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**Research Interests**

Our lab's research uses rodent models of autism to examine the neurobiology of the disorder and study social interactions, repetitive behaviors, and changes in cognitive flexibility. Our primary model is of Fragile X syndrome, which is the number one cause of intellectual disability. Fragile X rats are created by modifying the Fmr1 gene (Fmr1 knock out) which results in the loss of FMR protein. Projects include using electrophysiology to record from the medial prefrontal cortex during cognitive performance to assess differences in brain function between knock out and wild type animals.  We are also interested in understanding change across the life-span and have projects that examine adolescent development as well as in aged animals. Lastly, we have a collaboration with Dr. Julio Hernandez-Pavon to use transcranial magnetic stimulation to improve cognitive performance in rats.

**Student Involvement**

The lab is actively recruiting students! Interested undergraduate or graduate students should email Dr. Plakke. Students will have the opportunity to design experiments as well as participate in collecting and analyzing data. A variety of techniques including behavioral handling and training of animals, histology, ELISA assays, and immunohistochemistry can be learned by students. Students can develop a project and present the work at regional or national conferences and can gain valuable experience sharing their research.

**Publications**

Payne, M., Mali, I., Shrestha, T., McKinnell, Z. E., Bossman,S., **Plakke, B**. (2021). Increased volumes of lobule VI in a valproic acid model of autism are associated with worse set-shifting performance in male Long-Evan rats. *Brain Research*,1765, 147495.

McKinnell, Z.E. **,** Maze, T., Challans, B., Ramos, A., **Plakke, B**. (2021). Valproic acid treated Long-Evans rats are impaired on attentional set-shifting. *Behavioural Brain Research*, 397, 112966.

**Plakke, B**., Romanski, L.M. (2016). Neural circuits in auditory and audiovisual memory. *Brain Research*. 1640 (Pt B), 278-288.

**Plakke, B**., Hwang, J., Romanski, L.M. (2015). Inactivation of primate prefrontal cortex impairs auditory and audiovisual working memory. *The Journal of Neuroscience*, 35(26): 9666-9675.

**Plakke, B**., Romanski, L.M. (2014). Auditory connections and functions of prefrontal cortex. Review *Frontiers in Neuroscience.*8:199.

Ng, C.W., **Plakke, B**., Poremba, A. (2014). Neural correlates of auditory recognition memory in the primate dorsal temporal pole. *Journal of Neurophysiology*, 111(3): 455-69.