KELLY E. CROWE
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EDUCATION

The Ohio State University — Columbus, OH
Doctor of Philosophy in Molecular, Cellular and Developmental Biology — 2018

Missouri State University — Springfield, MO
Master of Science in Biology — 2012

Drury University — Springfield, MO
Bachelor of Arts in Biology, Bachelor of Arts in Psychology, *summa cum laude* — 2011
Minors: Chemistry and Global Studies

TEACHING EXPERIENCE

Xavier University – Assistant Professor
Human Physiology (BIOL 410) – Instructor of record, 3 credit hours — 2022
Human Physiology Lab (BIOL 411) – Instructor of record, 3 credit hours — 2022

Mount St. Joseph University – Assistant Professor
Neurobiology (BIO 328) – Instructor of record, 4 credit hours — 2021
Biology Seminar (BIO 204) – Instructor of record, 2 credit hours — 2019, 2020, 2021
Pathophysiology (BIO 301) – Instructor of record, 4 credit hours — 2019, 2020, 2021
Biological Psychology and Lab (BIO 360) – Instructor of record, 4 credit hours — 2019, 2020, 2021
Human Anatomy & Physiology for the Health Sciences I and Lab (BIO 197) – Instructor of record, 4 credit hours — 2018, 2019, 2020, 2021
Biotechnology and Lab (BIO 309) – Instructor of record, 4 credit hours — 2020
Principles of Biology I Lab (BIO111A) – Instructor of record, 1 credit hour — 2019
Pathophysiology Online (BIO301) – Instructor of record, 4 credit hours — 2019

Denison University – Guest Lecturer
Neuroscience Senior Capstone Seminar (NEUR 412) — 2018

Muskingum University – Guest Lecturer
Functional Histology (BIOL 213) — 2017

Nationwide Children's Hospital – Instructor
Mechanisms of Human Health and Disease — 2017

RESEARCH EXPERIENCE

Xavier University — Cincinnati, OH
Assistant Professor of Biology — 2022-present

- Exploring mechanisms of muscle atrophy relevant to human spaceflight
- Assessing biomarkers for gene therapy for GNE myopathy

Mount St. Joseph University Cincinnati, OH
Assistant Professor of Biology 2018-2022

- Assessed changes in lectin binding as a potential biomarker for gene therapy in GNE myopathy using an *in vitro* model
- Determined linkage-specific sialic acid changes in mouse models of atrophy and hypertrophy
- Developed novel, inquiry-based laboratory activities on behavioral genetics in *C. elegans*

Nationwide Children's Hospital Research Institute Columbus, OH
Doctoral Candidate with Paul T. Martin, Ph.D. 2014-2018

- Compared effects of liver- and muscle-directed gene therapy in a mouse model of GNE myopathy
- Generated a novel mouse model of GNE myopathy to track incorporation of oral sialic acid
- Assessed preexisting antibody titers to gene therapy capsids in neuromuscular diseases
- Characterized αDG-N as a potential biomarker in Duchenne Muscular Dystrophy

Center for Biomedical and Life Sciences Springfield, MO
Graduate/Undergraduate Researcher 2010-2012

- Graduate: Investigated the effect of dual and single orexin receptor antagonism on trigeminal nociception using protein arrays
- Undergraduate: Characterized the effect of dual orexin receptor antagonism on trigeminal inflammation using immunohistochemistry and behavioral assays

PEER-REVIEWED PUBLICATIONS

Sattler, K.M., Paleo, B.J., Roth, M., Bradley, K., Gilpin, M., Poynter, M., & **Crowe, K. E.** (2022). Lectins as Staining Biomarkers for GNE Myopathy Gene Therapy. Manuscript in preparation.

Crowe, K.E., Rosendale, A.J., Mannings, M., & Lovejoy, C. (2022). Development of a Remote Inquiry-Based Undergraduate Laboratory Activity for Sensory Physiology. Manuscript in preparation.

Paleo, B.J., McElhanon, K.E., Banford, K., Beck, E.X., Sattler, K.M., Goines, B.N., Ratcliff, S.L., **Crowe, K.E.**, & Weisleder, N. (2021). Reduced sarcolemmal membrane repair exacerbates pathology in a mouse model of Duchenne Muscular Dystrophy. *Cells, 11(9),* 1417.

Crowe, K.E., Heller, K., Rodino-Klapac, L., Noguchi, S., Nishino, I., & Martin, P.T. (2021). Visualizing muscle sialic acid expression in the GNED207VTgGne-/- Cmah-/- model of GNE myopathy: A comparison of dietary and gene therapy approaches. *J. Neuromuscular Dis., 9(1),* 53-71.

Martin, P. T., Kawanishi, K., Ashbrook, A., Golden, B., Samraj, A., **Crowe, K. E.,** Zygmunt, D., Okerblom, J., Yu, H., Maki, A., Diaz, S., Chen, X., Janssen, P. M. L., & Varki, A. (2021). Serum antibodies to N-glycolyl-neuraminic acid are elevated in Duchenne Muscular Dystrophy and correlate with elevated disease pathology in Cmah-/-mdx mice. *The American Journal of Pathology, 191(8)*, 1474-1486.

Xu, R., Jia, Y., Zygmunt, D.A., Cramer, M.L., **Crowe, K.E.**, Shao, G., Maki, A., Guggenheim, H., Hood, B., Flanigan, K.M., Rodino-Klapac, L.R., Chicoine, L.G., and Martin, P.T. (2018). An isolated limb

infusion method allows for broad distribution of rAAVrh74.MCK.GALGT2 to leg skeletal muscles in the rhesus macaque. *Molecular Therapy – Methods & Clinical Development, 10,* 89-104. 10.1016/j.omtm.2018.06.002.

Zygmunt, D., Singhal, N., Kim, M. L., Cramer, M. L., **Crowe, K. E.**, Xu, R., Jia, Y., Adair, J., Martinex-Pena Y Valenzuela, I., Akaaboune, M., White, P., Janssen, Pl. M., & Martin, P. T. (2017). Deletion of *Pofut1* in mouse skeletal myofibers induces muscle aging-related phenotypes in cis and in trans. *Molecular and Cellular Biology, 37(10),* e00426-16. doi: 10.1128/MCB.00426-16

Zygmunt, D., **Crowe, K. E.**, Flanigan, K. M., & Martin, P. T. (2017). Comparison of serum rAAV serotype-specific antibodies in patients with Duchenne Muscular Dystrophy, Becker Muscular Dystrophy, Inclusion Body Myositis or GNE myopathy. *Human Gene Therapy, 28(9),* 737-746. doi:10.1089/hum.2016.141

Crowe, K. E., Shao, G., Flanigan, K. M., & Martin, P. T. (2016). N-terminal α Dystroglycan (αDG-N): A Potential Serum Biomarker for Duchenne Muscular Dystrophy. *JND Journal of Neuromuscular Diseases, 3(2),* 247-260. doi:10.3233/jnd-150127

PRESENTATIONS

Crowe, K.E. Evaluating GNE Gene Therapy: Movement Towards a Biomarker. Oral presentation delivered at NDF GNEM Symposium Speaker Series, June 2021.

Crowe, K.E., Paleo, B. J. Evaluation of Lectin Staining Biomarkers in Skeletal Muscle of Patients with GNE Myopathy. Oral presentation delivered at Experimental Biology 2021, Virtual, April 2021

Crowe, K.E., Rosendale, A.J., Lovejoy, C.M., Mannings, M.C. Development of a Remote Inquiry-Based Undergraduate Laboratory for Sensory Physiology. Oral presentation delivered at the Massachusetts PKAL Winter Meeting, Virtual, January 2021.

Crowe, K.E. Moving Towards a Biomarker for GNE Myopathy Gene Therapy. Oral presentation delivered at NDF GNEM Symposium Speaker Series, May 2020.

Crowe, K.E. Lectin Staining Biomarkers for Gene Therapy in GNE Myopathy. Oral presentation accepted for Experimental Biology 2020 (Cancelled due to COVID-19).

Crowe, K.E. Therapeutic Strategies for GNE Myopathy. Oral presentation delivered at The Ohio State University, November 2019.

Crowe, K.E. Assessment of Therapies for GNE Myopathy. Oral presentation delivered at Yale University, November 2019.

Crowe, K.E. Development of a Lectin Staining Biomarker for GNE Myopathy Gene Therapy. Oral presentation delivered at the Neuromuscular Disease Foundation's 6th Annual Symposium on GNE Myopathy, Tel Aviv, Israel, May 2019.

Crowe, K.E., & Brown, M.A. Defining Success in the First Year of a Tenure-Track, STEM Faculty Position. Oral presentation delivered at the fifth annual Ohio Project Kaleidoscope (OH-PKAL) conference, Dayton, OH, May 2019.

Crowe, K.E. Development of a Lectin Staining Biomarker for GNE Myopathy Gene Therapy. Oral presentation delivered at the Neuromuscular Disease Foundation's 6th Annual Symposium on GNE Myopathy, Philadelphia, PA, May 2019.

Crowe, K. E., & Martin, P. T. Sialic acid therapy and gene therapy in a GNE myopathy model – Visualizing the endpoints. Poster presentation delivered at the Ohio Physiological Society (OPS) meeting, Cincinnati, OH, September 2018.

Crowe, K. E., & Martin, P. T. Sialic acid therapy and gene therapy in a GNE myopathy model – Visualizing the endpoints. Poster presentation delivered at the New Directions in Biology and Disease of Skeletal Muscle Conference, New Orleans, LA, June 2018.

Crowe, K. E., & Martin, P. T. αDG-N: A Biomarker for Duchenne Muscular Dystrophy. Oral presentation delivered at the Edward F. Hayes Graduate Research Forum at The Ohio State University, Columbus, Ohio, March 2018.

Crowe, K. E., & Martin, P. T. Serum αDG-N as a marker in DMD. Oral presentation delivered at the Center of Research Translation Monthly Meeting at the Research Institute at Nationwide Children's Hospital, Columbus, Ohio, August 2017.

Crowe, K. E., Shao, G., Flanigan, K. M., & Martin, P. T. N-terminal α Dystroglycan (αDG-N): A Potential Serum Biomarker for Duchenne Muscular Dystrophy. Poster presentation delivered at the 21st Congress of the World Muscle Society, Granada, Spain, October 2016.

GRANTS AND FELLOWSHIPS

Research Grant - "Evaluation of Lectin Staining Biomarkers in Pre-Clinical Models of GNEM" 2021
Neuromuscular Disease Foundation

#SciCommMake COVID-19 Communications Collaborations Grant - "Coronavirus Videos" 2020
Sigma Xi, The Scientific Research Honor Society and Science Talk

#SciCommMake COVID-19 Communications Collaborations Grant - "The New Normal" 2020
Sigma Xi, The Scientific Research Honor Society and Science Talk

Research Grant - "Validation of a Lectin Staining Biomarker for GNE Myopathy Gene Therapy" 2020
Neuromuscular Disease Foundation

Research Grant -"Development of a Lectin Staining Biomarker for GNE Myopathy Gene Therapy" 2019
Neuromuscular Disease Foundation

Jeffrey J. Seilhamer Fellowship 2017
Jeffrey J. Seilhamer Lung Cancer Foundation
**A competitive graduate fellowship awarded to one Molecular, Cellular, and Developmental Biology (MCDB) student each year*

Grant-in-Aid of Research (GIAR) Award 2016
The Ohio State University Chapter of Sigma Xi

AWARDS AND HONORS

Linda H. Mantel Next Generation Women's Leadership Award 2022
Sigma Xi
**Biennial award to recognize outstanding service and leadership potential of an early career scholar/researcher.*

Sister Adele Clifford, S.C. Award 2021
Mount St. Joseph University
**Presented each year to one tenure-track faculty member who has significantly influenced students' lives and demonstrated excellence in teaching.*

Undergraduate Faculty Travel Award 2021
American Society for Biochemistry and Molecular Biology

Sigma Xi Chapter of Excellence 2020
Sigma Xi, the Scientific Research Honor Society
**Served as Vice President for the UC Sigma Xi chapter, which was one of five chapters chosen for this award out of more than 500 chapters.*

Emerging Scholar 2020
Mount St. Joseph University
**Presented each year to one tenure-track faculty member based on advancement of scholarship in his or her field*

Outstanding Poster Presentation 2018
New Directions in Biology and Disease of Skeletal Muscle Conference

IGP Symposium Outstanding Poster Presentation 2018
The Ohio State University Interdisciplinary Graduate Programs Annual Research Forum

MCDB Travel Award 2018
Molecular, Cellular, and Developmental Biology Graduate Program at The Ohio State University

Hayes Graduate Research Forum Oral Presentation in Biological Sciences – 2nd place 2018
Council of Graduate Students at The Ohio State University

Sigma Xi Chapter Program of Excellence 2017
Sigma Xi, the Scientific Research Honor Society
**Served as director for the OSU Sigma Xi "Meet-a-Scientist" program, which was chosen for this award out of programs in over 500 chapters.*

MCDB Three Minute Thesis (3MT) Competition – 3rd place 2016
Molecular, Cellular, and Developmental Biology Graduate Program at The Ohio State University

The Edward J. Ray Travel Award for Scholarship and Service 2016
The Ohio State University – Council of Graduate Students

Trainee Travel Award 2016, 2018
Nationwide Children's Hospital Office of Trainee Affairs

CMHND Travel Award 2016
The Center for Muscle Health and Neuromuscular Disorders at The Ohio State University & Nationwide Children's Hospital

Research Retreat Poster Competition – 1st place 2015
Nationwide Children's Hospital Research Institute

RELATED PROFESSIONAL EXPERIENCE

Associate Director of North Central Region 2021-present
Sigma Xi, the Scientific Research Honor Society
- Facilitate interactions between the national Sigma Xi organization and regional chapters

Member of the Scientific Advisory Committee 2019-present
Neuromuscular Disease Foundation (NDF)
- Provide scientific input regarding research advances and opportunities in GNE myopathy

President 2021-2022
Sigma Xi, the Scientific Honor Society – University of Cincinnati Chapter
- Led a committee of colleagues to guide programming for the Cincinnati research community

Pre-Health Professions Advisor 2018-2022
Mount St. Joseph University Health Professions Advising Committee
- Advised 6-8 pre-medical undergraduate students per year

Faculty Advisor 2018-2022
Mount St. Joseph University TriBeta Chapter
- Guided biology students in program development for scientific and social campus events

Review Editor 2020-2021
Editorial Board of Molecular Medicine (Frontiers in Cell and Developmental Biology)
- Endorsed manuscripts for publication

Invited Panelist for Substance Use Disorder (SUD) Forum 2019-2021
Community Primary Care Champions Fellowship Panel Series
- Provided biomedical research perspective to primary care fellows at the University of Cincinnati regarding the ongoing opioid epidemic

Participant in Spaceflight, Technology, Applications, and Research (STAR) course 2020-2021
NASA Ames Research Center
- Participated in a space biosciences training course

Vice President 2020-2021
Sigma Xi, the Scientific Honor Society – University of Cincinnati Chapter
- Worked with the President to guide programming for the Cincinnati research community

Member-at-Large 2019-2020
Sigma Xi, the Scientific Honor Society – University of Cincinnati Chapter
- Contributed to collaborative development of programming for the local research community

Director of Education and Outreach 2017-2018
Sigma Xi, the Scientific Honor Society – The Ohio State University Chapter
- Organized and implemented more than 25 lectures and laboratory activities per year in K-12 schools

Preparing Future Faculty Fellow 2017-2018
The Ohio State University
- Met regularly with faculty mentor Dr. Heather Rhodes at Denison University to gain insights into teaching, research, and service in the liberal arts setting

Mentor for First-Year Graduate Students 2015-2018
Molecular, Cellular, and Developmental Biology Graduate Program at The Ohio State University
- Mentored a total of 4 new graduate students, meeting on a monthly or bimonthly basis to address challenges with coursework and laboratory selection

Mentor for Bioscience Senior Capstone Project 2017
Eastland-Fairfield Career & Technical School
- Mentored high school student in her independent research project involving forensic analysis of blood samples
- Mentored high school student in his independent research project involving molecular cloning of the cytolysin A gene

Chair of Outreach Committee 2016-2017
Nationwide Children's Hospital Research Institute Trainee Association
- Developed science curriculum and taught scientific modules to students ranging from elementary to undergraduate ages
- Led a committee of 13 students and postdoctoral researchers in the organization of science events in local schools

Graduate Student Representative 2016-2017
Nationwide Children's Hospital Research Institute Trainee Association
- Coordinated nomination, election, and recruitment of a graduate student-elected speaker, Dr. Dana Carroll, to present his research at the Nationwide Children's Hospital Research Institute
- Communicated graduate student concerns to research institute administration

Laboratory Mentor for High School Student 2016
Nationwide Children's Hospital Research Institute

- Taught high-school student scientific theory and practical lab skills so that the student was able to independently perform experiments prior to beginning her undergraduate education

Vice President of Graduate Student Organization 2015-2016
Molecular, Cellular, and Developmental Biology Graduate Program at The Ohio State University

- Worked with a team to coordinate recruitment for prospective MCDB graduate students and organized events for current MCDB graduate students

PROFESSIONAL ASSOCIATIONS

National Association of Advisors for the Health Professions (NAAHP)	2019-present
American Society for Biochemistry and Molecular Biology (ASBMB)	2019-present
Ohio Physiological Society	2018-present
World Muscle Society	2016-present
Sigma Xi, Scientific Research Honor Society	2015-present