Gabriella Porter
Campus: Bryan-College Station
Research Area: Adverse effects of opioid administration immediately post spinal cord injury
Mentor: Dr. Michelle Hook, PhD.

Gabriella Porter is a member of the Class of 2026 at the Texas A&M School of Medicine conducting neuroscience research in opioids under the guidance of Michelle Hook, Ph.D., an Associate Professor in the Department of Neuroscience and Experimental Therapeutics at Texas A&M Health Science Center. Spinal cord injuries often result in permanent changes to motor, sensory, and psychocognitive functions, reducing quality of life. While there is constant ongoing research to reduce negative effects, recent studies suggest a potential adverse consequence with a routine approach to treatment. Opioids are one of the most effective and commonly used forms of pain management immediately following a spinal cord injury (SCI). Alarmingly, in animal models and in humans, early opioid administration has been linked to attenuated locomotor recovery, increased lesion size, increased depression rates, higher risk of infection, and long-term pain post SCI (Stampas et al., 2020). With few alternatives to severe pain management, however, opioids are currently indispensable. This project investigates methods to mitigate and extinguish adverse effects of opioids, while retaining their analgesic efficacy. The proposed project will examine the effects of four clinically relevant opioids (morphine, oxycodone, fentanyl, and buprenorphine), that differ in their affinity for the kappa opioid receptor, on recovery of function after SCI. The current project will extend the research to examine female Spraque-Dawley rats. Each of the opioids will be administered for the first 7 days post injury, and long-term assessments of locomotor function, sensory reactivity, and cellular changes will be performed. We hypothesize that opioids that directly activate the kappa opioid receptor (morphine, oxycodone) will undermine recovery, whereas those that do not (fentanyl and buprenorphine) will not.