

**BIOMEDICAL & VETERINARY SCIENCES
GRADUATE PROGRAM**



ANNOUNCES

The Doctor of Philosophy Seminar and Examination of

Vanessa Oakes

**“Theileria orientalis Ikeda genotype: Implications for
Cattle Health in Virginia”**

**Tuesday, May 10th, 2022
1:00pm
VMIA 220**

Bio



An enthusiastic, lifelong learner, Vanessa was born and raised in Reston, VA. She began her collegiate journey in 2007, graduating from Virginia Tech in 2012 with bachelors degrees in both Biology and Business Management. Over the course of the next decade, she completed her Doctorate of Veterinary Medicine, a Master of Public Health, and recently achieved Diplomate status with the American College of Veterinary Pathologists. Her interests are varied, including infectious disease, bioinformatics, and molecular diagnostics. It will come as no surprise that this anatomic pathologist is a true crime aficionado, and when she isn't conducting autopsies at work, she's listening to one of many related podcasts while cooking, drawing, or pursuing her other hobbies at home. She recently accepted a position with IDEXX as a virtual anatomic veterinary pathologist, and is eager to begin her next adventure.

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VCOM-VMCVM Virginia Tech One Health Fund
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VMCVM Office of Research and Graduate Studies

Lay Language Abstract

Theileriosis is a disease that infects cattle, caused by the blood parasite, *Theileria orientalis*, specifically two distinct genotypes of *T. orientalis*, Ikeda and Chitose. Theileriosis is transmitted to cattle by the asian longhorned tick, *Haemaphysalis longicornis*, which was recently identified in the United States. Globally, theileriosis is one of four major tickborne diseases of cattle with significant economic importance, so the discovery of this parasite in the state of Virginia is of special importance to the cattle industry in Virginia. My work has revolved around making the initial discovery of *T. orientalis* Ikeda in the United States, and developing tests for cattle producers and veterinarians to use to help diagnose theileriosis in sick animals. Another tickborne disease of cattle, anaplasmosis, is caused by a bacterium, *A. marginale*. These two organisms have different biology, are transmitted by different ticks, and are treated differently, but cause identical clinical signs of disease in cattle. In addition to identifying *T. orientalis*, we have developed a single test that can determine if sick cattle have *T. orientalis* or *A. marginale* – this is important, because the antibiotic used to treat *A. marginale* does not work to treat *T. orientalis*. In fact, there is no treatment for *T. orientalis* available in the United States. In addition to developing diagnostic assays, I seek to put into pathobiological, ecological, and economic context the importance of theileriosis on the cattle industry in Virginia.

Publications

- E.M. Gidcumb, B. Trusiano, V. J. Oakes, T. A. Bolton. Probably paraneoplastic leukocytosis in a dog with a gastrointestinal stromal tumor. *Veterinary Clinical Pathology*. 2022. In review.
- C. Nyblade, V. Parreno, P. Zhou, C. Hensley, V. Oakes, H. Mahsoub, K. Kiley, M. Frazier, A. Frazier, Y. Zhang, H. Feng, L. Yuan. Establishment of a gnotobiotic pig model of *Clostridioides difficile* infection and disease. *Gut Pathogens*. 2022. In review.
- X. Cabana-Puig, J. M. Bond, Z. Wang, R. Dai, R. Lu, A. Lin, V. J. Oakes, A. Rizzo, B. Swartwout, L. Abdelhamid, J. Mao, M. Prakash, C. Sangmeister, N. Cheung, C. Cowan, C. M. Reilly, S. Sun, S. A. Ahmed, X. M. Luo. Phenotypic Drift in Lupus-Prone MRL/lpr Mice: Potential Roles of MicroRNAs and Gut Microbiota. *ImmunoHorizons*. 2022(1):36-45.
- V. J. Oakes, S. M. Todd, A. A. Carbonello, P. Michalak, K. K. Lahmers. Co-Infection of cattle in Virginia with *Theileria orientalis* ikeda genotype and *Anaplasma marginale*. *J Vet Diagn Invest*. 2022(1):36-41.
- V. J. Oakes, F. R. Carvallo. Epitheliotropic lymphoma-induced disseminated ulcerative dermatitis in a dog. *Braz J Vet Pathol*, 2021:75-79
- V.J. Oakes, M.J. Yabsley, D. Schwartz, T. LeRoith, C. Bissett, C. Broaddus, J.L. Schlater, S.M. Todd, K.M. Boes, M. Brookhart, K.K. Lahmers. *Theileria orientalis* Ikeda Genotype in Cattle, Virginia, USA. *Emerg Infect Dis*. 2019(9):1653-1659.
- P. Huang, C. Bell, V. J. Oakes (Wallace), B.G. Murphy. Mixed odontogenic tumors in four young dogs: ameloblastic fibroma and ameloblastic fibro-odontoma. *J Vet Diagn Invest*. 2019(1):98-102.

Presentations

A. Hassebroek, V. J. Oakes, S. Hancock, T. Cecere. Bad Karma: Amoebic Enteritis in an Adult Panther Chameleon. Presented at the Southeastern Veterinary Pathology Conference. May 12-13, 2022. Tifton, GA.

V. J. Oakes, F. Carvallo. Case #23. Presented at the Northeastern Veterinary Pathology Conference. Sep. 17-18, 2021. Virtual.

V. J. Oakes, S. M. Todd, K. K. Lahmers. Developing a duplex assay for *Anaplasma marginale* and *Theileria orientalis* complex. Presented at the Biomedical and Veterinary Sciences Research Symposium, Blacksburg, VA. Mar. 25-26, 2021. Virtual.

V. J. Oakes, M. J. Yabsley, D. Schwartz, T. LeRoith, C. Bissett, C. Broaddus, J. L. Schlater, S. M. Todd, K. M. Boes, M. Brookhart, K. K. Lahmers. *Theileria orientalis* Ikeda genotype is in cattle in southwestern VA. Presented at the American College of Veterinary Pathologists annual meeting Oct. 30-Nov. 1, 2020. Virtual.

V. J. Oakes, M. J. Yabsley, D. Schwartz, T. LeRoith, C. Bissett, J. L. Schlater, S. M. Todd, K. M. Boes, M. Brookhart, K. K. Lahmers. *Theileria Orientalis* Ikeda Genotype is Identified in Cattle in Southwestern Virginia. Edward Via College of Osteopathic Medicine Research Day, Blacksburg, VA. Feb. 28, 2020.

V. J. Oakes, K. M. Boes, K. K. Lahmers. Case 2: Blood from a cow (Parasitology mystery slide). Presented at the American College of Veterinary Pathologists annual meeting, San Antonio, TX. Nov. 9-13, 2019.

V. J. Oakes, K. M. Boes, K. K. Lahmers. Blood from a cow (Clinical pathology mystery case). Presented at the American College of Veterinary Pathologists annual meeting, San Antonio, TX. Nov. 9-13, 2019.

V. J. Oakes, M. J. Yabsley, D. Schwartz, T. LeRoith, C. Bissett, C. Broaddus, J. L. Schlater, S. M. Todd, K. M. Boes, M. Brookhart, K. K. Lahmers. *Theileria orientalis* Ikeda genotype is in cattle in southwestern VA. Presented at the Biomedical and Veterinary Sciences Research Symposium, Blacksburg, VA. Nov. 6, 2019.

V. J. Oakes, M. J. Yabsley, D. Schwartz, T. LeRoith, C. Bissett, C. Broaddus, J. L. Schlater, S. M. Todd, K. M. Boes, M. Brookhart, K. K. Lahmers. *Theileria orientalis* Ikeda genotype is in cattle in southwestern VA. Presented at the American Association of Veterinary Laboratory Diagnosticians annual meeting, Providence, RI. Oct. 24-30, 2019.

V. J. Oakes, S. Coutermarsh-Ott. Tissue from a pig. Presented at the Southeastern Veterinary Pathology Conference, Tifton, GA. May 17-20, 2019.

F. Fan, V. J. Oakes, T. LeRoith, S. Coutermarsh-Ott. Renal metastases of mammary carcinoma in an intact male canine. American College of Veterinary Pathologists Annual Meeting, Washington, DC, Nov. 3-7, 2018.

A. E. Saver, V. J. Oakes, T. LeRoith, D. P. Sponenberg, C. Lau. Three Cases of Carcinoma in *Chrysopelea paradisi*. American College of Veterinary Pathologists Annual Meeting, Washington, DC, Nov. 3-7, 2018.

J. Magnotti, V. J. Oakes, D.P. Sponenberg. Subinvolution of placental sites in a bitch. American College of Veterinary Pathologists Annual Meeting, Washington, DC, Nov. 3-7, 2018.

V. J. Oakes. Developing a diagnostic test for an emerging strain of *Theileria orientalis*. Biomedical and Veterinary Sciences Seminar Series, Blacksburg, VA. Sep. 5, 2018.

V. J. Oakes, S. Coutermarsh-Ott. Case 34: Plasma cell tumor in the spinal cord of a dog. Presented at the Southeastern Veterinary Pathology Conference, Tifton, GA. May 18-20, 2018.

M. T. Caudill, K. M. Boes, S. M. DeMonaco, V. J. Oakes (Wallace), D. P. Sponenberg. Systemic Blastomycosis in an adult female dog. American College of Veterinary Pathologists Annual Meeting, Vancouver, BC, Canada. Nov. 4-8, 2017.

V. J. Oakes (Wallace), T. LeRoith, S. M. Todd. Fungal pneumonia in a cow. Presented at the American Association of Veterinary Laboratory Diagnosticians Annual Meeting, San Diego, CA. Oct. 13-16, 2017.

V. J. Oakes (Wallace), K. Lahmers. Case 27: Blastomycosis in a domestic shorthair cat. Presented at the Southeastern Veterinary Pathology Conference, Tifton, GA. May 19-21, 2017.

V. J. Oakes (Wallace). A comparison of immunoassay measurements of serum and salivary oxytocin. Biomedical and Veterinary Sciences Graduate Seminar Series, Blacksburg, VA. Feb. 14, 2017.

V. J. Oakes (Wallace). A Discussion of Delaney et al. (2016) "Initial Case Reports of Cancer in Naked Mole-rats (*Heterocephalus glaber*)". Biomedical and Veterinary Sciences Graduate Seminar Series, Blacksburg, VA. Sep 6, 2016.

Awards and Academic Achievements

- 2020: Charles Louis Davis, DVM Foundation's Pathology Trainee and Scholarship Award.
- 2020: First Place Poster in Resident: Biomedical Sciences Edward Via College of Osteopathic Medicine Research Day.
- 2019: AAVLD/ACVP Diagnostic Pathology Travel Award
- 2019: AAVLD Travel Award

Examination Graduate Committee

Major Advisor/Chair:

Kevin Lahmers, DVM, PhD, DACVP (Anatomic)
Clinical Associate Professor
Anatomic Pathology
Department of Biomedical Sciences and Pathobiology

Tanya LeRoith, DVM, PhD, DACVP (Anatomic)
Clinical Professor
Anatomic Pathology
Department of Biomedical Sciences and Pathobiology

Graduate Advising Committee Members:

Laura Hungerford, DVM, MPH, PhD, CPH
Professor
Veterinary Public Health and Epidemiology
Department Head, Population Health Sciences

Sierra Guynn, DVM, PhD
Clinical Assistant Professor
Production Management Medicine
Department of Large Animal Clinical Services



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