

CURRICULUM VITAE

Cassidy Beam

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Education

Doctor of Philosophy in Animal Science, Immunology and Stress Physiology

December 2023

Effects of Maternal Factors on Stress and Immune Responses in the Progeny

Oklahoma State University; Stillwater, Oklahoma

Bachelor of Science in Animal Science

December 2018

Texas A&M University; College Station, Texas

Certificate of Meat Science

Texas A&M University; College Station, Texas

December 2018

Employment Experience

Microbiologist Post Doctoral Fellow

March 2024-February 2025

United States Department of

Agriculture- Agricultural

Research Service

Stuttgart, Arkansas

- Conducted research trials to:
 - Determine the sequence of immunoglobulins in white bass from genomic DNA for downstream monoclonal antibody design
 - Isolate bacteriophages from bacteria relevant to aquaculture
 - Determine lethality of zinc and copper on pests relevant to aquaculture
- Conducted lab work:
 - Extract and prepare DNA for long read sequencing
 - Conduct analyses of known immunoglobulin sequences from other species to determine an approximate size and possible sequence for unknown white bass immunoglobulin sequences
 - Determine DNA quality through use of electrophoresis gel band analysis and nanodrop technology
 - Determine bacterial growth curves
 - Culture and prepare bacteria for bacteriophage testing

Graduate Research Assistant

January 2019-December 2023

Oklahoma State University

Stillwater, Oklahoma

- Conducted research trials to:
 - Determine if the length of the tail dock affects immune function, growth, and performance of lambs

- Determine if supplementation of tryptophan or methionine affects the immune function, stress responsiveness, behavior, and growth of newly weaned pigs in response to mixing, physiological stress and challenge with a bacterial toxin.
- Demonstrate the difference in immune cell population and functionality in dairy cows at different intervals post-partum.
- Demonstrate the difference in an immune cell population, functionality, and immune responsiveness in weaned cattle administered a live attenuated vaccine or a killed vaccine for Bovine Respiratory Disease.
- Demonstrate the difference in serum neutralizing antibody production as well as subsets of immunoglobulin G in cattle who received homologous and heterologous vaccine regimes, as well as vaccination given during times of maternal immune interference for Bovine Respiratory Disease.
- Determine the effects of maternal immune phenotype on offspring immune development and response to vaccination for Bovine Respiratory Disease.
- Validate a gestational stress model in pigs.
 - Determine the effect of chronic stress at different stages of gestation on gilt HPA activity, immune cell population, functionality and immune responsiveness, farrowing and lactation behavior, fecal and vaginal microbiome, as well as colostrum immune and hormonal composition.
- Determine the effects of time of gestational stress on piglet HPA activity, immune cell population, and functionality, immune responsiveness, fecal and vaginal microbiome, behavior, and growth through weaning
- Demonstrate the effects of previous gestational stress on the subsequent parity through immune parameters and litter characteristics
- Conducted lab work:
 - Plasma collection from various species ○ Serum collection from various species ○ Colostrum collection from various species
 - Complete blood counts and white blood cell counts through the use of blood smears and a CBC machine
 - Isolation of neutrophils, lymphocytes, and the buffy coat ○ Chemotaxis of isolated neutrophils
 - Lymphocyte proliferation assay using multiple mitogens including those for T and B cells ○ Analysis of killing capability of natural killer cells
 - Phagocytosis analysis
 - Fluorescence-activated Cell Sorting (FACS) analysis
 - Utilized ELISA kits and assays to determine concentrations of various cytokines, immunoglobulins and biomarkers such as IL-8, IL-17, IgG1 and 2, IgM, IgA, IgE, cortisol, 11BHSD2, CBG and ACTH from mediums including plasma, serum, colostrum, hair and saliva
 - Extracted DNA for sequencing from fecal samples
 - Cultured and maintained an immortal human cell line for use in immune assays
- Organized, analyzed and presented data
- Collaborated with graduate students, faculty, and farm staff regarding protocol preparation, coordinating sample collections, and other research activities.
- Trained undergraduate and graduate research assistants in blood processing, immune cell isolation and ELISA kits
- Designed experiments for undergraduate research scholars

Graduate Teaching Assistant

January 2019-December 2023

*Oklahoma State University Stillwater,
Oklahoma*

- Teaching assistant to Dr. Janeen Salak-Johnson in Livestock Behavior and Environmental Interaction

(ANSI 3623/5623) ○ Assisted in lecture through grading of assignments, quizzes, exams, and projects, met with students outside of class times for supplemental instruction, aided in writing and formatting quizzes and exams, proctored exams, and lectured when needed.

Publications

Peer Reviewed:

- **Reddout-Beam C**, Hernandez LP, Salak-Johnson JL. Timing of Maternal Stress Differentially Affects Immune and Stress Phenotypes in Progeny. *Animals (Basel)*. 2024 Oct 25;14(21):3074. doi: 10.3390/ani14213074. PMID: 39518797; PMCID: PMC11545280.
 - **Sample collection and processing, data collection and analysis, original writing, review and editing.**
- Alexis R H Main, **Cassidy C Reddout-Beam**, Janeen L Salak-Johnson, 332 Selection for moderate and high growth and dam age differentially affect immune and stress responses of beef calves at weaning, *Journal of Animal Science*, Volume 102, Issue Supplement_3, September 2024, Page 59, <https://doi.org/10.1093/jas/skac234.064>
 - **Sample collection and processing, data collection and analysis**
- **Reddout, C.**; Chase, C.C.L.; Beck, P.; Salak-Johnson, J.L. Dam Age Differentially Affects Immune Response of Her Calf to Bovine Respiratory Disease Vaccination. *Agriculture* **2024**, *14*, 68. <https://doi.org/10.3390/agriculture14010068>
 - **Design, sample collection and processing, data collection and analysis, original writing, review and editing.**
- **Reddout, C.**, L. P. Hernandez, C. C. L. Chase, P. Beck, F. White, and J. L. Salak-Johnson. 2023. Immune phenotype is differentially affected by changing the type of bovine respiratory disease vaccine administered at revaccination in beef heifers. *Frontiers in Veterinary Science* 10(Original Research) doi: 10.3389/fvets.2023.1161902
 - **Sample collection and processing, data collection and analysis, original writing, review and editing.**
- Matty JM, **Reddout C***, Adams J, Major M, Lalman D, Biggs R, Salak-Johnson JL, Beck PA. The Effects of Respiratory Vaccine Type and Timing on Antibody Titers, Immunoglobulins, and Growth Performance in Pre- and Post-Weaned Beef Calves. *Veterinary Sciences*. 2023; 10(1):37. doi:10.3390/vetsci10010037
 - **Data collection and analysis, original writing, review and editing.**
- **Cassidy C Reddout**, Janeen L Salak-Johnson, Paul A Beck, Frank White, 45 Vaccine Protocol Influences Immune Phenotype of Weaned Beef Calves, *Journal of Animal Science*, Volume 100, Issue Supplement_3, October 2022, Page 19. doi:/10.1093/jas/skac247.035
 - **Sample collection and processing, data collection and analysis**
- Lily P Hernandez, **Cassidy C Reddout**, Janeen L Salak-Johnson, 301 Effect of Maternal Supplementation of *Saccharomyces Cerevisiae* var. *Boulardii* During Late-Gestation and Lactation on Progeny Immune Status from Birth to 35 Days-of-age, *Journal of Animal Science*, Volume 100, Issue Supplement_3, October 2022, Page 144. doi:/10.1093/jas/skac247.266
 - **Data collection and analysis**
- Salak-Johnson JL, **Reddout C**, Hernandez L, Visconti A. Maternal Supplementation of *Saccharomyces cerevisiae boulardii* during Late-Gestation through Lactation Differentially Modulated Immune Status and Stress Responsiveness of the Progeny to Farrowing and Weaning Stressors. *Animals*. 2022; 12(2):164. doi:/10.3390/ani12020164
 - **Data collection and analysis, original writing, review and editing**

Presentations

- 17th Vaccine Congress 2023. Dam Age Differentially Affects Immune Response of Her Calf to Bovine Respiratory Disease Vaccination.
- ASAS-CSAS: Annual Meeting. 2023. Effect of Timing of Dam Gestational Stress on Immune and Stress Responsiveness of the Progeny.
- ASAS-CSAS: Annual Meeting. 2022. Vaccine Protocol Influences Immune Phenotype of Weaned Beef Calves.
- Oklahoma State University: Dr. Joe V. Whiteman Award. 2022. Effect of Prenatal Stress During Different Stages of Gestation on Sow and Piglet Behavior and Physiologic Measures.
- Merck: Advancing Animal Welfare Together. 2021. Influence of Prenatal Stress on Immune Function, Behavior and Welfare of Progeny.

Awards and Fellowships

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| • Women's Faculty Council Student Research Award | April 2023 |
| • Williams Endowed Distinguished Graduate Student Fellowship | August 2022-May 2023 |
| • Merck Advancing Animal Welfare Together Scholarship | November 2021 |

References

1. Dr. Michael Deshotel:
michael.deshotel@usda.gov
2. Dr. Janeen Johnson:
janeen.johnson@okstate.edu
3. Dr. Paul Beck:
Paul.beck@okstate.edu
4. More references available upon request.