



Analysis in *Syngnathus fuscus*:
Biochemical, Parentage, &
Behavioral

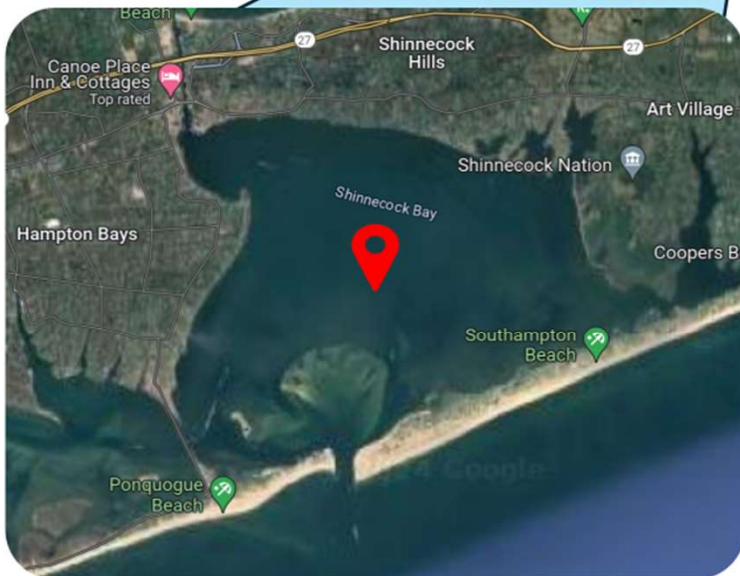
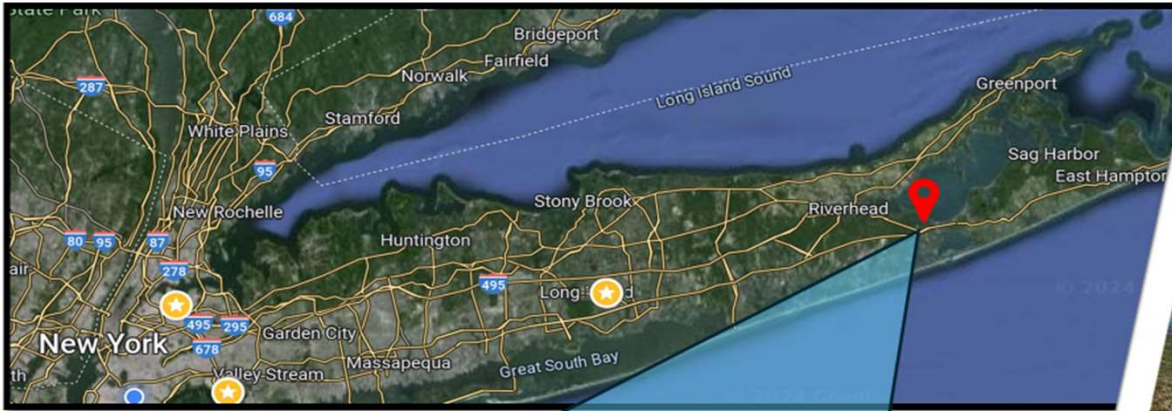
Jazmyn Gutierrez, Sophie Neiblum, Ari Berrios
BUEE: Wilson Lab
Summer 2024

Northern Pipefish (*Syngnathus fuscus*)

- Ovoviviparous
- Syngnathid males have a brood pouch
- Sex-role reversed



Shinnecock Bay, NY

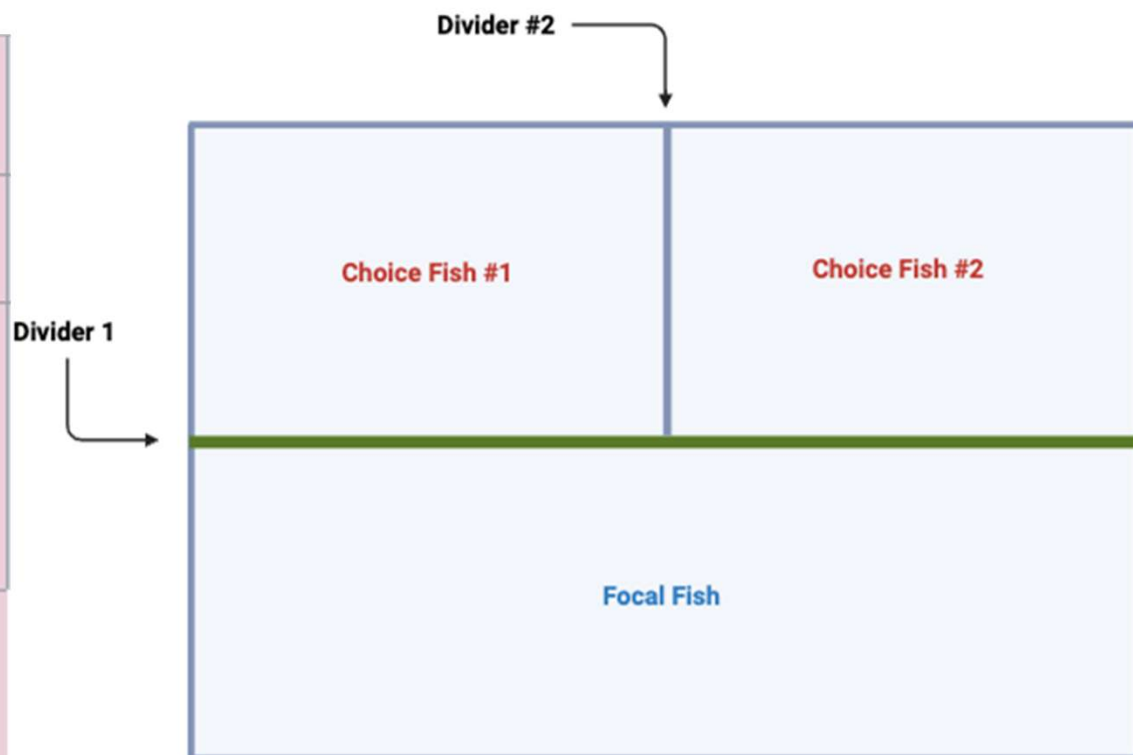


Xylo Lazrinth
REU Student - 2023



Evelyn Papalimberis
REU Student - 2023

Experimental Timeline



Experimental Timeline

Day 0

9:30 a.m. - 10:30 a.m.

10:30 a.m. - 10:40 a.m.

10:40 a.m. - 2:00 p.m.

Experimental
Set-Up

2:00 p.m. - 5:00 p.m.

Introduce Fish



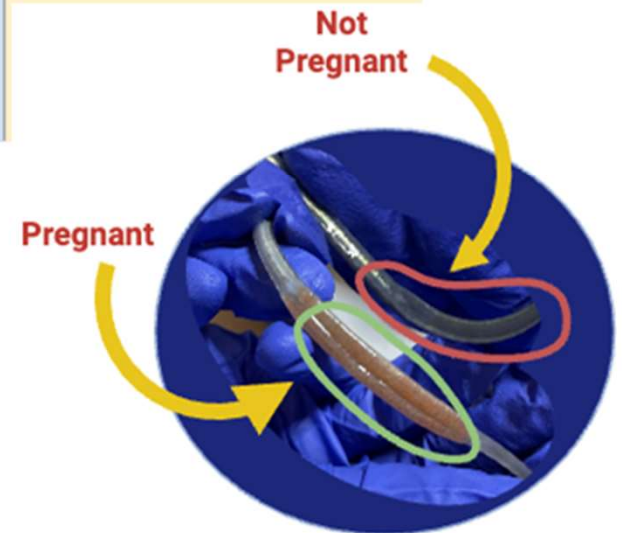
Experimental Timeline

<u>Day 0</u>	<u>Day 1</u>
<u>9:30 a.m. - 10:30 a.m.</u>	Preference trial
<u>10:30 a.m. - 10:40 a.m.</u>	Remove Barriers
<u>10:40 a.m. - 2:00 p.m.</u>	Experimental Set-Up
<u>2:00 p.m. - 5:00 p.m.</u>	Introduce Fish



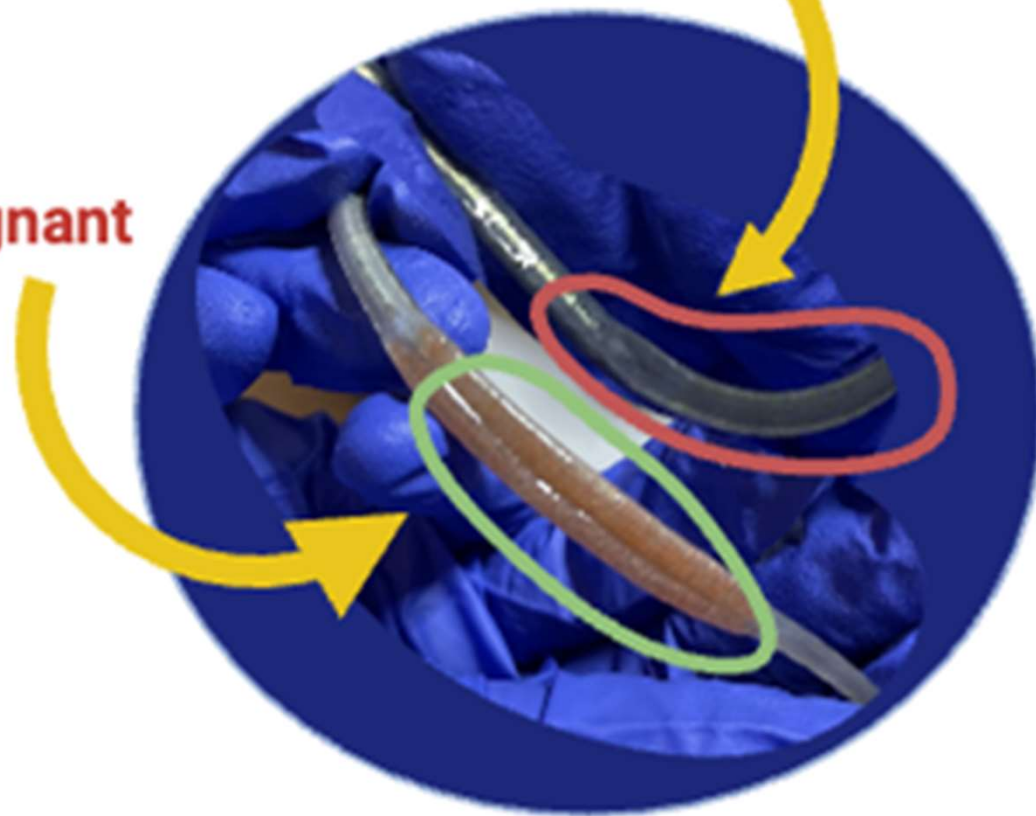
Experimental Timeline

	<u>Day 0</u>	<u>Day 1</u>	<u>Day 2</u>
<u>9:30 a.m. - 10:30 a.m.</u>		Preference trial	
<u>10:30 a.m. - 10:40 a.m.</u>		Remove Barriers	Pregnancy Check
<u>10:40 a.m. - 2:00 p.m.</u>	Experimental Set-Up		
<u>2:00 p.m. - 5:00 p.m.</u>	Introduce Fish		



**Not
Pregnant**

Pregnant



Experimental Timeline

	<u>Day 0</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>
<u>9:30 a.m. - 10:30 a.m.</u>		Preference trial		
<u>10:30 a.m. - 10:40 a.m.</u>		Remove Barriers	Pregnancy Check	End experiment: remove, weigh/measure, & isolate fish
<u>10:40 a.m. - 2:00 p.m.</u>	Experimental Set-Up			
<u>2:00 p.m. - 5:00 p.m.</u>	Introduce Fish			



MATING PAIR 6
A/G (P3000)

G2

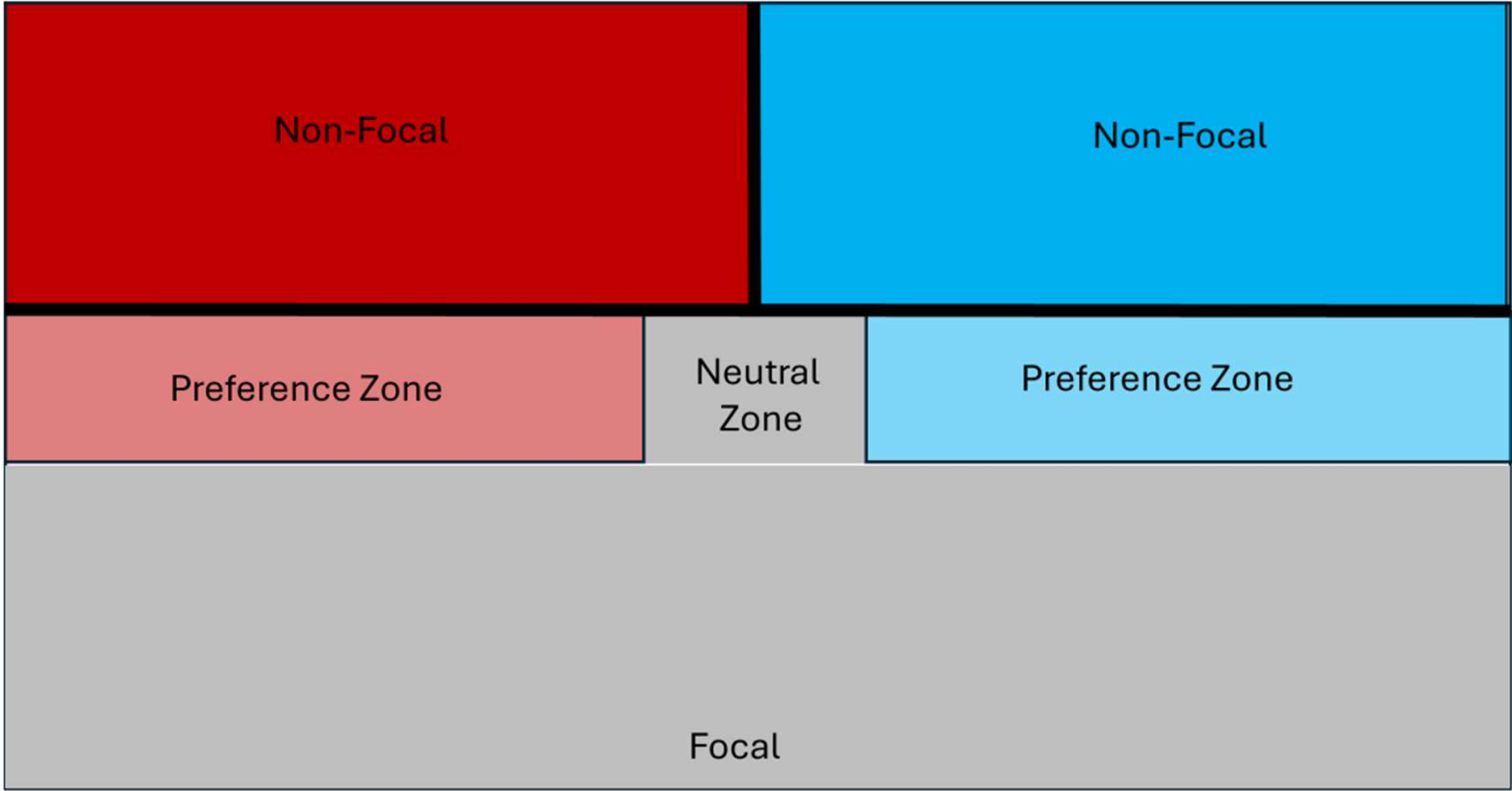
IN

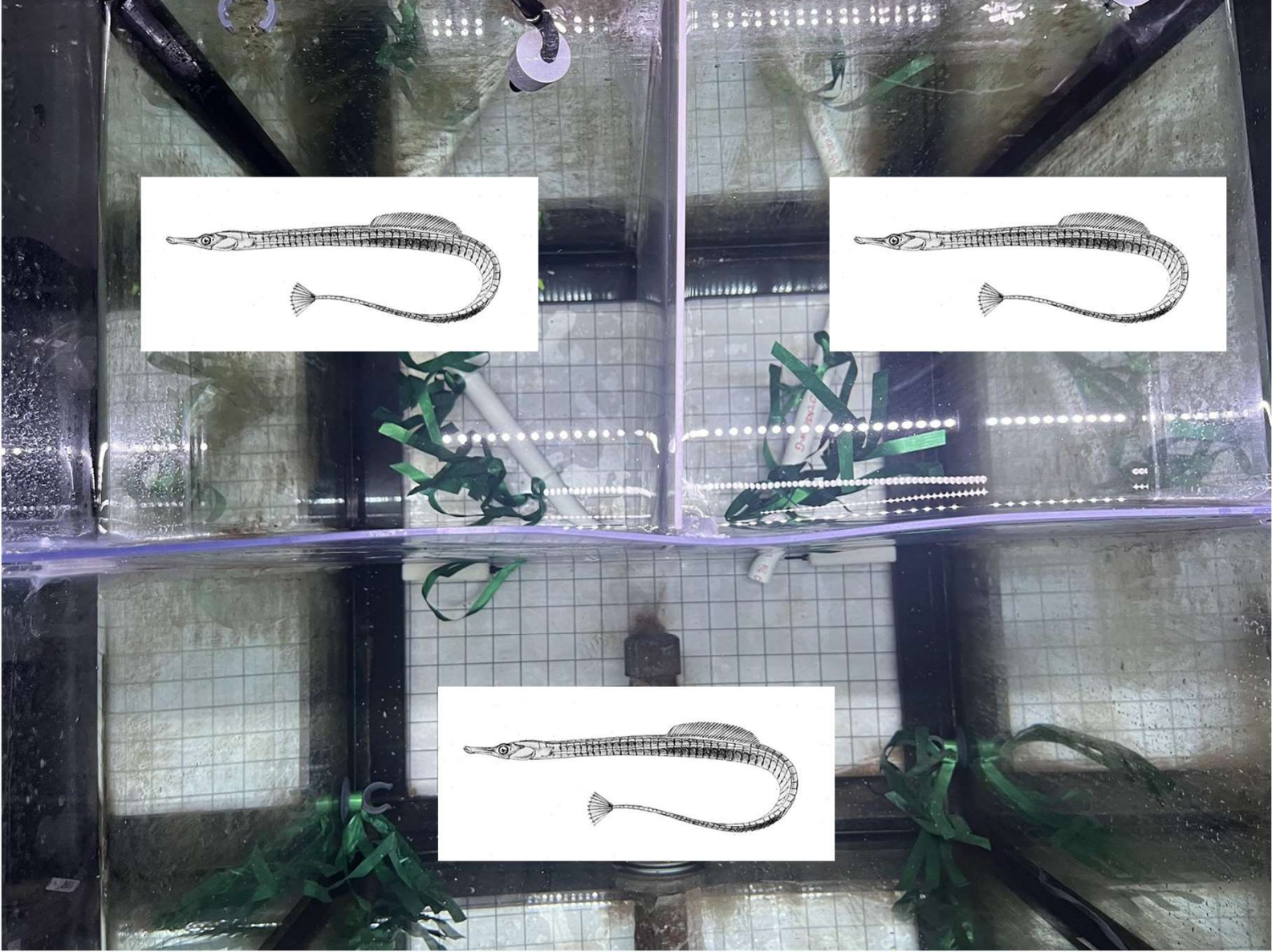
Behavioral Trial Tank

Opaque plastic divider

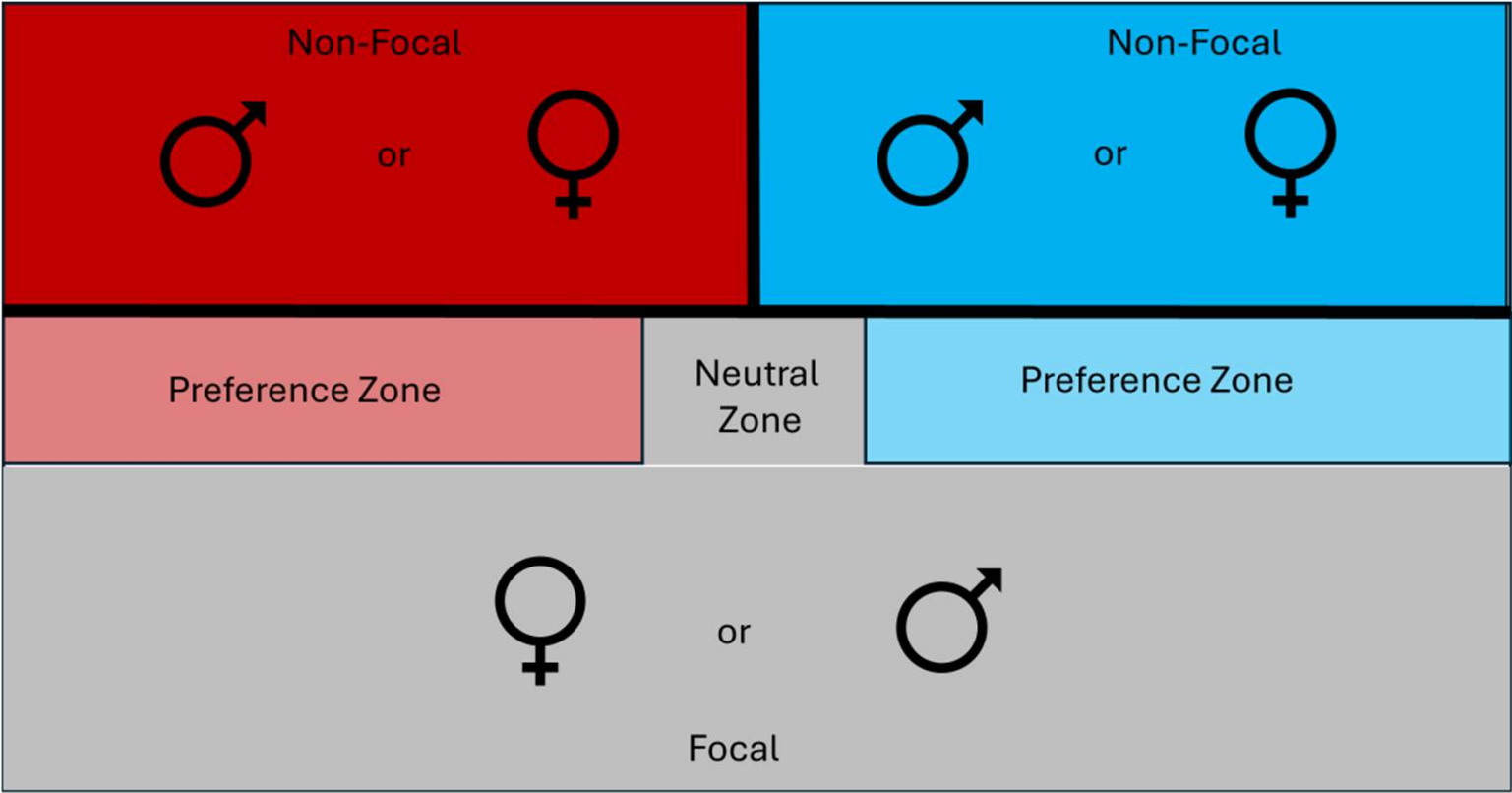
Plexiglas divider

Imaginary lines

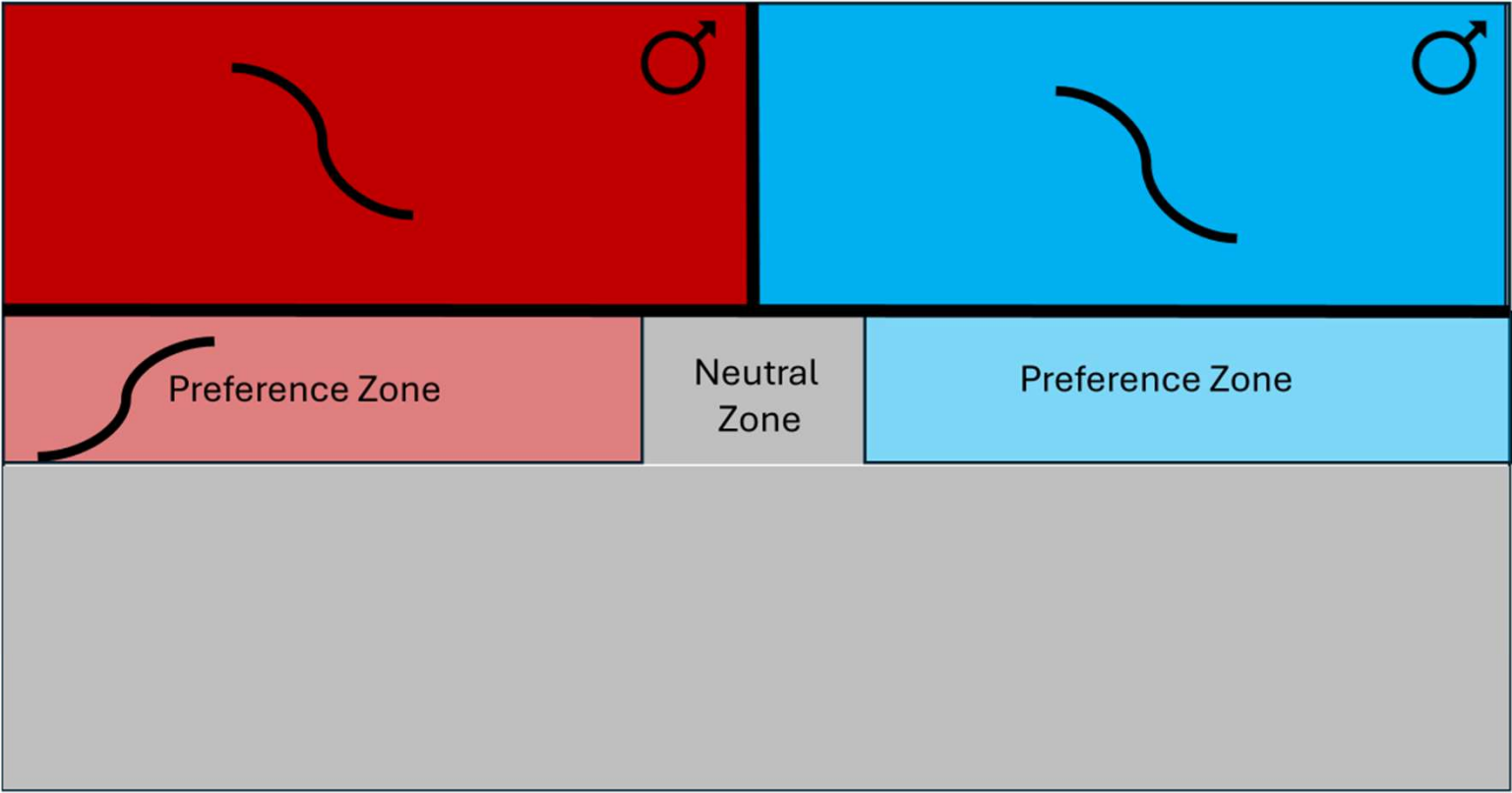




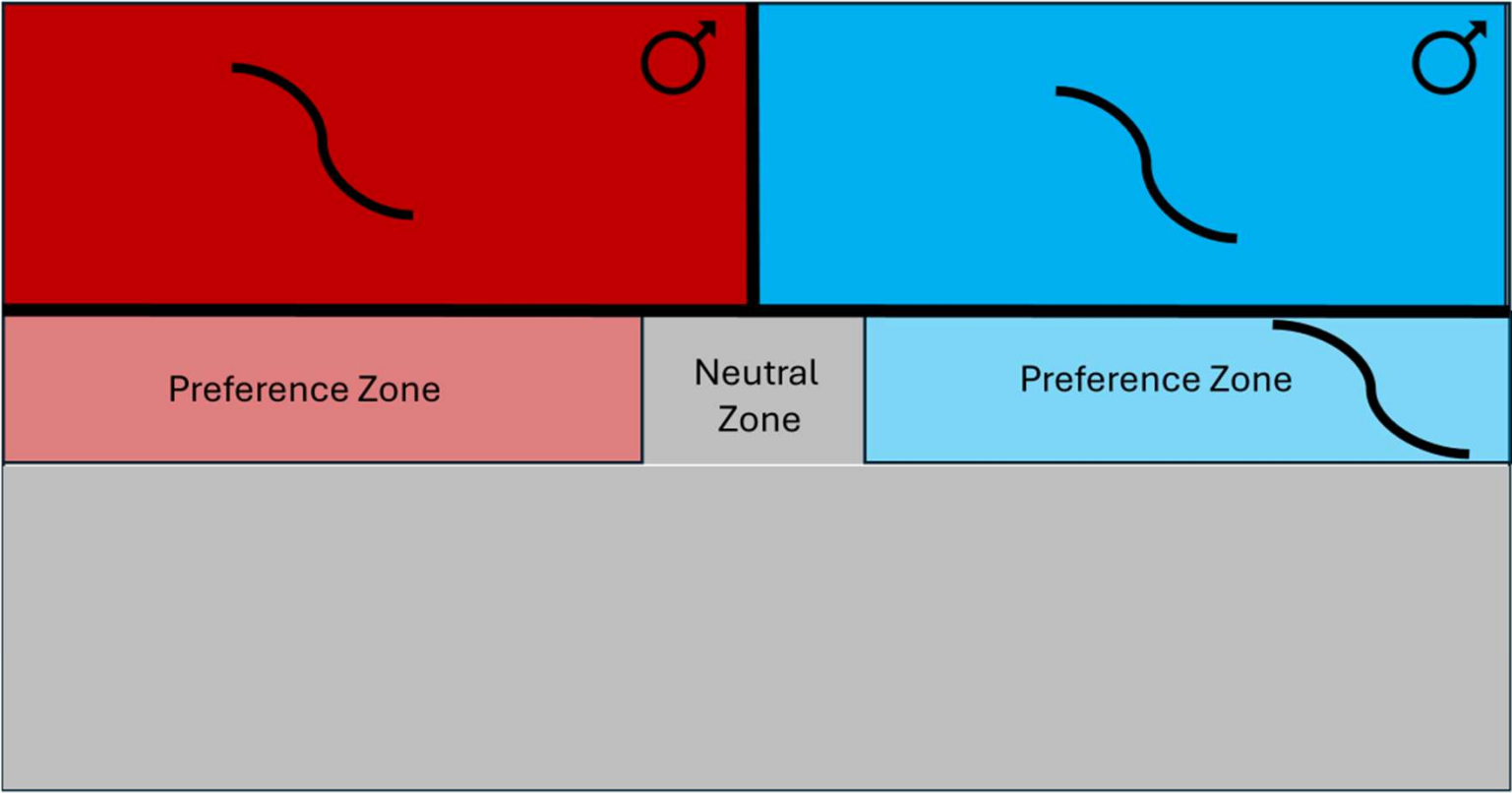
Behavioral Trial Tank



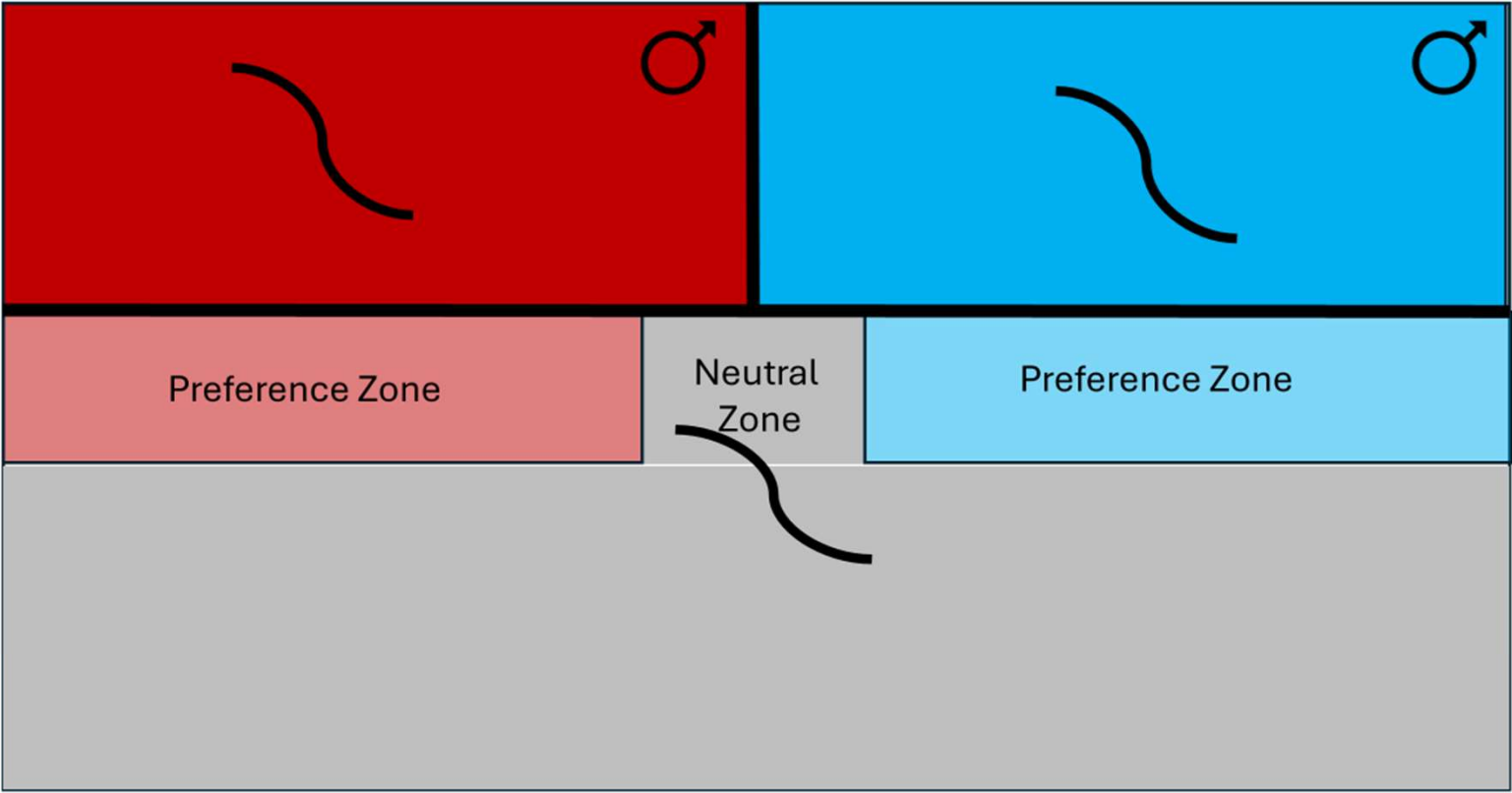
Behavioral Trial Tank



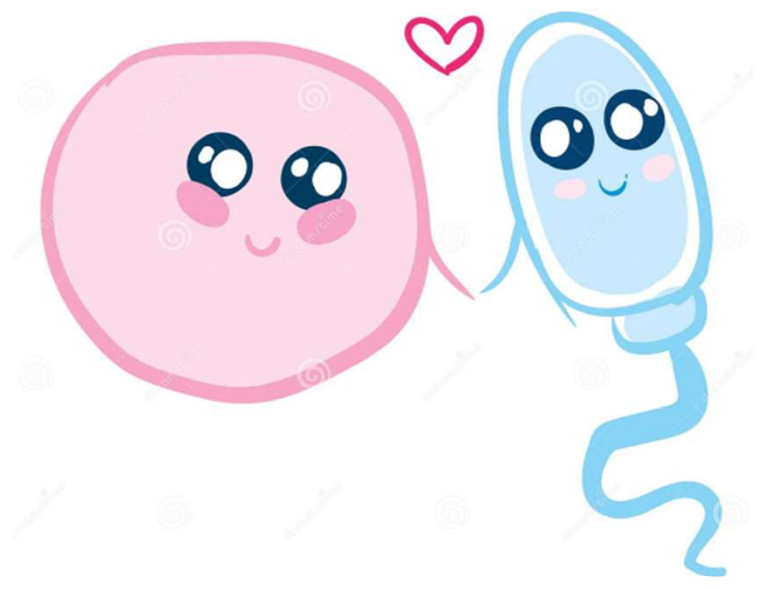
Behavioral Trial Tank



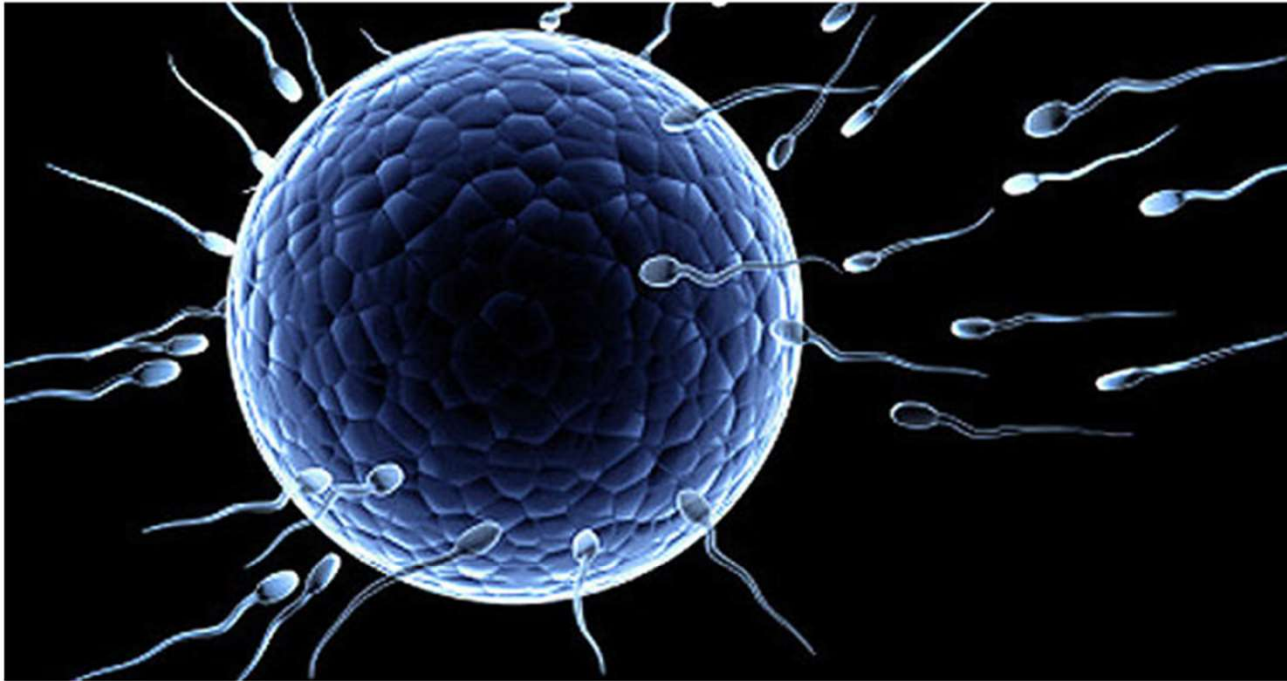
Behavioral Trial Tank



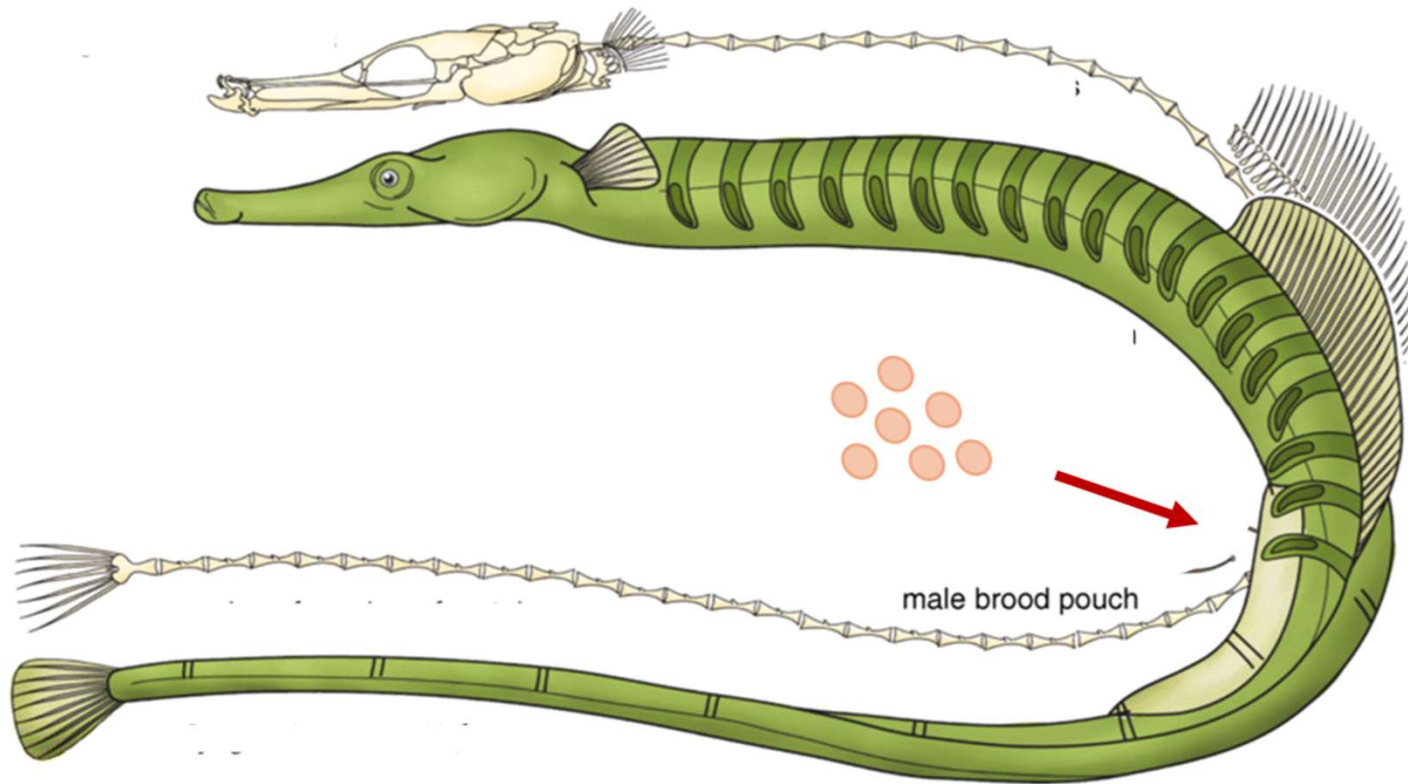
Sexual Reproduction



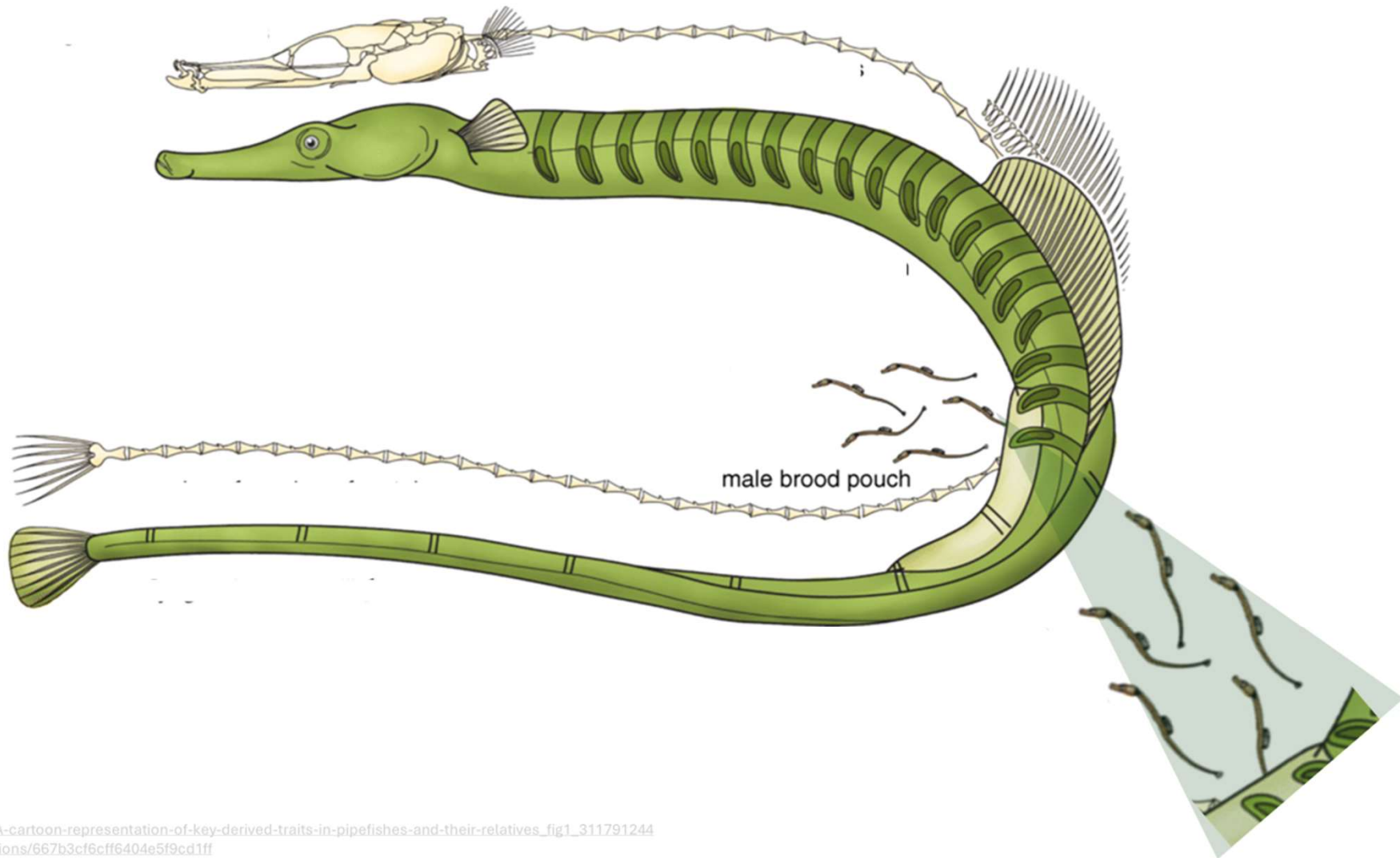
Sexual Reproduction



https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.dreamstime.com%2Fillustration%2Fperm-egg-cartoon.html&psig=AOvVaw3X5EcNmhaUdvKclMN6FWGD&ust=1719438230916000&source=images&cd=vfe&opi=89978449&ved=0CBEQjRxqEwoTCNiYn_Tc94YDFQAAAAAdAAAAABAE

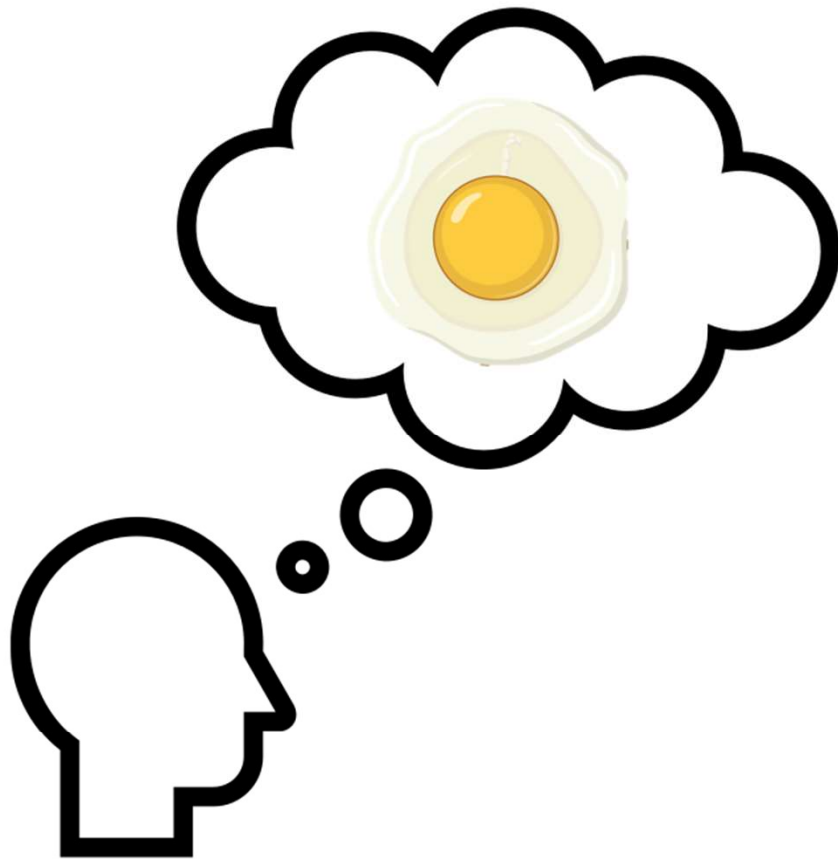


male brood pouch

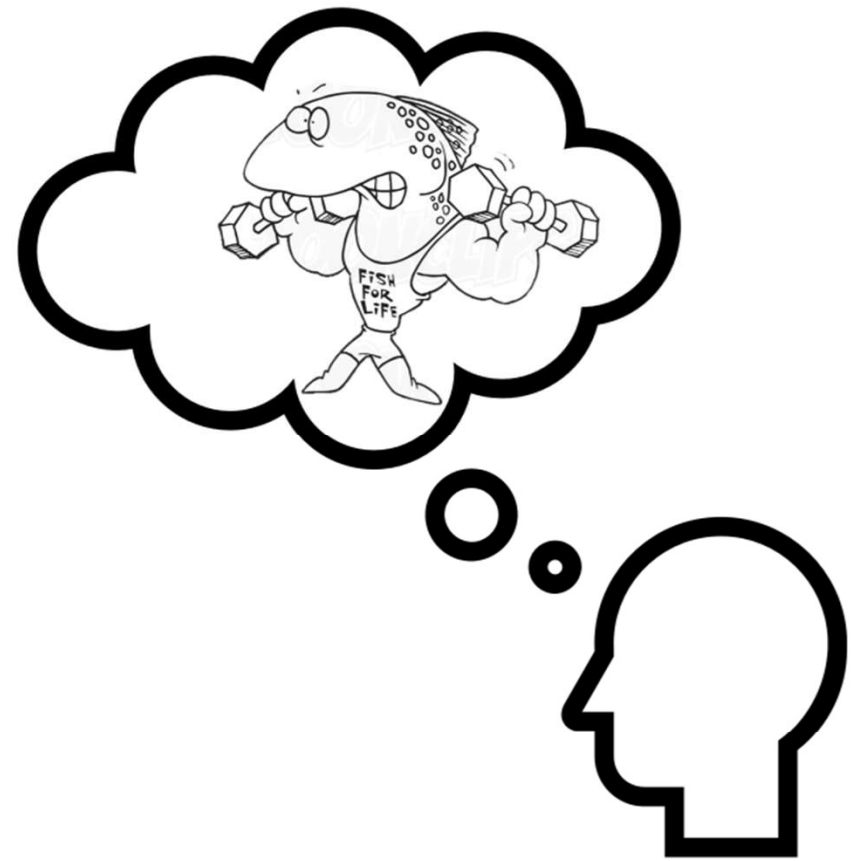


https://www.researchgate.net/figure/A-cartoon-representation-of-key-derived-traits-in-pipefishes-and-their-relatives_fig1_311791244

D - <https://app.biorender.com/illustrations/667b3cf6cff6404e5f9cd1ff>



or



Our Hypothesis

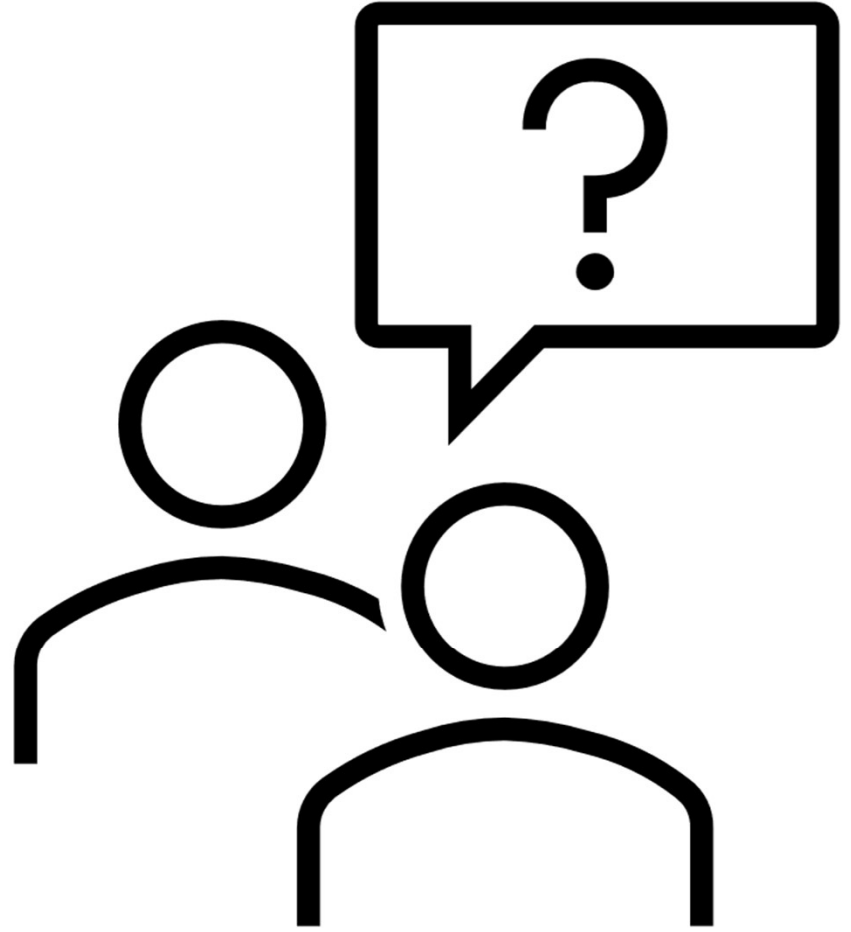
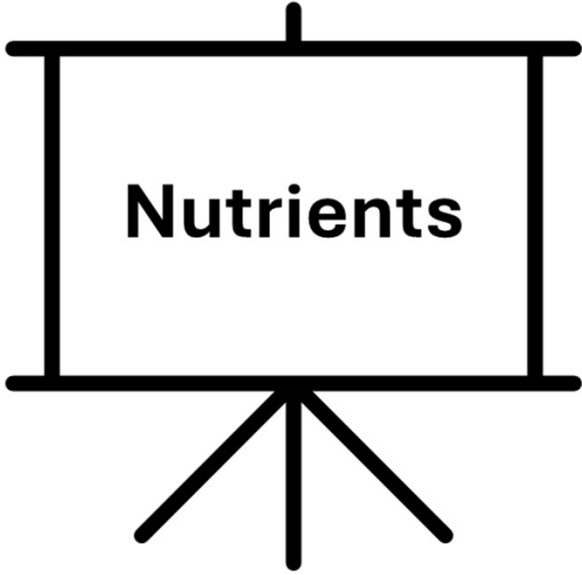
Only female contributes



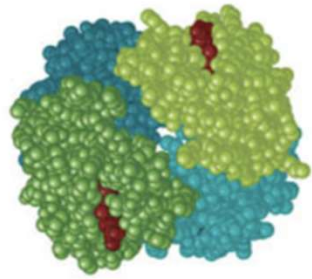
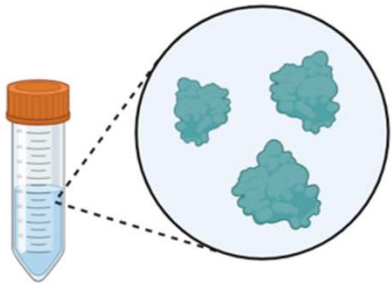
Alternative Hypothesis

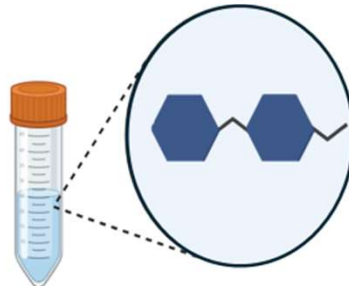
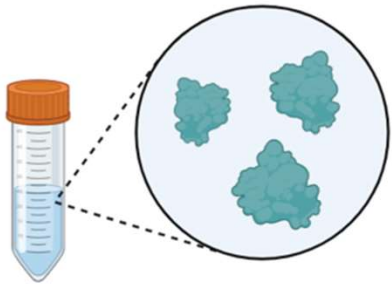
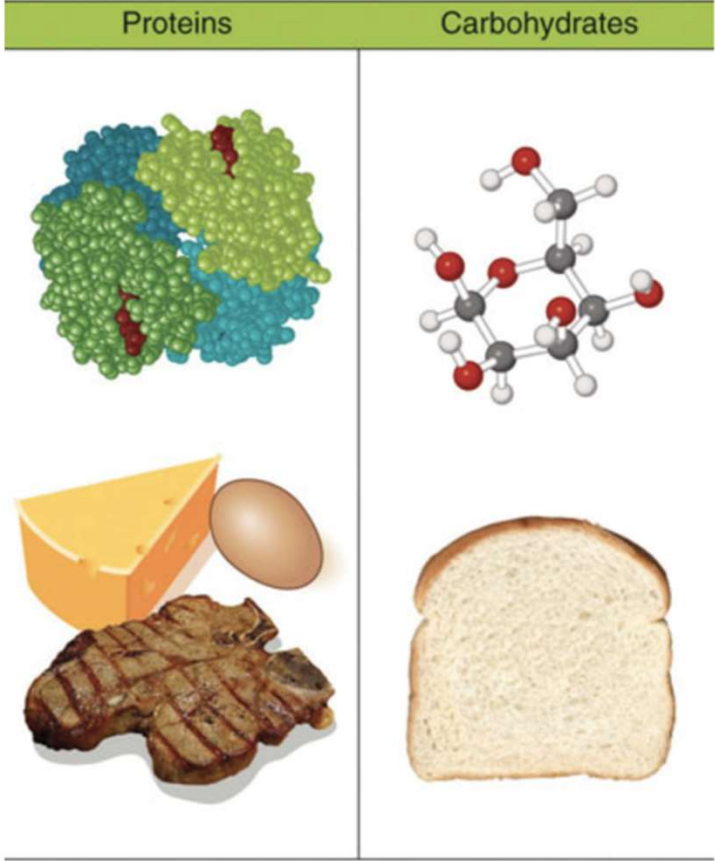
Female and male contribute

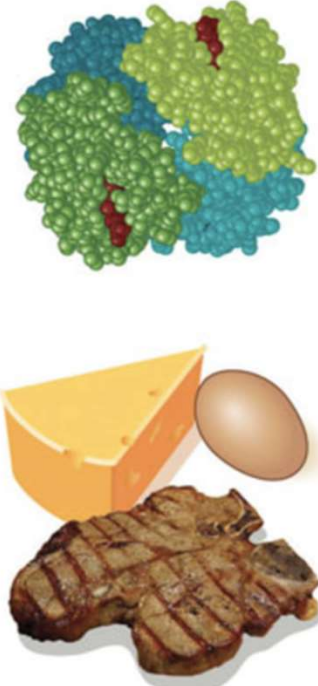
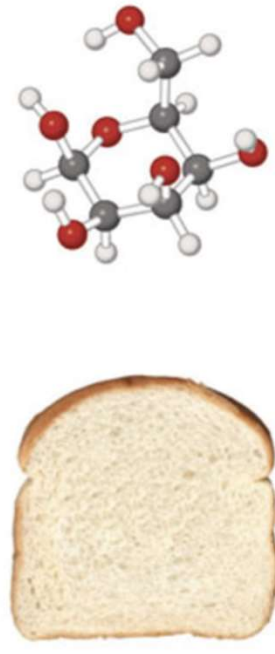



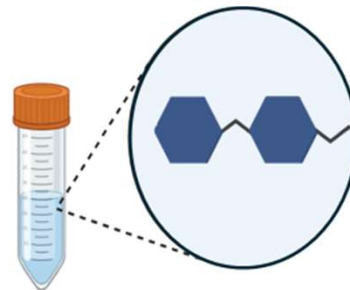
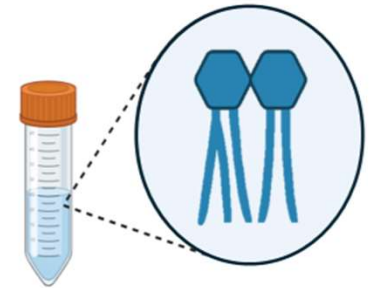
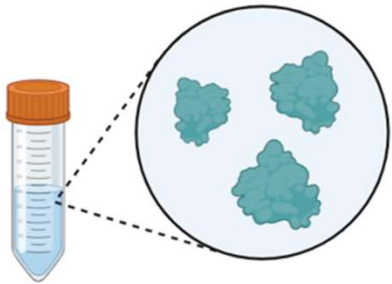


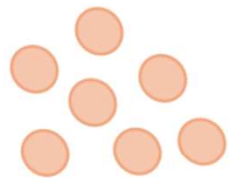
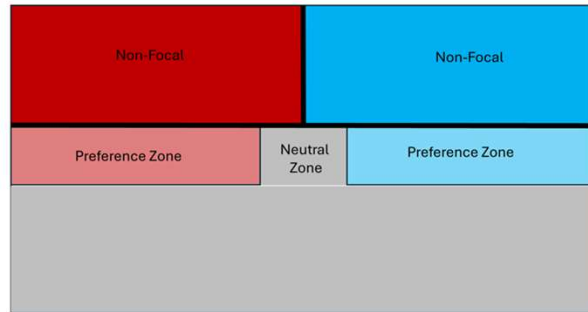
Proteins





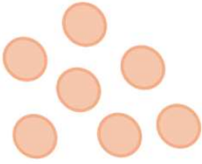

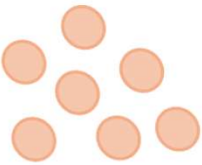

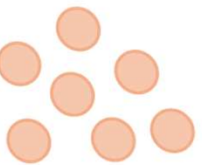

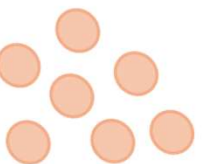

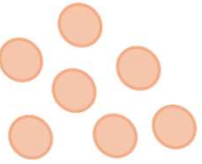

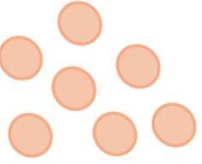

Proteins	Carbohydrates	Lipids
		

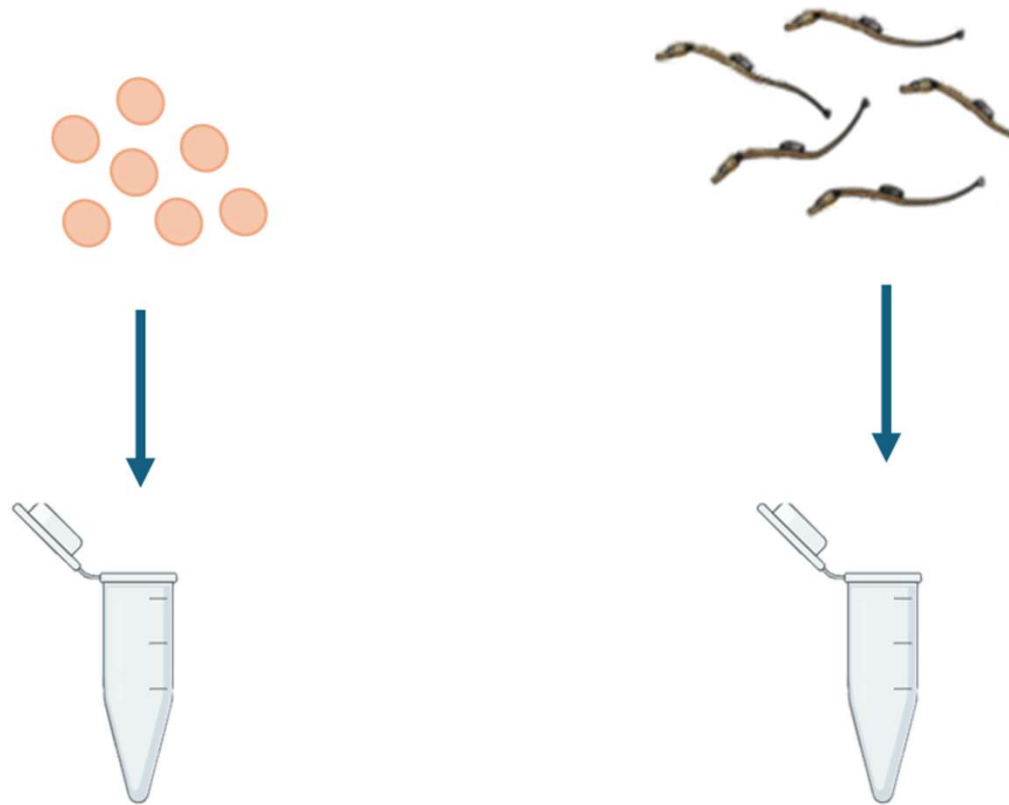


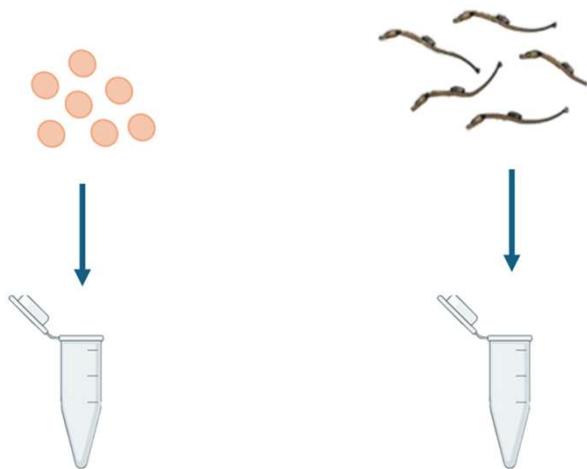


Tests

Samples

	Proteins		Carbohydrates		Lipids	
A						
B						





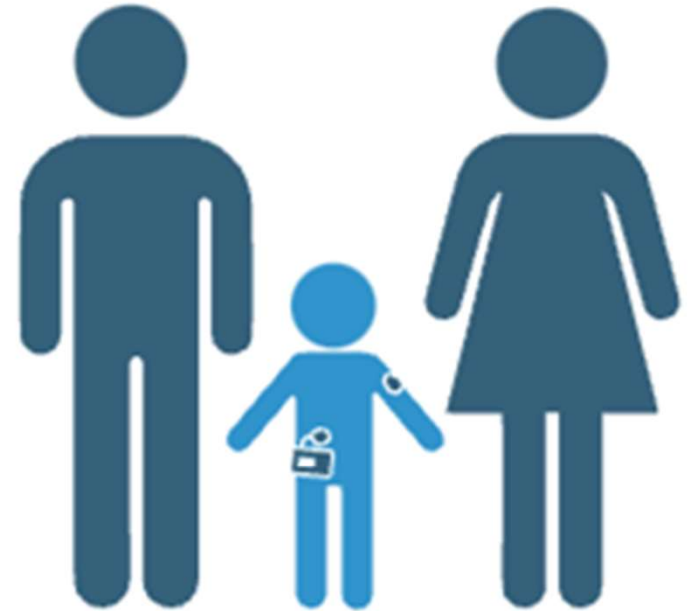
Pathways of our study



Biochemical Analysis



Melissa Ramnath



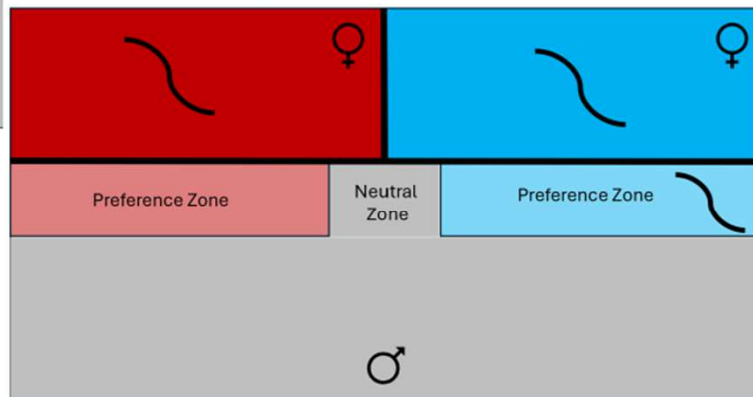
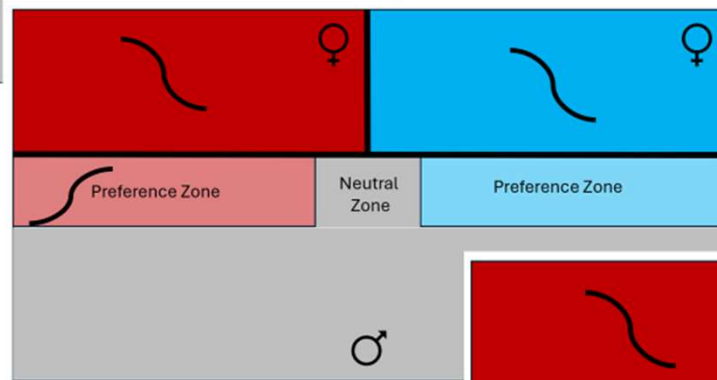
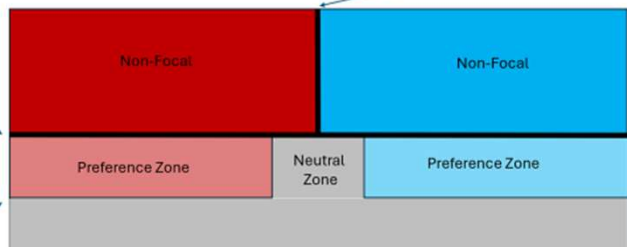
Parentage

Behavioral Trial Tank

Opaque plastic divider

Plexiglas divider

Imaginary lines



Experimental Timeline

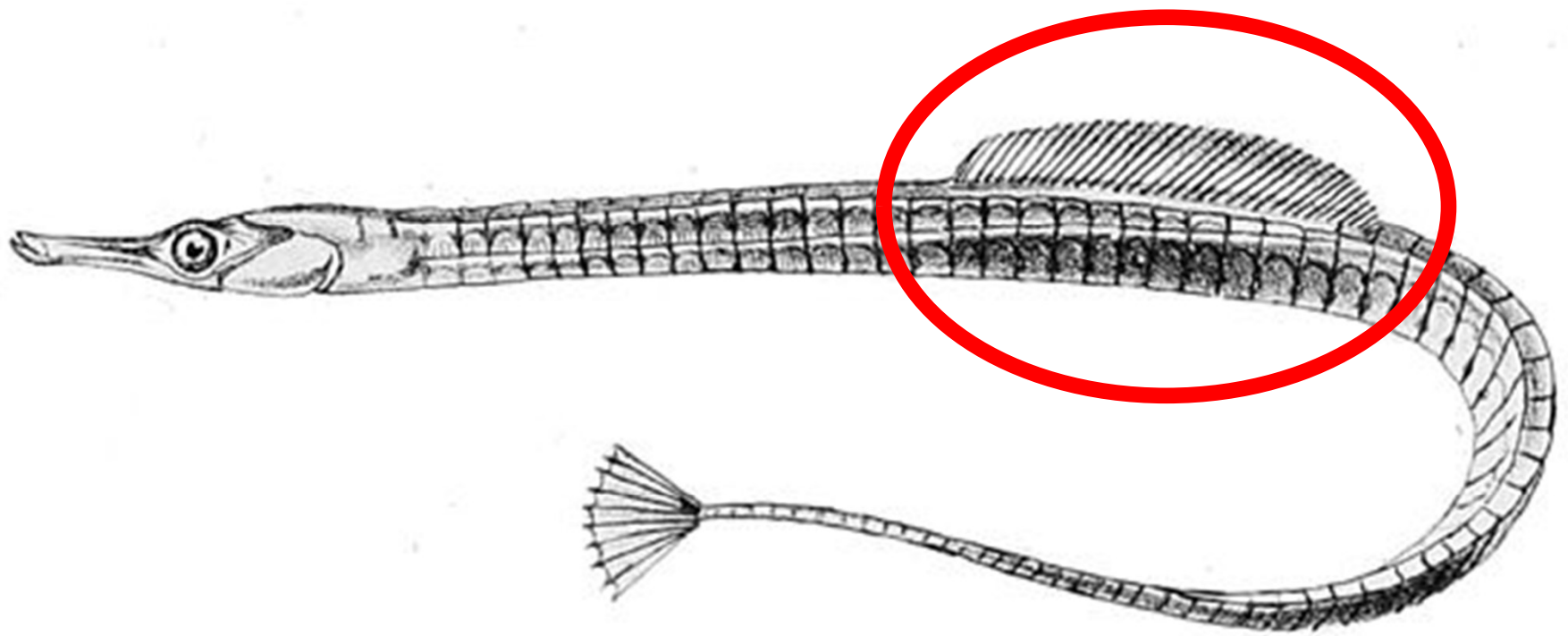
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<u>9:30 a.m. - 10:30 a.m.</u>		Preference trial		
<u>10:30 a.m. - 10:40 a.m.</u>	Experimental Set-Up	Remove Barriers		Final Pregnancy Check
<u>10:40 a.m. - 2:00 p.m.</u>				End experiment: remove, weigh/measure, & isolate fish
<u>2:00 p.m. - 5:00 p.m.</u>	Introduce Fish		Pregnancy Check	

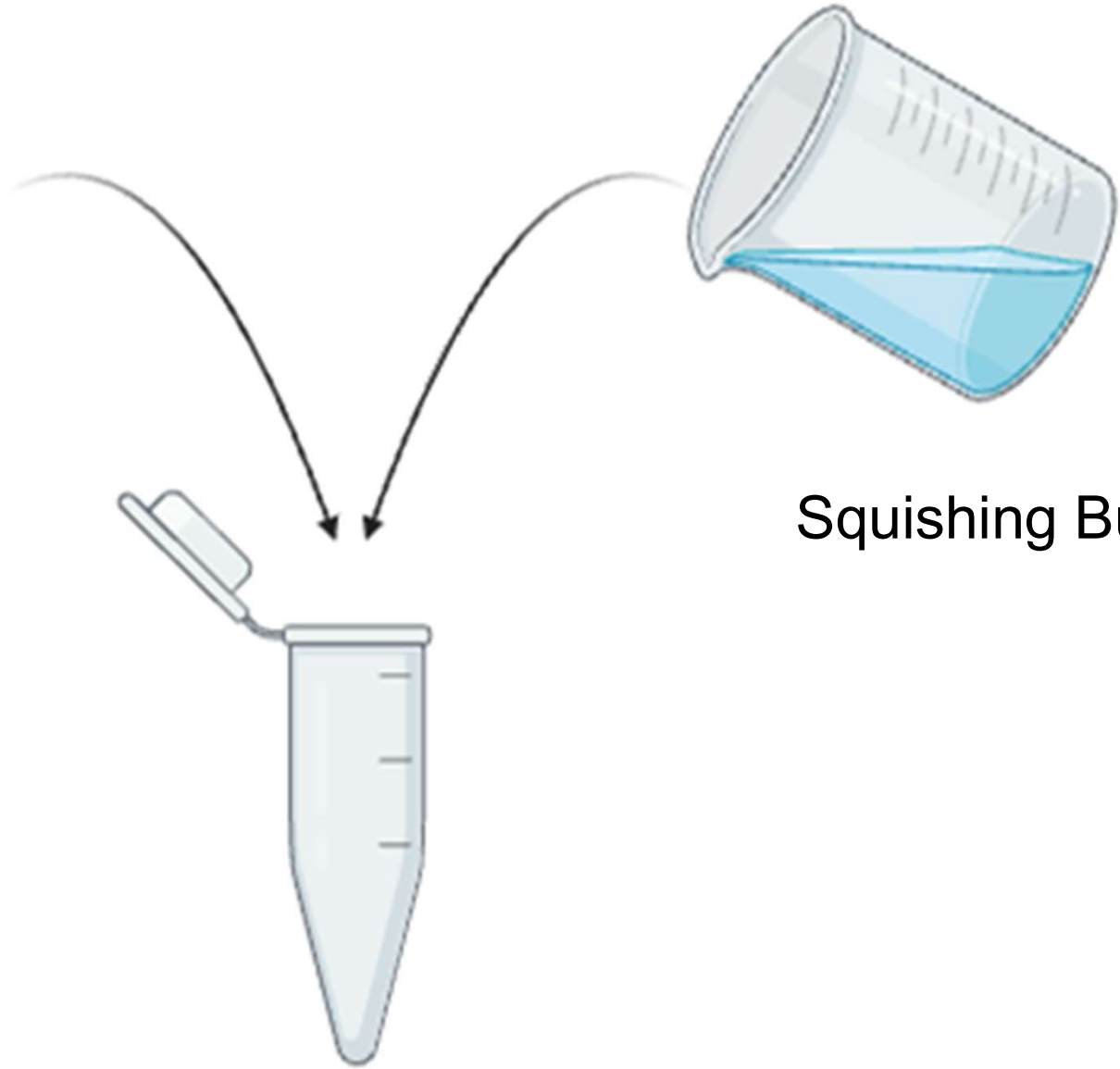
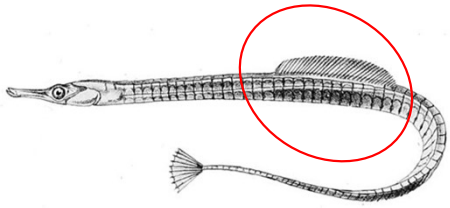


MATING PAIR 6
A/G (P2000)

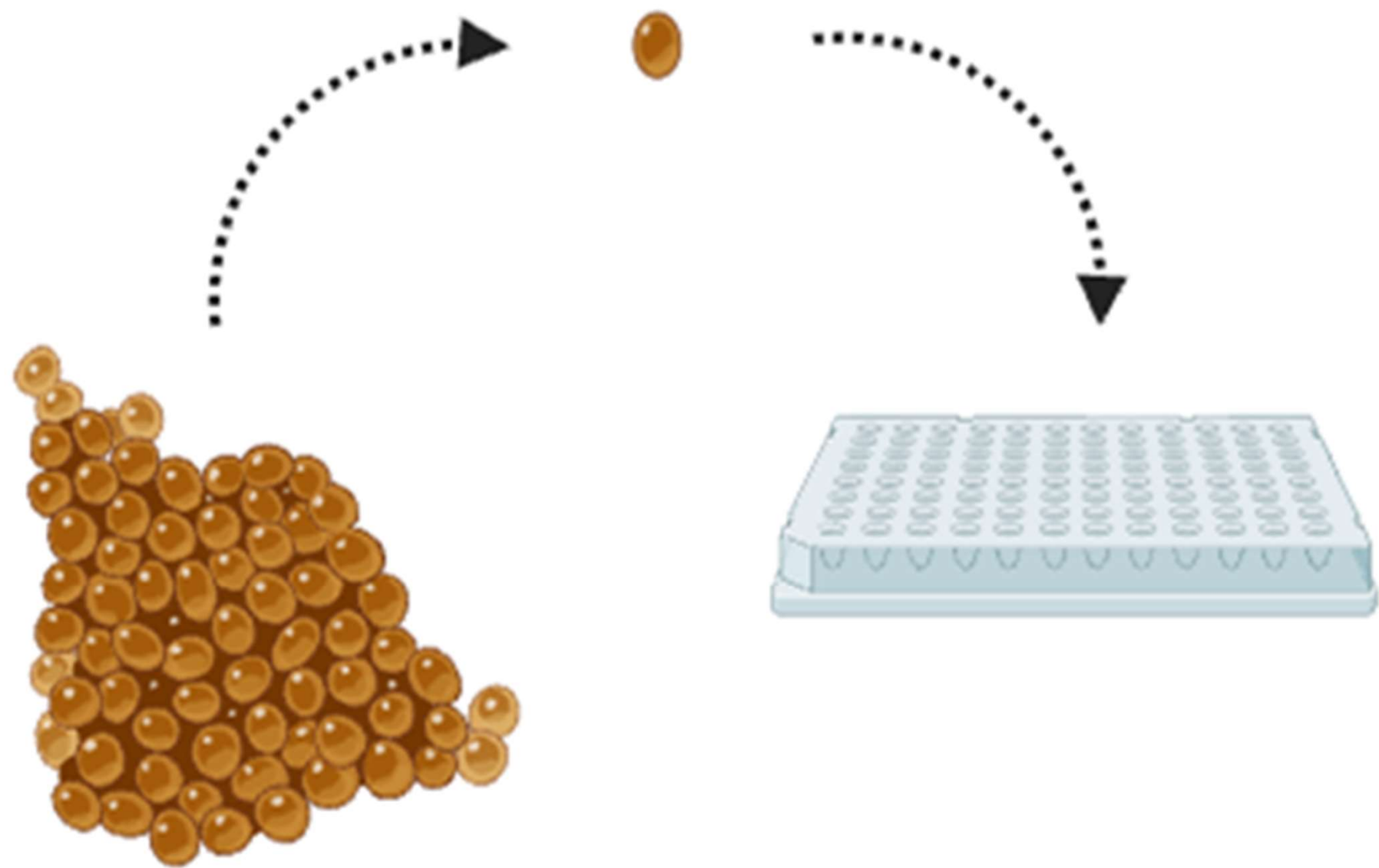
IN

G2





Squishing Buffer



1 Egg

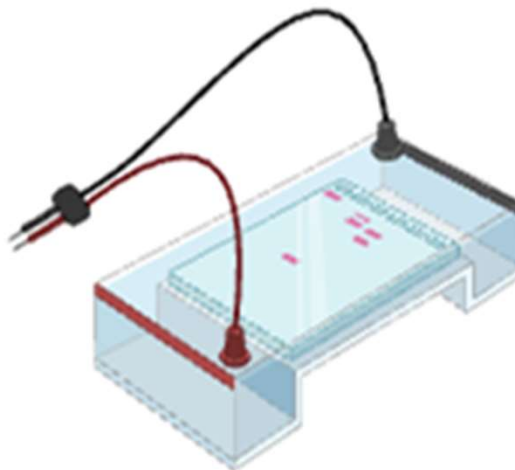


Squishing Buffer





<https://www.gmi-inc.com/product/gmi-thermo-scientifics-nanodrop-2000c-spectrophotometer/>

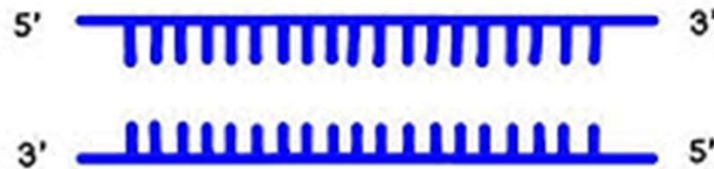


PCR EXPLAINED

1. DENATURATION



~95°C

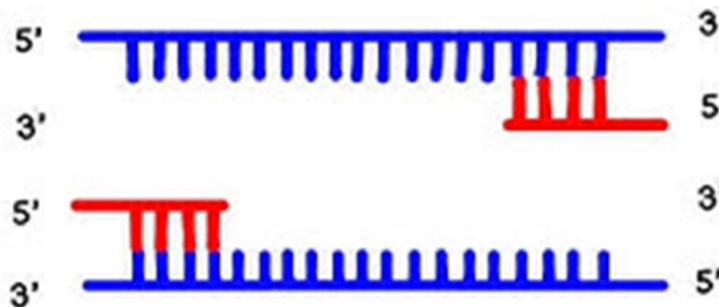


DNA STRANDS
SEPARATE

2. ANNEALING



~55°C

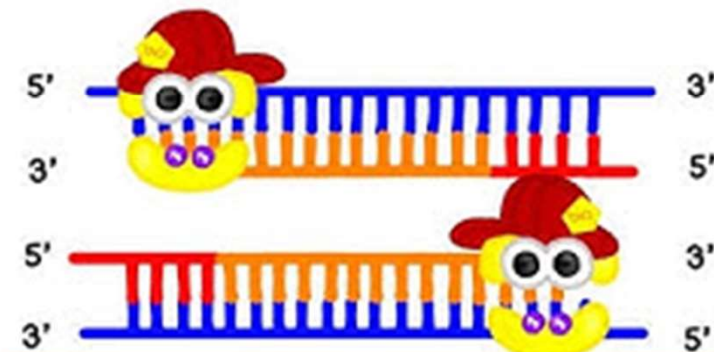


PRIMERS ADHERE TO
DNA STRANDS

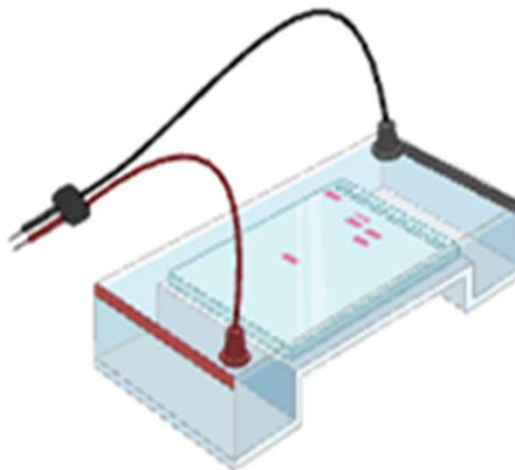
3. EXTENSION

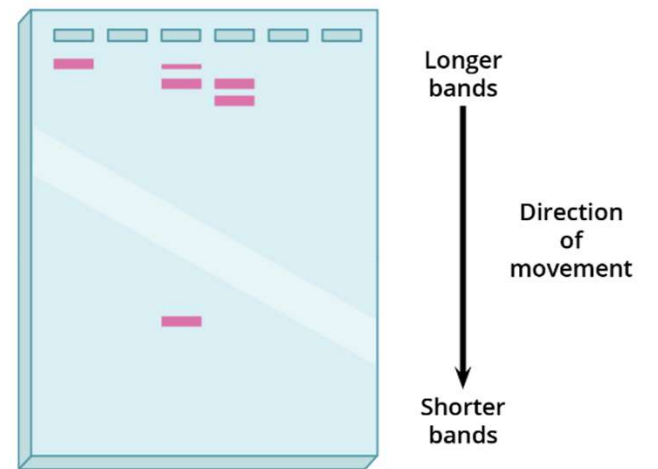
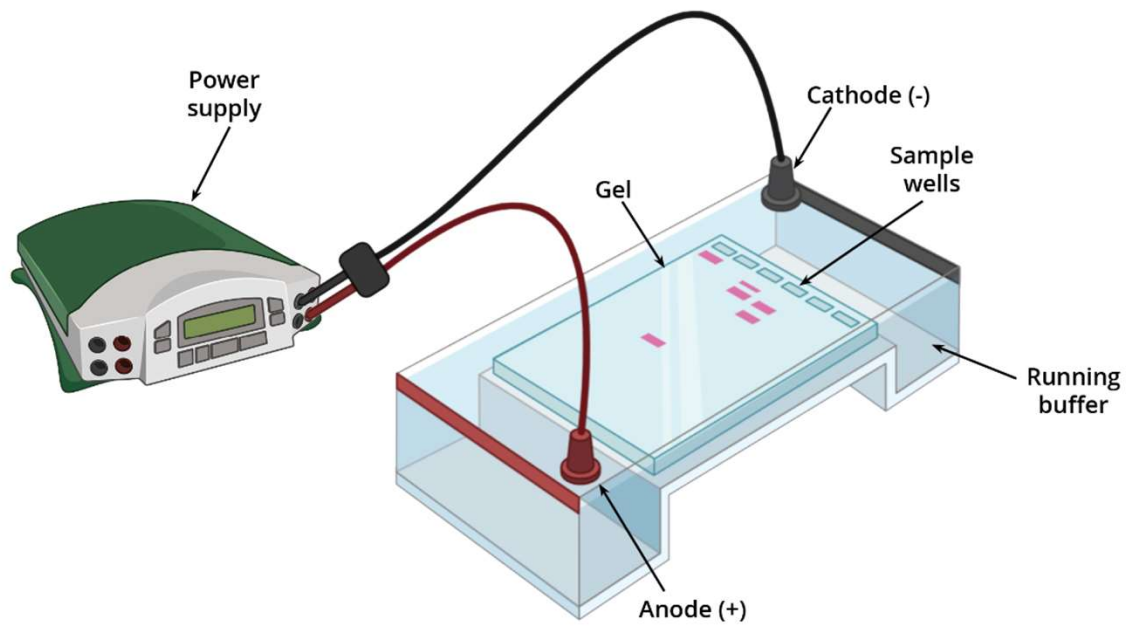


~72°C



TAQ POLYMERASE BUILDS
COMPLEMENTARY STRAND







Geneious

<https://brand.cornell.edu/merchandising/>

Short Tandem Repeats (STRs)



Geneious

<https://brand.cornell.edu/merchandising/>



Non-Focal Female 2



Non-Focal Female 2





BORIS



Thank you!

Questions?



