

Madison Fagan, M.S.

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EDUCATION

PhD, Neuroscience, University of Georgia *Expected Spring 2022*
Dissertation: *Efficacy of gut microbial transfer to alleviate the effects of traumatic brain injury in a piglet model*
Certificate: *Clinical Trials Design and Management*

MS, Animal Science, University of Georgia August 2018
Thesis: *The effects of level and form of vitamin E supplementation on oxidative stress and muscle damage in exercising horses*

BS, Animal Science, North Carolina State University May 2015

RELEVANT EXPERIENCE

Graduate Research Assistant

- Design, organize, and execute pre-clinical study investigating probiotic therapy for traumatic brain injury in a porcine model
- Conduct and troubleshoot in vitro assays related to porcine or equine peripheral biomarkers correlating to study treatments
- Manage team of 5 graduate students and up to 10 undergraduate students for successful completion of pre-clinical studies
- Collect and analyze equine gait, and porcine gait and behavior in relation to neural injury
- Implement research plan for equine nutrition project funded by Waltham Buckeye Nutrition

Teaching Assistant

- Animal and Dairy Science Practicum, University of Georgia, Fall 2017
- Introduction to Horsemanship, University of Georgia, Fall 2017
- Animal Anatomy and Physiology, North Carolina State University, Spring 2014

Guest Lecturer

Animal and Dairy Science Practicum, University of Georgia

- Topic: Introduction to Horses and Equine Parasites, February 2018
- Topic: Equine Health and Vaccines, October 2017
- Topic: Introduction to Horses and Equine Parasites, September 2017

Equine Anatomy and Biomechanics, University of Georgia

- Topic: Equine Delayed Onset Muscle Soreness, April 2017

Equine Nutrition, University of Georgia

- Topic: Vitamin E, November 2016

CERTIFICATIONS AND TECHNICAL SKILLS

Certifications: CITI Biomedical Research, Bloodborne Pathogen Safety, Laboratory Animal Nutrition, Sharps Training, Hazardous Waste Training, Occupational Health and Safety Training, Institutional Animal Care and Use Committee Training, MRI Safety.

In vitro: Flow cytometry: intracellular and extracellular marker detection, aseptic cell culture technique, protein carbonylation assessment, thiobarbituric acid centrifugation method, Lipopolysaccharide solution preparation, DiR cell labeling, Fillcol-Paque separation method, Western Blot.

In vivo: Laboratory and large animal handling, anesthesia induction and monitoring, animal surgery using sterile technique, craniectomy, tissue handling/processing, suturing, jugular and peripheral blood draws, animal behavior testing, animal gait collection, pre- and post-operative care, plasma and serum processing. Emphasis in porcine and equine species.

Equipment: Continuous flow anesthetic machine, centrifuge, Ethovision Software, GAITFour, XCitex Motion Capture and ProAnalyst, Cortical Controlled Impactor, Flow Cytometer: Beckman Coulter CyAn and Acea Quanteon, IVIS Lumina II, Laminar Flow Hoods, spectrophotometer.

Technology: Canva, Instagram, Twitter, Microsoft Suite, Adobe Photoshop, Adobe Lightroom, MAC and PC Systems, Zoom, Google Suite.

PUBLICATIONS

Published Articles:

1. Blackwell, M.J., Britt, A., **Fagan, M.M.**, Turner, K. K., Duberstein, K.J. (2021). Short term effect of *Serecia lespedeza* on strongyle fecal egg counts in mature horses. *Journal of Undergraduate Research*, XI, 1-5.
2. Simchick G., Scheulin K.M., Sun W., Sneed S.S., **Fagan M.M.**, Cheek S.R., West F.D., Zhao Q. (2021). Detecting functional disruptions in a translational pediatric traumatic brain injury porcine model using resting-state and task-based fMRI. *Scientific Reports*. 11(1) , 1-19.
3. Sneed, S.E., Scheulin, K.M., Kaiser, E.E., **Fagan, M.M.**, Jurgielewicz, B.J., Waters, E.S., Spellicy, S.E., Duberstein, K.J., Platt, S.R., Baker, E.W., Stice, S.L., Kinder, H.K., West, F. D. (2021). Magnetic Resonance Imaging and Gait Analysis Indicate Similar Outcomes Between Yucatan and Landrace Porcine Ischemic Stroke Models. *Frontiers in neurology*, 11, 1897.
4. Waters, E. S., Kaiser, E. E., Yang, X., **Fagan, M. M.**, Scheulin, K. M., Jeon, J. H., Shin, S.K., Kinder, H.K., Kumar, A., Platt, S.R., Duberstein, K.J., Park, H.J., West, F. D. (2021). Intracisternal administration of tanshinone IIA-loaded nanoparticles leads to reduced tissue injury and functional deficits in a porcine model of ischemic stroke. *IBRO Neuroscience Reports*, 10, 18-30..
5. **Fagan, M. M.**, Harris, P., Adams, A., Pazdro, R., Krotky, A., Call, J., & Duberstein, K. J. (2020). Form of vitamin E supplementation effects oxidative and inflammatory response in exercising horses. *Journal of Equine Veterinary Science*, 103103.
6. Kaiser, E. E., Waters, E. S., **Fagan, M. M.**, Scheulin, K. M., Platt, S. R., Jeon, J. H., ... & Park, H. J. (2020). Characterization of tissue and functional deficits in a clinically translational pig model of acute ischemic stroke. *Brain Research*, 146778.
7. Duberstein, K.J., **Fagan, M.M.**, Blackwell, M. (2020) Equine Parasite Control: Moving Beyond Rotational Deworming. *UGA Cooperative Extension Circular 1193*.

Abstracts:

1. Jeon, J., Lourenco, J., Kaiser, E.E., Waters, E.S., Yang, X., **Fagan, M.M.**, Scheulin, K.M., Sneed, S.E., Shin, S.K., Kinder, H.A., Kumar, A., Platt, S.R., Duberstein, K.J., Xie, J., Callaway, T.R., West, F.D., Park, H.J. Fecal Short Chain Fatty Acids show correlations with stroke recovery in a stroke pig model. (2021). Obesity Society Annual Scientific Meeting. September. Chicago, IL.
2. Kaiser, E.E., Waters, E. S., Yang, X., **Fagan, M.M.**, Scheulin, K.M., Sneed, S.E., Jeon, J.H., Shin, S.K., Kinder, H.A., Kumar, A., Platt, S.R., Duberstein, K.J., Park, H.J., Xie, J., West, F.D. Tanshinone IIA-Loaded nanoparticles and induced pluripotent stem cell-derived neuronal stem cell therapies enhance recovery in a translational pig ischemic stroke model. (2021). International Stroke Conference. February, 2022. New Orleans, LA.
3. Scheulin, K.M., Simchick, G.A., Sneed, S.E., Sun, W., **Fagan, M.M.**, Cheek, S.R., Kaiser, E.E., Kinder, H.K., Duberstein, K.J., Zhao, Q., West, F.D. Functional Magnetic Resonance Imaging and diffusion tensor imaging evaluation of functional and structural resting state network

- disruptions in a translational porcine model of traumatic brain injury. (2021). Military Health System Research Symposium. August. Kissimmee, FL.
4. Mahoney, B., **Fagan, M.**, Scheulin, K., Welch, C., Sneed, S., Cheek, S., West, F., Kinder, H. Effect of fecal matter transplantation on motor function in a piglet traumatic brain injury. (2021). CURO Undergraduate Research Symposium. April. Athens, GA.
 5. Sun, W., Scheulin, K., Sneed, S., **Fagan, M.**, Cheek, S., Welch, C., Golan, M., West, F., Zhao, Q. Detecting functional connectivity changes in a pig traumatic brain injury model using resting state fMRI. (2021). International Society for Magnetic Resonance in Medicine. May. Vancouver, BC, Canada.
 6. Waters, E., Kaiser, E., Yang, X., **Fagan, M.**, Scheulin, K., Jeon, J., Shin, S., Kinder, H., Kumar, A., Platt, S., Duberstein, K., Park, HJ., West, F. Intracisternal administration of tanshinone IIA-loaded nanoparticles leads to reduced tissue injury and functional deficits in a porcine model of ischemic stroke. (2020) Stroke. December. Virtual.
 7. Waters, E., Kaiser, E., Yang, X., **Fagan, M.**, Scheulin, K., Jeon, J., Shin, S., Kinder, H., Kumar, A., Platt, S., Duberstein, K., Park, HJ., West, F. Intracisternal administration of tanshinone IIA-loaded nanoparticles leads to reduced tissue injury and functional deficits in a porcine model of ischemic stroke. (2020) Society for Developmental Biology Annual Meeting. July. Online Poster Session.
 8. Zukowski, A., Scheulin, K., Sneed, S., **Fagan, M.**, Cheek, S., Kinder, H., West, F. White matter evaluation after moderate traumatic brain injury in a gyrencephalic pig brain. (2020) CURO Symposium. April. Athens, GA.
 9. Pronesti, B., Scheulin, K., Sneed, S., **Fagan, M.**, Cheek, S., Kinder, H., West, F. Investigation of functional connectivity by functional magnetic resonance imaging in the acute stage post traumatic brain injury. (2020). CURO Symposim. April. Athens, GA.
 10. Pronesti, B., Scheulin, K., Simchick, G., Sneed, S., Sun, W., **Fagan, M.**, Cheek, S., Kaiser, E., Kinder, H., Duberstein, K., Zhao, Q., West, F. Functional magnetic resonance imaging patterns demonstrate altered functional connectivity between brain networks in a porcine traumatic brain injury model. (2020). CAES Undergraduate Research Symposium. April. Athens, GA.
 11. Dennard, K., Scheulin, K., Sneed, S., **Fagan, M.**, Cheek, S., Kaiser, E., Kinder, H., Duberstein, K., West, F. Pediatric traumatic brain injury results in cerebral changes in a translatable pre-clinical porcine model. CAES Undergraduate Research Symposium. April. Athens, GA.
 12. Scheulin, K., Smichick, G., Sneed, S., **Fagan, M.**, Cheek, S., Kaiser, E., Kinder, H., Duberstein, K., Zhao, Z., West, F. (2020). Resting state and task based functional magnetic resonance imaging demonstrate traumatic brain injury disrupts cognitive and motor function brain networks in a translational porcine model. Military Health System Research Symposium (*Canceled due to COVID19*).
 13. Kaiser, E., Water, E., Jurgielewicz, B., Yang, W., **Fagan, M.**, Scheulin, K., Spellicy, S., Jeon, J., Shin, S., Sneed, S., Kinder, H., Platt, S., Park, H., Duberstein, K., Stice, S., Xie, J., West, F. (2020). Assessment of nanoparticle and neural stem cell extracellular vesicle therapies in a preclinical porcine neural injury model. Military Health System Research Symposium (*Canceled due to COVID19*).
 14. Kane, M., **Fagan, M.**, Dubertein, KJ. (2019). Preliminary evaluation of equine forelimb kinematic response to commonly used head and neck position. *Journal of Equine Veterinary Science*.
 15. **Fagan, M.**, DeBoer, G., Towe, M., Duberstein, KJ. (2019). Effectiveness of clicker-trained versus handler led horses for gait analysis. *Journal of Equine Veterinary Science*.
 16. Towe, M., DeBoer, G., **Fagan, M.**, Duberstein, KJ. (2019). Identification of motor laterality and its correlation to hoof growth patterns and limb kinematics in mature riding horses. *Journal of Equine Veterinary Science*.
 17. DeBoer, G., Towe, M., **Fagan, M.**, Duberstein, KJ. (2019). An assessment of equine gait asymmetry when subjected to symmetrical and asymmetrical rider position and its interrelationship with equine motor bias. *Journal of Equine Veterinary Science*.
 18. **Fagan, M.**, Adams, A., Harris, P., Krotky, A., Duberstein, KJ. (2019). Cytokine and oxidative stress response to vitamin E supplementation in exercising horses. *Journal of Equine Veterinary Science*.
 19. Jeon J, Loureno J, Kaiser E., Waters E., Scheulin K., **Fagan M.**, Fang X., Kinder H., Platt S., Duberstein K., Callaway T., West F. (2019) *Dynamic changes of gut microbiome and immune*

- response during the acute stage of stroke in a pig model.* Nutrition 2019 Conference. June. Baltimore, MD
20. Radhakrishnan S., Scheulin K., **Fagan M.**, Kaiser E., Waters E., Yang X., Kumar A., Jeon J., Fang X., Kinder H., Platt S., Park H.J., Xie J., Duberstein K., West F. *Analysis of Magnetic Resonance Imaging and Spatiotemporal Gait Parameters in Response to Tanshinone-IIA Loaded Nanoparticle Treatment in a Pig Model of Ischemic Stroke.* CAES Undergraduate Research Symposium. 2019 April. Athens, GA Student won 1st place in poster presentation
 21. Alcalde, M., Scheulin, K., **Fagan, M.**, Kaiser, E., Waters, E., Yang, X., Kumar, A., Jeon, J., Fang, X., Kinder, H., Platt, S., Park, H.J., Duberstein, K., West, F. Analysis of magnetic resonance imaging and spatiotemporal gait parameters in response to Tanshinone-IIA loaded nanoparticle treatment in a pig model of ischemic stroke. (2019). CURO Symposium. April. Athens, GA.
 22. Snyder M., Scheulin K., **Fagan M.**, Kaiser E., Waters E., Yang X., Jeon J., Fang X., Kinder H., Platt S., Park H.J, Xie J., Duberstein K., West F. *Tanshinone-IIA Loaded Nanoparticle Treatment Demonstrates Increased Diffusivity, White Matter Integrity and Improved Motor Function in a Pig Model of Ischemic Stroke.* Regenerative Bioscience Center Fellows Symposium. 2019 April. Athens, GA
 23. Sneed, S., Scheulin, K., Kaiser, E., **Fagan, M.**, Jurgielewicz, B., Waters, E., Spellicy, S., Duberstein, K., Baker, E., Stice, S., Kinder, H., West, F. (2019). Magnetic resonance imaging and functional gait analysis indicate similar outcomes between Yucatan biomedical miniature pig and Landrace cross pig Ischemic stroke models. GA Bio Innovation Summit, Atlanta, GA.
 24. Zukowski, A., **Fagan, M.**, Kaiser, E., Waters, E., Kinder, H., West, F. (2019, April). Porcine ischemic stroke leads to tissue damage and subsequent impairments in gait, behavior and functional recovery in a biomedical porcine model. Regenerative Bioscience Center Research Symposium. Athens, GA
 25. **Fagan, M.**, Pazdro, R., Call, J., Abrams, A., Harris, P., Krotky, A., Duberstein, K. (2018, November). Effects of vitamin E dose and form on blood parameters in exercising horses. Comparative Exercise Physiology; International Conference on Equine Exercise Physiology. Lorne, Victoria, Australia.
 26. **Fagan, M.**, Pazdro R., Call, J., Abrams, A., Krotky, A., & Duberstein, K. (2017). Assessment of oxidative stress and muscle damage in exercising horses in response to level and form of vitamin E. *Journal of Equine Veterinary Science.*

SYMPOSIUM AND CONFERENCE ATTENDANCE

- **Regenerative Medicine Workshop 2021**, Virtual
- **National Neurotrauma Society 2020 Symposium**, poster presentation. Characterization of acute tissue and functional changes in a porcine model of ischemic stroke. Atlanta, GA. *Canceled due to COVID-19.*
- **Equine Science Society 2019 Symposium**, oral presentation: Effectiveness of clicker trained vs handler led horses for gait analysis. Oral presentation: Cytokine and oxidative stress response to vitamin E supplementation in exercising horses. Asheville, NC.
- **Regenerative Medicine Workshop 2019**, poster presentation: Assessment of spatiotemporal changes in response to tanshinone-IIA nanoparticle administration in a pig stroke model. Charleston, SC.
- **American Society of Animal Science 2018 National Meeting**, poster presentation: Effects of serecia lespedeza on parasite load and oxidative stress in mature horses. Vancouver, BC, Canada. Poster presentation: Assessment of oxidative stress and muscle damage in exercising horses in response to level and form of vitamin E. Vancouver, BC, Canada.
- **Interdisciplinary Research and Ideas 2018 Symposium**, poster presentation: Assessment of oxidative stress and muscle damage in exercising horses in response to level and form of vitamin E. Athens, GA.

- **Equine Science Society 2017 Symposium**, poster presentation: Assessment of oxidative stress and muscle damage in exercising horses in response to level and form of vitamin E. Minneapolis, MN.
- **Regenerative Bioscience Center Fellows 2017 Symposium**, poster presentation: Assessment of oxidative stress and muscle damage in exercising horses in response to level and form of vitamin E. Athens, GA.
- **Interdisciplinary Research and Ideas 2017 Symposium**, poster presentation: Assessment of oxidative stress and muscle damage in exercising horses in response to level and form of vitamin E. Athens, GA.

AWARDS AND FUNDING

Graduate School Travel Funding, 2020

University of Georgia Innovative and Interdisciplinary Research Grant, 2020

Graduate School Travel Funding, 2019

PhD Graduate Research Assistantship, 2018

E. Broadus Browne Outstanding Research Communication Award, *1st Place*, 2018

Master's Graduate Research Assistantship, 2017

LEADERSHIP ROLES

Regenerative Bioscience Center Graduate Student Association Social Media and Outreach Coordinator, 2021- Present (Instagram: @uga_regenbiograds; Twitter: @regenbiograds)

UGA Emerging Leaders Program, 2020-21 Cohort

Graduate Student Mentor, 2019-2021

ADS Graduate Student Association, Co-President 2017-2020

Animal Science in Action Mentor, 2017-2018

COMMUNITY OUTREACH

Georgia Junior Science and Humanities Symposium Poster Judge, 2021

Watkinsville FBC College Group Leader, 2020

Georgia City-Council Management Association Conference Speaker, 2018

University of Georgia Federal Staff Retreat Presentation Assistant, 2018

Watkinsville FBC LifeGroup Leader, 2017-2020

Georgia 4H Equine Quiz Bowl Judge, 2017-2019

PROFESSIONAL AFFILIATIONS

Equine Science Society

American Society of Animal Science

National Neurotrauma Society

Regenerative Bioscience Center

Kappa Delta Sorority