Have you ever heard about fight or flight? That’s the name for how our nervous system responds to an acute stressor… like running from a bear. I don’t know if you’ve ever been in that situation (I haven’t) but you can imagine that you’re not very hungry… you’ve got bigger problems.

My name is Ruby, and I am studying the **link between stress and appetite** in a region of the brain called the hypothalamus, specifically the dorsomedial hypothalamus (or DMH), which is **involved in the regulation of appetite and body weight**.

To do this, I am investigating how neurons **change their communication** in response to acute stressors in **female rats.**

Given the similarities between the human and rat brain, this research could allow us to gain insight into the human brain **under stress**.

The nervous system uses electrical and chemical (or neurotransmitter) messages to communicate. In this case I am looking at the **amplitude of the electrical currents** caused by an **excitatory neurotransmitter called glutamate**.

We obtain brain slices from rats and keep the neurons **alive** by giving them all the oxygen and nutrients they normal get when inside your body.

This is an image of what it looks like to record from a **live** neuron. The pink neuron is the neuron of interest that we are recording from, and the dark blue electrode collects that information, the grey is the neurons are in the surrounding tissue, and they are stimulated by the light blue electrode to release the neurotransmitter glutamate, so that we can see how the neuron of interest responds to that communication.

Down here in yellow we have naïve rats, so we are measuring neurons from them who did not experience acute stress.

In pink, these rats experienced a 30-minute acute stressor before we collected brain slices.

We apply HFS which I like to think of as a way to “**fast forward**” and see long lasting changes in neural communication in just 30 minutes.

We can see that there is a significant depression in the amplitude of the currents in the acutely stressed rats and it’s even more significant the longer the recording goes.

This is super interesting because in our lab there has been previous experiments like this on male rats, and we don’t see this depression. This **change in communication** might be involved in the **sex differences in food intake under stress** that we do see in humans.

I am currently looking into the **mechanism** of this depression, to see if there is a **specific hormone or receptor involved**, and I am conducting a similar experiment to see what happens when **female rats are chronically stressed**.