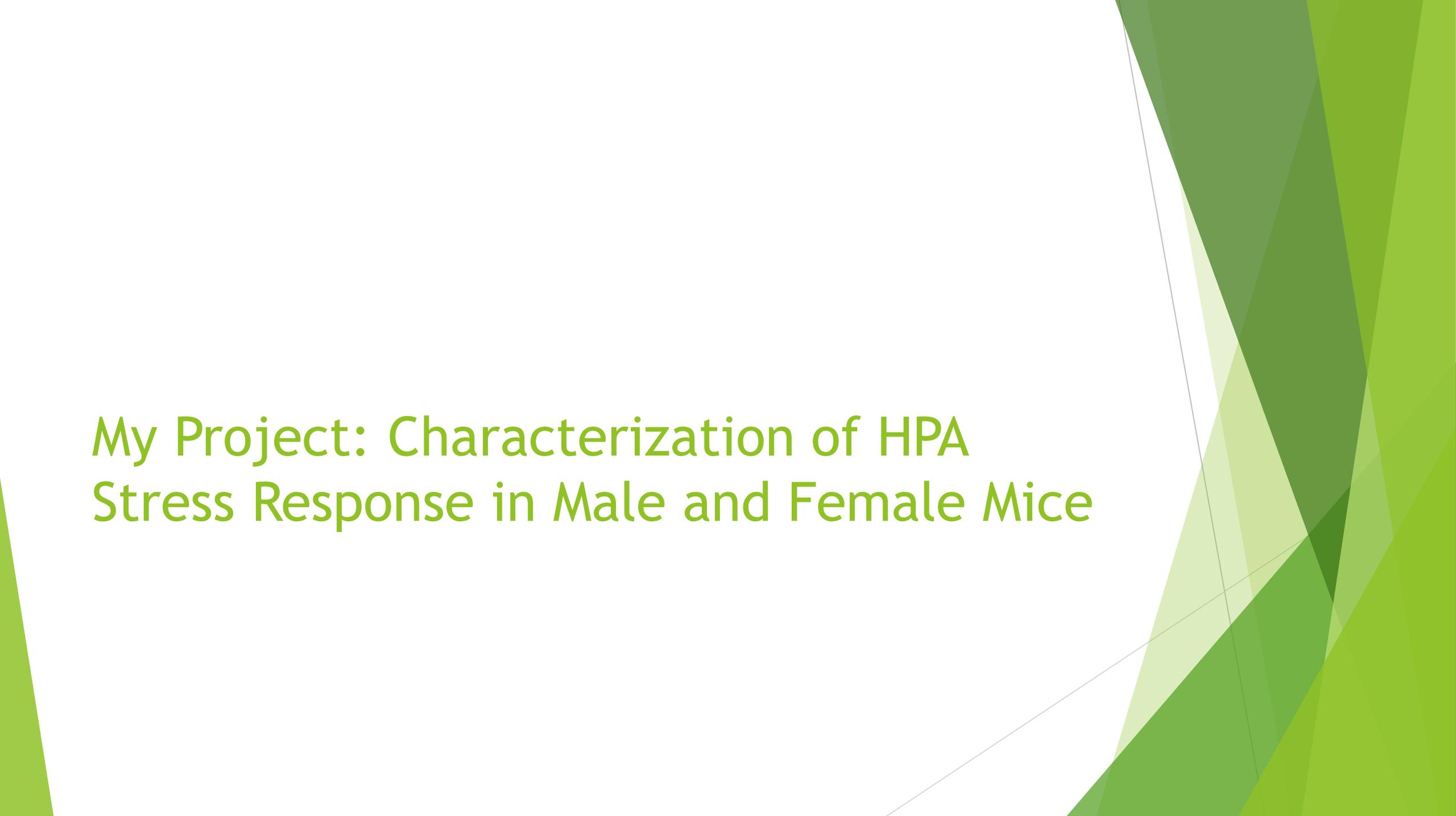


The slide features a white background with abstract green geometric shapes on the left and right sides. The text is centered in a green, sans-serif font.

# USUHS Summer Internship

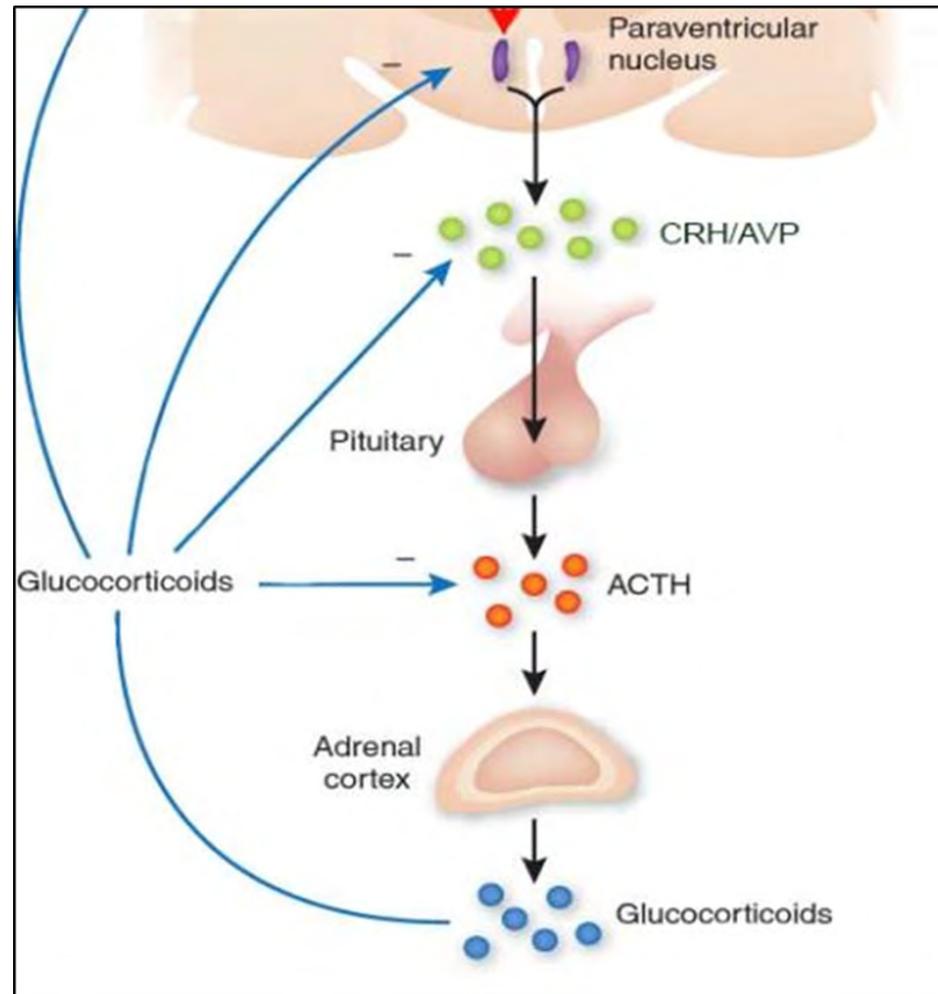
The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the slide, creating a modern, layered effect. The text is positioned on the left side of the slide, set against a plain white background.

# My Project: Characterization of HPA Stress Response in *Male and Female Mice*

# Background

- ▶ About 1.4 million people experience traumatic brain injuries (TBI) annually
- ▶ 80% are mild TBI
- ▶ Mild Blast TBI (mbTBI) occur after an injury such as an explosion, etc.
- ▶ TBI patients are often diagnosed with neuropsychiatric disorders
- ▶ Women develop anxiety disorders more often after TBI

# Hypothalamic Pituitary Adrenal (HPA) Axis



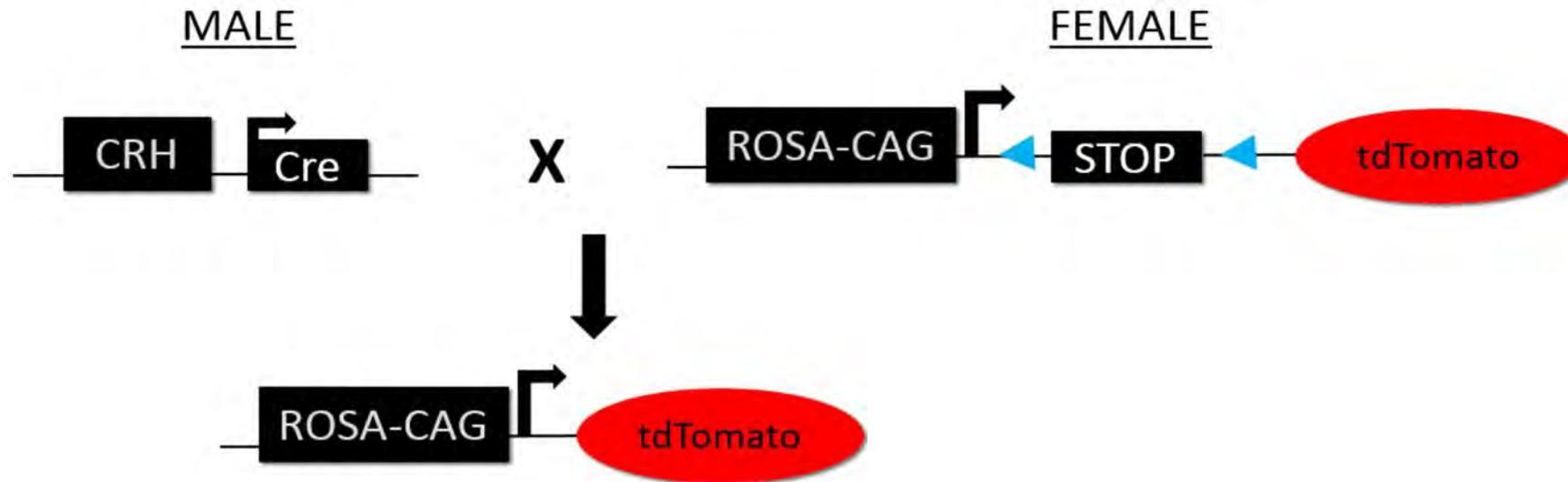
# Goals

- ▶ The goal of the project is to understand the sex-dependent HPA dysregulations that increase neuropsychiatric disorders after mbTBI.
- ▶ My project was to characterize cellular activation after stress in male and female mice without TBI.

# Methods

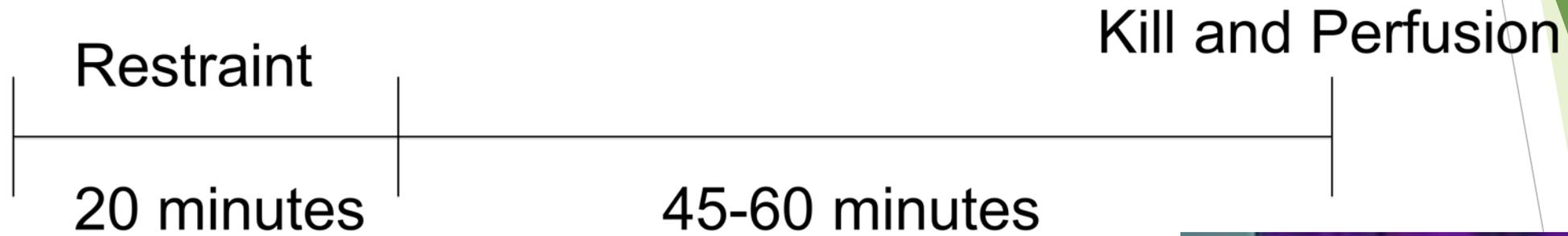
	No Stress	Stress
Male	4	5
Female	4	3

# Animal Breeding



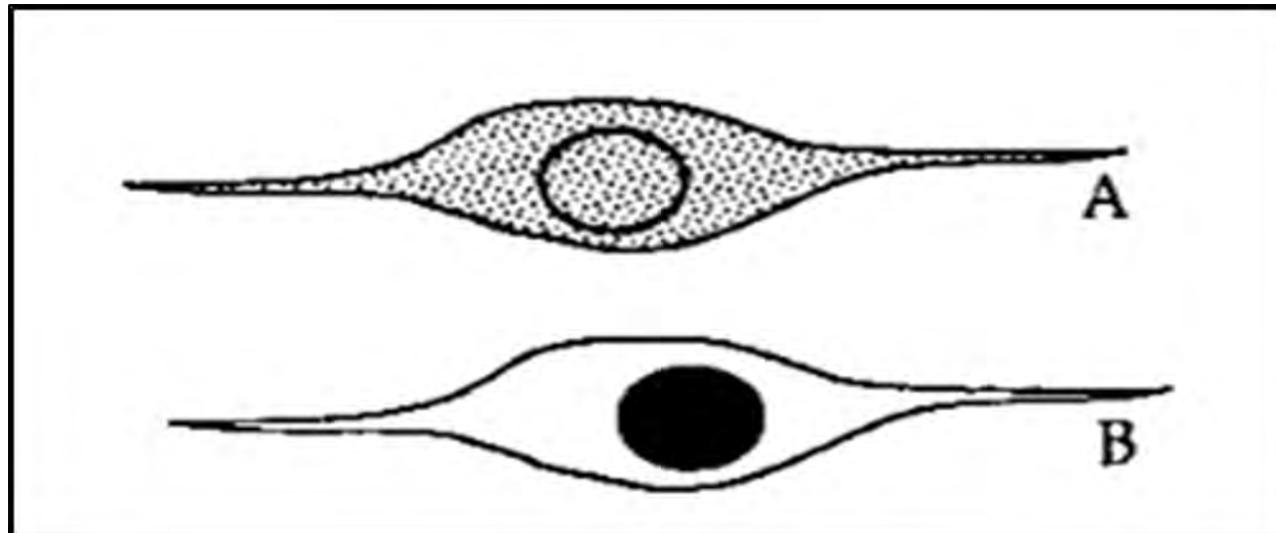
**Causes CRH neurons to appear red**

# Timeline of Experiment

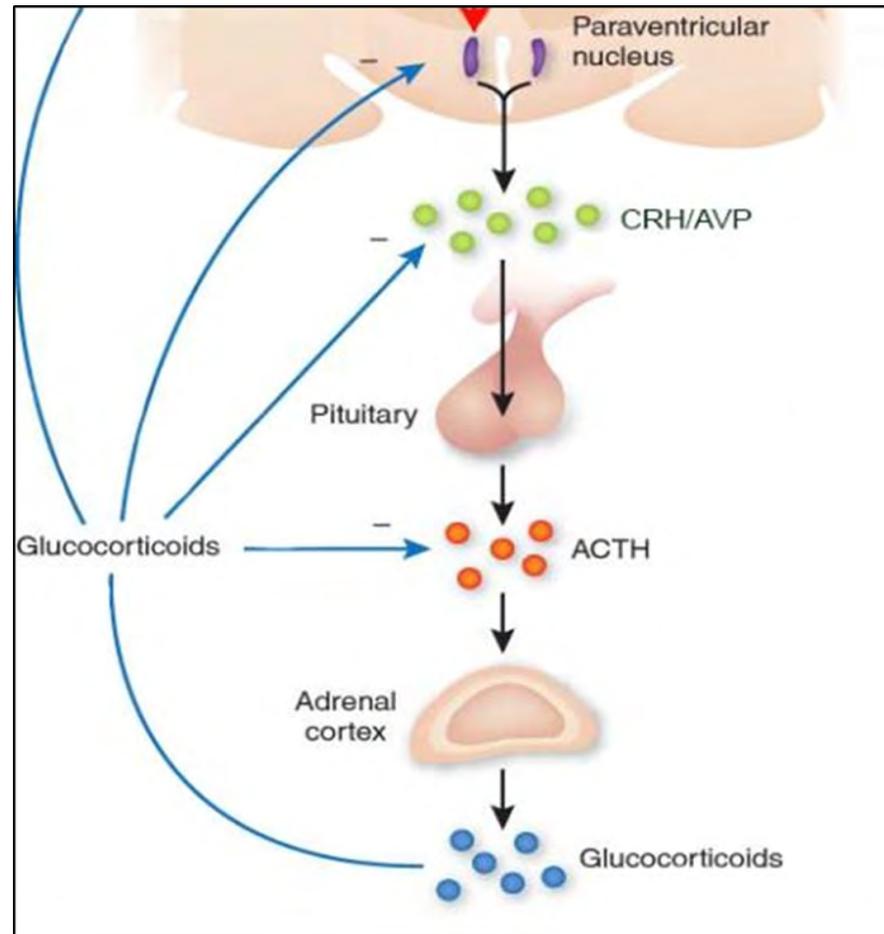


# c-FOS

- ▶ During basal conditions, c-FOS is not expressed
- ▶ Upon stimulation, there is an increase in c-FOS protein expression
- ▶ c-FOS is used to measure neuronal activation
- ▶ **c-FOS stains green**

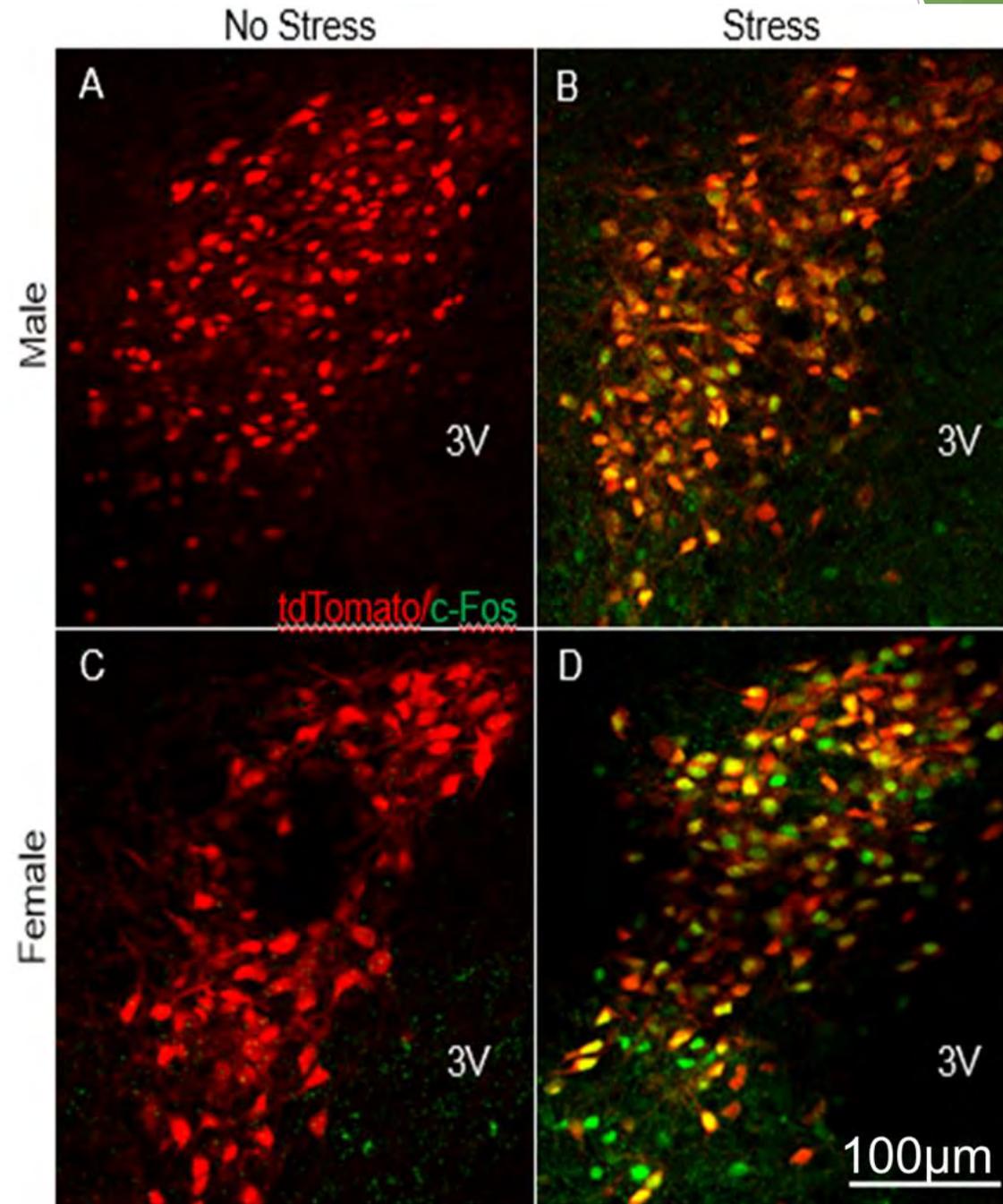


# Hypothalamic Pituitary Adrenal (HPA) Axis

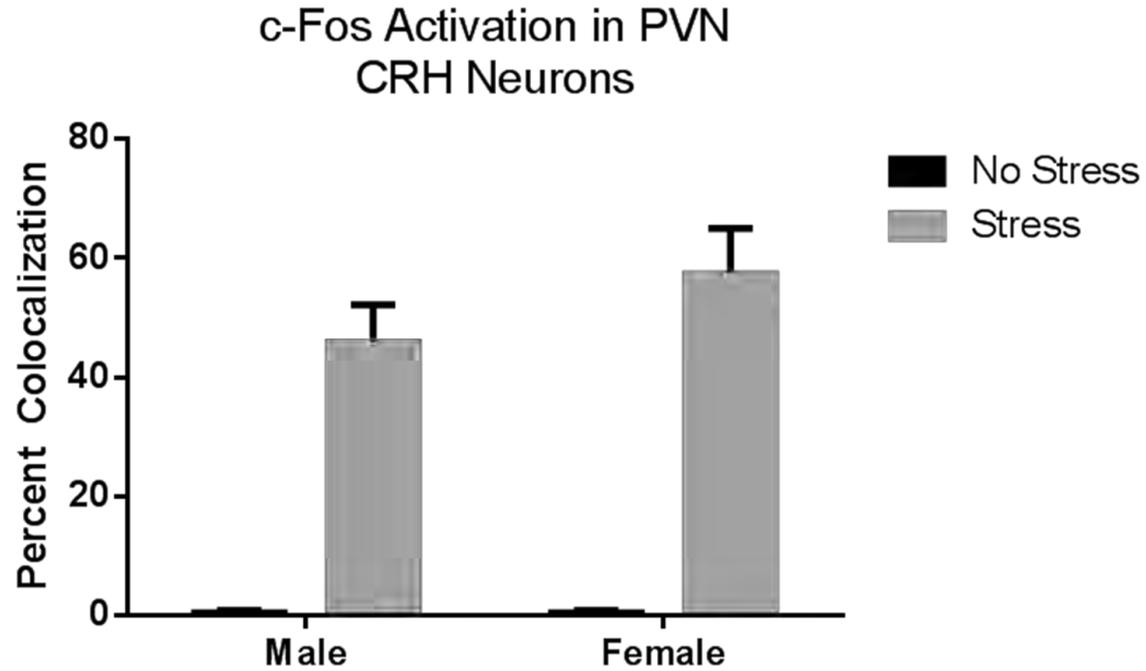


# Results

CRH fluoresces red  
c-FOS stains green



# Cell Counts

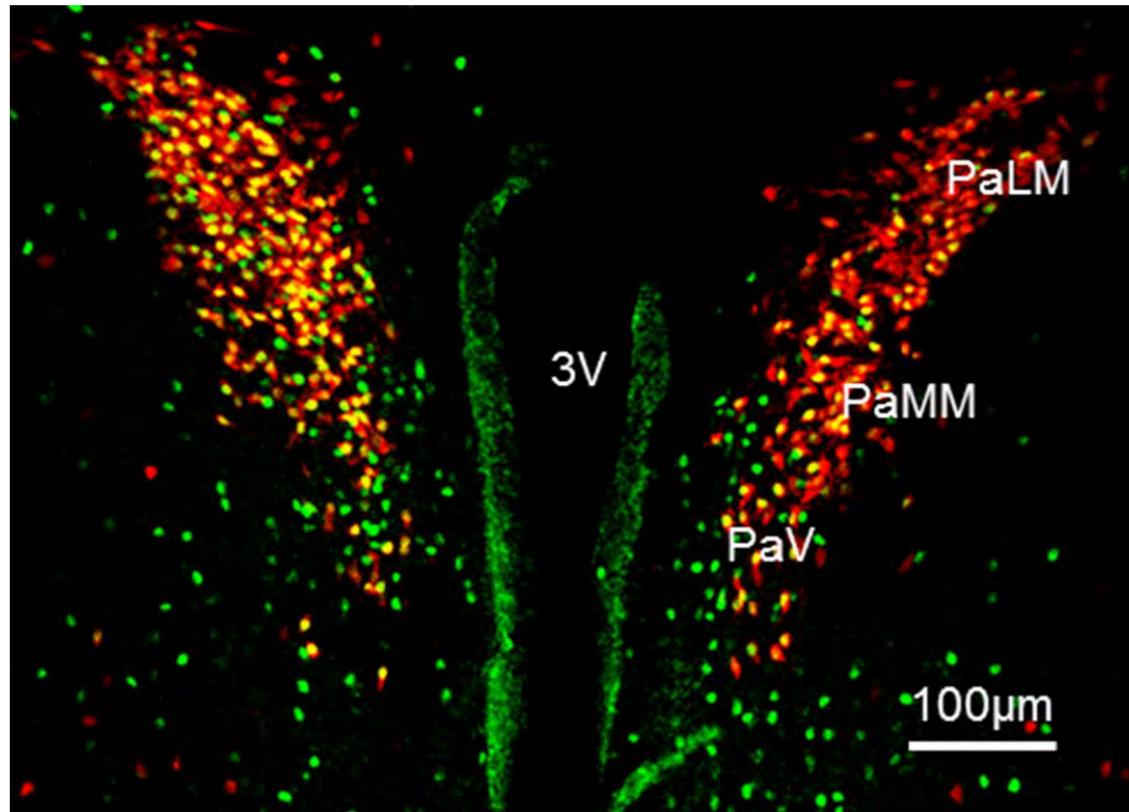


No Stress

Stress

	CRH	c-FOS	Co-localization	% Co-localization		CRH	c-FOS	Co-localization	% Co-localization
Male	48.46	2.94	0.18	0.50	Male	48.65	49.72	23.35	45.92
Female	46.38	1.94	0.25	0.53	Female	72.58	61.08	41.00	57.37

# Paraventricular Nucleus



# Conclusions

- ▶ Large difference in percentages of co-localized neurons between stressed and no stressed animals
- ▶ Sex-difference not significant
- ▶ Future research will be compared against this characterization to analyze results of animals with mbTBI

# Takeaway from the Summer

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# Mistakes Made and Lessons Learned

- ▶ Mistakes were infinite, mine, others', and those that could not be controlled
- ▶ Find joy in whatever you do
- ▶ Having a good work ethic is about more than studying

# Acknowledgements

- ▶ Dr. Wu for being a great mentor
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Questions?

