Maxwell L. Kramer
Curriculum Vitae
Teaching Assistant Professor

Department of Biology Teaching and Learning
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Professional Appointments

University of Minnesota, College of Biological Sciences, Department of Biology Teaching and Learning Minneapolis, MN

Teaching Assistant Professor, 2018-present
Postdoctoral Associate, 2016-2017

Education

New York University, Sackler Institute of Graduate Biomedical Sciences New York, NY

Doctor of Philosophy in Developmental Genetics
Thesis: Dosage compensation, H4K20me1 and sex bias are mechanisms shaping developmental dynamics of X chromosome expression. January 2016

Lewis and Clark College Portland, OR

Bachelor of Arts with honors, Biochemistry and Molecular Biology
May 2007

Undergraduate Teaching Experience

University of Minnesota, Department of Biology Teaching and Learning Minneapolis, MN

Primary Instructor

Deconstructing Research: Writing about Biological Research for Non-scientists (BIOL4321W)

Writing intensive class for upper level biology students. Course develops student skills in primary research analysis and written communication of scientific findings to varied audiences. Taught in active learning classroom. Spring 2017 (co-instructor with Dr. Dalay Olson), Spring 2018; 10-20 students per semester

Foundations of Biology laboratory (BIOL1961, BIOL3004)
2 semester stand-alone introductory lab course series for biology students. Students develop fundamental biology laboratory techniques and scientific inquiry skills by participating in a course-based undergraduate research experience. Development and administration of bioinformatics and microbiome course based research projects. Edited and revised *Computational Microbiology* lab manual. Administered course Moodle site. Weekly graduate TA preparation meetings. Spring 2017 - present (Co-instructors with Dr. Catherine Kirkpatrick and Vanessa Pompei)

Nature of Life, NOL @ Itasca
Instructor for new student experience at Itasca field station. Taught daylong module on "Genes and Disease" topic. Student-led inquiry uses public databases and software to locate information on genetic causes of disease (SNPs) and research in model organisms. Also introduces students to active learning concepts. Summer, Fall 2017, Summer 2018

Guest Lecturer
General Biology (BIOL1009)
Taught guest lectures on "Introduction to Cells" and "Gene Regulation." Included student investigation into antibiotics and cancer chemotherapies. Fall 2017 (250 student lecture section, 3 guest lectures)

New York University, Department of Biology New York, NY
Undergraduate Research Mentor
Directed three undergraduate students in independent research projects and other work including writing research proposals, writing undergraduate theses, and presenting posters. 2011-2015

Professional Development in Education

Early Career Teaching and Learning Program
Year-long pedagogical course including discussion, practice and reflection in large and small group interactions with other early career UMN faculty. Works to deepen understanding of student learning and broaden teaching strategies with UMN courses in mind. University of Minnesota, Center for Educational Innovation, Minneapolis, MN, 2018-19 academic year

Teaching with Writing: Annual Faculty Seminar
Participated in week-long seminar for university instructors to focus on the roles writing plays (or could play) in the specific courses they teach. Each half-day session involves hands-on activities using sample writing assignments and student-written drafts. Developed materials and approaches for current and potential future courses. Presented by the University of Minnesota Center for Writing. Minneapolis, MN, Fall 2018.

"Undergraduate Biology Education Research" Gordon Research Conference attendee
Participated in subject specific conference. Theme: "Improving Diversity, Equity, and Learning in Biology Education" Stonehill College, Easton, MA, 2017

University of Minnesota "Teaching with Writing" workshops
Completed half day workshops on developing writing assignments and writing to opposing audiences. Presented by the University of Minnesota Center for Writing. Minneapolis, MN, 2017

National Academies NorthStar Summer Institute for Undergraduate Biology Education
Engaged in three-day training program sponsored by National Academies of Science and Howard Hughes Medical Institute. Trained in active learning, assessment, and diversity, developed and presented a teachable unit based on these themes. Minneapolis, MN, 2016.

Fundamentals of Teaching, New York University Graduate School course

Semester long course covering the fundamental elements of scientific teaching, including cognitive hierarchies, adult learning styles, course, lesson and syllabus design, design of teaching portfolio, lecture hall strategies, active learning strategies, formative and summative assessment techniques. Worked as a group to apply those ideas and create a teachable lesson to present to class. New York, NY, 2012

K12 Teaching Experience

Science Museum of Minnesota St. Paul, MN

Resident Scientist in the Cell Lab exhibit. Facilitated visitor experiences with interactive cell biology exhibits. Helped visitors use real life lab techniques to investigate blood cells, cheek cells, enzymes, chromosomes and DNA isolation. 2016

Cell Motion Labs, Inc. New York, NY

BioBus and BioBase learning centers

Taught K-12 students aboard a mobile science lab (BioBus) in courses that introduce microscopy, microorganisms, nematodes, and the scientific method. Hosted visitors during science outreach events and fairs, taught summer classes. 2012-2016

New York University STEP/BEST program New York, NY

Enrichment program for middle and high school students from groups underrepresented groups STEM. Taught year-long capstone research course to 11-12 graders. Students led research projects that investigated gene structure, function, and role in disease. Students presented results at regional conference. Course was developed based on NYU Biology freshman lab course and taught in NYU lab classrooms. 2015

CITIZEN Schools New York, NY

Developed and taught *Invisible Worlds* course for middle school students in the Bronx borough of New York. Covered microbes, fermented foods, and food molecules. 2012

Research Experience

University of Minnesota Minneapolis, MN

Postdoctoral Associate

Advised by Dr. Robin Wright

Focus on Undergraduate Biology Education Research. Designed, created, implemented and assessed online tutorials that teach science process skills and the central dogma of molecular biology. Developed and implemented bioinformatics research projects for introductory biology lab courses. 2016-present

New York University New York, NY

Graduate Student

Advised by Dr. Sevinc Ercan

Investigated the genetics and developmental dynamics of X chromosome regulation and dosage compensation in the nematode worm C. elegans. Research served as a model system for understanding sex-biased gene expression, mechanisms that regulate large scale gene expression patterns and the role of chromatin in gene regulation during embryonic development. 2010-2016

New York University New York, NY
Research Technician and Graduate Student
Laboratory of Dr. Matthew Rockman
Studied population structure and the genetic basis for complex behaviors in the nematode worm *C. elegans*. 2008-2010

Oregon Health and Sciences University Portland, OR

Research Technician
Laboratory of Dr. Caroline Enns
Studied expression of HFE in mice, protein that regulates iron uptake in the liver and is mutated in iron uptake diseases. 2007-2008

Lewis and Clark College Portland, OR
Undergraduate Honors Researcher
Advised by Dr. Greg Hermann
Cell biological and genetic investigation of the role of novel gene *glo-3* in formation of specialized lysosomes in the nematode worm *C. elegans*. 2004-2007

Publications

Kramer, M., Olson, D., and Walker, J. (2018) Design and Assessment of Online, Interactive Tutorials That Teach Science Process Skills. CBE- Life Sciences Education 17(2). https://doi.org/10.1187/cbe.17-06-0109

Kramer, M., Rao, P., and Ercan, S. (2016). Sex-biased expression of the *Caenorhabditis elegans* X chromosome is a result of both X chromosome copy number and sex-specific gene regulation. Genetics, 204(1): 355-369; DOI: 10.1534/genetics.116.190298.

Kramer, M., Kranz, A.-L., Su, A., Winterkorn, L., Albritton, S. and Ercan, S. (2015) Developmental dynamics of X-chromosome dosage compensation by the DCC and H4K20me1 in *C. elegans*. PLOS Gen, 11(12): e1005698

Noble, L., Chang, A., McNelis, D., **Kramer, M**., Yen, M., Nicodemus, J., Riccardi, D., Ammerman, P., Phillips, M., Islam, T. and Rockman, M. (2015) Natural Variation in plep-1 Causes Male-Male Copulatory Behavior in C. elegans. Curr Biol, 25: doi:10.1016/j.cub.2015.09.019.

Albritton, S., Kranz, A.L., Rao, P., **Kramer, M**. and Ercan, S. (2014) Sex-biased gene expression and the evolution of the X chromosome in nematodes. Genetics, 197: 865-883.

Kranz, A.L., Jiao, C., Winterkorn, L., Albritton, S., **Kramer, M**. and Ercan, S. (2013) Genome-wide analysis of condensin binding in Caenorhabditis elegans. Genome Biol,14: R112.

Gao , J., Chen, J., **Kramer, M**., Tsukamoto, H., Zhang, A.S., Enns, C.A. (2009) Interaction of the hereditary hemochromatosis protein HFE with transferrin receptor 2 is required for transferrin-induced hepcidin expression. Cell Metab, 9 (3): 217-227.

Rabbitts, B.M, Ciotti, M.K, Miller, N.E., **Kramer, M**., Lawrenson, A.L., Levitte, S., Kremer, S., Kwan, E., Weis, A.M., and Hermann, G.J. (2008) glo-3, a novel Caenorhabditis elegans gene, is required for lysosome-related organelle biogenesis. Genetics, 180(2): 857-71.

Schroeder, L. K., **Kramer, M**., Kremer, S., Currie, E., Kwan, E. Watts, J. L., Lawrenson, A. L., and Hermann, G. J. (2007) Function of the Caenorhabditis elegans ABC transporter PGP-2 in the biogenesis of a lysosome-related fat storage organelle. Mol Biol Cell, 18: 995-1008.

Presentations

Poster: Interactive digital tutorials improve science process skills in introductory students. Kramer, M., Olson, D., and Walker, J. Undergraduate Biology Education Research, Gordon Research Conference. Stonehill College, Easton MA. June 2017.

Presentation: *Online Tutorials Effectively Teach Science Process Skills.* University of Minnesota Postdoc Research Symposium, St. Paul, MN. May 2017

Poster: *Developmental dynamics of X chromosome dosage compensation in* C. elegans. **M. Kramer,** A.-L. Kranz, A. Su, L. Winterkorn, S. Albritton, S. Ercan. 20th International C. elegans Conference, Los Angeles, CA. June 2015

Poster: *X chromosome dosage compensation in the early* C. elegans *embryo.* **Kramer, M.** and Ercan S. 19th International *C. elegans* Conference, Los Angeles, CA. June 2013

Poster: *Genetic analysis of* glo-3*, a gene required for specialized lysosome biogenesis.* **Kramer, M**. M.J. Murdock Undergraduate Research Conference, Portland, OR. August 2006

Service and Outreach

Undergraduate Research Proposal reviewer, 2016-2017
Role model scientist for “Biology Saves the World” group project, 2017
"BEST TA Training" Facilitator, University of Minnesota, 2018

Honors and Awards

Developmental Biology NIH training fellow. New York University, 2011-2013
Phi Beta Kappa honor society, member, 2007
Sigma Pi Sigma National Physics Honor Society, member, 2004
President's Scholar. Lewis and Clark College, 2003-2007