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Major Professor: Laura Hernandez and Milo Wiltbank

Degree Objective: Endocrinology and Reproductive Physiology

Background:

Research Fellow, Eutheria Foundation/ UW-Madison, 2016-2019.

DVM – Federal University of Vicosa, Brazil, 2016.

Current Research Project:

Fluoxetine (a.k.a. Prozac) is one of the most used antidepressant and 5-10% of pregnant women in the USA take it during the peripartum period. As other selective serotonin reuptake inhibitors, fluoxetine increases serotonin signaling in the brain (antidepressant effect) by inhibiting the serotonin transporter (SERT) reuptake of serotonin. However, the inhibition of SERT in peripheral tissues gives rise to side effects related to increased serotonin signaling. Because serotonin is involved in a variety of biological processes (including embryogenesis and control of placenta blood flow), SSRI use during pregnancy may result in adverse pregnancy outcomes such as preeclampsia, fetal malformations, placenta insufficiency, intrauterine growth restriction, and preterm birth. My thesis project aims to investigate the mechanisms by which fluoxetine affects pregnancy outcomes in humans. We have been using two animal models (mouse and sheep) to elucidate how altered SERT function due to fluoxetine use modifies placenta homeostasis leading to placental insufficiency, intrauterine growth restriction and preterm birth. Further, we are evaluating the effectiveness of a serotonin receptor antagonist to prevent the fluoxetine-related adverse pregnancy outcomes.

Honors:

Grants Received:

Global Health Institute – Graduate Research Award, UW-Madison, April 2021-March 2022

Publications:

- Ginther, O.G.; Silva, P.N.; Gomez-León, V.E.; **Domingues, R.R.**; Inskeep, E.K. Side of ovulation at each end of two- and three-wave interovulatory intervals and before and after pregnancy in cattle. *Animal Reproduction Science* 229, 2021.
- Castro, T.C.; Jacob, J.C.; Stefani, G.; **Domingues, R.R.**; Ginther, O.G. Concentrations of progesterone and a PGF₂ α metabolite during the interovulatory interval compared to the corresponding days of pregnancy in mares. *Theriogenology* 165, 10-17, 2021.



- **Domingues, R.R.**; Ginther, O.J.; Toledo, M.Z.; Wiltbank, M.C. Increased dietary energy alters follicle dynamics and wave patterns in heifers. *Reproduction* 161, 943-953, 2020.
- Gomez-León, V.E.; Ginther, O.J.; **Domingues, R.R.**; Guimaraes, J.D.; Wiltbank, M.C. Necessity for LH in selection and continued growth of the bovine dominant follicle. *Reproduction* 159, 559-569, 2020.
- **Domingues, R.R.**; Ginther, O.J.; Gomez-León, V.E.; Wiltbank, M.C. Up-regulation of endometrial oxytocin receptor is associated with the timing of luteolysis in heifers with two and three follicular waves. *Biology of Reproduction* 102, 316-326, 2020.
- Ginther, O.J.; **Domingues, R.R.**; Kennedy, V.C.; Dangudubiyam, S.V. Endogenous and exogenous effects of PGF₂α during luteolysis in mares. *Theriogenology* 132, 45-52, 2019.
- Andrade, J.P.N.; Andrade, F.S.; Guerson, Y.B.; **Domingues, R.R.**; Gomez-León, V.E.; Cunha, T.O.; Jacob, J.C.F.; Sales, J.N.; Martins, J.P.N.; Mello, M.R.B. Early pregnancy diagnosis at 21 days post artificial insemination using corpus luteum vascular perfusion compared to corpus luteum diameter and/or echogenicity in Nelore heifers. *Animal Reproduction Science* 209, 2019.
- Ginther, O.J.; Dangudubiyam, S.V.; **Domingues, R.R.** Follicle blood flow and FSH concentration associated with variations in characteristics of follicle selection in heifers. *Theriogenology* 125, 93-101, 2019.
- Ginther, O.J.; **Domingues, R.R.**; Dangudubiyam, S.V.; Araujo, E.R. Gonadotropin concentrations associated with variations in diameter deviation during follicle selection in Holstein heifers. *Animal Reproduction Science* 192, 271–279, 2018.
- **Domingues, R.R.**; Ginther, O.J. Angiocoupling between the dominant follicle and corpus luteum during waves 1 and 2 in *Bos taurus* heifers. *Theriogenology* 114, 109–115, 2018.
- Ginther, O.J.; **Domingues, R.R.**; Dangudubiyam, S.V.; Araujo, E.R. Concentrations of follicle stimulating hormone associated with follicle selection, number of follicles, and ipsilateral vs contralateral relationships in mares. *Theriogenology* 113, 159–165, 2018.
- Mouro, V.S.G.; Menezes, T.P.; Lima, G.D.A.; **Domingues, R.R.**; Souza, A.C.F.; Oliveira, J.A.; Matta, S.L.P.; Machado-Neves, M. How bad is aluminium exposure to reproductive parameters in rats? *Biological Trace Element Research* 183, 314–324, 2018.
- Silveira, W.F.; Braga, F.R.; Tavela, A.O.; Santos, L.F.; **Domingues, R.R.**; Aguiar, A.R.; Ferraz, C.M.; Carvalho, L.M.; Ayupe, T.H.; Zanuncio, J.C.; Araújo, J.V. Nematophagous fungi combinations reduce free-living stages of sheep gastrointestinal nematodes in the field. *Journal of Invertebrate Pathology* 150, 1–5, 2017.
- Ginther, O.J.; **Domingues, R.R.**; Siddiqui, M.A.R.; Dangudubiyam, S.V. Blood flow and echotextural differences between the future dominant and subordinate follicles before the beginning of diameter deviation in heifers. *Theriogenology* 100, 42–49, 2017.
- Silveira, W.F.; Oliveira, G.D.; Braga, F.R.; Carvalho, L.M.; **Domingues, R.R.**; Silva, L.A.; Zanuncio, J.C.; Araujo, J.V. Predation rate of nematophagous fungi after passing through the gastrointestinal tract of goats. *Small Ruminant Research* 147, 101–105, 2017.
- Carvalho, L.M.; Braga, F.R.; **Domingues, R.R.**; Araujo, J.M.; Lelis, R.T.; Paula, A.T.; Silveira, W.F.; Araujo, J.V. Interaction of the nematophagous fungus *Pochonia chlamydosporia* and *Parascaris equorum* eggs in different culture media. *Journal of Basic Microbiology*, 54, 109–114, 2014.



National Presentations:

Other Presentations:

Teaching and Mentorship:

ERP Service: