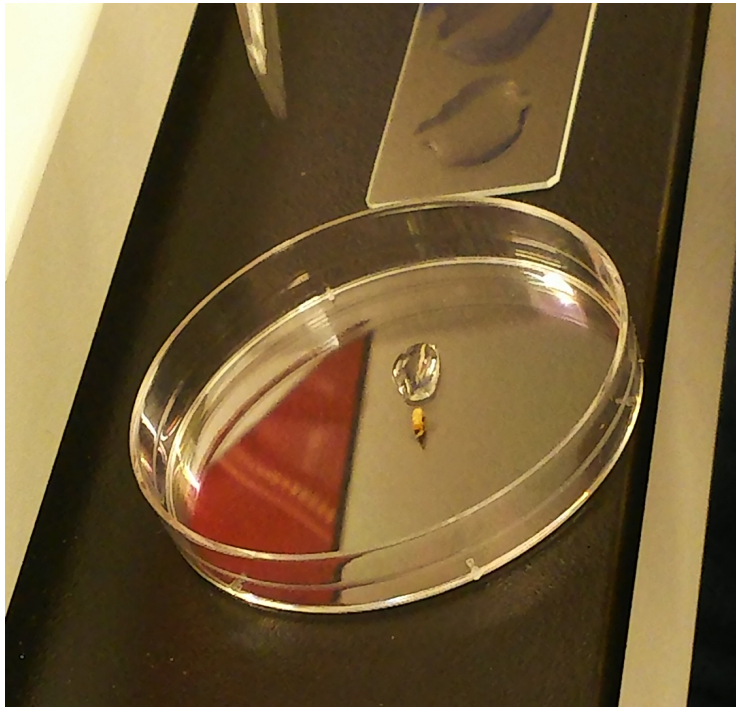
The workflow

- Dissection: Using two tweezers, hold the head of the termite with one tweezer, and pull the gut out of the termite from the rear side [abdomen side] using the other tweezer (Video)



The workflow

- Transfer the gut to the slide, mix the gut content in one of the drops of Solution U on the slide.
- Transfer a few drops of the gut content from one drop to the other drop, using pipette. This is called as dilution.
- Check under the microscope (80X magnification).



The workflow

- Please wait your turn to check under the digital microscope (80X magnification).
- We will help you with this!
- Please feel free to check out the log for different species and forms of termites while you wait – Can you tell the difference between workers and soldiers? How many Species are in the log?
- We also have some examples of termite Queens and Kings in sealed sample tubes. Please look, but don't open – Thanks!

- *Glyptotermes* sp.



- *Coptotermes* sp.



- There are more than 400 different species of protists in the termite gut.
- They can be classified into two groups:

Parabasalids - They are larger in size, they have parabasal filaments.

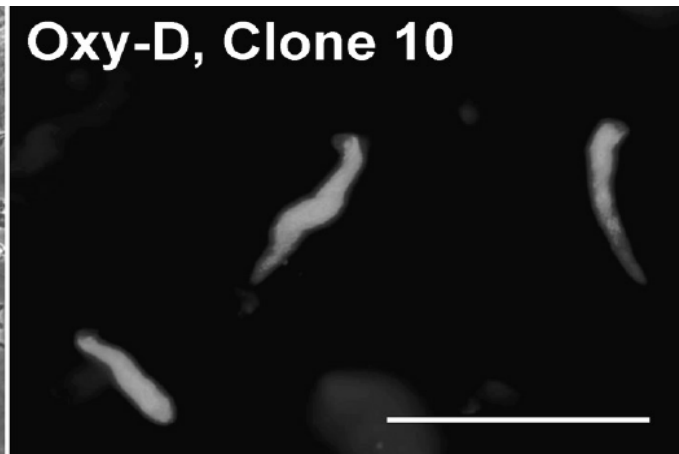
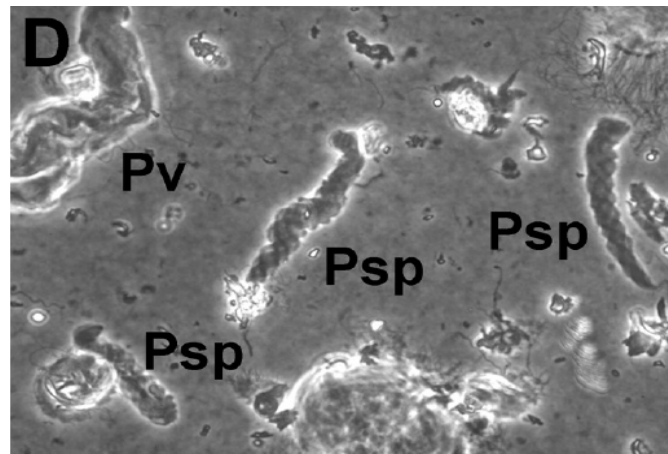
Oxymonads - They are smaller in size, they lack these filaments.

Parabasalids

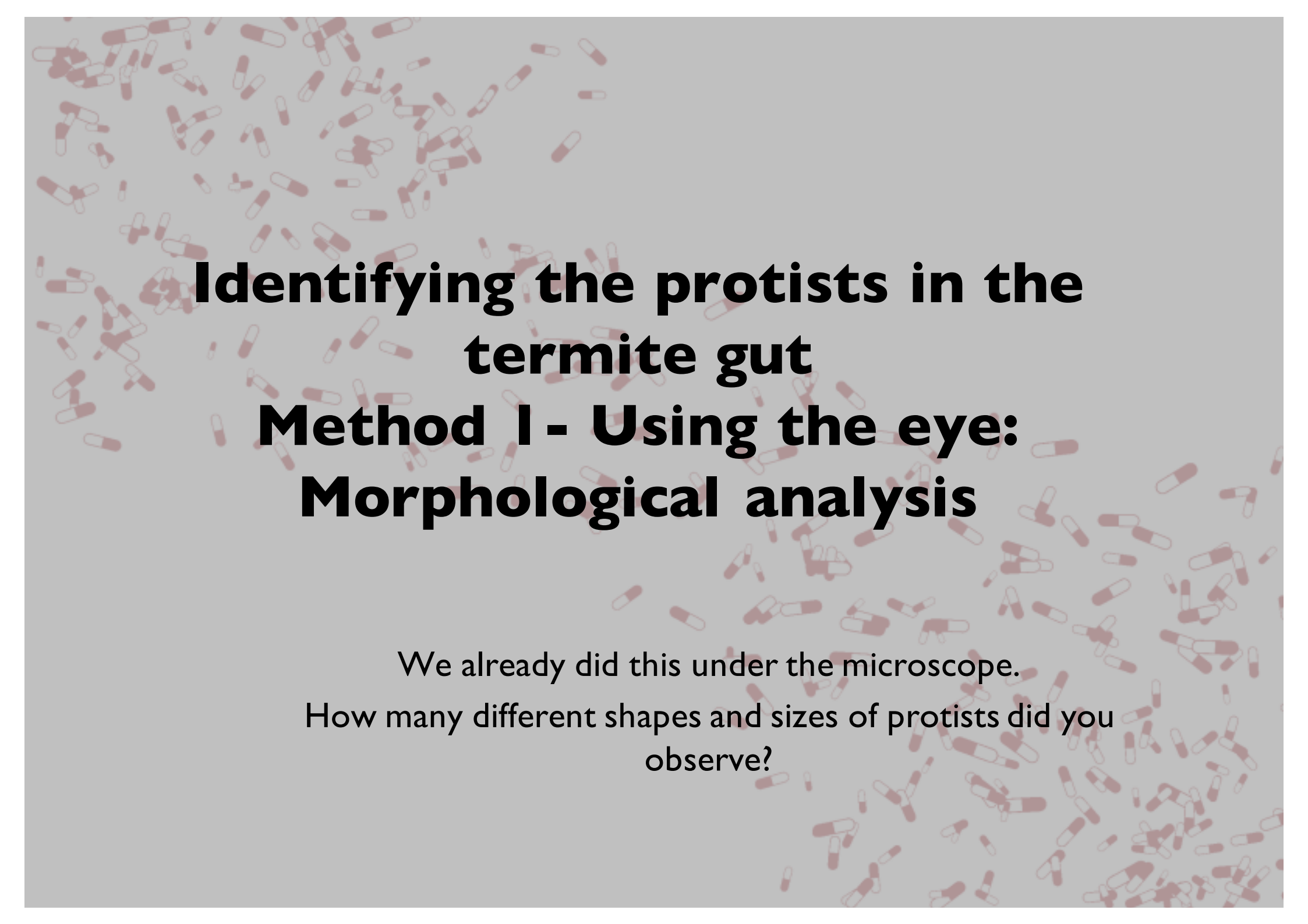


Carpenter *et al*, 2009

Oxymonads



Stingl and Brune, 2003

The background of the slide is a light gray color with a repeating pattern of small, red and white capsules scattered across it.

Identifying the protists in the termite gut

Method I - Using the eye: Morphological analysis

We already did this under the microscope.
How many different shapes and sizes of protists did you
observe?