CURRICULUM VITAE

Yuta Kawarasaki

WORK ADDRESS

Gustavus Adolphus College
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COUNTRY OF CITIZENSHIP

Japan/US Permanent Resident

EDUCATION

Academic Degrees

Ph.D. in Zoology, Miami University, Oxford, OH 2013
Dissertation: *Tolerance and physiological response to subzero temperatures in the Antarctic midge,* Belgica antarctica: *to freeze or not to freeze*
(Advisor: Richard E. Lee, Jr.)

B.A. in Biology, Ottawa University, Ottawa, KS 2007

PROFESSIONAL POSITIONS

Associate Professor, Gustavus Adolphus College, Saint Peter, MN	2020 – present
Assistant Professor, Gustavus Adolphus College, Saint Peter, MN	2014 – 2020
Visiting Assistant Professor, Gustavus Adolphus College, Saint Peter, MN	2013 – 2014
Teaching Assistant, Miami University, Oxford, OH	2012 – 2013
Research Assistant, Miami University, Oxford, OH	2010 – 2012
Teaching Assistant, Miami University, Oxford, OH	2008 – 2010
Research Assistant, Miami University, Oxford, OH	2007 – 2008

GRANTS AND AWARDS

Presidential Faculty/Student Collaboration Grant with Amelia Wernsing (’23) 2022
NSF Research Opportunity Award with Nicholas Teets, University of Kentucky ($41,000) 2021-2022
Curriculum Development and Revitalization grant with members of the Biology Department for work on de-colonizing the department core curriculum 2021
Mansergh Faculty Scientific Research Award 2020
Kendall Center Individual Teaching and Learning Mini-Grant ($1,500) 2019
Competitive Travel grant ($1,000) 2019
Short-term consultation grant from Midstates Consortium for Math and Science ($1,500) 2018
Presidential Faculty/Student Collaboration Grant with Rachel Strandmark (’18) and Alyssa Welle (’19) 2016
Kendall Center Individual Teaching and Learning Mini-Grant ($1,500) 2015
Nominated for the British Ecological Society’s Haldane Prize 2014
Congressional Antarctic Service Medal awarded by National Science Foundation (NSF) for work and participation in the U.S. Antarctic Program 2013
Department of Zoology Doctoral Student Research Award 2012
Graduate Achievement Awards by Miami University 2009, 2011

DUOS (Doctoral Undergraduate Opportunity Scholarship) grant by Miami University with Nicholas Levis 2010
Best Poster Presentation Award at the Miami University Graduate Research Forum 2009
Best Poster Presentation Award at the 3rd International Symposium of Environmental Physiology of Ectotherms and Plants (ISEPEP3) in Tsukuba, Japan 2009
Outstanding Senior Biology Student Award at Ottawa University 2007
Outstanding Chemistry Student Award by University of Kansas Section of American Chemical Society 2006
Freshman Chemistry Achievement Award at Ottawa University 2005

TEACHING EXPERIENCE

Courses taught at Gustavus Adolphus College

Principles of Biology (First-semester biology course for major students; Lecture and Lab)
Organismal Biology (Second-semester biology course for major students; Lecture and Lab)
Cell and Molecular Biology (Third-semester biology course for major students; Lab)
Evolution, Ecology, and Behavior (Fourth-semester biology course for major students; Lab)
Comparative Physiology (For upper-level major students; Lecture and Lab)
Comparative Anatomy of Vertebrates (For upper-level major students; Lecture and Lab)
Directed Research in Environmental Physiology of Stress Tolerance (Lecture and Lab)
Animals in Extreme Environments: Physiological and Ecological Adaptations to Challenging Environments (An experiential course for the January term)
First-term seminar titled *What Humans Cannot Do*

Courses taught at Miami University

Human Physiology (For non-major students; Lecture and Lab)

2012

General Entomology (For upper-level major students; Lab)

Animal Physiology (For upper-level major students; Lab)

RESEARCH INTERESTS

Environmental and Comparative Physiology
Cryobiology
Entomology
Winter Ecology

MENTORED UNDERGRADUATE RESEARCH

Students mentored at Miami University

Vince Mandas 2009
Investigated the expression pattern of genes for LEA proteins in a freeze-tolerant larvae of goldenrod gall fly, *Eurosta solidgainis*. PCR techniques with degenerate primers were used to investigate the presence of mRNA for LEA proteins and sequencing techniques were applied to establish its identify.

Nicholas Levis 2010 – 2011

Examined the effects of the cell volume change in a freeze-tolerant insect, *Eurosta solidaginis.* Experiments were designed at both organismal and cellular levels to investigate the relationship between the stresses of dehydration and freezing. In addition to guiding his laboratory work, I assisted Nick in writing a successful proposal for a highly competitive DUOS (Doctoral Undergraduate Opportunity Scholarship) grant by Miami University.

Students mentored at Gustavus Adolphus College

Anna Meier 2015

Compared the effects of slow *versus* rapid exposures to low temperatures on the metabolic acitivities in pupae and adults of flesh fly, *Sarcophaga bullata*. Organismal oxygen consumption rates were measured using the modified-syringe method.

Lindsey Taylor 2015

Examined the effects of temperatures on the metabolic rates of Madagascar hissing cockroaches. We developed a laboratory activity for BIO101, which has been implemented since Fall 2017.

Rachel Strandmark 2015 – 2016

Examining the process of diapause development in the Minnesota population of *Eurosta solidaginis*. We will compare the population differences in the timing of diapause development between Minnesota vs. Texas populations.

Savannah Maynard 2016

Characterizing the effect of cold exposures on the process of oogenesis in *Drosophila melanogaster*. We ultimately aim to determine whether rapid cold-hardening confers the protection for oogenesis and fecundity.

Alyssa Welle 2016 – 2019

Investigating the time-course changes in the rate of oxygen consumption during the induction of rapid cold-hardening process in *Sarcophaga bullta.* She orally presented results of her summer work as a FYRE student at Midstates Consortium for Math and Science's Undergraduate Research Symposium at University of Chicago in November 2016. In 2018-19, she completed her Honors Thesis project that examined the effect of the induction of rapid cold-hardening on the mitochondrial properties in *S. bullata.*

Amelia Wernsing 2020 – present

Characterizing the effects of rapid cold-hardening on the chill coma tolerance in *Drosophila melanogaster.*

Alyssa Hedge and Kaylee Olson Spring 2022

Characterizing the effects of desiccation in inducing rapid cold-hardening in *Drosophila melanogaster.* Project was completed as a part of Directed Research course experience in Spring 2022.

Olivia Panning and Geena Zebrasky Spring 2022

Examining the effect of multiple exposures to ecologically-relevant thermoperiodic cycles in inducing rapid cold-hardening in *Drosophila melanogaster.* Project was completed as a part of Directed Research course experience in Spring 2022.

Trang Phan and Amelia Wernsing Spring 2022

Evaluating the effects of rapid cold-hardening in mitigating the negative impacts of cold in reproductive success of *Drosophila melanogaster.* Project was completed as a part of Directed Research course experience in Spring 2022.

PROFESSIONAL PUBLICATIONS

Devlin, J.J., L. Unfried, M. Lecheta, E. McCabe, J.D. Gantz, **Y. Kawarasaki**, M.A. Elnitsky, S. Hotaling, A.P. Michel, P. Convey, S.A.L. Hayward, and N.M. Teets (accepted for publication) Simulated winter warming negatively impacts survival of Antarctica's only endemic insect. *Functional Ecology.*

Potts, L. J., J.D. Gantz, **Y. Kawarasaki**, B. N. Philip, D. J. Gonthier, J. M. Unrine, R. L. McCulley, R. E. Lee, D. L. Denlinger and N. M. Teets (2020) Environmental factors influencing fine-scale distribution of Antarctica's only endemic insect. *Oecologia.* 194: 529-539.

Teets, N. M., J. D. Gantz and **Y. Kawarasaki** (2020) Rapid cold hardening: ecological relevance, physiological mechanisms and new perspectives. *Journal of Experimental Biology.* 223: jeb203448.

Kawarasaki, Y., A. M. Welle and M. A. Elnitsky (2020) Is rapid cold-hardening an aerobic process? Characterization of changes in metabolic activity during its induction and effects of anoxia in flesh fly. *Journal of Insect Physiology.* 120: 103996.

Teets, N. M., **Y. Kawarasaki,** L. J. Potts, B. N. Philip, J. D. Gantz, D. L. Denlinger and R. E. Lee D. L. Denlinger and R. E. Lee (2019) Rapid cold hardening protects against sublethal freezing injury in an Antarctic insect. *Journal of Experimental Biology.* 222: jeb206011.

Kawarasaki, Y., N. M. Teets, B. N. Philip, L. J. Potts, J. D. Gantz, D. L. Denlinger and R. E. Lee (2019) Characterization of drought-induced rapid cold-hardening in the Antarctic midge, *Belgica antarctica. Polar Biology.* 42: 1147-1156.

Kawarasaki, Y. N. M. Teets, D. L. Denlinger and R. E. Lee (2014) Alternative overwintering strategies in an Antarctic midge: freezing *versus* cryoprotective dehydration. *Functional Ecology.* 28: 933-943.

Kawarasaki, Y., N. M. Teets, D. L. Denlinger and R. E. Lee (2014) Wet hibernacula promote inoculative freezing and limit the potential for cryoprotective dehydration in the Antarctic midge, *Belgica antarctica. Polar Biology.* 37: 753-761.

Kawarasaki, Y., N. M. Teets, D. L. Denlinger and R. E. Lee (2013) The protective effect of rapid cold-hardening develops more quickly in frozen *versus* supercooled larvae of the Antarctic midge, *Belgica antarctica*. *Journal of Experimental Biology.* 216: 3937-3945.

D'souza, N. A., **Y. Kawarasaki,** J. D. Gantz, R. E. Lee, B. F. N. Beall, Y. M. Shtarkman, Z. A. Koçer, S. O. Rogers, H. Wildschutte, G. S. Bullerjahn and R. M. L. McKay (2013) Diatom assemblages promote ice formation in large lakes. *The ISME Journal.* 7: 1632-1640.

Teets, N. M., **Y. Kawarasaki,** R. E. Lee and D. L. Denlinger (2013) Expression of genes involved in energy mobilization and osmoprotectant synthesis during thermal and desiccation stress in the Antarctic midge, *Belgica antarctica. Journal of Comparative Physiology B.* 183: 189-201.

Teets, N. M., J. T. Payton, H. Colinet, D. Renault, J. L. Kelley, **Y. Kawarasaki,** R. E. Lee and D. L. Denlinger (2012) Gene expression changes governing extreme dehydration tolerance in an Antarctic insect. *Proceedings of National Academy of Science.* 109: 20744-20749.

Teets, N. M., **Y. Kawarasaki**, R. E. Lee and D. L. Denlinger. (2012) Energetic consequences of repeated and prolonged dehydration in the Antarctic midge, *Belgica antarctica*. *Journal of Insect Physiology.* 58: 498-505.

Goto, S. G., B. N. Philip, N. M. Teets, **Y. Kawarasaki**, R. E. Lee and D. L. Denlinger. (2011) Functional characterization of an aquaporin in the Antarctic midge *Belgica antarctica*. *Journal of Insect Physiology.* 57:1106-1114.

Teets, N. M., **Y. Kawarasaki**, R. E. Lee and D. L. Denlinger. (2011) Survival and energetic costs of repeated cold exposure in the Antarctic midge, *Belgica antarctica*: A comparison between frozen and supercooled larvae. *Journal of Experimental Biology.* 214: 806-814.

Schussler, E. E., F. E. Rowland, C. A. Distel, J. M. Bauman, M. L. Keppler, **Y. Kawarasaki**, M. R. McCarthy, A. Glover and H. Salem. (2011) Promoting the Development of Graduate Student Teaching Philosophy Statements. *Journal of College Science Teaching.* 40: 32-35.

Steinwald, M., **Y. Kawarasaki**, J. Constible, R. E. Lee and A. J. Bailer. (2010) Picturing polar science: Using Gigapan to connect classrooms to Antarctic cryobiologists. *Proceedings of the Fine International Conference on Gigapixel Imaging for Science.* November 2010.

Bradford, S., **Y. Kawarasaki** and J. A. Cowan. (2009) Copper-Lys-Gly-His-Lys mediated cleavage of $tRNA^{Phe}$: Studies of reaction mechanism and cleavage specificity. *Journal of Inorganic Biochemistry*. 103: 871-875.

PROFESSIONAL PRESENTATIONS

Kawarasaki, Y., N. M. Teets, B.N. Philip, L.J. Potts, J.D. Gantz, D. L. Denlinger and R. E. Lee (2019) Characterization of drought-induced rapid cold-hardening in the Antarctic midge, *Belgica antarctica.* Society for Integrative and Comparative Biology Annual Meeting, Tampa, FL.

Kawarasaki, Y. (2017) Survival and physiological responses to subzero temperatures; Rapid cold-hardening response in insect. Invited seminar. Minnesota State University, Mankato Biology seminar series. Mankato, MN.

Kawarasaki, Y., A. M. Welle and M. A. Elnitsky. (2017) Oxygen consumption during the induction of rapid cold-hardening in isolated muscle of flesh fly, *Sarcophaga bullata*. Society for Integrative and Comparative Biology Annual Meeting, New Orleans, LA.

Kawarasaki, Y., N. M. Teets, A. Kobelkova, D. L. Denlinger and R.E. Lee. (2012) Acclimatory responses of the Antarctic midge, *Belgica antarctica*: Effects of cellular dehydration. Society for Integrative and Comparative Biology Annual Meeting, Charleston, SC.

Kawarasaki, Y., S.-X. Yi and R. E. Lee. (2009) Rapid cold-hardening protects against cold-induced apoptosis: Overview. Entomological Society of America Annual Meeting in Indianapolis, IN.

Kawarasaki, Y., S.-X. Yi and R. E. Lee. (2009) Rapid cold-hardening protects against cold-induced apoptosis: Overview. 3rd International Symposium of Environmental Physiology of Ectotherms and Plants (ISEPEP3) in Tsukuba, Japan.

Kawarasaki, Y., S.-X. Yi and R. E. Lee. (2009) Rapid cold-hardening protects against cold-induced apoptosis: Role of Bcl-2 protein. Society for Integrative and Comparative Biology Annual Meeting, Boston, MA.

PROFESSIONAL AFFILIATIONS

Entomological Society of America
International Society for Environmental Physiology of Ectotherms and Plants (ISEPEP)
Sigma Xi

Society for Integrative and Comparative Biology

PROFESSIONAL SERVICE

Served as an expert reviewer for;

Biological Journal of the Linnean Society
BMC Ecology
CryoLetters
Elsevier Publishing
Environmental Entomology
Insect Molecular Biology
Journal of Experimental Biology
Journal of Insect Physiology
Northeastern Naturalist
Polar Biology
Scientific Reports
Thermal Biology

INSTITUTIONAL SERVICE

College-wide

Institutional Animal Care and Use Committee	2014 – 2020; 2021 – present
Chair	2019 – 2020; 2021 – 2022
Academic Operations Committee (At-Large position)	2017 – 2020
Co-chair	2018 –2019, 2019 – 2020
Faculty Emergency Planning Committee	Spring 2020
Formed in response to COVID-19 pandemic, and served it as a co-chair of the Academic Operations Committee	
Committee for the Assessment of Student Learning (CASL)	Dissolved upon election in 2017
Assistant Faculty Marshall	2016 – 2019
Academic Operations Committee (At-Large position)	2016 – 2017
Treasurer for the Gustavus Sigma Xi chapter	2016 – 2018
Program Assessment Liaison for the Department of Biology	2015 – 2020
Lecture Series Committee	2015 – 2017
Institutional Student Learning Outcomes Working Group (Ethical Reflection)	2015 – 2017

Biology Department

Biology faculty search committee for tenure-track positions	2014, 2015, 2019
BMB program faculty search committee for a tenure-track position	2020
Biology expert associated with the life science teaching program	2021 – present
Biology Department Petition Committee	2019 – present
Program Assessment Liaison for the Department of Biology	2015 – 2020
Served as a faculty chaperon for students' trip to the Undergraduate Research Symposium hosted by Midstates Consortium for Math and Science	2014
Have written letters of recommendation to support Gustavus students	2013 – present

PEDAGOGICAL TRAINING

Workshops

Teaching Case Studies in Science Workshop by National Center for Case Study Teaching in Science at University of Buffalo 2015

Computation and Data Visualization Workshop by Computation and Visualization Consortium at Smith College 2015

Workshop for early career faculty: Planning for success by Midstates Consortium for Math and Science 2014

Courses taken

An Introduction to Evidence-Based Undergraduate STEM Teaching 2015
Graduate-level, Massive Open Online Course (MOOC) prepared by educators and researchers affiliated with the Center for the Integration of Research, Teaching, and Learning (CIRTL). This online course was aimed to provide the information about various pedagogical strategies, as well as the educational research that had provided corroborating evidence for them.

Learning Theories in Chemistry (3 credits; Miami University) 2011
Discussed learning theories included constructivism, meaningful learning, and metacognition, among others. In addition to enhancing the understanding of how these learning theories affect students' performance in the classroom, effective pedagogical implementations of these theories into practice were discussed.

Seminar in Chemistry Education: Concept inventories (1 credit; Miami University) 2011
Discussion of primary literatures about the development of various concept inventories. In addition to the validity of developments of those inventories, pedagogical techniques associated with the use of these inventories were discussed.

Seminar in Chemistry Education: Multiple representations (1 credit; Miami University) 2010
Discussion of literatures analyzing the use of various visualizations and representations (i.e. figures and drawings) in science learning and teaching. Topics ranged from research methodologies in studying issues associated with multiple representations to the effective approaches in fostering students' ability to intellectually move among different visualizations.

Graduate Student Teaching Enhancement Program (1 credit; Miami University) 2009
A semester-long seminar series hosted by the Center for the Enhancement of Learning and Teaching at Miami University. Each seminar focused on various pedagogical techniques, including the creation of inclusive classrooms, the use of small-group discussions, various roles of a teacher in a classroom, and assessment techniques.

Biological Science Education (3 credits: *Audited* at Miami University) 2008
Participated in all class discussions, presentations, and activities about various topics related to teaching biology in today's classroom at the college level. Some of the class periods were devoted to discussions about obstacles in effective teaching, the use of inquiry-based learning, and how to improve students' writing skills in science. Discussion in this class resulted in a publication in a peer-reviewed journal in science education (Schussler et al., 2011).

Teaching Conferences

International Lily Conference on College Teaching 2009, 2010
Annual conference hosted by Miami University. Attended various seminars presenting teaching practices by experienced educators. Topics of those seminars included the

development and use of a unique writing assignment by Dr. Susan Lawler of the La Trobe University in Australia, in which she asks her biology students to write a letter to the 19-th century biologist, T.H. Huxley. Since Huxley did not have any knowledge of the molecular basis of biology, students are challenged to describe complex concepts using non-technical terms.