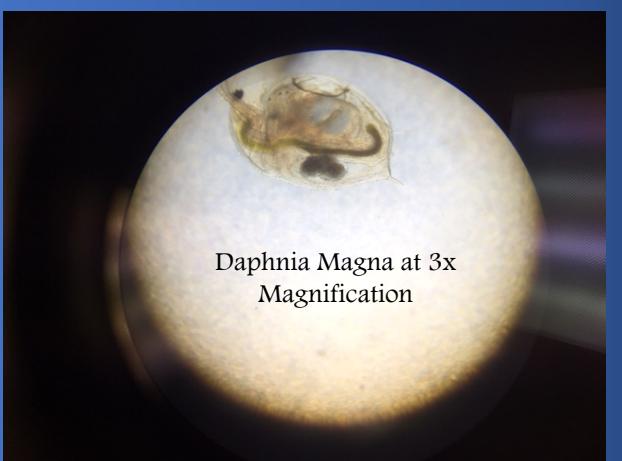


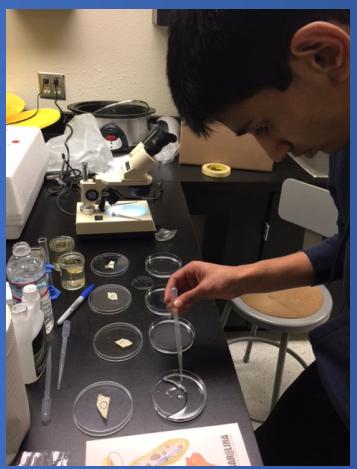
# Question:

Does Caffeine Affect the Heartrate of Daphnia?



# Purpose:

Determine whether or not caffeine will raise or lower a Daphnia's heartrate..



# Hypothesis:

If caffeine is added to a chemical solution for Daphnia, then the Daphnia's heart rate per minute will increase drastically.

# Materials:

- Pipette
- Daphnia Magna Culture
- Pure Caffeine
- Marker
- Petri Dish
- Tripod
- Camera
- Graduated Cylinder
- Notebook
- Tape

# Procedure:

## Preparing Petri Dishes:

### Control Group:

1. Put spring water to the 10 mL line of the graduated cylinder
2. Using the pipette, add at least 10 Daphnia to the cylinder
3. Gently pour contents into petri dish
4. Seal petri dish with two layers of tape
5. Write on the tape, labeling that it has 0 mL of caffeine

### 2 mL of Caffeine:

1. Put spring water to the 8 mL line of the graduated cylinder
2. Using pipette, add 2 mL of pure caffeine to the graduated cylinder
3. Using pipette, add at least 10 Daphnia to the cylinder
4. Gently pour contents into petri dish
5. Seal petri dish with two layers of tape
6. Write on the tape, labeling that it has 2 mL of caffeine

### 1 ½ mL of Caffeine:

1. Put spring water to the 8 ½ mL line of the graduated cylinder
2. Using pipette, add 1 ½ mL of pure caffeine to the graduated cylinder
3. Using pipette, ad at least 10 Daphnia to the cylinder
4. Gently pour contents into petri dish
5. Seal petri dish with two layers of tape
6. Write on the tape, labeling that it has 1 ½ mL of caffeine

### 1 mL of Caffeine:

1. Put spring water to the 9mL line of the graduated cylinder
2. Using pipette, add 1 mL of pure caffeine to the graduated cylinder
3. Using pipette, add at least 10 Daphnia to the cylinder
4. Gently pour contents into petri dish
5. Seal petri dish with two layers of tape
6. Write on the tape, labeling that it has 1 mL of caffeine

### Preparing to Record Data:

1. Take compound microscope and turn it on
2. Set up tripod and camera so that capturing heart of magnified Daphnia is possible

# A Caffeine Kick

# Data:

## Trial #1:

Control Group: (No Caffeine Added)			
	Beats Per Min.		Beats Per Min.
1	172	6	184
2	205	7	201
3	186	8	194
4	192	9	189
5	210	10	164
Average BPM:		190	

## Trial #2:

Control Group: (No Caffeine Added)			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	182	6	190
2	193	7	174
3	187	8	189
4	176	9	NA
5	181	10	NA
Average BPM:		184	

1 mL of Caffeine			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	228	6	211
2	236	7	224
3	241	8	219
4	235	9	243
5	242	10	226
Average BPM:		231	

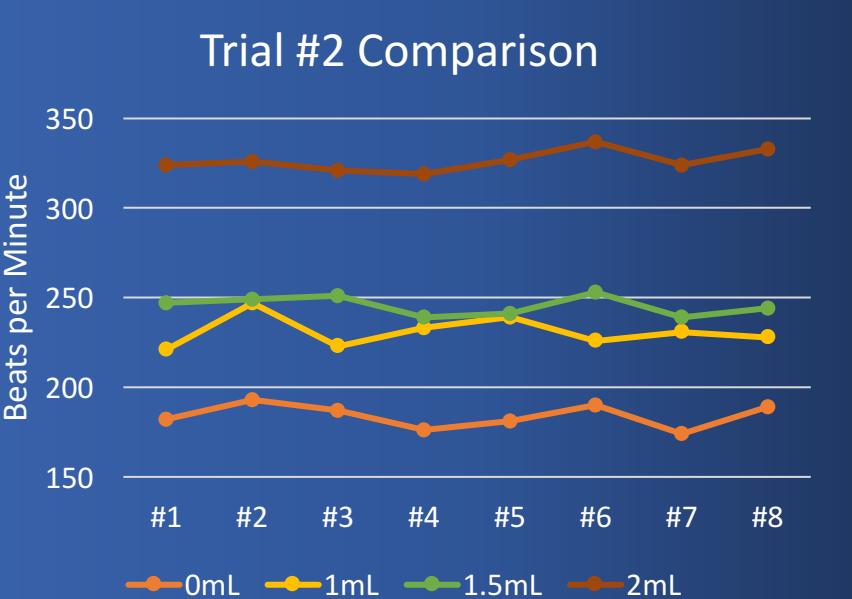
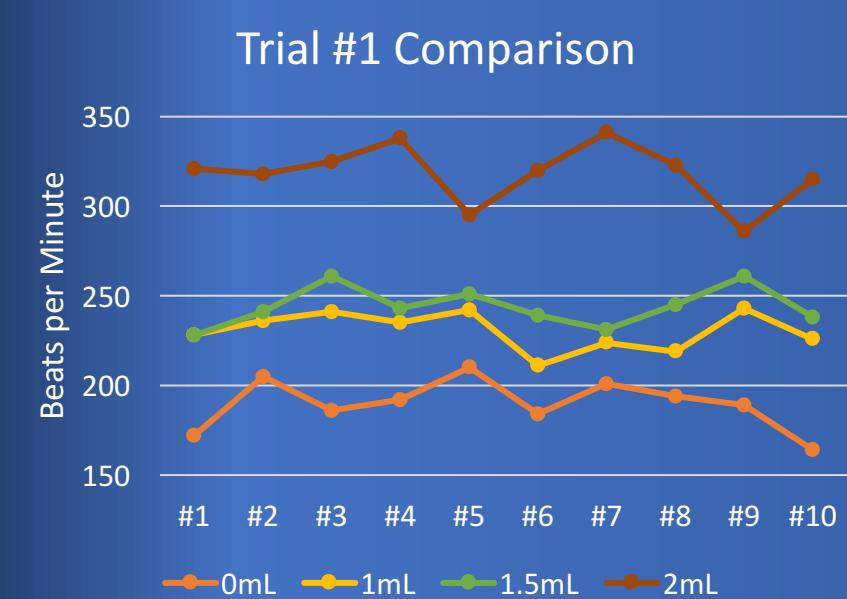
1 mL of Caffeine			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	221	6	226
2	247	7	231
3	223	8	228
4	233	9	NA
5	239	10	NA
Average BPM:		231	

1.5 mL of Caffeine			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	228	6	239
2	241	7	231
3	261	8	245
4	243	9	261
5	251	10	238
Average BPM:		244	

1.5 mL of Caffeine			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	247	6	253
2	249	7	239
3	251	8	244
4	239	9	NA
5	241	10	NA
Average BPM:		245	

2 mL of Caffeine			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	321	6	320
2	318	7	341
3	325	8	323
4	338	9	286
5	295	10	315
Average BPM:		318	

2 mL of Caffeine			
Daphnia #	Beats Per Min.	Daphnia #	Beats Per Min.
1	324	6	337
2	326	7	324
3	321	8	333
4	319	9	NA
5	327	10	NA
Average BPM:		326	



# Procedure:

### Recording Data:

1. Take petri dish marked without any caffeine and place under microscope
2. Never turn on light because temperature has an effect on heart rates