**JESSICA L. FREELING** (she/her/hers)

The University of South Dakota **•** Basic Biomedical Sciences **•** Sanford School of Medicine

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**EDUCATION**

**Ph.D. Candidate** in Nutrition and Exercise Science • January 2019 – present

*-coursework & comprehensive exam completed*

*-dissertation work in progress with anticipated defense in fall 2022*

South Dakota State University • Brookings, SD

Dissertation Proposal: *The Impact of Macronutrient Distribution on Growth in Children with Type 1 Diabetes Mellitus*

**Master of Science** in Biomedical Sciences • August 2009 – December 2011

The University of South Dakota • Vermillion, SD

Research Thesis: *Altered Parasympathetic Nervous System Regulation of the Aging Heart*

**Baccalaureate of Science** in Agricultural Sciences • August 1996 – May 2002

The University of Nebraska-Lincoln • Lincoln, NE

Track: *Pre-Veterinary, Veterinary Technology*

**Associate of Applied Science** in Veterinary Technology • August 2000 – May 2002

Vatterott College • Omaha, NE

**PROFESSIONAL EXPERIENCE**

**Physiology Core Facility Director** • July 2017 – present

**Core Laboratory Manager** • January 2012 – June 2017

The University of South Dakota • Vermillion, SD

<https://www.usd.edu/medicine/basic-biomedical-sciences/physiology-core>

*Provide biomedical researchers with a central resource for the creation & assessment of models of animal physiology & pathophysiology encompassing cardiovascular disease, neurovascular disease, diabetes, & cancer using the following: collection & analysis of ultrasound & hemodynamic data, experimental design, training/teaching & supervision of researchers & students, animal model surgical disease induction, novel method development, & mentorship of high school/undergraduate/graduate/medical students*

**Research Associate II / III** • November 2004 – December 2011

The University of South Dakota • Vermillion, SD

*Management of a cardiovascular physiology research laboratory including; molecular biology techniques, cell culture, small animal surgery & anesthesia, echocardiograms, hemodynamic data collection, experimental management, procedure writing, grant/manuscript editing, safety protocol development*

**Microbiologist / Veterinary Technologist** • November 2002 – October 2004

South Dakota State University • Brookings, SD

*Microbiology technician in E coli infectious disease research laboratory & Veterinary Technologist for Animal Resource Facility including; large animal surgery performance, animal care & treatment, experimental design & management, anesthesia, necropsy, inoculations, venipuncture, microbiology, procedure writing, BL-3 project involvement, E coli diagnostics for veterinary diagnostic lab*

**Temporary Emergency Employee in Clinical Pathology** • June 2002 – October 2002

South Dakota State University • Brookings, SD

*Clinical pathology testing for State Veterinary Diagnostic Laboratory including; hematology, urinalysis, fecal analysis, parasitology, antibiotic sensitivity testing, bacterial testing, ELISA, chemistry profile*

**Veterinary Assistant / Technician Intern / Technologist** • August 1998 – May 2002

Parkview Animal Hospital • Lincoln, NE

*Client communication, surgical preparation, dentistry, radiology, anesthesia, husbandry, injections/vaccinations, venipuncture, clinical pathology, emergency care*

**RELEVANT COURSEWORK**

**Ph.D. courses**

Bioinformatics, Grant Writing, Micronutrients in Human Nutrition, Macronutrients in Human Nutrition, Public Health Nutrition, Biostatistics I, Epidemiology, Diabetes Medical Nutrition Therapy, Nutrigenomics & Molecular Nutrition, Bayesian Statistics, Teaching in Molecular Nutrition

**Master’s courses**

Teaching in the Basic Sciences, Experimental Design & Statistics, Biomedical Tools & Techniques, Responsible Conduct of Research, \*Foundations I & II (\*PhD level)

**Baccalaureate & Associate courses**

Business, Management, Communication, Writing, Microbiology, Chemistry, Biochemistry, Physics, Biology, Genetics, Anatomy/Physiology, Embryology, Calculus, Anesthesia, Surgery, Dentistry, Husbandry/Nutrition, Clinical Pathology, Parasitology, Radiography, Sonography, Histology, Microbiology, Animal Nutrition, Feeding, Zoonotic Disease

**RELEVANT SOFTWARE**

* REDCap® online database and survey platform
* Adobe Illustrator
* GraphPAD Prism, STATA, SPSS
* LabChart, VevoLAB, ImageStudio, Leica Application Suite
* Microsoft Office Suite

**SERVICE & MENTORSHIP**

USD Institutional Animal Care and Use Committee (IACUC) Member • 2015 – present

Nanoparticle and Cancer Journal Club Coordinator • Summer 2020

USD Institutional Biosafety Committee (IBC) Member • 2015 – 2018

Summer Program for Undergraduate Research in Addiction (SPURA) Student Mentor • 2018

Medical Student Research Program (MSRP) Student Mentor • 2018

USD Search Committee Service for Office of Research and Basic Biomedical Sciences • ongoing

**AWARDS**

SDSU Sigma Xi PhD Oral Proposal Competition First Place Presentation • 2020

Graduate Student Experimental Biology Travel Award – Joint Iowa and Nebraska Physiological Society • 2012

Protein Quality Control and Degradation (PQCD) Best Poster Award • 2011

**TEACHING & PROFESSIONAL ORAL PRESENTATIONS**

NUTR 560 SDSU – Nutrigenomics & Molecular Nutrition – Guest Lecturer • Fall 2020

Webinar for PREDiCT Tumor Models Virtual Conference • 2020 <https://lnkd.in/eaZ_SKG>

Oral presentation for Vevo Imaging Forum – West • UCSF Hellen Diller Cancer Research Center • 2018

Webinar for FUJIFILM VisualSonics • 2017

Oral presentation at Academy of Surgical Research (ASR) – New Orleans, LA • 2016

**LICENSURES & CERTIFICATIONS & CERTIFICATES**

Collaborative Institutional Training Initiative (CITI) Social & Behavioral Conduct of Research Training • 2020

Collaborative Institutional Training Initiative (CITI) Good Laboratory Practices (GLP) Training • 2020

American Association of Laboratory Animal Scientists (AALAS) Laboratory Animal Technologist (LATG) • 2006

Licensed Veterinary Technician (VT) (Passed National Board Examination) • 2002

USD Center for Teaching and Learning Mentorship Core Workshop Completion • 2018

**PROFESSIONAL MEMBERSHIPS**

* South Dakota Public Health Association (SDPHA) Student Member
* American Diabetes Association (ADA) Student Member
* Association of Diabetes Care & Education Specialists (ADCES) Student Member
* Sigma Xi South Dakota State University Chapter Full Member
* Midlands Society of Physiological Sciences (MSPS) Member
* American Association for Cancer Research (AACR) Affiliate Member

**GRANTS AWARDED WITH SIGNIFICANT INVOLVEMENT**

* 5R01HL147105-03 – NIH R01: “The role of pro-BDNF/mature-BDNF balance in skeletal muscle inactivity-induced capillary regression”, co-investigator role with Dr. Yifan Li
* U54GM128729-01 – DaCCoTA Scholars Program: National Institute of General Medical Sciences (NIGMS). “AKT/mTOR pathway in obesity and colorectal cancer (CRC): Molecular interconnections and potential clinical applications”, collaborator role with Dr. Khosrow Rezvani.
* Faculty Research grant – Sanford School of Medicine: “Veratridine suppresses cancer cell progression and invasion in an orthotopic mouse model.”, co-investigator role with Dr. Khosrow Rezvani.

**PRIMARY JOURNAL PUBLICATIONS (**1–17**)**

**NIH NCBI Bibliography:** <https://www.ncbi.nlm.nih.gov/myncbi/1F9rflbKab6A_/bibliography/public/>

**Freeling, J. L.,** Scholl, J. L., Eikanger, M., Knoblich, C., Potts, R. A., Anderson, D. J., Rower, J. E., Farjoo, M. H., Zhao, H., Pillatzki, A. & Rezvani, K. Pre-clinical safety and therapeutic efficacy of a plant-based alkaloid in a human colon cancer xenograft model. *Cell Death Discov* 8, 135 (2022).

Martin, D., Drummer, S., **Freeling, J.** & Reihe, C. Hemodynamic patterns associated with activation of bradykinin-sensitive pericardial afferents. *Curr Res Physiology* 5, 73–78 (2022).

Thielen, N. T., Kleinsasser, A. A. & **Freeling, J. L.** Myocardial contrast echocardiography assessment of mouse myocardial infarction: comparison of kinetic parameters with conventional methods. *Peerj* 9, e11500 (2021).

**Freeling, J. L.** & McFadden, L. M. The Emergence of Cardiac Changes Following the Self-Administration of Methamphetamine. *Drug Alcohol Depen* 212, 108029 (2020).

Martin, D. S., Vogel, E., **Freeling, J.** & Reihe, C. Activation of bradykinin-sensitive pericardial afferents increases systemic venous tone in conscious rats. *Autonomic Neurosci* 223, 102624 (2019).

Gao, H., **Freeling, J.,** Wu, P., Liang, A. P., Wang, X. & Li, Y. UCHL1 regulates muscle fibers and mTORC1 activity in skeletal muscle. *Life Sci* 233, 116699 (2019).

Min, J., Lü, L., **Freeling, J. L.,** Martin, D. S. & Wang, H. USP14 inhibitor attenuates cerebral ischemia/reperfusion‐induced neuronal injury in mice. *J Neurochem* 140, 826–833 (2017).

**Freeling, J. L.** & Rezvani, K. Assessment of murine colorectal cancer by micro-ultrasound using three dimensional reconstruction and non-linear contrast imaging. *Mol Ther - Methods Clin Dev* 3, 16070 (2016).

Abdullah, A., Sane, S., **Freeling, J. L.**, Wang, H., Zhang, D. & Rezvani, K. Nucleocytoplasmic Translocation of UBXN2A Is Required for Apoptosis during DNA Damage Stresses in Colon Cancer Cells. *J Cancer* 6, 1066–1078 (2015).

Abdullah, A., Sane, S., Branick, K. A., **Freeling, J. L.**, Wang, H., Zhang, D. & Rezvani, K. A plant alkaloid, veratridine, potentiates cancer chemosensitivity by UBXN2A-dependent inhibition of an oncoprotein, mortalin-2. *Oncotarget* 6, 23561–23581 (2015).

**Freeling, J. L.** & Li, Y. Age-related attenuation of parasympathetic control of the heart in mice. *Int J Physiology Pathophysiol Pharmacol* 7, 126–35 (2015).

Li, Y.-F., LaCroix, C. & **Freeling, J.** Cytisine induces autonomic cardiovascular responses via activations of different nicotinic receptors. *Autonomic Neurosci* 154, 14–19 (2010).

Li, Y.-F., LaCroix, C. & **Freeling, J.** Specific subtypes of nicotinic cholinergic receptors involved in sympathetic and parasympathetic cardiovascular responses. *Neurosci Lett* 462, 20–23 (2009).

LaCroix, C., **Freeling, J.**, Giles, A., Wess, J. & Li, Y.-F. Deficiency of M2 muscarinic acetylcholine receptors increases susceptibility of ventricular function to chronic adrenergic stress. *Am J Physiol-heart C* 294, H810–H820 (2008).

**Freeling, J**., Wattier, K., LaCroix, C. & Li, Y. Neostigmine and pilocarpine attenuated tumour necrosis factor α expression and cardiac hypertrophy in the heart with pressure overload. *Exp Physiol* 93, 75–82 (2008).

Zhang, W., Berberov, E. M., **Freeling, J**., He, D., Moxley, R. A. & Francis, D. H. Significance of Heat-Stable and Heat-Labile Enterotoxins in Porcine Colibacillosis in an Additive Model for Pathogenicity Studies†. *Infect Immun* 74, 3107–3114 (2006).

Butler, J. E., Francis, D. H., **Freeling, J**., Weber, P. & Krieg, A. M. Antibody Repertoire Development in Fetal and Neonatal Piglets. IX. Three Pathogen-Associated Molecular Patterns Act Synergistically to Allow Germfree Piglets to Respond to Type 2 Thymus-Independent and Thymus-Dependent Antigens. *J Immunol* 175, 6772–6785 (2005).