

Education

- PhD in Cellular and Molecular Biology** 2014
North Dakota State University
- Bachelors of Science in Zoology *summa cum laude*** 2010
North Dakota State University

Professional Appointments

- Assistant Professor** 2017-present
Department of Biological Sciences, Northern Illinois University
Biology Education Research
- Postdoctoral Research Associate** 2015-2017
School of Natural Resources, University of Nebraska- Lincoln
Project: An innovative computer simulation environment to facilitate learning of biology using dynamical systems approaches (IUSE #1432001)
Dr. Joseph Dauer
- Graduate Research Assistant** 2010-2014
Department of Biological Sciences, North Dakota State University
Thesis: Nutritional Regulation of Growth Hormone-Stimulated Lipolysis
Dr. Mark Sheridan and Dr. Wendy Reed
- Undergraduate Research Assistant** 2008-2010
Department of Biological Sciences, North Dakota State University
Project: Resolving the growth-promoting and lipid catabolic actions of growth hormone (IOS #0920116)
Dr. Mark Sheridan

Teaching Experience

- Instructor** – Fundamentals of Cellular Biology, NIU Spring 2018
- Instructor** – Senior Assessment, NIU Spring 2018
- Instructor** – Endocrinology, NDSU Fall 2014

Teaching Experience continued

College Teaching Certification – NDSU	December 2014
Guest Lecturer – Gene Regulation and Expression, NDSU	Fall 2013
Graduate Teaching Assistant – Anatomy and Physiology Lab, NDSU	Spring/Fall 2012
Guest Lecturer – Animal Physiology, NDSU	Spring 2011
Guest Lecturer – Endocrinology, NDSU	Fall 2010

Peer-Reviewed Publications

Crowther, A., **Bergan-Roller, H.E.**, Galt, N.J., Dauer, J.T., Helikar, T. *Accepted*.
Discovering Prokaryotic Gene Regulation with Simulations of the *trp* Operon.
CourseSource.

Bergan-Roller, H.E., Sheridan, M.A. 2017. The Growth Hormone Signaling System: Insights into Coordinating the Anabolic and Catabolic Actions of Growth Hormone. *General and Comparative Endocrinology*

Bergan-Roller, H.E., Galt, N.J., Dauer, J.T., Helikar, T. 2017. Discovering Cellular Respiration with Computational Modeling and Simulations. *CourseSource*.
<https://doi.org/10.24918/cs.2017.10>

Bergan-Roller, H.E., Ickstadt, A.T., Kittilson, J.D., Sheridan, M. 2017. Insulin and insulin-like growth factor-1 modulate the lipolytic action of growth hormone by altering signaling pathway linkages. *General and Comparative Endocrinology* 248, 40-48.

Bergan, H.E., Kittilson, J.D., Sheridan, M. 2015. Nutritional state modulates growth hormone-stimulated lipolysis. *General and Comparative Endocrinology* 217–218, 1–9.

Bergan, H.E., Kittilson, J.D., Sheridan, M.A. 2013. PKC and ERK mediate the activation and enhanced expression of hormone sensitive lipase by growth hormone. *Journal of Molecular Endocrinology* 51(2), 213-224.

Bergan, H.E., Kittilson, J.D., Sheridan, M.A. 2012. Nutrition-regulated lipolysis in rainbow trout (*Oncorhynchus mykiss*) is associated with alterations in the ERK, PI3K-Akt, JAK-STAT, and PKC signaling pathways. *General and Comparative Endocrinology* 176, 367-376.

Reindl, K.M., Kittilson, J.D., **Bergan, H.E.**, Sheridan, M.A. 2011. Growth hormone-stimulated insulin-like growth factor-1 expression in rainbow trout (*Oncorhynchus*

mykiss) hepatocytes is mediated by ERK, PI3K-Akt, and JAK-STAT. *American Journal of Physiology* 301, R236-243.

Hagemeister, A.L., Kittilson, J.D., **Bergan, H.E.**, Sheridan, M.A. 2010. Rainbow trout somatostatin receptor subtypes SSTR1A, SSTR1B, and SSTR2 differentially activate the extracellular signal-regulated kinase and phosphatidylinositol 3-kinase signaling pathways in transfected cells. *Journal of Molecular Endocrinology* 45(5), 317-327.

Publications in Review

Bergan-Roller, H.E., Galt, N.J., Chizinski, C.J., Helikar, T., Dauer, J.T. Simulated computational model lesson improves systems thinking in biology students. Submitted to *BioScience*.

Bergan-Roller, H.E., Galt, N.J., Helikar, T., Dauer, J.T. Revealing Undergraduate Student Knowledge of Cellular Respiration with Conceptual Models. Submitted to *Journal of Biological Education*.

Appleby, L., **Bergan-Roller, H.E.**, Galt, N.J., Pribil, E., Chizinski, C.J., Dauer, J.T., Helikar, T. A computational model-based lesson improves students' systems thinking in the context of cellular respiration. Submitted to *Journal of Microbiology and Biology Education*.

Crowther, A., **Bergan-Roller, H.E.**, Galt, N.J., Dauer, J.T., Helikar, T. Discovering Prokaryotic Gene Regulation by Building and Investigating the lac Operon. Submitted to *CourseSource*.

Publications in Advanced Stages of Preparation

Dauer, J.T., **Bergan-Roller, H.E.**, King, G., Kjose, M., Galt, N.J., Helikar, T. Effect of Model Building and Model Investigation on Student Learning of Gene Regulatory Networks. For submission to *CBE- Life Sciences Education* fall 2017.

Presentations

Invited Talks

Bergan-Roller, H.E. Content knowledge and skill development in undergraduate students: assessing and promoting learning. Northern Illinois University Biological Science Seminar, DeKalb, IL, February 2017.

Bergan-Roller, H.E. Student modeling of complex biological systems: promoting learning and assessing thinking. Minnesota State University-Mankato Biological Science Seminar, Mankato, MN, February 2016.

Bergan-Roller, H.E., Galt, N.J. Research-driven facilitation of systems thinking with computational models in life sciences education. UNL STEM Education Seminar, Lincoln, NE, October 2015.

Sheridan, M.A. and **Bergan, H.E.** Growth hormone: An integrator of growth and metabolism. 17th International Congress on Comparative Endocrinology, Barcelona, Spain, July 2013.

Sheridan, M.A. and **Bergan, H.E.** Rainbow trout hepatocytes: A model for elucidating the molecular mechanisms of growth hormone. 10th International Congress on the Biology of Fish, Madison, WI, July 2012.

Sheridan, M.A., **Bergan, H.E.,** and Walock, C.N. Resolving the growth-promoting and lipid catabolic actions of growth hormone. 1st North American Society of Comparative Endocrinology, Ann Arbor, MI, July 2011

Other Talks

Appleby, L., **Bergan-Roller, H.E.,** Galt, N., Dauer, J.T., Helikar, T. Improving student tracing through metabolic systems through a computational model-based learning module. Society for the Advancement of Biology Education Research, Minneapolis, MN, July 2017.

Helikar, T., Appleby, L., **Bergan-Roller, H.E.,** Galt, N., Dauer, J.T. Computational modeling: a tool to improve student reasoning with biological systems. Society for the Advancement of Biology Education Research, Minneapolis, MN, July 2017.

Bergan-Roller, H.E., Helikar, T. Demonstrating Cell Collective for teaching and research applications. Nebraska Academy of Sciences Annual Meeting, Lincoln, NE, April 2017.

Bergan-Roller, H.E., Galt, N., Helikar, T., Dauer, J.T. Simulated computational model activity improves conceptual understanding about biological systems. International Annual Conference of the National Association for Research in Science Teaching, San Antonio, TX, April 2017.

Bergan-Roller, H.E., Galt, N., Tichy, D., Kowal, B., Dauer, J.T., Helikar, T. Teaching about cellular processes using computational modeling and interactive simulations. Biennial Conference on Chemical Education, Greeley, CO, August 2016.

Dauer, J.T., **Bergan-Roller, H.E.**, Galt, N., Helikar, T. Effect of Model Building and Model Investigation on Student Learning of Gene Regulatory Networks. Society for the Advancement of Biology Education Research, Minneapolis, MN, July 2016.

Bergan-Roller, H.E., Galt, N.J., Mediratta, J.K., Akkoseoglu, S., Helikar, T., Dauer, J.T. Using Modeling to Assess Concept Connectedness in Cellular Respiration. Society for the Advancement of Biology Education Research, Minneapolis, MN, August 2015.

Bergan, H.E., Sheridan, M.A. Nutritional state modulates the effects of growth hormone on lipid catabolism. Northern Plains Biological Symposium, Grand Forks, ND, April 2013.

Poster Presentations

Bergan-Roller, H.E., Galt, N., Appleby, L., Helikar, T., Dauer, J.T. Student understanding of system dynamics and cycles in biological processes. Society for the Advancement of Biology Education Research, Minneapolis, MN, July 2017.

Bergan-Roller, H.E., Galt, N., Helikar, T., Dauer, J.T. Guided Investigation using Simulated Computational Models Improves Student Thinking about Cellular Respiration System. STEM Education Research Retreat, Lincoln, NE, October 2016.

Bergan-Roller, H.E., Galt, N., Helikar, T., Dauer, J.T. Guided Investigation using Simulated Computational Models Improves Student Thinking about Cellular Respiration System. Society for the Advancement of Biology Education Research, Minneapolis, MN, July 2016.

Tichy, D., Kowal, B., Galt, N., **Bergan-Roller, H.E.**, Dauer, J.T., Helikar, T. Cell Collective - Learn: An Interactive Simulation Platform for Learning and Teaching About Biological Processes. Society for the Advancement of Biology Education Research, Minneapolis, MN, July 2016.

Galt, N.J., **Bergan-Roller, H.E.**, Dauer, J.T., Helikar, T. Evaluation of Students' Mechanistic Reasoning through Dynamic Simulations of Cellular Respiration. Society for the Advancement of Biology Education Research, Minneapolis, MN, August 2015.

Galt, N.J., **Bergan-Roller, H.E.**, Cutucache, C.E., Dauer, J.T., Helikar, T. Learning about Complex Biological Systems with Cell Collective: An Interactive, Collaborative Simulation Platform. Society for the Advancement of Biology Education Research, Minneapolis, MN, August 2015.

Walock, C.N., **Bergan, H.E.**, Kittilson, J.D., Sheridan, M.A. Differential effects of growth hormone family peptides on the expression of insulin-like growth factor 1 and 2 mRNAs and modulation by nutritional state. World Aquaculture, Nashville, TN, February 2013.

Bergan, H.E., Walock, C.N., Sheridan, M.A. Nutritional state modulates growth hormone-stimulated insulin-like growth factor and hormone-sensitive lipase mRNA expression. 10th International Congress on the Biology of Fishes, Madison, WI, July 2012.

Bergan, H.E. and Sheridan, M.A. Mechanisms that underlie fasting-associated growth cessation and lipid catabolism in rainbow trout (*Oncorhynchus mykiss*). Annual Meeting of the Society for Integrative and Comparative Biology, Charleston, SC, January, 2012.

Bergan, H.E. and Sheridan, M.A. Growth hormone-stimulated hormone sensitive lipase expression in rainbow trout is mediated by ERK and PKC. Northern Plains Biological Symposium, Fargo, ND, April 2012.

Bergan, H.E., Sheridan, M.A. Growth hormone-stimulated hormone sensitive lipase expression in rainbow trout livers is mediated by ERK and PKC., 1st North American Society for Comparative Endocrinology, Ann Arbor, MI, July 2011.

Reindl, K.M., Kittilson, J.D. Jones, **Bergan, H. E.** and Sheridan, M.A. The Hepatic Growth Hormone Receptors of Rainbow Trout Differentially Link to Signal Transduction Pathways. Annual Meeting of the Society for Integrative and Comparative Biology, Salt Lake City, UT, January 2011.

Mentoring

Mentees with Funded Projects

Taylor Uhlir – Undergraduate Research Assistant, UNL 2016-2017
Project: “Understanding Student Knowledge in Genetics with Conceptual Modeling”

McKenzie KJose – Undergraduate Research Assistant, UNL 2015-2017
Project: “Effects of Computational Model Building versus Model Investigation on Student Thinking About Gene Regulation”

Sinan Akkoseoglu – Undergraduate Research Assistant, UNL 2015-2016
Project: “Student Reason with Relationships in Cellular Respiration”
Presentation: Akkoseoglu, S., Bergan-Roller, H.E., Dauer, J.T. Establishing Students’ Abilities to Reason with Relationships in the Context of Cellular Respiration. UNL Spring Research Fair, Lincoln, NE, April 2016.

Jai Kumar Mediratta – Undergraduate Research Assistant, UNL 2015
Project: “Development of Learning Activities Centered on Computational Modeling”

Other Mentees

Gisselle Ruiz – Undergraduate Learning Assistant, NIU	2018-present
Mario Salcio – Undergraduate Learning Assistant, NIU	2018-present
Harry Chieng – Undergraduate Learning Assistant, NIU	2018-present
Nate Green – Undergraduate Learning Assistant, NIU	2018-present
Derrick Judkins – Undergraduate Research Assistant, NIU	2017-present
Jacob Bilyeu – Undergraduate Research Assistant, NIU	2017
Sabah Sattar – Undergraduate Research Assistant, NIU	2017-present
Audrey Crowther – Research Associate, UNL	2016-present
Abby Lewis – Undergraduate Research Assistant, UNL	2016-2017
Sarah Spier – Graduate Research Assistant, UNL	2016-2017
Taylor Diedrichsen – Undergraduate Research Assistant, UNL	2016
Jena Wilson – Undergraduate Research Assistant, UNL	2016
Lexus Wellman – Undergraduate Research Assistant, UNL	2016
Suhair Barbaraskara – Undergraduate Research Assistant, UNL	2016
Shirley Kala – Undergraduate Research Assistant, UNL	2015-2016
Alena Chisstopolskaia – Undergraduate Research Assistant, UNL	2015-2016
Nathaniel Niosco – Graduate Research Assistant, UNL	2015-2016
Jacob Winters – Undergraduate Research Assistant, UNL	2015
Alicia Ickstadt – Undergraduate Research Assistant, NDSU	2013-2016
Lincoln Martin – Graduate Research Assistant, NDSU	2012-2014
Elle Kvam – Undergraduate Research Assistant, NDSU	2011-2012

Service

University Service

Elected Postdoc Representative

Women in Science SNR Group, UNL	2015-present
Biological Science Graduate Student Association, NDSU	2011-2014

Workshop (co)Presenter

Curriculum Vitas and Resumes for SNR, UNL	Spring 2016, Fall 2015
Student Learning and Engagement in Large Lecture Classes, UNL	Summer 2015

Abstract and Presentation Reviewer

Socio-scientific Issues (ARGI 103) Poster Judge, UNL	Spring 2016
Undergraduate Creative Activities and Researcher, UNL	Spring 2015

Seminar Coordinator

Cellular and Molecular Biology Series, NDSU	2013-2014
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Meeting (co)Organizer

STEM Education Research Retreat, UNL	2015, 2016
Annual Northern Plains Biological Symposium, NDSU	2012, 2014

Advisor to Incoming Graduate Students, NDSU	
RA/TA Orientation (Panel member)	2012, 2013
Graduate School Recruiting Fair (Recruiter)	2012

Professional Service

Editorial Board Member and Reviewer	
Journal of Microbiology and Biology Education	2016-present

Ad hoc Journal Reviewer

CBE- Life Science Education	2018
Journal of Biological Education	2017
International Journal of STEM Education	2016
International Journal of Endocrinology	2016
Fish Physiology and Biochemistry	2016
Aquaculture	2015
Journal of Comparative Endocrinology	2010-2014
Comparative Biochemistry and Physiology	2010-2014
Endocrinology	2010-2014
Cell and Tissue Culture Research	2010-2014

Community Service

Traffic Control – Ragnar Northwoods Trail Race	Fall 2016
Practice Patient – Union College Nursing Program	Fall 2016
State Science Fair Judge – Nebraska Junior Academy of Science	Spring 2016
Dog Walker and Trainer – Homeward Animal Shelter	2013-2014
Home Fitness Instructor, Floater – YWCA of Fargo/Moorhead	2012-2013
Traffic Director – Bismarck Marathon	2013

Professional Development Activities

National Academies Sackler Colloquia on the Science of Science Communication	2017
Undocumented Ally Training	2017
Illinois State Teachers Association Conference	2017
Creating a More Inclusive Classroom Workshop	2017
PI Academy Workshop Series	2017
External Mentorship Program	2017
Alan Alda Communicating Science Workshop	2016
AWIS Becoming a Better Mentor and Mentee	2016
Critical Thinking Assessment Test Hybrid Workshop	2016
UNL SciComm Symposium	2015
Writing Skills for Researchers Workshop	2015
Science Literacy Working Group Discussions	2015
Innovation in Pedagogy and Technology Symposium	2015

Managing Projects Discussion	2015
Write Winning Grant Proposals Workshop	2015
Discipline-Based Education Research Symposium	2015
Networking Workshop	2015
Teaching Portfolios Workshop	2015
Grants and Coffee Workshop Series	2015
Working in R Workshop	2015
Methodologies, Analytics, and Psychometrics Series	2015
Grading in Blackboard Workshop	2014
Turning Technology (Clickers) Workshop	2014
Networking Workshop	2014
Western Association of Graduate Schools Conference	2014
Demystifying the Literature Review Workshop	2014
Thinking Well and Writing Well Workshop	2013
Live Critiquing Pedagogy Workshop	2013
Grant Writing Workshop	2012

Professional Memberships

Council on Undergraduate Research	2017-present
American Association for the Advancement of Sciences	2016-present
Association for Women in Science	2016-present
National Postdoctoral Association	2015-2017
Society for the Advancement of Biology Education Research	2014-present
American Society for Biochemistry and Molecular Biology	2014-2016
Text and Academic Authors Association	2013-2015
American Fisheries Society	2012-2013
North American Society for Comparative Endocrinology	2011-2013

Honors and Awards

Student Commencement Speaker	2014
Department Nominee for College Student Research Award	2014
ND EPSCoR Doctoral Dissertation Assistantship	2013
NDSU Dept. of Biological Sciences Summer Research Fellowship	2013
2 nd Place Best Student Abstract in Fish Culture – World Aquaculture Society	2013
Best Poster Presentation – 10 th International Congress on the Biology of Fish	2012
Steinhaus-Rhinehard Scholarship	2009
Outstanding Zoology Junior Scholarship	2008