

Danielle (Nellie) Reuland Bruns, PhD  
Curriculum Vitae

---

## CONTACT INFORMATION

Danielle R. Bruns, PhD  
Assistant Professor  
Kinesiology & Health  
University of Wyoming

Phone: (307) 766-5290  
Mobile: (206) 276-3931  
Email: dbruns1@uwyo.edu

## EDUCATION AND TRAINING

- |      |     |  |
|------|-----|--|
| 2013 | PhD | Human Bioenergetics<br>Colorado State University- Fort Collins, CO<br>Co-Advisors: Karyn Hamilton, PhD and Benjamin Miller, PhD<br>Dissertation: <i>Oxidative and energetic stress: regulation of Nrf2 and mitochondrial biogenesis for slowed aging interventions</i> |
| 2010 | MS  | Health and Exercise Science<br>Colorado State University- Fort Collins, CO<br>Advisor: Karyn Hamilton, PhD<br>Thesis: <i>Upregulation of HO-1 and Activation of Nrf2 by the Phytochemicals in Protandim</i>  |
| 2008 | BS  | Exercise Science<br>Linfield College-McMinnville, OR   |

# SCHOLARLY ACTIVITY

## RESEARCH FOCUS

- Molecular mechanisms of right ventricular (RV) dysfunction and right heart failure
- Aging and RV dysfunction
- Sex differences in cardiac and RV dysfunction
- Exercise as medicine for RV dysfunction

## PUBLICATIONS

### Book Chapters

**Bruns, D.R.**, Walker, L.A. "Mitochondria and metabolism in right heart failure." (2018). InTechOpen.

### Refereed Journals

**Bruns, D.R.\***, Ehrlicher, S.E.\*, Khademi, S., Biela, L.M., Peelor, F.F., Miller, B.F., Hamilton, K.L. (2018) "Differential effects of vitamin C and Protandim on skeletal muscle adaptation to exercise". \*Co-First Author. *Journal of Applied Physiology*.

**Bruns, D.R.** and Walker, L.A. (2017). "Exercise and pharmacology as medicine for CVD: from bench to bedside and back." *Exercise and Sports Science Reviews*.

**Bruns, D.R.**, Ghincea, A.R., Ghincea, C.V., Autieri, M.V. Watson, P.A., Walker, L.A. (2017). "Interleukin-19 is cardioprotective in dominant negative CREB-mediated heart failure in a sexually dimorphic manner." *World Journal of Cardiology*.

**Bruns, D.R.**, Buttrick, P.M., Walker, L.A. (2016) "Genetic ablation of interleukin-18 does not attenuate hypobaric hypoxia-induced right ventricular hypertrophy." *AJP-Lung*.

**Bruns, D.R.**, Drake, J.C., Biela, L.M., Peelor, F.F., Miller, B.F., Hamilton, K.L. (2015). "Nrf2 signaling and the slowed aging phenotype: Evidence from long-lived models." *Oxidative Medicine and Cellular Longevity*.

Drake, J. C., **Bruns, D.R.**, Peelor, F.F. 3<sup>rd</sup>, Biela, L.M., Miller, R.A., Miller, B.F., Hamilton, K.L. (2015). "Long-lived Snell dwarf mice display increased proteostatic mechanisms that are not dependent on decreased mTORC1 activity". *Aging Cell*.

**Bruns, D.R.**, Brown, R.D., Stenmark, K.R., Buttrick, P.M., Walker, L.A (2014). "Mitochondrial integrity in a neonatal bovine model of right ventricular dysfunction". *AJP-Lung*.

Drake, J.C., **Bruns, D.R.**, Peelor, R.F., Biela, L.M., Miller, R.A., Hamilton, K.L., Miller, B.F (2014). "Long-lived crowded litter mice have an age-dependent increase in protein synthesis to DNA synthesis and mTORC1-substrate phosphorylation". *AJP-Endo*.

**Reuland, D. J.**, J. M. McCord, and K. L. Hamilton (2013). "The role of Nrf2 in the attenuation of cardiovascular disease". *Exercise and Sports Science Reviews*.

**Reuland, D.J.**, Khademi, S., Castle, C.J., Irwin, D.C., McCord, J. M., Miller, B.F., et al. (2012). "Upregulation of phase II enzymes through phytochemical activation of Nrf2 protects cardiomyocytes against oxidant stress". *Free Radic Biol Med*.

Miller, B.F., Robinson, M.M., **Reuland, D.J.**, Drake, J.C., Peelor, F.F., 3rd, Bruss, M. D., et al. (2012). "Calorie Restriction Does Not Increase Short-term or Long-term Protein Synthesis". *J Gerontol A Biol Sci Med Sci*.

Donovan, E. L., McCord, J.M., **Reuland, D.J.**, Miller, B.F., & Hamilton, K.L. (2012). "Phytochemical activation of Nrf2 protects human coronary artery endothelial cells against an oxidative challenge". *Oxid Med Cell Longev*.

### **In Review/In Preparation**

Woulfe, K.C. and **Bruns, D.R.** "From pediatrics to geriatrics: mechanisms of heart failure across the life-course." *In Review Journal of Cellular and Molecular Cardiology*.

**Bruns, D.R.**, Tatman, P.D., Stenmark, K.R., Buttrick, P.M., Walker, L.A. "The right ventricular fibroblast secretome drives cardiomyocyte differentiation." *To be submitted to Circulation Research*

### **SELECTED ABSTRACTS**

Keller, A.C, Walker, L.A., Reusch, E.B.J., **Bruns, D.R.** Sex- and age- specific differences in cardiac contractility and energetics: therapeutic repurposing of metformin for the failing right heart. Center for Women's Health Research National Conference, 2018. Denver, CO.

**Bruns, D.R.**, Jeong, M, Buttrick, P.M., Walker, L.A. Therapeutic activation of AMPK for the aging right heart. Front Range Aging Consortium 2017. Fort Collins, CO.

**Bruns, D.R.**, Tatman, P.D., Stenmark, K.R., Buttrick, P.M., Walker, L.A. The activated cardiac fibroblast secretome drives cardiomyocyte dedifferentiation in pulmonary hypertension-induced RV dysfunction: A role for interleukin-1 $\beta$ ? American Heart Association Basic Cardiovascular Sciences 2017. Portland, OR.

**Bruns, D.R.**, Jeong, M, Buttrick, P.M., Walker, L.A. Myofilament and biochemical responses of the right ventricle to hypoxia-related cardiac dysfunction in aging. American Physiological Society. Cardiovascular Aging Conference 2017. Westminster, CO.

**Bruns, D.R.**, Ghincea, A.R., Ghincea, C.V., Watson, P.A., Autieri, M.V., Thoemmes, S.F., Walker, L.A. Interleukin-19 is cardioprotective in dominant negative CREB-mediated heart failure in a sex-specific manner. Center for Women's Health Research National Conference, 2016. Colorado Springs, CO.

**Bruns, D.R.**, Thoemmes, S.F., Buttrick, P.M., Stenmark, K.R., Walker, L.A. The epigenetically modified pro-inflammatory cardiac fibroblast drives cardiomyocyte dysfunction in pulmonary hypertension-induced right ventricular pressure overload. American Heart Association Basic Cardiovascular Sciences 2016. Phoenix, AZ.

**Bruns, D.R.**, Buttrick, P.M., Walker, L.A. Genetic ablation of Interleukin-18 does not attenuate hypobaric hypoxia-induced right ventricular dysfunction. American Heart Association Basic Cardiovascular Sciences 2015. New Orleans, LA.

Ehrlicher, S.E., **Bruns D.R.**, Peelor, F.F., Khademi, S., Miller, B.F., Hamilton, K.L. Mitochondrial biogenesis in response to exercise or hydrogen peroxide treatment is not blunted by upregulation of endogenous antioxidants. *Experimental Biology*, 2015. Boston, MA.

- Bruns, D.R.**, Brown, R.D., Stenmark, K.R., Buttrick, P.M., Walker, L.A. Mitochondrial integrity in a neonatal bovine model of right ventricular dysfunction. Keystone Symposia on Molecular and Cellular Biology: Mitochondria, Metabolism and Heart Failure, 2015. Santa Fe, NM.
- Ehrlicher, S.E., **Bruns D.R.**, Peelor, F.F., Khademi, S., Baeverstad, K.A., Miller, B.F., Hamilton, K.L. Development of a new method to assess the effect of reactive oxygen species on protein turnover. CURC, 2014. Colorado State University. Fort Collins, CO.
- Hamilton, K.L., Drake, J.C., **Reuland, D.J.**, Peelor F.F., Biela, L.M., Miller, R.A., Miller, B.F. DNA synthesis in cardiac tissue: Growth and somatic maintenance in long lived models. San Antonio Nathan Shock Aging Center 2013 Conference on Aging: Stem Cells and Aging.
- Miller, B.F., Drake, J.C., **Reuland, D.J.**, Peelor, F.F., Biela, L.M., Miller, R.A., Hamilton, K.L. Growth versus somatic maintenance and the synthesis of new DNA in skeletal muscle cells. San Antonio Nathan Shock Aging Center 2013 Conference on Aging: Stem Cells and Aging.
- Baeverstad, K.A., **Reuland, D.J.**, Drake, J.C., Peelor, F.F., Biela, L.M., Ehrlicher, S.E., Hamilton, K.L., Miller, B.F. The influence of growth on the assessment of mitochondrial biogenic responses to exercise. CURC, 2013. Colorado State University. Fort Collins, CO.
- Reuland, D.J.**, Drake, J.C., Biela, L.M., Ehrlicher, S.E., Baeverstad, K.A., Peelor F.F., Miller, R.A., Miller, B.F., Hamilton, K.L. Nrf2-regulated antioxidant defenses in rodent models of longevity. Experimental Biology, 2013. Boston, MA.
- Watkins, M.K., Ehrlicher, S.E., **Reuland, D.J.**, Miller, B.F., Hamilton, K.L. Validation of method using  $^2\text{H}_2\text{O}$  to measure rates of protein breakdown in myoblasts. Experimental Biology, 2013. Boston, MA.
- Reuland, D.J.**, Drake, J.C., Khademi, S, Miller, B.F., Hamilton, K.L. Treatment of cultured myotubes with rapamycin activates AMPK. Integrative Biology of Medicine, 2012. Westminster, CO.
- Reuland D.J.**, Biela, L.M., Peelor, F.F., Drake, J. C., Miller, B.F., Hamilton, K.L. Upregulation of endogenous antioxidant defenses by Nrf2 activation does not blunt exercise-induced mitochondrial biogenesis in rats. Experimental Biology, 2012. San Diego, CA.
- Reuland,D.J.**, Miller B.F., McCord, J.M., Hamilton, K. L. Activation of Nrf2 and upregulation of phase II enzymes in cardiomyocytes by the phytochemicals in Protandim. Rocky Mountain American College of Sports Medicine Regional Meeting, 2011. Fort Collins, CO.

## FUNDING

### Pending

**NIH/NIA. K01 Career Development Award.**

**Bruns (PI).**

**Priority Score: 10**

“Therapeutic activation of AMPK for the aging right heart.”

**NIH/NHLBI R01**

“Periostin is a nodal regulator of cardiomyocyte plasticity”

**Bruns (Co-I)**

7/1/2019-6/30/2024

**Wyoming NIH INBRE Equipment Grant.**

**Bruns (Co-PI)**

Small equipment grant for purchase of a fluorescent microscope and capture system for UW K&H investigators.

### Completed

**American Heart Association. Southwest Affiliate Postdoctoral Fellowship.**

**Bruns (PI)**

1/1/2017-8/15/2018

“Hypobaric hypoxia-induced epigenetic changes of the cardiac fibroblast.”

**American Federation for Aging Research.**

**Bruns (PI)**

12/31/2016-12/31/2017

(returned upon award of American Heart Association Postdoctoral Fellowship)

“AMP-activated protein kinase as a therapeutic target to improve hypoxia-related cardiac dysfunction in aging.”

**NIH T32 HL007822-16**

**Bruns (Trainee)**

1/15/2014-1/15/2017

“Inflammation and mitochondrial dysfunction in models of heart failure.”

PI: Peter Buttrick. Mentor: Lori Walker.

**American College of Sports Medicine Foundation Predoctoral Grant. Reuland (PI)**

6/1/2012-6/30/2013

“Selective translation of mitochondrial proteins during energetic stress”.

## INVITED TALKS

- 2018 “Pulmonary hypertension-induced right ventricular pressure overload simulates cardiac fibroblast periostin expression and dedifferentiation of adult cardiac myocytes”. American Heart Association Scientific Sessions. Chicago, IL.
- 2018 “Novel and direct myofilament-mediated action of metformin in the aging right heart”. Gerontological Society of America Annual Scientific Meeting. Boston, MA.
- 2018 “Molecular mechanisms of right heart failure”. Molecular Monday Seminar Series, Department of Molecular Biology. University of WY. Laramie, WY.
- 2018 “Back to the bench: A basic science approach to studying human health”. Division of Kinesiology & Health Seminar. University of Wyoming. Laramie, WY.
- 2018 “Therapeutic activation of AMPK for the aging right heart.” Cardiology Research Conference. University of Colorado-Denver. Aurora, CO.
- 2017 “AMP-activated protein kinase as a therapeutic target to improve hypoxia-related cardiac dysfunction in aging”. Cardiology Research Conference. University of Colorado-Denver. Aurora, CO.

- 2017 “Novel mechanisms of right heart failure”. Colorado State University, Department of Health and Exercise Science Seminar Series.
- 2016 “Pulmonary hypertension-induced right ventricular pressure overload triggers acute epigenetic reprogramming of pro-inflammatory cardiac fibroblasts”. American Heart Association Scientific Sessions. New Orleans, LA.
- 2016 “Interleukin-19: A novel sexually dimorphic cardiac cytokine.” American Physiological Society Inflammation, Immunity, and Cardiovascular Diseases. Westminster, CO.
- 2016 “The epigenetically modified pro-inflammatory cardiac fibroblast drives cardiomyocyte dysfunction in pulmonary hypertension-induced right ventricular pressure overload”. Cardiology Research Conference. University of Colorado-Denver. Aurora, CO.
- 2015 “Molecular mechanisms regulating cardiac dysfunction in hypobaric hypoxia-induced RV pressure overload”. Cardiology Research Conference. University of Colorado-Denver. Aurora, CO.
- 2013 “Activation of Nrf2 for maintenance of redox balance and exercise-induced mitochondrial biogenesis.” Center for Environmental Medicine Spring Symposium. Colorado State University. Fort Collins, CO.
- 2011 “Activation of Nrf2 and upregulation of phase II enzymes in cardiomyocytes by the phytochemicals in Protandim.” Rocky Mountain American College of Sports Medicine Regional Meeting, 2011. Fort Collins, CO.

## **HONORS AND AWARDS**

- 2018 American Heart Association Scientific Sessions: BCVS Abstract Travel Award
- 2018 Center for Women’s Health Research National Conference Poster Award
- 2018 NIA Summer Training Course on Biology of Aging
- 2018 UC-Denver Postdoc Travel Award
- 2016 NIH/NIA Butler-Williams Scholar
- 2016 American Physiological Society: Inflammation, Immunity and Cardiovascular Disease Travel Award
- 2016 Center for Women’s Health Research National Conference Poster Award
- 2016 American Heart Association BCVS New Investigator Travel Award
- 2013 Isotec Scholarship Recipient for the 6<sup>th</sup> annual Isotope Tracers Course.
- 2012 Robert W. Gotshall Graduate Scholarship Recipient: Colorado State University
- 2011 1<sup>st</sup> place poster presentation at Rocky Mountain American College of Sports Medicine

## POSITIONS, TEACHING & MENTORSHIP

### ACADEMIC POSITIONS AND PROFESSIONAL EXPERIENCE

- 2018-present      **Assistant Professor**  
Kinesiology & Health  
University of Wyoming, Laramie, WY
- 2014-2018        **Postdoctoral Fellow**  
Division of Cardiology, Department of Medicine  
University of Colorado-Denver, Aurora, CO
- 2016-present     **Adjunct Faculty**  
Department of Biology  
Metropolitan State University-Denver  
Department Head: Ford Lux, PhD
- 2009-2013        **Research Assistant**  
Department of Health & Exercise Science  
Colorado State University, Fort Collins, CO
- 2008-2010        **Teaching Assistant**  
Department of Health & Exercise Science  
Colorado State University, Fort Collins, CO  
Supervisor: Brian Butki, PhD

### TEACHING EXPERIENCE

- 2018-present     **Human Medicine: Cardiovascular, Pulmonary and Renal Block Lead**  
University of Wyoming, WWAMI Regional Medical Education
- 2016-2017        **BIO 1000: Human Biology**  
Adjunct Faculty
- 2016-2018        **Molecules 2 Man: MD Curriculum**  
Small Group Facilitator. University of Colorado-Denver
- 2015-2018        **Problem-Based Learning: MD Curriculum**  
Small Group Facilitator. University of Colorado-Denver
- 2012                **HES 476: Exercise and Chronic Disease**  
Mentored Student Teaching  
Department of Health & Exercise Science, Colorado State University
- 2008-2010        **HES 403: Exercise Physiology Laboratory**  
Graduate Teaching Assistant  
Department of Health & Exercise Science, Colorado State University

## **MENTORSHIP**

2018-	Benjamin McNair
2018	Ryan Lupi
2017	Roshni Kalkur
2015-2016	Alexander Ghincea, MD
2014-2016	Stephen Thoemmes
2014	Stacey Santiago
2012-2013	Kathryn Baeeverstad
2011-2013	Sarah Ehrlicher, MS
2010	Molly Watkins, DPT



## **PROFESSIONAL AND ACADEMIC SERVICE**

### **ACADEMIC SERVICE**

#### **Ad-hoc Reviewer**

Journal of Applied Physiology

Journal of Molecular and Cellular Cardiology

Nutrients

Advances in Physiology Education

Journal of Cardiovascular Pharmacology and Therapeutics

#### **Gerontological Society of America 2018 Meeting Abstract Review**

### **UNIVERSITY SERVICE**

2016-present	GEMS Program Judge and Applicant Review Committee University of Colorado-Denver
2014-present	Student Research Forum Judge University of Colorado-Denver
2014-2015	Postdoctoral Research Day Planning Committee University of Colorado-Denver

### **PROFESSIONAL SOCIETIES**

American Heart Association

American Physiological Society

American College of Sports Medicine

American Gerontological Society

American Aging Association