

Lydia K. Wooldridge

4959 Whitethorne Road
Blacksburg, VA, 24060

Tel: 636-357-3690
Email: Wooldridge.Lydia.91@gmail.com

EDUCATION

- Doctor of Philosophy, Animal Science, Embryology** **May 2020**
Virginia Polytechnic Institute and State University
- Bachelor of Science, Animal Science, Cum Laude** **May 2014**
University of Missouri at Columbia

RESEARCH EXPERIENCE

Doctoral Research **2015-2020**
Virginia Polytechnic Institute and State University

Project: "The role of interleukin-6 and STAT3 in bovine preimplantation development"
Advisor: Dr. Alan D. Ealy

- Discovered that supplementation of interleukin-6 (IL6) to in vitro produced bovine embryos greatly increases the number of cells in the inner cell mass (ICM), mainly by increasing the hypoblast population.
- Discovered that IL6, but not leukemia inhibitory factor, stimulates the JAK/STAT3 pathway in the bovine ICM.
- Awarded a USDA-NIFA predoctoral grant to investigate the essentiality of STAT3 in the bovine ICM.
 - Discovered that the ICM has two phases of STAT3 necessity. Before the epiblast and hypoblast are segregated, STAT3 inhibition results in a loss of all ICM cells. However, after lineage separation, only the hypoblast retains STAT3 necessity.

Additional "side" projects:

- Formulated a new synthetic oviductal fluid media which allows for extended in vitro culture of bovine embryos.

Undergraduate Research **2013-2014**
University of Missouri at Columbia

Advisor: Dr. Jonathan Green

- Designed CRISPRs to remove the PAG locus in swine embryos.

Molecular & Cellular Techniques in Animal Science **2013**
University of Missouri at Columbia

Professors: Dr. Jonathan Green and Dr. Kevin Wells

- Investigated the effects of estrogen on the reproductive tracts of prepubertal female rats.

Lab Technician **2013-2014**
University of Missouri at Columbia

Department of Animal Sciences

PI: Dr. Jerry Taylor

- Designed and optimized allele-specific multiplex PCR primers for screening samples.

Student Assistant Technician **2012-2013**
University of Missouri at Columbia

Department of Plant Sciences

PI: Dr. Henry Nguyen

- Assisted in the generation of a cDNA library of transcription factors associated with drought tolerance in soybean.

GRANTS & AWARDS

USDA National Institute of Food and Agriculture grant no 2018-67011-27992 "Establishing the essential role of STAT3 in early embryonic viability."	2018-2020 \$95,000
APSC Research Symposium Travel Award Recipient	2017, 2018, 2019 \$400-500 each year
ICTAS Doctoral Scholar Fellowship Recipient	2015-2019

PUBLICATIONS

Wooldridge L. K., Nardi M. E., and Ealy A. D. (2019). Zinc supplementation during in vitro embryo culture increases inner cell mass and total cell numbers in bovine blastocysts. *Journal of Animal Science* 97(12), 4946-4950. doi:10.1093/jas/skz351.

Wooldridge L. K., Johnson S. E., Cockrum R. R., and Ealy A. D. (2019). Interleukin-6 requires JAK activity to stimulate inner cell mass expansion in bovine embryos. *Reproduction* 158(4), 303-312. doi:10.1530/REP-19-0286

Wooldridge L. K., and Ealy A. D. (2019). Interleukin-6 increases inner cell mass numbers in bovine embryos. *BMC Developmental Biology* 19, 2. doi:10.1186/s12861-019-0182-z

Ealy A. D., **Wooldridge L. K.**, and McCoski S. R. (2019). Post-transfer Consequences of In Vitro-Produced Embryos in Cattle. *Journal of Animal Science* 97(6), 2555-2568. doi:10.1093/jas/skz11

Vailes M., McCoski S., **Wooldridge L. K.**, Reese S., Pohler K., Roper D., Mercadante V., and Ealy A. D. (2018). Post-Transfer Outcomes in Cultured Bovine Embryos Supplemented with Epidermal Growth Factor, Fibroblast Growth Factor 2, and Insulin-Like Growth Factor 1. *Theriogenology* 124, 1–8. doi:10.1016/j.theriogenology.2018.09.023

Ealy A.D, and **Wooldridge L. K.** (2017). The evolution of interferon-tau. *Reproduction* 154(4), F1–F10. doi:10.1530/rep-17-0292

Chai C., Wang Y., Joshi T., Valliyodan B., Prince S., **Michel L.**, Xu D., and Nguyen H. (2015). Soybean transcription factor ORFeome associated with drought resistance: a valuable resource to accelerate research on abiotic stress resistance. *BMC Genomics* 16, 596. doi:10.1186/s12864-015-1743-6

WORK BEING PREPARED FOR PUBLICATION

Wooldridge L. K., and Ealy A. D. (2020). The hypoblast retains sensitivity to and proliferates in response to interleukin-6. In preparation for *Reproduction*.

Wooldridge L. K., and Ealy A. D. (2020). LIF is unable to activate STAT3 and increase inner cell mass cell numbers in bovine blastocysts. In preparation for *BMC Developmental Biology*.

Wooldridge L. K., and Ealy A. D. (2020). The bovine blastocyst ICM requires STAT3 to maintain the hypoblast. In preparation for *Reproduction*.

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

Society for Developmental Biology 2019
Society for the Study of Reproduction 2016-2019
International Embryo Transfer Society 2016

POSTERS

Wooldridge, L. K., and A. D. Ealy. STAT3 is required for hypoblast lineage development in bovine blastocysts. SDB Annual Meeting. July 2019.

Wooldridge, L. K., S.E. Johnson, and A. D. Ealy. Interleukin-6 increases inner cell mass and hypoblast cell numbers in bovine blastocysts. SSR Annual Meeting. July 2019.

Wooldridge, L. K., and A. D. Ealy. Interleukin-6 preferentially stimulates hypoblast proliferation and STAT3 is essential for survival of the hypoblast lineage in bovine blastocysts. ICTAS Doctoral Scholars Spring Poster Session. April 2019.

Wooldridge, L. K., and A. D. Ealy. Establishing the Essential Role of STAT3 in Early Embryonic Viability. CRWAD Annual Meeting 2018.

Wooldridge, L. K., and A. D. Ealy. Interleukin-6 has embryotrophic effects before and after embryonic genome activation in bovine preimplantation embryos. SSR Annual Meeting. July 2018.

Wooldridge, L. K., S. E. Johnson, A. D. Ealy. In vitro-produced bovine embryo blastocyst inner cell mass numbers are increased with Interleukin-6 supplementation. ICTAS Doctoral Scholars Spring Poster Session. April 2018.

Wooldridge, L. K., S. E. Johnson, A. D. Ealy. In vitro-produced bovine embryo blastocyst formation and inner cell mass numbers are increased with Interleukin-6 supplementation. ICTAS Spring poster session April 2019, and SSR Annual Meeting July 2017.

TEACHING EXPERIENCE

Guest Lecturer

Spring & Fall 2019

Introduction to Animal & Poultry Sciences APSC 1454
Virginia Polytechnic Institute and State University

- Gave a lecture on Assisted Reproductive Technologies (ARTs) in livestock.

Graduate Teaching Assistant

Spring 2018

Animal Breeding and Genetics ALS 3104
Virginia Polytechnic Institute and State University

- Led in-class assignments and review sessions, graded homework and entered grades, assisted students with questions one-on-one outside of class as needed

Guest Lecturer

Spring & Fall 2016, Fall 2018

Reproductive Physiology ALS 3304
Virginia Polytechnic Institute and State University

- Gave lectures on placentation and early embryo development.

Graduate Teaching Assistant

Fall 2015, Fall 2016

Reproductive Physiology Lab ALS 3314
Virginia Polytechnic Institute and State University

- Gave lectures, set up and tore down laboratory, administered and graded practicals.

Mentored Undergraduate Research Assistants/Volunteers

2015-present

Virginia Polytechnic Institute and State University

- Mentored more than 10 undergraduate students in various aspects of in vitro bovine embryo production.
- 1 now works at a human IVF clinic, and several have gone on to graduate or veterinary school.

Mentored Graduate Students**2016-present**

- Served as the lead instructor for 2 MS and 5 PhD students learning in vitro embryo production and immunofluorescence staining techniques.

ADDITIONAL PROFESSIONAL DEVELOPMENT

Presentations in The Reproductive Biology Club**2015-present**

Virginia Polytechnic Institute and State University

- A weekly seminar series for reproductive biologists at Virginia Tech to share recent research.
- Gave a research presentation each semester.

Founder and Coordinator of the “Cell Biology and Biotechnology” Graduate Student Journal Club**2017-present**

Virginia Polytechnic Institute and State University