BIOGRAPHICAL SKETCH

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NAME: Gosselink, Kristin L.

eRA COMMONS USER NAME (credential, e.g., agency login): KGOSSELINK

POSITION TITLE: Associate Professor of Biological Sciences

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Luther College, Decorah, IA	B.A.	05/1991	Biology
University of California, Los Angeles, CA	M.S	05/1998	Physiological Science
University of California, Los Angeles, CA	Ph.D.	05/2001	Physiological Science
Salk Institute, La Jolla, CA	Postdoc	2001-05	Neuroendocrinology

A. Personal Statement

In leading Aim 2 of the Behavioral Research Project of this application, I have a broad base of experience that supports my ability to effectively contribute to and complete the proposed work. The focus of this part of the proposal is on health literacy and provider recommendation and practice among persons in the age group of 18-45 years. I have extensive experience with this age group, including the creation and implementation of educational interventions as well as pre-post assessments of medical knowledge, patient care, communication skills, and practice-based learning and improvement. I am well prepared to work with current and future healthcare providers to ensure the success of this project. Since 2011, I have served as Co-PI (and now PI) of the A-PRIME program within the Transformation in Medical Education (TIME) initiative. Funded by the University of Texas System, this initiative provides an accelerated path to medical school for high-achieving undergraduate pre-medical students, with an additional focus on students of diverse backgrounds and from underserved communities. In this and my faculty role, I engage with large numbers of health professions students each year, and also interact with individuals actively working in healthcare fields and faculty who provide post-graduate instruction to our students. In A-PRIME, specifically, we foster professional development through training that includes health disparities and sociocultural factors in health. Importantly, we conduct annual assessments of student and program performance, supporting my ability to collect and analyze data we intend to gather from our participants. In addition, I currently serve as PI of the NSF-sponsored Bridge to the Doctorate program of the Louis Stokes Alliance for Minority Participation, and as Co-PI of Louis Stokes STEM Pathways and Research Alliance: University of Texas System LSAMP. In both of these programs, I work with and mentor young scientists, including some non-traditional students, who engage in STEM research as they pursue their career goals in this area. I further interact collaboratively with trainees at the undergraduate and post-doctoral levels through NIH/NIDA-funded programs at UTEP. In all these efforts, I work closely with people in the defined age range for the current project, and am skilled in collecting and assessing feedback and communicating with current and future health providers about barriers and facilitators of patient care. At an institutional level, I have been a member of the Border Biomedical Research Center at UTEP since 2005, and held a leadership role within it from 2007 to 2011. I understand the importance of building and sustaining our research infrastructure, have utilized the research cores, and maintain a strong commitment to community engagement and addressing health disparities. Lastly, my independent research program and my faculty development experience will foster success in this project in that I work well in interdisciplinary teams, and may serve as a mentor to early career researchers who are members of this project as well as the Basic Science and Clinical projects in our larger proposal.

B. Positions and Honors

Positions

2003 – 2005	Associate Faculty; Biology, MiraCosta Community College, Oceanside, CA
2005 – 2011	Assistant Professor; Biological Sciences, University of Texas at El Paso, El Paso, TX
2011 –	Associate Professor; Biological Sciences, University of Texas at El Paso, El Paso, TX
2013 –	Associate Dean; College of Science, University of Texas at El Paso, El Paso, TX

Appointments

2007 – 2009	Interim Director, Neuroscience and Metabolic Disorders Unit, Border Biomedical Research Center, University of Texas at El Paso, El Paso, TX
2009 – 2011	Co-leader, Neuroscience and Metabolic Disorders Unit, Border Biomedical Research Center, University of Texas at El Paso, El Paso, TX
2009 – 2012	Orville E. Egbert, M.D. Endowed Chair, UTEP
2011 –	UTEP Director, A-PRIME TIME Program – UT Transformation in Medical Education; UTEP
2015 – 2017	Advisory Committee for the Competency-Based B.S. in Biomedical Sciences Degree Program; UT System Institute for Transformational Learning; UT System
2015 – 2017	Steering/Advisory Committee, Center for the Integration of Research, Teaching and Learning (CIRTL) Network; UTEP
2015 –	Editorial Board Member, Journal of Alcoholism, Drug Abuse and Substance Dependence
2016 –	Advisory Board, Pre-Med Certificate; UTEP
2018 –	Review Editor, Frontiers in Neuroscience

Honors

2008	RCMI Travel Award, 11th RCMI International Symposium on Health Disparities, Honolulu, HI
2010	University Of Texas System Regents' Outstanding Teaching Award
2012	Outstanding Participant, Leadership Development Institute, UTEP
2013	Research article featured online in "Psychology Progress"

C. Contributions to Science

1. My primary research interest is on the effects of acute and chronic or repeated stress exposure on the brain, with a view toward understanding how chronic stress impacts health and health disparities. To date, we have identified sex, age, regional cellular (anatomical) differences in stress responsiveness in the brain, that have implications for controlling a wide array of health-related outcomes including cognitive performance, obesity and type II diabetes, anxiety and other affective disorders, and cancer. We have additionally identified central nervous system inflammatory and oxidative stress markers that are induced by chronic stress exposure and play a role in neurological diseases and conditions. Most of these studies have used restraint as a stressor, and our findings have extended the field by determining the neurological effects of stress and how various disease states may manifest as a consequence of stress even as the body habituates in its response(s) to the stressor itself. Now we have incorporated the early life stress model of maternal separation into our work, and continue to evaluate sex- and age-specific outcomes associated with this stress paradigm. Two additional manuscripts in this area are currently in preparation from our lab.

(*denotes graduate student author; **denotes undergraduate student)

a. Sierra-Fonseca, J.A. and **K.L. Gosselink**. Tauopathy and neurodegeneration: a role for stress. Neurobiol of Stress 9: 105-112, 2018.

b. Flores, I.E.**, J.A. Sierra-Fonseca, O. Davalos**, L.A. Saenz**, M.M. Castellanos**, J.K. Zavala* and **K.L. Gosselink**. Stress alters the expression of cancer-related genes in the prostate. BMC Cancer 17: 621, 2017.

c. Zavala, J.K.*, A.A. Fernandez** and **K.L. Gosselink**. Female responses to acute and repeated restraint stress differ from those in males. Physiol. Behav. 104: 215-221, 2011.

d. Radley, J.J., **K.L. Gosselink** and P.E. Sawchenko. A discrete GABAergic relay mediates medial prefrontal cortical inhibition of the neuroendocrine stress response. J. Neurosci. 29(22): 7330-7340, 2009.

2. Research in my laboratory has also been focused on the relationship between stress and addiction, with some attention to reward in a broader context. Much is known about the role of stress in increasing the likelihood of drug use, abuse and relapse, but the specific mechanisms through which stress sensitizes this behavior are largely unknown. Using physical restraint or neonatal maternal separation as stress paradigms, we are able to examine the effects of different types of stress of greater or lesser severity at variable times across the lifespan. We also assess drug taking behavior through methamphetamine self-administration, and have recently looked to conditioned place preference as a method for determining appetitive and aversive responses to drug. The major impact of this work to date is that we have examined the neurochemistry of the brain 72 h after methamphetamine access is withdrawn, which is a highly relevant and under-studied timepoint in drug abuse and withdrawal. Our data show that dopamine transporter levels are upregulated at this stage, as opposed to the consistent downregulations seen in previous work where analyses were done at later timepoints. In addition to the publications given below, two additional manuscripts are in preparation.

a. D'Arcy, C.*, J.E. Luevano*, M. Miranda-Arango, J.A. Pipkin*, J. Jackson**, E. Castaneda, **K.L. Gosselink** and L.E. O'Dell. Extended access to methamphetamine self-administration up-regulates dopamine transporter levels 72 hours after withdrawal in rats. Behav. Brain Res. 296: 125-128, 2016.

b. **Gosselink, K.L.**, L.E. O'Dell and C.E. Bond-D'Arcy*. Short review: The importance of environmental conditions in substance abuse research. J. Alc. Drug Abuse Substance Depend. 2: 005, 2016.

c. Chagra, S.L.*, J.K. Zavala*, M.V. Hall* and **K.L. Gosselink**. Acute and repeated restraint differentially activate orexigenic pathways in the rat hypothalamus. Regulatory Peptides 167: 70-78, 2011.

3. In my earlier work, the physiological regulation of a potentially novel pituitary growth factor – bioassayable growth hormone (BGH) – was determined, and the beginning stages of identifying and characterizing this growth factor were initiated. I continued this work early in my faculty appointment, with the goal of developing an in vitro bioassay to evaluate growth factor concentrations and effects. Significant findings from this project illustrated a sensory nervous system pathway through which the control of secretion of an anterior pituitary hormone could be mediated through muscle spindle afferent activation. The stimulation of BGH release was specific to fast-twitch muscle activity, as cutaneous input had no effect on BGH release and inputs from slow-twitch muscle were inhibitory. The ability of fast-twitch muscle activation to increase BGH secretion was demonstrated in isolated nerve experiments, muscle vibration studies, and in vivo exercise. Furthermore, the BGH response is modified when the loading state of the musculoskeletal system is changed (i.e., decreased loading through simulated or actual exposure to weightlessness abolishes fast-twitch muscle-induced BGH secretion). These physiological findings were seen in both rats and humans. A candidate molecule was identified its molecular characterization continues. The impact of this work on the field is that we have laid the foundation for examining a mechanism through which the body may be able to monitor in real time the amount of physical activity being experienced, and remodel critical musculoskeletal and/or nervous tissues accordingly.

a. Bigbee, A.J.*, R.E. Grindeland, R.R. Roy, H. Zhong, **K.L. Gosselink***, S. Arnaud and V.R. Edgerton. Basal and evoked levels of bioassayable growth hormone are altered by hindlimb unloading. J. Appl. Physiol. 100: 1037-1042, 2006.

b. **Gosselink, K.L.***, R.R. Roy, H. Zhong, R.E. Grindeland, A.J. Bigbee* and V.R. Edgerton. Vibration-induced activation of muscle afferents modulates bioassayable growth hormone release. J. Appl. Physiol. 96(6): 2097-2102, 2004.

c. **Gosselink, K.L.***, R.E. Grindeland, R.R. Roy, H. Zhong, A.J. Bigbee* and V.R. Edgerton. Afferent input from rat slow skeletal muscle inhibits bioassayable growth hormone release. J. Appl. Physiol. 88(1): 142-148, 2000.

d. Bigbee, A.J.*, **K.L. Gosselink***, R.E. Grindeland, R.R. Roy, H. Zhong and V.R. Edgerton. Bioassayable growth hormone release in rats in response to a single bout of treadmill exercise. J. Appl. Physiol. 89(6): 2174-2178, 2000.

4. My early efforts in biomedical research were focused on the effects of weightlessness (or reduced gravity) on the endocrine and neuromuscular systems of the body. Using an animal model of simulated microgravity – hindlimb suspension in the rat – my colleagues and I were able to demonstrate changes in muscle and organ weights, muscle protein synthesis and content, myosin heavy chain expression, and hormone release as a

consequence of non-weight-bearing. Moreover, we showed that different types of muscles responded to the weightless environment in different ways, with slow-twitch muscles showing the greatest changes. We then were able to examine the effectiveness of exercise or functional overload to serve as countermeasures to the microgravity-induced changes in muscle mass and function. In total, our results both confirmed and extended our understanding of how unloading affects the musculoskeletal system. These findings are highly relevant to maintaining body systems and structures in situations of chronic unloading or wasting such as spaceflight, long-term bedrest, or cancer cachexia.

a. Kim, S.J., R.R. Roy, J.A. Kim, K.M. Manning, H. Zhong, A.J. Bigbee, **K.L. Gosselink**, R.E. Grindeland and V.R. Edgerton. Differential effects of long-term hindlimb unloading on a slow and fast extensor and a fast flexor in adult rats. J. Grav. Physiol. 11: 35-46, 2004.

b. McCall, G.E., **K.L. Gosselink**, A.J. Bigbee, R.R. Roy, R.E. Grindeland and V.R. Edgerton. Muscle afferent--pituitary axis: A novel pathway for modulating the secretion of a pituitary growth factor. Exerc. Sports Sci. Rev. 29(4): 164-169, 2001.

c. Linderman, J.K., R.J. Talmadge, **K.L. Gosselink**, P.N. Tri, R.R. Roy and R.E. Grindeland. Lack of an interaction of functional overload and non-weight bearing on soleus atrophy and myosin heavy chain expression. Med. Sci. Sports Exercise 28(5): 142, 1996.

d. Linderman, J.K., **K.L. Gosselink**, F.W. Booth, V.R. Mukku and R.E. Grindeland. Resistance exercise and growth hormone as countermeasures for skeletal muscle atrophy in hindlimb-suspended rats. Am. J. Physiol. 267 (Regulatory Integrative Comp. Physiol.) 36: R365-R371, 1994.

5. Over the past 10 years, I have increased my participation in interdisciplinary research and contributed my knowledge of the brain and stress responses to other fields and colleagues. These collaborations continue to be highly productive, in terms of published manuscripts but particularly in the successful mentoring of graduate students and postdoctoral researchers.

a. Ramos-Muniz, M.G.*, M. Palfreeman**, M.A. Sanchez, N. Setzu**, K.M. Garza, **K.L. Gosselink**, C. Spencer and P. Saenz Portillo. Obesity exacerbates the cytokine storm elicited by Francisella tularensis infection of females and is associated with increased mortality. Biomed Res Int. 2018:3412732, 2018.

b. Mejia, G.E.*, **K.L. Gosselink**, D.G. Pérez-Ishiwara and A. Martinez-Martinez. Oxidant/antioxidant effects of chronic exposure to predator odor in prefrontal cortex, amygdala and hypothalamus. Mol. Cell. Biochem. 406(1-2): 121-129, 2015.

c. Mejia, G.E.*, **K.L. Gosselink**, L.A. de la Rosa, D.G. Pérez-Ishiwara and A. Martinez-Martinez. Evaluation of antioxidant enzymes in response to predator odor stress in prefrontal cortex and amygdala. Neurochem J. 8(2): 125-128, 2014.

d. Dayangaç, A., **K.L. Gosselink** and Ö. Yılmaz. Fasting and postprandial conditions alter hypothalamic lipid derivative values and serum cholesterol, malondialdehyde and vitamin levels in male rats. Animal Biol. (Neth) 62(2): 157-169, 2012.

Complete List of Published Work in MyBibliography:

http://www.ncbi.nlm.nih.gov/myncbi/collections/bibliography/49060087/

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

- NSF 1826745 Gosselink (PI) 9/1/18 – 8/31/23
  Louis Stokes STEM Pathways and Research Alliance: University of Texas System LSAMP
  This “Bridge to the Doctorate” program of the Louis Stokes Alliance for Minority Participation provides a cohort of 12 Ph.D. students with training in relevant professional skills for careers in STEM, and financially supports the first two years of their studies.
  Role: Co-PI

- NSF 1810898 Gosselink (PI) 7/1/18 – 6/30/20
  LSAMP BD: University of Texas at El Paso - University of Texas System LSAMP
  This "Bridge to the Doctorate" program of the Louis Stokes Alliance for Minority Participation provides a cohort of 12 Ph.D. students with training in relevant professional skills for careers in STEM, and financially supports the first two years of their studies.
  Role: PI

- NIH/NIDA 2 R25 DA033613 O'Dell (PI) 5/1/17 – 4/30/20
  SMART MIND: Summer Mentoring and Research Training program in Methods in the Neuroscience of Drug-addiction
  This summer undergraduate research experience program provides a cohort of students with training in relevant professional skills for careers in neuroscience, including research, education, and ethics.
  Role: Collaborator

- NIH/NIDA 1 R24 DA029989-01 Castaneda (PI) 9/30/16 – 9/29/20
  Postdoctoral contract: Vulnerability issues in drug abuse: career and research trans-disciplinary training (VIDA-CARTT) program
  This training grant will train minority postdoctoral scientists in multidisciplinary approaches to the study of drug abuse, including multiple models and methods, health disparity issues, and ways to identify and address barriers to persistence and success in the research profession.
  Role: Collaborator

Completed Research Support

- University of Texas Ekal/Gosselink (PI) 8/1/13 – 8/31/17
  Transformation in Medical Education: A-PRIME TIME
  This undergraduate academic program provided an accelerated path to medical school for high-achieving students.
  Role: Co-PI 2013-15, PI 2015-17

- NIH/NIDA 1 R25 DA033613 O'Dell (PI) 5/1/12 – 4/30/17
  SMART MIND: Summer Mentoring and Research Training program in Methods in the Neuroscience of Drug-addiction
  This summer undergraduate research experience program provides a cohort of students with training in relevant professional skills for careers in neuroscience, including research, education, and ethics.
  Role: Collaborator

- NIH/NCRR 5 G12 MD007592 Garza (PI) 4/1/15 – 3/31/16
  BBRC Pilot Grant – The stress of obesity
  This pilot project will evaluate the comparative stress loads and inflammatory responses conferred in mice by obesity or bacterial infection, and a combination of the two.
  Role: Co-PI

- NIH/NIDA 1 R24 DA029989-01 Castaneda (PI) 3/4/11 – 3/3/16
  UTEP DIDARP: Vulnerability Issues in Drug Abuse (VIDA)
  This training grant will train minority scientists in multidisciplinary approaches to the study of drug abuse, with a specific focus on our predominantly Hispanic community on the U.S./Mexico border, where health disparities and co-morbid conditions are prevalent. We expect that vulnerability in this population will be highly influenced by stress, which may be worsened or alleviated by factors such as age, sex, immigration and acculturation, family, religion, chronic illness, socioeconomic status, education, and language.
  Role: PI of primary research subproject "Stress-induced increases in vulnerability to substance abuse and addiction"