



Name: Hannah P. Fricke

Email: hfricke@wisc.edu

Major Professor: Dr. Laura Hernandez

Degree Objective: Endocrinology and Reproductive Physiology

Background: BS Dairy Science and Life Sciences Communication, University of Wisconsin—Madison, Spring 2018

Current Research Project:

My research focuses on lactation and the long-term bone health of both the mother and the offspring when lactation is combined with the usage of the selective serotonin reuptake inhibitor (SSRI) fluoxetine (Prozac®). In all mammals, lactation is characterized by a breakdown of bone tissue in order to supply sufficient calcium to the offspring and is thought to be restored after weaning. SSRIs have also been shown to decrease bone mineral density (BMD) across all ages and sexes and are considered a risk for osteoporotic fractures. Previous work in our lab has shown a relationship between SSRI usage and the perpetuation of lactation-driven bone loss into adulthood, as well as a developmental impact on the bone growth of offspring exposed to fluoxetine *in utero* and during lactation. Currently, I use C57bl6/J wild type mice to study the long-term health effects on the bone of mice given fluoxetine during gestation, lactation, or both, as well as the effects on the bone health of the exposed offspring at weaning and into adulthood. Further, I am also investigating the possibility of a dietary intervention, folic acid supplementation, as a possible rescue of lactation-driven bone loss.

Publications:

Carvalho, P. D., Santos, V. G., **Fricke, H. P.**, Hernandez, L. L., & Fricke, P. M. (2019). Effect of manipulating progesterone before timed artificial insemination on reproductive and endocrine outcomes in high-producing multiparous Holstein cows. *Journal of Dairy Science*, 102(8), 7509-7521.

Kuehnl, J. M., Connelly, M. K., Dzidic, A., Lauber, M., **Fricke, H. P.**, Klister, M., ... & Crump, P. M. (2020). Corrigendum: The effects of incomplete milking and increased milking frequency on milk production rate and milk composition. *Journal of Animal Science*, 98(3).

Niles, A. M., **Fricke, H. P.**, Carvalho, P. D., Wiltbank, M. C., Hernandez, L. L., & Fricke, P. M. (2019). Effect of treatment with human chorionic gonadotropin 7 days after artificial insemination or at the time of embryo transfer on reproductive outcomes in nulliparous Holstein heifers. *Journal of dairy science*, 102(3), 2593-2606.

Weaver, S. R., **Fricke, H. P.**, Xie, C., Aiello, R. J., Charles, J. F., & Hernandez, L. L. (2018). Peripartum dietary supplementation of a small-molecule inhibitor of tryptophan hydroxylase 1 compromises infant, but not maternal, bone. *American Journal of Physiology-Endocrinology and Metabolism*, 315(6), E1133.



Weaver, S. R., **Fricke, H. P.**, Xie, C., Lipinski, R. J., Vezina, C. M., Charles, J. F., & Hernandez, L. L. (2018). Peripartum fluoxetine reduces maternal trabecular bone after weaning and elevates mammary gland serotonin and PTHrP. *Endocrinology*, 159(8), 2850-2862.

National Presentations:

Poster presentation: **Fricke, H. P.**, Weaver, S., Hernandez, L. (2018). Bone Remodeling Gene Expression is Dynamic Across Lactation in Response to Fluoxetine. Abstract presented at ENDO, 2018. Chicago, IL. *Abstract selected for poster award competition.

Poster presentation: **Fricke, H. P.**, Connelly, M., Hernandez, L. (2018). The role of serotonin in systemic immune response during mid-late lactation in dairy cows. Abstract presented at ADSA, 2018, Knoxville, TN.

Other Presentations:

Poster presentation: **Fricke, H. P.**, Weaver, S., Hernandez, L. (2018). Bone Remodeling Gene Expression is Dynamic Across Lactation in Response to Fluoxetine. Abstract presented at the Endocrinology and Reproductive Physiology Symposium, 2018. *Abstract selected for poster award competition.

Oral presentation: **Fricke, H. P.**, Hernandez, L. (2018). Fluoxetine, Folic Acid, and Bone Remodeling During Lactation. Presented at the Developmental Endocrinology Cohort Meeting, 2018. Madison, WI.

Teaching and Mentorship:

TA: Animal Science/Dairy Science 373: Animal Physiology; Spring 2019