

**BIOMEDICAL & VETERINARY SCIENCES  
GRADUATE PROGRAM**



**ANNOUNCES**

The Doctor of Philosophy Seminar and Examination of

**Valentina Stevenson**

**“Molecular basis of immunotolerance in canine  
neoplasia”**

**Monday, December 5th, 2022**

**9:00AM**

**VMIA 330**

**Zoom: <https://virginiatech.zoom.us/j/84317900522>**



## **Bio**

Valentina Stevenson is a Doctor of Veterinary Medicine who graduated from Universidad Austral de Chile, where she found her passion in Pathology and actively assisted teaching histopathology for the School of Medicine. After graduating, she moved to Blacksburg, VA, where she worked as a visiting practitioner in the departments of Small Animal Clinical Sciences (Dermatology), then in Biomedical Sciences and Pathobiology at the Virginia-Maryland College of Veterinary Medicine. During these years, she assisted with lectures in dermatology and endocrinology, and in pathology on the laboratory services rotation. Later, she worked in Dr. Huckle's lab, determining the expression of VEGF family genes in cats with squamous cell carcinoma. This experience encouraged her to pursue a Ph.D. and an Anatomic Pathology Residency. From the beginning of her program, Valentina showed great interest in research to determine the mechanisms of immunotolerance in canine melanoma and enthusiastically engaged in oncopathology learning during her residency. She presented her research work successfully at ACVP annual meetings where she was recognized for her scholarship. During her residency, Valentina has demonstrated a strong work ethic, and took the initiative to work out cases beyond what is minimally required. She also has a passion for teaching being a tremendous asset training veterinary student. Valentina enjoys photography, and outdoor activities with her daughter Emma, her husband Kristobal, and her dog Hoshi. At the same time, she indulges in trail running in the company of friends.

## **Funded by**

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VMCVM Office of Research and Graduate Studies

## **Lay Language Abstract**

Melanoma is a highly malignant tumor and very resistant to therapy for humans and dogs. At the same time, this neoplasia is usually highly infiltrated by cells from the immune system. However, this immune infiltration is often inhibited by molecules expressed by the melanoma cells. In contrast, soft tissue sarcoma is considered poorly immunogenic, as they often contain low levels of immune cell infiltrates but are still considered immune suppressed. In this study, we determined the expression of molecules that inhibit the effect of T lymphocytes, specifically Programed cell death receptor-1, PD-Ligand 1, and PD-Ligand 2 for these neoplasms with distinct immune profiles. We encounter that despite their immune profiles, the expression of these molecules is higher in malignant tumors. Additionally, we evaluated the expression of these molecules in a set of patients that received histotripsy, which is a non-invasive and non-thermal ultrasound focused therapy that induces mechanical stress to the cancerigenous cells, leading to its death (necrosis). Here we reported a focal decrease of the expression of these checkpoint molecules in tissue sections obtain at the treatment interface, compared to those taken from untreated areas of the tumor. In addition, a positive relationship was noticed between the infiltration of T lymphocytes and the expression of these checkpoint molecules in both canine melanoma, and soft tissue sarcoma. Our findings demonstrate that immunotherapies targeting these checkpoint molecules have a great potential for efficacy in canine neoplasms, along or combined with tumor ablation therapies that increased immune cell infiltration in poorly immunogenic neoplasia.

## Publications

**V. Stevenson**, K. Gudenschwager, S. Klahn, T. LeRoith, W. Huckle. Expression of inhibitory checkpoint molecules in canine soft tissue sarcoma. 2022. (in preparation).

**V. Stevenson**, S. Klahn, T. LeRoith, W. Huckle. (2022). Canine Melanoma: A Comparative Review of Mechanisms of Disease in the Era of Immunotherapies. *Frontiers in Veterinary Science* (revision submitted).

Gudenschwager-Basso, E, **V. Stevenson**, D. P. Sponenberg, T. E. Cecere, W. R. Huckle. (2022). Characterization of the expression of angiogenic factors in cutaneous squamous cell carcinoma of domestic cats. *Veterinary Sciences*, 2022 Jul 21;9(7):375.

Carvalho, F., **V. Stevenson**. (2022). Interstitial Pneumonia and Diffuse Alveolar Damage in Animals and humans. *Veterinary Pathology*, July;59(4):586-601.

**Stevenson, V.**, W. Huckle, T. LeRoith. (2021). PD-1, PD-L1, and PD-L2 Gene Expression and Tumor Infiltrating Lymphocytes in Canine Melanoma. *Veterinary Pathology* 58(4): 692-698.

Hines, E.S, **V.B. Stevenson**, M.E. Patton, H.R. Leventhal, N. Díaz-Portalatín, M.A. Meyerhoeffer, L.A. Dahlgren, D.P. Sponenberg. (2021). Fibrous Osteodystrophy in a Dromedary Camel. *Journal of Veterinary Diagnostic Investigation*. 33(1), 144–148.

**Stevenson, V.** (2012). Blood Mineral Concentration in Adult Huemul (*Hippocamelus bisulcus*, Molina 1872) at Lago Cochrane National Reserve, Aysén District. DVM Thesis. <http://cybertesis.uach.cl/tesis/uach/2012/fvs848c/doc/fvs848c.pdf>

Chihuailaf, R, **V. Stevenson**, C. Saucedo, P. Corti. (2014). Blood mineral concentrations in the endangered huemul deer (*Hippocamelus bisulcus*) from Chilean Patagonia. *Journal of Wildlife Diseases*.50(1): 146-149. 2014.

## Presentations

### ORAL PRESENTATIONS

1. **Stevenson, V.** Expression of immunoinhibitory checkpoint molecules in canine soft tissue sarcoma. American College of Veterinary Pathology. Annual Meeting. Boston, Massachusetts. 2022.
2. **Stevenson, V.** Poxvirus in a dromedary camel. Northeast Veterinary Pathology Conference. 2021.
3. **Stevenson, V.** Pathological findings of fibrous osteodystrophy in a Dromedary camel. American Association of Veterinary Laboratory Diagnosticians Annual Meeting. 2020
4. **Stevenson, V.** Melanoma: comparative oncology in the era of immunotherapies. Biomedical and Veterinary Sciences Seminar Series. Virginia-Maryland College of Veterinary Medicine. 2019.

### POSTERS

**Stevenson, V.**, Gudenschwager E.K., Klahn S., LeRoith T., Huckle W. Expression of immunoinhibitory checkpoint molecules in canine soft tissue sarcoma. American College of Veterinary Pathology. Annual Meeting. Boston, Massachusetts. 2022.

DeFoor N., Browning J, Gudenschwager E.K., **Stevenson, V**, Li S., Ge T., Pickrell A. COVID-19 Treatment Drug Remdesivir Increases mtDNA Copy Number, but only Causes Mild Changes to Mitochondrial Function. American Society for Cell Biology, Washington, DC. 2022. (Accepted for poster presentation).

**Stevenson, V.**, LeRoith T., Huckle W. Mechanisms of tumorigenesis and immune tolerance in canine melanoma. Annual Research Symposium, Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. 2021.

**Stevenson, V.**, LeRoith T., Huckle W. Mechanisms of tumorigenesis and immune tolerance in canine melanoma. American College of Veterinary Pathology. Annual Meeting. San Antonio, Texas. 2019.

**Stevenson, V.**, LeRoith T., Huckle W. Mechanisms of tumorigenesis and immune tolerance in canine melanoma. Annual Research Symposium. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. 2019

Gudenschwager, K., **Stevenson, V.**, Huckle, W. Characterization of the expression of angiogenic factors in feline cutaneous squamous cell carcinoma. Annual Symposium. Virginia-Maryland College of Veterinary Medicine. Blacksburg, Virginia. 2018.

**Stevenson, V.** Assessment of the mineral status in Huemul and their relationship with the habitat in the Aysén region, Chile: implications for management and conservation. VI Binational Meeting About the Huemul. Valdivia, Chile. 2012.

### **Awards and Academic Achievements**

- 2022 Young Investigator Award, for “Expression of immunoinhibitory checkpoint molecules in canine soft tissue sarcoma”. American College of Veterinary Pathology. Annual Meeting. Boston, Massachusetts. 2022.
- 2022 Davis-Thompson, DVM Foundation’s Pathology Trainee and Scholarship Award. Boston, Massachusetts, November 2023.
- 2022 VMCVM Phi Zeta Manuscript Competition 2022 winner. Blacksburg, Virginia. February 2022.
- 2019 Young Investigator Award, for “Mechanisms of tumorigenesis and immune tolerance in canine melanoma.” American College of Veterinary Pathologists Annual Meeting. San Antonio, Texas. November 2019.
- 2019 LCPG-CL Davis Foundation Travel Award. American College of Veterinary Pathologists annual meeting. San Antonio, Texas. November 2019.

## Examination Graduate Committee

### **Major Advisor/Chair:**

Tanya LeRoith, DVM, PhD, DACVP (Chair)  
Professor  
Department of Biomedical Sciences & Pathobiology

William R. Huckle, MS, PhD (Co-Chair)  
Associate Professor  
Department of Biomedical Sciences & Pathobiology

### **Graduate Advising Committee Members:**

Sheryl Coutermarsh-Ott, DVM, Ph.D., DACVP.  
Anatomic Pathologist, VDACS.

Shawna Klahn, DVM, DACVIM-Oncology,  
Associate Professor, ACCRC,  
Department of Small Animal Clinical Sciences

Joanne Tuohy, DVM, Ph.D., DACVP-Small Animal,  
Assistant Professor, ACCRC,  
Department of Small Animal Clinical Sciences



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