

# Jayne E. Wiarda

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## EDUCATION:

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- 2017 – Present      **Doctor of Philosophy in Immunobiology**  
*Iowa State University, Ames, Iowa*
- GPA 3.85/4.00
  - Advanced to candidacy: June 2020
- 2013 – 2016      **Bachelor of Science in Genetics**  
*Iowa State University, Ames, Iowa*
- *Summa cum laude*; graduation with honors

## RESEARCH EXPERIENCE:

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- 2018 – Present    **Graduate Research Fellow, Swine Immunology Research**  
*National Animal Disease Center, USDA, Ames, Iowa*
- Supervisor: Crystal Loving
  - Evaluate changes in intestinal immune cell populations during critical stages of pig production and in response to various early-life intervention strategies
  - Analyze transcriptional differences between intestinal sites of immune induction using integrated spatial and single-cell transcriptomic approaches
  - Establish single-cell RNA sequencing analysis pipelines and reference atlases in pigs
  - Characterize presence and distribution of immune cells in immunodeficient pig models
- 2017 – 2018      **Graduate Student Researcher, Tuberculosis Research**  
*National Animal Disease Center, USDA, Ames, Iowa*
- Supervisor: Mitchell Palmer
  - Identified early transcriptional signatures predicting disease severity in cattle infected with tuberculosis
  - Evaluated the feasibility of developing a diagnostic biomarker profile from blood of tuberculosis-infected cattle
- 2016 – 2017      **Biological Science Technician, Tuberculosis Research**  
*National Animal Disease Center, USDA, Ames, Iowa*
- Supervisor: Mitchell Palmer
  - Studied the pathological progression of tuberculosis in infected cattle, white-tailed deer, and mongooses
  - Supervised and mentored undergraduate student workers

## PEER-REVIEWED PUBLICATIONS: (first-author publications in all bold)

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2020:

- [5]    **Wiarda JE, Boggiatto PM, Bayles DO, Waters WR, Thacker TC, Palmer MV. “Severity of bovine tuberculosis is associated with innate immune-biased transcriptional signatures of whole blood in early weeks after experimental *Mycobacterium bovis* infection”. *PLOS ONE* 15(11): e0239938. Published November 9, 2020. doi: 10.1371/journal.pone.0239938**
- [4]    **Wiarda JE, Trachsel JM, Bond ZF, Byrne KA, Gabler NG, Loving CL. “Intraepithelial T cells diverge by intestinal location as pigs age”. *Frontiers in Immunology* 11:1139. Published June 16, 2020. doi: 10.3389/fimmu.2020.01139**
- [3]    Boettcher AN, Cino-Ozuna AG, Solanki Y, **Wiarda JE**, Putz EJ, Owens JL, Crane SA, Ahrens A, Loving CL, Cunnick JE, Rowland RRR, Charley SE, Dekkers JCM, Tuggle CK. “CD3ε<sup>+</sup> cells in pigs with severe combined immunodeficiency due to defects in *ARTEMIS*”. Published March 31, 2020.

*Frontiers in Immunology* 11:510. doi: 10.3389/fimmu.2020.00510

- [2] Boettcher AN\*, Li Y\*, Ahrens AP, Kiupel M, Byrne KA, Loving CL, Cino-Ozuna AG, **Wiarda JE**, Adur M, Schultz B, Swanson JJ, Snella EM, Ho CS, Charley SE, Kiefer ZE, Cunnick JE, Putz EJ, Dell'Anna G, Jens J, Sathe S, Goldman F, Westin ER, Dekkers JCM, Ross JW, Tuggle CK. "Novel engraftment and T cell differentiation of human hematopoietic cells in *ART<sup>-/-</sup> IL2RG<sup>-Y</sup>* SCID pigs". *Frontiers in Immunology* 11:100. Published February 6, 2020. doi: 10.3389/fimmu.2020.00100 [\*authors contributed equally]

2019:

- [1] Palmer MV, **Wiarda J**, Kanipe C, Thacker TC. "Early pulmonary lesions in cattle infected via aerosolized *Mycobacterium bovis*". *Veterinary Pathology*, 56:544-554. Published March 21, 2019. doi: 10.1177/0300985819833454

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**INVITED PRESENTATIONS:** (presentation format underlined)

2020:

- [1] "Single-cell RNA sequencing of intestinal lymphocytes in pigs: challenges, workflows, and discoveries in a veterinary species". Invited for oral presentation at Midwest Single-Cell Sequencing Virtual Symposium, sponsored by Illumina. September 22-23, 2020. Virtual conference.

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**ABSTRACTS AND PRESENTATIONS:** (presentation format underlined)

2020:

- [4] **Wiarda JE, Sivasankaran SK, Liu H, Byrne KA, Tuggle CK, Loving CL.** "Single-cell RNA sequencing reveals pig intestinal innate lymphoid cells and unique activation profiles of T cells". Oral presentation at Conference of Research Workers in Animal Diseases (CRWAD), December 5-8, 2020. Virtual conference.
- [3] **Wiarda JE, Trachsel J, Bond ZF, Byrne KA, Gabler NK, Loving CL.** "Intraepithelial T cell phenotype and function diverge by intestinal location with age". Poster presentation\* at American Association of Immunologists (AAI) Annual Meeting, May 8-12, 2020. Honolulu, HI, USA. Published in *The Journal of Immunology* 204 (1 Supplement) 92.16. [\*cancelled due to COVID-19 pandemic]

2019:

- [2] **Wiarda JE, Sivasankaran SK, Liu H, Byrne KA, Tuggle CK, Loving CL.** "Single-cell RNA sequencing identifies cell phenotypes and functions in porcine ileum". Oral presentation at Conference of Research Workers in Animal Diseases (CRWAD), November 3-5, 2019. Chicago, IL, USA.
- [1] **Wiarda JE, Byrne KA, De Mille CM, Gabler NK, Loving CL.** "Porcine  $\gamma\delta$  T cells display unique phenotypes by intestinal compartment and time post-weaning". Oral presentation at International Veterinary Immunology Symposium (IVIS), August 13-16, 2019. Seattle, WA, USA.

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**GRANTS IN REVIEW:**

USDA AFRI EWD Predoctoral Fellowship. \$120,000. "Delayed weaning in pigs to reduce intestinal inflammation associated with intraepithelial T cells". 12/2020-11/2022

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**AWARDS:**

2021:

Brown Graduate Fellowship (August 2021 – May 2022)

\$10,000

2020:

American Association of Veterinary Immunologists (AAVI) Oral Presentation Award, 1<sup>st</sup> Place \$250

2019:

American Association of Veterinary Immunologists (AAVI) Oral Presentation Award, 2<sup>nd</sup> Place \$150

Conference of Research Workers in Animal Diseases (CRWAD) Travel Award \$500

American Association of Immunologists (AAI) Young Investigator Award \$100

American Association of Veterinary Immunologists (AAVI) Travel Award \$1,500

**PROFESSIONAL INVOLVEMENT:**

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2019 – Present	Member of American Association of Immunologists (AAI)
2019 – Present	Member of American Association of Veterinary Immunologists (AAVI)
2018	Panelist on scientific career path sessions with local youth, National Animal Disease Center, USDA
2017 – Present	Member of Immunobiology Graduate Student Organization, Iowa State University <ul style="list-style-type: none"><li>• Offices held: Secretary (August 2018 – May 2019); Vice President (August 2019 – May 2020; August 2020 – Present)</li></ul>
2017 – Present	Volunteer at junior high science fair, National Animal Disease Center, USDA