Curriculum Vitae

Nicholas M. Teets
Associate Professor
Department of Entomology
University of Kentucky, Lexington, KY 40546
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EDUCATION:

2012 PhD in Entomology, Ohio State University, Columbus, OH
Advisor: Professor David L. Denlinger
Dissertation title: Cellular and Molecular Mechanisms of Environmental Stress Tolerance in Insects

2007 B.S. in Zoology, Minor in Mathematics, Miami University, Oxford, OH
Summa Cum Laude, Honors with Distinction
Advisor: Professor Richard E. Lee, Jr.
Thesis title: In vivo and *in vitro* rapid cold-hardening in the Antarctic midge, *Belgica antarctica:* Evidence of a role for calcium

EXPERIENCE:

2021-present	Associate Professor, Department of Entomology, University of Kentucky
2016-2021	Assistant Professor, Department of Entomology, University of Kentucky
2013-2016	Postdoctoral Associate, Department of Entomology and Nematology, University of Florida, Advisor: Dr. Daniel A. Hahn
2012-2013	Postdoctoral Researcher, Department of Evolution, Ecology, and Organismal Biology, Ohio State University, Advisor: Dr. David L. Denlinger
2007-2012	Graduate Research Fellow, Ohio State University, Advisor: Dr. David L. Denlinger
2005-2007	Honors Research, Miami University Laboratory for Ecophysiological Cryobiology, Advisor: Dr. Richard E. Lee
2003-2004	Undergraduate Research Assistant, Miami University Department of Zoology, Advisor: Dr. Sheldon Guttman

TEACHING:

2016-present	Instructor, Department of Entomology, University of Kentucky. Courses taught: Integrative Organismal Entomology, Insect Climate Change Biology, Honors Course in Climate Change, Online Insect Biology, Molecular Genetics
2014	Instructor, Molecular Biology Techniques Course, Department of Entomology and Nematology, University of Florida
2010,2012	Instructor, PAST Foundation Summer Entomology Course (2010: Ohio State University, 2012: Kelley's Island Field School)1.
2009,2011	Lab Instructor, Graduate Level Insect Physiology, Department of Entomology, Ohio State University

2004-2007 Supplemental Instructor, Department of Chemistry, Miami University
2004-2007 Peer-Led Team Learning Workshop Leader, Department of Chemistry, Miami University

GRANTS and FELLOWSHIPS

2024-2027 Nunez, J.C.B., **Teets, N.M.,** Lotterhos, K.E., **Project Title:** Collaborative Research: ORCC: Climate change responses in a globally invasive insect: Quantifying the roles of local adaptation, seasonal adaptation, and phenotypic plasticity. NSF Organismal Responses to Climate Change Program. $1,390,732. Teets Portion: $360,663. Role: PI.

2024-2026 **Teets, N.M.,** Kopechek, J., Palli, S.R. **Project Title:** Sonoporation-Mediated Delivery of Reagents into Insect Embryos. NSF IUCRC Center for Arthropod Management Technologies. $178,200. Role: PI.

2023-2024 **Teets, N.M. Project Title:** Acquisition of a Walk-in Growth Chamber for High Quality Insect Rearing Space. University of Kentucky Vice President of Research Equipment Competition. $121,750. Role: PI

2023-2024 **Teets, N.M.,** Kopechek, J., Palli, S.R. **Project Title:** Sonoporation-Mediated Delivery of Nucleic Acids in Southern Green Stink Bug Embryo. NSF IUCRC Center for Arthropod Management Technologies. $39,500. Role: PI.

2022-2025 **Teets, N.M.,** Palli, S.R. **Project Title:** Genotype by Environment Interactions Influencing the Efficacy of Insecticidal RNAi. USDA NIFA Biotechnology Risk Assessment Research Grants Program. $481,057. Role: PI.

2021-2024 **Teets, N.M.,** Downie, A.B., Menze, M.A., Kopechek, J. **Project Title:** Development of Long-Term Preservation and Revival Protocols for *Drosophila.* NIH Office of the Director. $415,790. Teets Portion: $335,656. Role: PI.

2019-2024 **Teets, N.M.,** Michel, A.P, Hayward, S.A.L., Convey, P. **Project Title:** NSFGEO-NERC: Mechanisms of Adaptation to Terrestrial Antarctica through Comparative Physiology and Genomics of Antarctic and sub-Antarctic Insects. NSF Office of Polar Programs. $923,840. Teets Portion: $594,723. Role: PI.

2018-2023 Cahan, S.I., Axen, H.J., Frietze, S.E., **Teets, N.M.**, Waters, J.S. **Project Title:** RII Track-2 FEC: From Genome to Phenome in a Stressful World: Epigenetic Regulatory Mechanisms Mediating Thermal Plasticity in *Drosophila*. NSF Office of Integrative Activities. $4,771,722. Teets Portion: $879,118. Role: Co-PI.

2018-2020 **Teets, N.M. Project Title:** Molecular Mechanisms of Diapause in the Corn Rootworm Complex. NSF IUCRC Center for Arthropod Management Technology. $157,500. Role: PI.

2017-2022 **Teets, N. M**. **Project Title:** Impact of Genotype and Environmental Variables on Transgene Effectiveness for Conditional Lethality Systems in Insects. USDA NIFA Biotechnology Risk Assessment Research Grants Program. $500,000**.** Role: PI.

2016 Obrycki, J.J., **Teets, N.M**. **Project Title:** Transcriptional Regulation of Diapause in Convergent Lady Beetles. College of Agriculture, Food and Environment Research Activity Award. $5,000. Role: co-PI.

2016-2018 **Teets, N.M**. **Project Title:** Calcium-dependent Signaling Mechanisms Governing Rapid Cold Hardening in Insects. Kentucky Science and Engineering Foundation Research and Development Excellence Program. $30,000. Role: PI.

2015-2018 **Teets, N.M**. **Project Title:** Improving the Efficacy of Sterile Insect Technique by Enhancing Male Performance with Targeted Overexpression of Antioxidant Defense Systems. NIFA-AFRI Education and Workforce Development. $149,998. Role: PI.

2007,2012 Distinguished University Fellowship, Ohio State University ($36,000 + tuition)

2007-2011 College of Biological **Sciences** Dean's Fellowship, Ohio State University ($84,000 + tuition)

GRANTS AND FELLOWSHIPS FOR ADVISEES

2023-2026 McCabe, E.A. Facilitative and Competitive Interactions Between Two Invasive Pests, *Drosophila suzukii* and *Zaprionus indianus,* NIFA-AFRI Education and Workforce Development. $180,000. Role: Primary Mentor.

2022-2023 Devlin, J.J. Investigating Microplastic Contamination Within Antarctica's Only Endemic Insect. Antarctic Science Bursary. $9,800. Role: Project Mentor.

2018-2020 Garcia, M.J., **Teets, N.M. Project Title:** *Drosophila suzukii* Population Collection: A Tool for Integrating Evolutionary Principles into Pest Management. NIFA-AFRI Education and Workforce Development. $165,000. Role: Primary Mentor.

2018-2020 Potts, L.J., **Teets, N.M. Project Title:** Winter Warming Effects on Spiders as Biological Control Agents. NIFA-AFRI Education and Workforce Development. $95,000**.** Role: Primary Mentor.

PUBLICATIONS:

55. Teets, N.M., MacMillan, H.A. 2024. Editorial Overview: Insect cold tolerance research reaches a Swift new Era. *Current Opinion in Insect Science,* in press.

54. Bruce, T., Buscher, T., Cissold, F., Teets, N.M., Wybouw, N. 2024. How Insects Work – Linking Genotype to Phenotype. *Physiological Entomology,* in press.

53. Piermarini, P.M. Teets, N.M. 2024. Rising stars in insect physiology. *Frontiers in Insect Science* 4, 1483760. https://doi.org/10.3389/finsc.2024.1483760

52. Chen, J., Liu, X., Guo, P., Teets, N.M., Zhou, J.C., Chen, W., Luo, Q., Kanjana, N., Li, Y., Zhang, L. 2023. Regulation of forkhead box O transcription factor by insulin signaling pathway controls the reproductive diapause of the lady beetle, *Coccinella septempunctata. International Journal of Biological Macromolecules,* https://doi.org/10.1016/j.ijbiomac.2023.128104.

51. *Perez-Galvez, F.R., #Zhou, S., +Wilson, A.C., +Cornwell, C.L., ^Awde, D.N., Teets, N.M. 2023. Scoring thermal limits in small insects using open-source, computer-assisted

motion detection. *Journal of Experimental Biology* 226, jeb246548. https://doi.org/10.1242/jeb.246548

50. *McCabe, E., *Unfried, L.N., Teets, N.M. 2023. Survival and nutritional requirements for overwintering *Drosophila suzukii* (Diptera: Drosophilidae) in Kentucky. *Environmental Entomology,* nvad094. https://doi.org/10.1093/ee/nvad094.

49. *AL-Bakri, A., *AL-Amery, M., Su, K., Geneve, R., Crocker, M., Teets, N.M., Armstrong, P., Kachroo, P., Hildebrand, D. 2023. Development of a rapid and simple protocol for oil quantification of small (mg) mass oil seed samples. *Biocatalysis and Agricultural Biotechnology* 50, 102715. https://doi.org/10.1016/j.bcab.2023.102715

48. ^Enriquez, T., Teets, N.M. 2023. Lipid metabolism in response to cold. *EcoEvoRxiv,* https://doi.org/10.32942/X2VS3F.

47. Teets, N.M., Marshall, K.E., Reynolds, J.A. 2023. Molecular mechanisms of winter survival. *Annual Review of Entomology* 68, 319-339. doi.org/10.1146/annurev-ento-120120-095233

46. *Devlin, J.J., *Unfried, L.N, ^Lecheta, M.C., *McCabe, E.A., Gantz, J.D., Kawarasaki, Y., Elnitsky, M.A., ^Hotaling, S., Michel, A.P., Convey, P., Hayward, S.A.L., Teets, N.M. Simulated winter warming negatively impacts survival of Antarctica's only endemic insect. *Functional Ecology* 36, 1949-1960. doi.org/10.1111/1365-2435.14089

45. *Nadeau, E.A.W., ^Lecheta, M.C., Obrycki, J.J., Teets, N.M. 2022. Transcriptional regulation of diapause in the convergent lady beetle, *Hippodamia convergens. Insects* 13, 343. doi.org/10.3390/insects13040343

44. ^Dias, V.S., Caceres, A.G., Parker, A.G., Pereira, R., Demirbas-Uzel, G., Abd-Alla, A.M.M., Teets, N.M., Schetelig, M.F., Handler, A.M., Hahn, D.A. 2021. Mitochondrial superoxide dismutase overexpression and low oxygen conditioning hormesis improve the performance of irradiated sterile males. *Scientific Reports* 11, 1-15. doi.org/10.1038/s41598-021-99594-1

43. *Spacht, D.E., Gantz, J.D., *Devlin, J.J., *McCabe, E.A., Lee, R.E., Denlinger, D.L. Teets, N.M. 2021. Fine-scale variation in microhabitat conditions influences physiology and metabolism in an Antarctic insect. *Oecologia,* 197, 373-385**.** doi.org/10.1007/s00442-021-05035-1

42. Teets, N.M., Hayward, S.A.L. 2021. Editorial on combatting the cold: Comparative physiology of low temperature and related stressors in arthropods. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 257, 111037. doi.org/10.1016/j.cbpa.2021.111037

41. +Littler, A.S., ^Garcia, M.J., Teets, N.M. 2021. Laboratory diet influences cold tolerance in a genotype-dependent manner in *Drosophila melanogaster. Comparative Biochemistry*

and Physiology Part A: Molecular & Integrative Physiology 257, 110948. doi.org/10.1016/j.cbpa.2021.110948

40. Teets, N.M., Meuti, M.E. 2021. Hello darkness, my old friend: A tutorial of Nanda-Hamner protocols. *Journal of Biological Rhythms* 36, 221-225. doi.org/10.1177/0748730421998469

39. *Potts, L.J., Koštál, V., Simek, P., Teets, N.M. 2020. Energy balance and metabolic changes in an overwintering wolf spider, *Schizocosa stridulans. Journal of Insect Physiology* 126, 104112. doi.org/10.1016/j.jinsphys.2020.104112

38. *Potts, L.J., Gantz, J.D., Kawarasaki, Y., Philip, B.N., Gonthier, D.J., Law, A.D., Moe, K., Unrine, J.M., McCulley, R.L., Lee, R.E. Jr., Denlinger, D.L., Teets, N.M. 2020. Environmental factors influencing fine-scale distribution of Antarctica's only endemic insect. *Oecologia* 194, 529-539**.** doi.org/10.1007/s00442-020-04714-9

37. ^Lecheta, M.C., ^Awde, D.N., *O'Leary, T.S., *Unfried, L.N., +Jacobs, N.A., +Whitlock, M.H., *McCabe, E., *Powers, B., Bora, K., Waters, J.S., Axen, H.J., Frietze, S., Lockwood, B.L., Teets, N.M., Cahan, S.H. 2020. Integrating GWAS and transcriptomics to identify the molecular underpinnings of thermal stress responses in *Drosophila melanogaster. Frontiers in Genetics* 11*,* 658. doi.org/10.3389/fgene.2020.00658

36. ^Garcia, M.J., *Littler, A.S., *Sriram, A., Teets, N.M. 2020. Distinct cold hardiness traits independently vary across genotypes in *Drosophila melanogaster. Evolution* 74, 1437-1450. doi.org/10.1111/evo.14025

35. ^Awde, D.N., #Fowler, T.E., *Galvez-Perez, F., ^Garcia, M.J., Teets, N.M. 2020. High-throughput assays of critical thermal limits in insects. *Journal of Visualized Experiments,* e61186. doi:10.3791/61186

34. *Potts, L.J., ^Garcia, M.J., Teets, N.M. 2020. Chilling in the cold: Using thermal acclimation to demonstrate phenotypic plasticity in animals. *CourseSource.* doi.org/10.24918/cs.2020.21

33. Teets, N.M., Gantz, J.D., Kawarasaki, Y. 2020. Rapid cold hardening: Ecological relevance, physiological mechanisms and new perspectives. *Journal of Experimental Biology* 223, jeb203448. doi:10.1242/jeb.203448

32. *Nadeau, E.A.W., Teets, N.M. 2020. Evidence for a rapid cold hardening response in cultured *Drosophila* S2 cells. *Journal of Experimental Biology* 223**,** jeb212613. doi:10.1242/jeb.212613

31. Teets, N.M., +Dalrymple, E.G., #Hillis, M.H., Gantz, J.D., *Spacht, D.E., Lee, R.E. Jr., Denlinger, D.L. 2020. Changes in energy reserves and gene expression elicited by freezing and supercooling in the Antarctic midge, *Belgica antarctica. Insects* 11**,** 18.

doi.org/10.3390/insects11010018

30. *Mercer, N.H., Teets, N.M., Bessin, R.T., Obrycki, J.J. 2020. Supplemental foods affect energetic reserves, survival, and spring reproduction in overwintering adult *Hippodamia convergens* (Coleoptera: Coccinellidae). *Environmental Entomology* 49, 1-9. doi.org/10.1093/ee/nvz137

29. *Gantz, J.D., Philip, B.N., Teets, N.M., Kawarasaki, Y., *Potts, L.J., Spacht, D.E., Benoit, J.B., Denlinger, D.L., Lee, R.E. Jr. 2020. Brief exposure to a diverse range of environmental stress enhances stress tolerance in the polyextremophile Antarctic midge, *Belgica antarctica. BioRxiv,* published online. doi.org.10.1101/2020.01.01.887414

28. *AL-Amery, M., Downie, B., DeBolt, D., Crocker, M., Urschel, K., Goof, B., Teets, N.M., *Gollihue, J., Hildebrand, D. 2019. Proximate composition of enhanced DGAT high oil, high protein soybeans. *Biocatalysis and Agricultural Biotechnology*, 21, 101303. doi.org/10.1016/j.bcab.2019.101303

27. Teets, N.M., Kawarasaki, Y., *Potts, L.J., Philip, B.N., *Gantz, J.D., Denlinger, D.L., Lee, R.E. 2019. Rapid cold hardening protects against sublethal freezing injury in an Antarctic insect. *Journal of Experimental Biology,* 222, jeb206011. doi:10.1242/jeb.206011

26. Teets, N.M., *Dias, V.S., +Pierce, B.K., Schetelig, M.F., Handler, A.M., Hahn, D.A. 2019. Overexpression of an antioxidant enzyme improves male mating performance after stress in a lek-mating fruit fly. *Proceedings of the Royal Society B,* 286, 20190531. doi.org/10.1098/rspb.2019.0531

25. Kawarasaki, Y., Teets, N.M., Philip, B.N., *Potts, L.J., *Gantz, J.D., Denlinger, D.L., Lee, R.E. 2019. Characterization of drought-induced rapid cold-hardening in the Antarctic midge, *Belgica antarctica. Polar Biology,* 42, 1147-1156. doi.org/10.1007/s00300-019-02503-6

24. ^Garcia, M.J., Teets, N.M. 2019. Cold stress results in sustained locomotor and behavioral deficits in *Drosophila melanogaster*. *Journal of Experimental Zoology Part A,* 331, 192-200, doi.org/10.1002/jez.2253

23. *Spacht, D.E., Teets, N.M., Denlinger, D.L. 2018. Two isoforms of Pepck in *Sarcophaga bullata* and their distinct expression profiles through development, diapause, and in response to stresses of cold and starvation. *Journal of Insect Physiology,* 111, 41-46, doi.org/10.1016/j.jinsphys.2018.10.008

22. *Halbritter, D.A., Teets, N.M., Williams, C.M., Daniels, J.C. 2018. Differences in winter cold hardiness reflect the geographic range disjunction of *Neophasia menapia* and *Neophasia terlooii* (Lepidoptera: Pieridae). *Journal of Insect Physiology,* 107, 204-211. doi.org/10.1016/j.jinsphys.2018.03.005

21. Teets, N.M., Hahn, D.A. 2018. Genetic variation in the shape of cold survival curves in a single fly population suggests potential for selection from climate variability. *Journal of Evolutionary Biology,* 31, 543-555. doi.org/10.1111/jeb.13244

20. Teets, N.M., and Denlinger, D.L. 2016. Quantitative phosphoproteomics reveals signaling mechanisms associated with rapid cold hardening in a chill-tolerant fly. *Journal of Proteome Research,* 15**,** 2855-2862. doi.org/10.1021/acs.jproteome.6b00427

19. +Dean, C.A.E,, Teets, N.M., Kostal, V., Simek, P., Denlinger, D.L. 2016. Enhanced stress responses and metabolic adjustments linked to diapause and onset of migration in the large milkweed bug, *Oncopeltus fasciatus. Physiological Entomology,* 41**,** 152-161. doi.org/10.1111/phen.12140

18. Terhzaz, S., Teets, N.M., Cabrero, P., Henderson, L., Ritchie, M.G., Nachman, R.J., Dow, J.A.T., Denlinger, D.L., Davies, S.A. 2015. Insect capa neuropeptides impact desiccation and cold tolerance. *Proceedings of the National Academy of Sciences U.S.A.,* 112, 2882-2887. doi.org/10.1073/pnas.1501518112

17. Kelley, J. L., Peyton, J. T., Fiston-Lavier, A.-S., Teets, N. M., Yee, M. C., Johnston, J. S., Bustamante, C. D., Lee, R. E. and Denlinger, D. L. 2014. Compact genome of the Antarctic midge is likely an adaptation to an extreme environment. *Nature Communications* 5, 4611. doi.org/10.1038/ncomms5611

16. Kawarasaki, Y., Teets, N. M., Denlinger, D. L. and Lee, R. E. 2014. Alternative overwintering strategies in an Antarctic midge: freezing versus cryoprotective dehydration. *Functional Ecology* 28, 933-943. doi.org/10.1111/1365-2435.12229

15. Kawarasaki, Y., Teets, N. M., Denlinger, D. L. and Lee, R. E. 2014. Wet hibernacula promote inoculative freezing and limit the potential for cryoprotective dehydration in the Antarctic midge, *Belgica antarctica. Polar Biology* 37, 753-761. doi.org/10.1007/s00300-014-1475-0

14. Teets, N. M. and Denlinger, D. L. 2014. Surviving in a frozen desert: Environmental stress physiology of terrestrial Antarctic arthropods. *Journal of Experimental Biology* 217, 84-93. doi: 10.1242/jeb.089490

13. Kawarasaki, Y., Teets, N. M., Denlinger, D. L. and Lee, R. E. 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. doi: 10.1242/jeb.089490

12. Teets, N. M. and Denlinger, D. L. 2013. Physiological mechanisms of seasonal and rapid cold-hardening in insects. *Physiological Entomology* 38, 105-116. doi.org/10.1111/phen.12019

11. Teets, N. M., Yi, S. X., Lee, R. E. and Denlinger, D. L. 2013. Calcium signaling

mediates cold sensing in insect tissues. *Proceedings of the National Academy of Sciences U.S.A.* 110, 9154-9159. doi.org/10.1073/pnas.1306705110

10. Teets, N. M. and Denlinger, D. L. 2013. Autophagy in Antarctica: Combating dehydration stress in the world's southernmost insect. *Autophagy* 9, 629-631. doi.org/10.4161/auto.23643

9. Teets, N. M., Kawarasaki, Y., Lee, R. E. and Denlinger, D. L. 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. doi.org/10.1007/s00360-012-0707-2

8. Teets, N. M., Peyton, J. T., Colinet, H., Renault, D., Kelley, J. L., Kawarasaki, Y., Lee, R. E. and Denlinger, D. L. 2012. Gene expression changes governing extreme dehydration tolerance in an Antarctic insect. *Proceedings of the National Academy of Sciences U.S.A.* 109, 20744-20749. doi.org/10.1073/pnas.1218661109

7. Teets, N. M., Peyton, J. T., Ragland, G. J., Colinet, H., Renault, D., Hahn, D. A. and Denlinger, D. L. 2012. Combined transcriptomic and metabolomic approach uncovers molecular mechanisms of cold tolerance in a temperate flesh fly. *Physiological Genomics* 44, 764-777. doi.org/10.1152/physiolgenomics.00042.2012

6. Teets, N. M., Kawarasaki, Y., Lee, R. E. and Denlinger, D. L. 2012. Energetic consequences of repeated and prolonged dehydration in the Antarctic midge, *Belgica antarctica*. *Journal of Insect Physiology* 58, 498-505. doi.org/10.1016/j.jinsphys.2011.11.011

5. Goto, S. G., Philip, B. N., Teets, N. M., Kawarasaki, Y., Lee, R. E. and Denlinger, D. L. 2011. Functional characterization of an aquaporin in the Antarctic midge *Belgica antarctica*. *Journal of Insect Physiology* 57, 1106-1114. doi.org/10.1016/j.jinsphys.2011.03.023

4. Teets, N. M., Kawarasaki, Y., Lee, R. E. and Denlinger, D. L. 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. doi: 10.1242/jeb.051912

3. Michaud, M. R., Teets, N. M., Peyton, J. T., Blobner, B. M. and Denlinger, D. L. 2011. Heat shock response to hypoxia and its attenuation during recovery in the flesh fly, *Sarcophaga crassipalpis*. *Journal of Insect Physiology* 57, 203-210. doi.org/10.1016/j.jinsphys.2010.11.007

2. Benoit, J. B., Lopez-Martinez, G., Teets, N. M., Phillips, S. A. and Denlinger, D. L. 2009. Responses of the bed bug, *Cimex lectularius*, to temperature extremes and dehydration: levels of tolerance, rapid cold hardening and expression of heat shock proteins. *Medical and Veterinary Entomology* 23, 418-425. doi.org/10.1111/j.1365-

2915.2009.00832.x

1. Teets, N. M., Elnitsky, M. A., Benoit, J. B., Lopez-Martinez, G., Denlinger, D. L. and Lee, R. E. 2008. Rapid cold-hardening in larvae of the Antarctic midge *Belgica antarctica*: cellular cold-sensing and a role for calcium. *American Journal of Physiology – Regulatory, Integrative, and Comparative Physiology* 294, R1938-R1946. doi.org/10.1152/ajpregu.00459.2007

ADVISEES

Graduate Student Advising:

1. Leslie Potts, PhD, complete. *Dissertation title:* Physiological ecology of overwintering and cold-adapted terrestrial arthropods. (2016-2020)
    a. **Awards:** USDA Predoctoral Fellowship; UK Women's Club Fellowship
    b. **Current Position:** Ecologist, Beaver Creek Hydrology
2. Emily Nadeau, PhD, complete. *Dissertation topic:* Functional genomics of overwintering adaptations in insects. (2017-2022)
    a. **Awards:** President's Prize for best oral presentation, 2019 Entomological Society of America
3. Fernan Perez, PhD, complete. *Dissertation Topic:* Risk assessment of transgenic insects used for pest control. (2018-2023)
4. Laura Unfried, PhD, in progress. *Dissertation topic:* Genetic mechanisms of thermal tolerance in flies. (2019-present)
5. Ellie McCabe, PhD, in progress. *Dissertation topic:* Seasonal biology of spotted wing drosophila. (2019-present)
6. Jack Devlin, PhD, in progress. *Dissertation topic:* Physiological ecology of Antarctic arthropods. (2020-present)
    a. **Awards:** Travel grant to attend International Symposium on the Environmental Physiology of Ectotherms and Plants; Research grant from Antarctic Sciences Bursary
7. Cleverson Lima, MS, in progress. *Thesis topic:* Comparative physiology of Antarctic and subantarctic midges. (2021-present)
    a. **Awards:** Travel grant to attend International Symposium on the Environmental Physiology of Ectotherms and Plants*;* Travel Grant to attend SCAR Biology Meeting
8. Committee service: I have served on eight graduate advising committees.
9. Outside Examiner: I have served as the outside examiner for seven PhD dissertations, four at UK, one at University of Western Ontario, one at Aalborg University, and one at Georgetown University.

Postdoctoral Scholars Advised:

1. Mark Garcia (2016 to 2020)
    a. **Current Position:** Assistant Professor, Southwestern Oklahoma State University
2. Melise Lecheta (2018 to 2023)

3. Justin Bredlau (2018 to 2020)
    a. **Current Position:** AAAS Science Policy Fellow for USDA
4. David Awde (2019 to 2022)
    a. **Current Position:** Assistant Professor, Mount Saint Vincent University, Halifax, Canada
5. Jason Solocinski (2021-2024)
6. Michael Darrington (2023-present)
7. Muhammad Noor ul Ane (2023-2024)
8. Georgia Cullen (2024-present)

Visiting Scholars:

1. Yuta Kawarasaki (2021)
    a. Associate Professor in Biology, Gustavus Adolphus College
2. Mizuki Yoshida (2022)
    a. PhD Candidate in Biology at Osaka City University
3. Shahriar Abul Fazal (2022)
    a. PhD Candidate in Biology at Czech University of Life Sciences Prague

Undergraduate and High School Student Research Mentoring:

1. Benjamin Burch, High school student at Dunbar High School (2023-2024)
2. Nico Lee, High School Student at Lafayette High School (2023-2024)
3. Sam Johnson, entomology undergraduate research project (2023)
4. Tristan Dorton, entomology undergraduate research project (2023)
5. Sam Cecconi, ABT student (2023)
6. Miles Whitlock, NRES capstone project (2022)
7. Jessica Fehsal, Summer Research Intern (2022)
8. Kirstin Thomas, Summer Research Intern (2022)
9. Catherine Cornwell, Chellgren Fellow Researcher (2021-present)
10. Robert Screen, ABT Student (2022t)
11. Faisal Syed, High School Student with MSTC Program (2021-2022)
12. Sophia Zhou, High School Student with MSTC Program and ABT student (2021-present)
13. Cisco Hadden, High School Student at Lafayette High School (2021-2022)
14. Kaitlin Donlon, Summer Research Intern (2021)
15. Ann Bowlin, Summer Research Intern (2021)
16. Rachael Snyder, Chellgren Fellow researcher and summer intern (2021-2023)
17. Angelica Garza, ABT research project (2021)
18. Goldie Blackson, ABT student and summer intern (2020-2021)
19. Annabelle Wilson, ABT student and summer intern (2020-2023)
20. Kaitlyn Collins, ABT student (2020-2021)
21. Tatum Fowler, High School Student at Lafayette High School (2019-2020)
22. Nicholas Jacobs, ABT Research Project (2019-2020)
23. Leah Carpenter, Entomology Major (2018-2022)
24. Faith Boles, Transylvania University (2018-2019)
25. Aerianna Litter, Entomology Major, awarded summer research fellowship (2018-2020)
26. Miles Whitlock, High School Student with STEAM Academy (2018-2019)
27. Randall Brewer, ABT Research Project (2016-2019)
28. Kylie Colvin, ABT Research Project (2018)

29. Aditya Sriram, Biology Major, awarded summer research fellowship (2017-2018)
30. Emma Dalrymple, Biology Honors Student (2017-2018)
31. Maya Hillis, High School Student with MSTC program (2016-2018)
32. Supervisor for additional undergraduate lab assistants (Kellen Williams, Kiera Carlisle, Nate Jula, Austin Lingle, Hye-Ree Yoon, David Reedy, Kate Cox, Faith Boles, Taylor Sturgill, Nate Lee, Jack Graba, Hannah Markwell, Kyla McDowell, Frances Walke).

AWARDS and HONORS:

2024	Plenary Speaker, Tennessee Entomological Society Annual Meeting
2020-2023	Wethington Award, University of Kentucky
2021	Amherst Steele High School Gallery of Success Inductee
2019	Faculty Mentor of the Week, University of Kentucky Office of Undergraduate Research
2019	Invited Speaker, Arthropod Genomics Symposium, Manhattan, KS (covered meeting registration and travel costs)
2019	Bobby Pass Excellence in Grantsmanship Award, University of Kentucky College of Food, Agriculture, and Environment ($1000)
2017	National Science Foundation Travel Award to attend Scientific Council on Antarctic Research Biology Symposium ($1800)
2016	Entomological Society of America Early Career Professional Research Award ($1000 + meeting registration; awarded to one early career member)
2015	Runner-up, University of Florida Postdoc Research Symposium oral presentations ($100)
2015	Selected to participate in New Generation of Polar Researchers Leadership Symposium, May 2-9, 2015.
2013	Entomological Society of America John Henry Comstock Award for excellence in graduate research ($1000 + meeting travel expenses)
2013	First Place, Ohio Agricultural Research and Development Center Student Poster Competition ($500)
2013	Ohio Agricultural Research and Development Center William E. Krausse Director's Award for Excellence in Graduate Research ($1000)
2012	Skip Nault Research Award, Department of Entomology, Ohio State University ($500) – given annually to the top student-authored paper in the department
2012	Entomological Society of America International Congress of Entomology Travel Award ($3000) – for travel to International Congress of Entomology in Daegu, South Korea
2012	National Science Foundation Antarctic Service Medal – awarded to individuals with at least six weeks of field research experience at a US Antarctic base
2011	First Place, Physiology, Biochemistry, and Toxicology Section of the Entomological Society of America Student Paper Competition
2011	Ohio State University Ray Travel Award ($750) – for travel to the Entomological Society of America Annual Meeting in Reno, NV
2011	NSF Travel Award ($400) – for travel to the Society for Experimental Biology meeting in Glasgow, UK

2010	First place in PhD student competition, Ohio Valley Entomological Association ($350)
2010	Delong Travel Award ($1000) – for travel to Entomological Society of America Annual Meeting in San Diego, CA
2009	First place in PhD student competition, Ohio Valley Entomological Association ($350)
2003-2007	National Merit Scholarship
2003-2007	Miami University Harrison Scholarship (4 years of full tuition)

INVITED PRESENTATIONS:

49. Teets, N.M. Insect thermal biology: Basic principles and practical applications. University of Vermont Department of Agriculture, Landscape, and Environment Seminar Series, Burlington, VT, October 25, 2024.

48. Teets, N.M. Entomology in Antarctica: Adaptations in the world's southernmost insect. Tennessee Entomology Society Annual Meeting, Memphis, TN, October 14, 2024.

47. Solocinski, J., Kopechek, J., Menze, M., Downie, A.B., Teets, N.M. Development of long-term preservation and revival protocols for *Drosophila.* Cryopreservation and Other Preservation Approaches for Animal Models, September 6, 2024.

46. Teets, N.M., Lima, C., Devlin, J., Kawarasaki, Y. Energetic costs of stress in Antarctica's extreme and rapidly changing environment. XXVII International Congress of Entomology, Kyoto, Japan, August 29, 2024. *Had to cancel talk last minute due to family emergency.*

45. Kawarasaki, Y., Lima, C., Devlin, J., Gantz, J.D., Pavinato, V., Michel, A., Teets, N.M. Comparisons of stress tolerance and transcriptomic response to sublethal freezing in the larvae of the Antarctic midge, *Belgica antarctica,* from three different populations. XXVII International Congress of Entomology, Kyoto, Japan, August 26, 2024.

44. Lima, C., Colinet, H., Renault, D., Teets, N.M. The importance of cross-tolerance in a polyextremophile: The Antarctic midge, *Belgica antarctica.* XXVII International Congress of Entomology, Kyoto, Japan, August 26, 2024.

43. Teets, N.M. Insect adaptations for coping with seasonal and extreme environments. CASK-KY Research Day, Lexington, KY, August 15, 2024.

42. Teets, N.M. Join research on new technologies for developmental regulation and large-scale production of natural enemy insects. Chinese Academy of Agricultural Sciences, Beijing, China, May 16, 2024. Given remotely.

41. Teets, N.M. Entomology in Antarctica: Environmental adaptations in the world's southernmost insect. Royal Entomological Society Online Talk Series, May 8, 2024.

40. Zhou, S.K., Perez-Galves, F.R., Teets, N.M. Insect thermal tolerance scored using DIME, a custom, automated motion detection software. Entomological Society of America North Central Branch Meeting, Fort Collins, Colorado. March 26, 2024.

39. Teets, N.M. Genomics and transcriptomics of extreme insects. The Center for Computational Sciences Research Computing and Data Seminar Series, March 19, 2024.

38. Teets, N.M. Insects at extreme temperatures: Basic principles and practical applications. University of Louisville Department of Biological Engineering Departmental seminar, September 12, 2023.

37. Teets, N.M. Entomology in Antarctica: Climate change and the World's Southernmost Insect. Kentucky Climate Change Consortium, February 24, 2023.

36. Teets, N.M., Devlin, J., Lima, C., Michel, A., Convey, P, Hayward, S. Coping with the longest winters in the world: Energetics in an Antarctic insect. Entomological Society of America annual meeting, November 16, 2022, Vancouver, BC.

35. Teets, N.M. Cold-blooded and nowhere to go: How insects survive the winter. University of Kentucky Department of Biology Seminar Series, October 27, 2022, Lexington, KY.

34. Teets, N.M. Sustainable agriculture, economic development, and entomology in South Greenland. University of Kentucky Department of Entomology Seminar Series, September 1, 2022, Lexington, KY.

33. Teets, N.M. Insects in cold places: Mechanisms of survival and sustainable pest control. A Thriving South – Nature, Community, Business Conference, August 23, 2022, Qaqortoq, Greenland.

32. Teets, N.M. Entomology in Antarctica: Adaptations facilitating survival on Earth's coldest continent. University of Aarhus Section for Zoophysiology Departmental Seminar, August 17, 2022, Aarhus, Denmark.

31. Teets, N.M. Impact of Genotype and Environmental Variables on Transgene Effectiveness for Conditional Lethality Systems in Insects. USDA BRAG Project Director's Meeting, April 27, 2022. Given virtually.

30. Devlin, J., Unfried, L., Lecheta, M., McCabe, E., Teets, N. Warmer overwintering temperatures negatively impact survival of an Antarctic insect. Entomological Society of America North Central Branch Meeting, March 30, 2022, Minneapolis, MN.

29. Nadeau, E.A.W., Teets, N.M., Obrycki, J.J. Transcriptional regulation of reproductive diapause in the convergent lady beetle. Entomological Society of America, Denver, CO. November 2, 2021.

28. Teets, N.M., Devlin, J.J., Michel, A.P. 2021. Adapted to the extreme: Climate change and Antarctica's only endemic insect. Entomological Society of America, Denver, CO. Delivered virtually in November 2021.

27. Teets, N.M. Entomology in Antarctica: Mechanisms of survival in the world's southernmost insect. Iowa State University Department of Entomology Seminar Series. Delivered remotely on November 8, 2021.

26. Teets, N.M. Entomology in Antarctica: Adaptations of the world's southernmost insect. University of Louisville Department of Biology Seminar Series. November 5, 2021.

25. Teets, N.M., Harner, D.H. Enhancing local environmental education programming through higher education research partnerships. Kentucky Association for Environmental Education webinar series, May 20, 2021.

24. Teets, N.M., Lecheta, M.C. Molecular regulation of diapause in two corn rootworm species (*Diabrotica spp*.). Entomological Society of America, Orlando, FL. November 19, 2020.

23. Teets, N.M. Cryopreservation of multicellular animals: Lessons from extreme insects. University of Michigan Life Sciences Symposium, Ann Arbor, MI. September 30, 2020.

22. Bredlau, J.P., Perez, F.P., Teets, N.M. Potential for resistance to conditionally lethal transgenes used for Sterile Insect Technique. Entomological Society of America, St. Louis, MO, November 17, 2019.

21. Teets, N.M. Mechanisms of environmental stress tolerance in Antarctica's only endemic insect. Arthropod Genomics Symposium, Manhattan, KS, June 13, 2019.

20. Teets, N.M. Impact of genotype and environmental variables on transgene effectiveness for conditional lethality systems in insects. USDA NIFA Biotechnology Risk Assessment Grants Program Annual Project Director's Meeting, Washington, DC, June 6, 2019.

19. Teets, N.M. Winter climate change and insects: Is warmer always better? Household Commercial Products Association IMPACT2019 Conference, Washington, DC, May 2, 2019. (talk given remotely)

18. Teets, N.M., Garcia, M.J., and Nadeau, E.AW.[†] From cells to populations: Towards an integrative understanding of how insects cope with low temperature stress. Entomological Society of America, Vancouver, BC, November 14, 2018.

17. Teets, N.M. GMO 101: The future of agriculture, or are Mark and KC slowly killing us? Palmer Station Science Lecture, Palmer Station, Antarctica, January 30, 2018.

16. Teets, N.M. Genetic approaches for improving the management of invasive fruit flies. Ohio State University Department of Entomology, Columbus, OH, November 15, 2017.

15. Teets, N. M. Taking shape of insect cold tolerance: Genetic underpinnings and eco-evolutionary implications of variation in the shape of cold survival curves. UK Department of Biology, Lexington, KY, September 22, 2017.

14. Teets, N. M. Stress biology of insects: Genetic mechanisms and practical applications. University of Western Ontario, London, ON, Canada, April 11, 2017.

13. Teets, N.M. A primer on genome editing technologies and their use in insects. XXV International Congress of Entomology, Orlando, FL, September 26, 2016.

12. Teets, N.M. and Hahn, D.A. Leveraging genetic variation to identify molecular mechanisms of cold tolerance. XXV International Congress of Entomology, Orlando, FL, September 25, 2016.

11. Teets, N.M. Making sexy flies with transgenics: Strategies to improve Sterile Insect Technique. Entomological Society of America North Central Branch, Cleveland, OH, June 7, 2016.

10. Teets, N. M. Insect stress biology: From basic mechanisms to practical applications. University of Cincinnati Department of Biology, Cincinnati, OH, January 25, 2016.

9. Teets, N.M. Cellular and molecular physiology of environmental stress tolerance: How basic principles can inform novel pest control strategies. Entomological Society of America, Portland, OR, November 18, 2014.

8. Teets, N.M. and Denlinger, D.L. Combining transcriptomics and metabolomics to reveal extreme adaptations in an Antarctic insect. Entomological Society of America, Austin, TX, November 13, 2013.

7. Teets, N.M. Entomology in Antarctica: Mechanisms of stress tolerance in the world's southernmost insect. University of Florida Department of Entomology and Nematology Seminar Series, September 19, 2013.

6. Teets, N.M., Peyton, J.T. and Denlinger, D.L. Drying out to survive the winter: Using RNA-Seq to identify genes involved in overwintering in the Antarctic midge, *Belgica antarctica.* XXIV International Congress of Entomology, Daegu, Korea, August 21, 2012.

5. Teets, N.M. Entomology in Antarctica: Mechanisms of survival in the world's southernmost insect. Public outreach lecture in Kelley's Island, Ohio. June 7, 2012.

4. Teets, N.M., Kawarasaki, Y., Lee, R.E. and Denlinger, D.L. An energetic comparison of cold tolerance strategies in the Antarctic midge, *Belgica antarctica:* The world's southernmost insect. Society for Experimental Biology, Glasgow, UK, July 2, 2011.

3. Teets, N.M. and Kawarasaki, Y. Buggers! Entomology in Antarctica. Station Science Talk at Palmer Station, Antarctica, April 2011.

2. Teets, N.M., Lee, R.E. and Denlinger, D.L. Cellular cold-sensing and signal transduction: the calcium connection. Entomological Society of America, Indianapolis, IN, December 16, 2009.

1. Sarquis, J.L. and Teets, N.M. Peer-led team learning: A new teaching strategy or an old strategy with a new name? Eastern Kentucky University Chemical Education Seminar, February 17, 2006.

CONTRIBUTED PRESENTATIONS

68. Zhou, S.K., Perez-Galves, F.R., Teets, N.M. Computational inference of thermal tolerance across insect taxa. Entomological Society of America North Central Branch Meeting, Fort Collins, Colorado. March 25, 2024.

67. Noor ul Ane, M., Teets, N.M. Life history traits of the *Chrysoperla carnea* (Neuroptera: Chrysopidae) feeding on canola aphids. Entomological Society of America annual meeting, National Harbor, Maryland. November 8, 2023.

66. Teets, N.M., Perez-Galvez, F.R. Environmentally mediated plasticity in the efficacy of conditionally lethal transgenes. Entomological Society of America annual meeting, National Harbor, Maryland. November 5, 2023.

65. Teets, N.M., Devlin, J., Lima, C., Kawarasaki, Y., Gantz, J.D., Michel, A., Convey, P., Hayward, S. Environmental stress responses in an Antarctic insect. 2nd US Antarctic Science Meeting, June 23, 2023. Given remotely.

64. McCabe, E., Teets, N.M. Identifying food sources that promote winter survival in spotted-wing drosophila. Entomological Society of America annual meeting, Vancouver, BC. November 14, 2022.

63. Lima, C., Lecheta, M., Nadeau, E., Teets, N. The changes in energy reserves and genetic activity levels during recovery from freezing in the Antarctic midge, *Belgica antarctica.* 9th International Symposium on the Environmental Physiology of Ectotherms and Plants, Rennes, France, July 13, 2022.

62. Devlin, J., Michel, A.P., Hayward, S.A.L., Convey, P., Teets, N.M. Coping with multiple extreme abiotic stressors in Antarctica's terrestrial ecosystems. 9th International Symposium on the Environmental Physiology of Ectotherms and Plants, Rennes, France, July 11, 2022.

61. Unfried, L.N., Teets, N.M. Rapid cold hardening protects against sublethal cold injury

but fails to preserve reproductive behaviors in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, Phoenix, AZ, January 6, 2022.

60. Awde, D.N., Teets, N.M. Transcriptional correlates of thermal acclimation capacity in *Drosophila melanogaster*. Society for Integrative and Comparative Biology, Phoenix, AZ, January 5, 2022.

59. Teets, N.M., Devlin, J.J. Warmer winters may spell trouble for Antarctica's only endemic insect. Society for Integrative and Comparative Biology Virtual Meeting, January 2022.

58. McCabe, E., Teets, N.M. Evidence of spotted wing drosophila overwintering in Kentucky. Entomological Society of America, Denver, CO, November 1, 2021.

57. Devlin, J.J., Unfried, L, Lecheta, M.C., McCabe, E., Teets, N.M. Mild overwintering temperatures negatively impact survival of Antarctic insect. Entomological Society of America, Denver, CO, November 3, 2021.

56. Perez-Galvez, F.R., Awde, D.A., Kawarasaki, Y., Teets, N.M. Motion-detection computational approach to time-to-knockdown bioassay scoring. Entomological Society of America, Denver, CO, November 2, 2021.

55. Awde, D.N., Teets, N.M. Genetic variation in phenotypic plasticity of thermal limits in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, January 2021. Presented virtually.

54. Unfried, L.M., Teets, N.M. Ability of RCH to protect against physiological damage from sublethal chilling in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, January 2021. Presented virtually.

53. Perez-Galvez, F.R., Awde, D., McCabe, E.A., Teets, N.M. Computer assisted analysis to improve throughput and precision of knockdown time assays. Society for Integrative and Comparative Biology, January 2021. Presented virtually.

52. Teets, N.M., Spacht, D.E., Potts, L.J., Gantz, J.D., Lee, R.E., Denlinger, D.L. Microhabitat diversity influences physiology and phenology in an Antarctic insect. Society for Integrative and Comparative Biology, January 2021. Presented virtually.

51. Teets, N.M., Dalrymple, E.G., Hillis, M.H., Lee, R.E. Jr., Denlinger, D.L. To freeze or not to freeze: Cold tolerance strategies in an Antarctic midge. Society for Integrative and Comparative Biology, Austin, TX, January 7, 2020.

50. Littler, A., Garcia, M.J., Teets, N.M. Does a well-balanced diet keep you going when the going gets cold? Society for Integrative and Comparative Biology, Austin, TX, January 6, 2020.

49. Unfried, L.N., Teets, N.M. Benefits of rapid cold hardening at sublethal temperatures in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, Austin, TX, January 5, 2020.

48. Helms Cahan, S., Frietze, S.E., Gerrard, D.L., Bora, K., Kaplan, I., Perez, M., Lockwood, B.L., Teets, N.M., Waters, J.S., Axen, H.J. Developmental temperature alters brain gene expression in adult *Drosophila melanogaster.* Society for Integrative and Comparative Biology, Austin, TX, January 4, 2020.

47. Awde, D.N., Lecheta, M.C., Unfried, L.N., Jacobs, N.A., Powers, B., Bora, K., Waters, J.S., Axen, H.J., Frietze, S.E., Lockwood, B.L., Cahan, S.H., Teets, N.M. Genetic mechanisms of basal thermal tolerance in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, Austin, TX, January 4, 2020.

46. Garcia, M.J., Teets, N.M. Genetic variation and molecular regulation of cold hardiness in spotted wing drosophila. Society for Integrative and Comparative Biology, Austin, TX, January 4, 2020.

45. Teets, N.M., Lecheta, M., Awde, D. Genetic architecture of thermal tolerance in *Drosophila melanogaster.* Entomological Society of America, St. Louis, MO, November 19, 2019.

44. Lecheta, M., Teets, N.M. Transcriptional mechanisms of diapause in the corn rootworm complex. Entomological Society of America, St. Louis, MO, November 19, 2019.

43. Garcia, M.J., Teets, N.M. Genetic variation and molecular regulation of cold hardiness in spotted-wing drosophila. Entomological Society of America, St. Louis, MO, November 19, 2019.

42. Littler, A., Teets, N.M., Garcia, M.J. Does a well-balanced diet keep you going when the going gets cold? Entomological Society of America, St. Louis, MO, November 18, 2019.

41. Potts, L.J., Teets, N.M. Overwintering spiders: Biochemical and metabolic responses to the winter season. Entomological Society of America, St. Louis, MO, November 18, 2019.

40. Nadeau, E.A.W., Obrycki, J., Teets, N.M. Transcriptional regulation of reproductive diapause in the convergent lady beetle. Entomological Society of America, St. Louis, MO November 18, 2019.

39. Teets, N.M. Nonlethal freezing injury in the Antarctic midge *Belgica antarctica.* 8th International Symposium on the Environmental Physiology of Ectotherms and Plants, Buenos Aires, Argentina, August 1, 2019.

38. Teets, N.M., Kawarasaki, Y., Potts, L.J., Gantz, J.D., Philip, B.P., Denlinger, D.L., Lee,

R.E. Rapid cold hardening provides sublethal benefits in an Antarctic extremophilic insect. Society for Integrative and Comparative Biology, Tampa, FL, January 6, 2019.

37. Teets, N.M., Dias, V., Schetelig, M.F., Handler, A.M., Hahn, D.A. Making macho males by transgenic overexpression of a mitochondrial antioxidant enzyme. Society for Integrative and Comparative Biology, Tampa, FL, January 6, 2019.

36. Garcia, M.J., Sriram, A.[§], Littler, A., Teets, N.M. Genetic variance in cold tolerance and its molecular underpinnings. Society for Integrative and Comparative Biology, Tampa, FL, January 6, 2019.

35. Perez-Galvez, F.R., Teets, N.M. Genetic and environmental factors influencing the efficacy of transgenic Sterile Insect Technique. Society for Integrative and Comparative Biology, Tampa, FL, January 5, 2019.

34. Kawarasaki, Y., Teets, N.M., Philip, B.N., Potts, L.J., Gantz, J.D., Denlinger, D.L., Lee, R.E. Characterization of drought-induced rapid cold-hardening in the Antarctic midge, *Belgica antarctica.* Society for Integrative and Comparative Biology, Tampa, FL, January 5, 2019.

33. Littler, A.S., Sriram, A., Garcia, M.J., Teets, N.M. Out in the cold: Genetic correlation of cold tolerance traits in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, Tampa, FL, January 5, 2019.

32. Potts, L.J., Teets, N.M. Overwintering spiders: Physiological responses to the winter season. Society for Integrative and Comparative Biology, Tampa, FL, January 4, 2019.

31. Teets, N.M., Kawarasaki, Y., Potts, L.J., Gantz, J.D., Philip, B.N., Denlinger, D.L., Lee, RE. Sublethal benefits of rapid cold hardening in Antarctica's only endemic insect. Entomological Society of America, Vancouver, BC, November 14, 2018.

30. Garcia, M. J., Teets, N. M. Neuromuscular performance as a measure of thermal tolerance. Society for Integrative and Comparative Biology, San Francisco, CA, January 4, 2018.

29. Gerken, A., Teets., N.M., Eller, O., Morgan, T., Hahn, D. Constraints, independence, and evolution of thermal plasticity: probing the genetic and cellular architecture of thermal responses. Entomological Society of America, Denver, CO, November 7, 2017.

28. Teets, N.M., Garcia, M.J. *Drosophila suzukii* Population Collection (DSPC): A tool for studying local adaptation in an invasive pest. Entomological Society of America, Denver, CO, November 6, 2017.

27. Mercer, N., Teets, N.M., Bessin, R., Obrycki, J. Impact of winter feeding on overwintering *Hippodamia convergens* survival and spring reproduction. Entomological Society of America, Denver, CO, November 6, 2017.

26. Teets, N.M. A tiny genome for a tiny midge: physiology and genomics of the world's southernmost insect. Scientific Council on Antarctic Research Biology Symposium, Leuven, Belgium, July 11, 2017.

25. Potts, L.J., Teets, N. M. Biochemical adaptations of overwintering spiders. American Arachnological Society, Queretaro, Mexico, July 25, 2017.

24. Teets, N. M. A tiny genome for a tiny midge: physiology and genomics of the world's southernmost insect. Scientific Council on Antarctic Research Biology Symposium, Leuven, Belgium, July 11, 2017.

23. Mercer, N., Teets, N. M., Bessin, R. T., Obrycki, J. J. Impact of winter feeding on overwintering *Hippodamia convergens* (Coccinellidae) survival and spring reproduction. Entomological Society of America North Central Branch, Indianapolis, IN, June 5, 2017.

22. Simoes Dias, V., Teets, N. M., Schetelig, M. F., Handler, A. M., Hahn, D. A., Araujo, G. Can transgenic flies overexpressing antioxidant enzymes blunt radiation-induced oxidative stress and improve mating success? XXV International Congress of Entomology, Orlando, FL, September 29, 2016.

21. Chen, C., Teets, N. M., Powell, T., Hahn, D. Metabolic mechanisms mediating the miserable months: Metabolomics of periodic arousal in insect diapause. XXV International Congress of Entomology, Orlando, FL, September 29, 2016.

20. Spacht, D., Teets, N. M., Denlinger, D. L. The role of PEPCK in insect diapause, development, and stress response. XXV International Congress of Entomology, Orlando, FL, September 27, 2016.

19. Teets, N.M., Handler, A.M. and Hahn, D.A. Testing the role of oxidative stress in sexual selection with transgenic overexpression of antioxidant defense systems in the Caribbean fruit fly, *Anastrepha suspensa.* Society for Integrative and Comparative Biology, West Palm Beach, FL, January 5, 2015.

18. Teets, N.M. and Denlinger, D.L. Quantitative phosphoproteomics reveals signaling events associated with rapid cold hardening in a temperate flesh fly. Society for Integrative and Comparative Biology, West Palm Beach, FL, January 5, 2015.

17. Cogley, T.R., Teets, N.M., Morgan, T.J. and Hahn, D.A. Survival of the Coldest: Developing methods to quantify autophagy during cold hardening in *Drosophila melanogaster.* Society for Integrative and Comparative Biology, West Palm Beach, FL, January 5, 2015.

16. Dean, C.A.E. and Teets, N.M. The effect of diapause on stress tolerance in migratory milkweed bugs, *Oncopeltus fasciatus.* Entomological Society of America, Portland, OR,

November 18, 2014.

15. Teets, N.M. and Denlinger, D.L. Calcium signaling mediates cold sensing and triggers rapid cold hardening in insect tissues. Entomological Society of America, Austin, TX, November 10, 2013.

14. Teets, N.M. and Denlinger, D.L. Calcium signaling mediates cold sensing and triggers rapid cold hardening in insect tissues. Ohio Agricultural Research and Development Center Annual Conference, Wooster, OH, April 25, 2013.

13. Teets, N.M., Peyton, J.T. and Denlinger, D.L. Uncovering the molecular mechanisms of cold tolerance in a temperature flesh fly using a combined transcriptomic and metabolomic approach. Ohio Agricultural Research and Development Center Annual Conference, Wooster, OH, April 26, 2012.

12. Teets, N.M., Peyton, J.T. and Denlinger, D.L. Uncovering molecular mechanisms of cold tolerance in a temperature flesh fly using a combined transcriptomic and metabolomic approach. Ohio State University Department of Evolution, Ecology, and Organismal Biology Darwin Presentations, April 12, 2012.

11. Kawarasaki, Y., Teets, N.M., Kobelkova, A., Denlinger, D.L. Lee, R.E. Rapid cold-hardening in the frozen state increases cold tolerance in the Antarctic midge, *Belgica antarctica*. Society for Integrative and Comparative Biology, Charleston, SC, January 4, 2012.

10. Teets, N.M. and Denlinger, D.L. Cellular cold-sensing in the goldenrod gall fly, *Eurosta solidaginis,* involves a calcium/calmodulin signaling axis. Entomological Society of America, Reno, NV, November 14, 2011.

9. Teets, N.M. and Denlinger, D.L. Cellular cold-sensing in the goldenrod gall fly, *Eurosta solidaginis,* involves a calcium/calmodulin signaling axis. Department of Entomology Delong Competition, November 8, 2011.

8. Teets, N.M., Kawarasaki, Y., Lee, R.E. and Denlinger, D.L. Survival and energetic costs of repeated cold exposure in the Antarctic midge, *Belgica antarctica:* a comparison between frozen and supercooled larvae. Entomological Society of America, San Diego, CA, December 13, 2010.

7. Teets, N.M., Kawarasaki, Y., Lee, R.E. and Denlinger, D.L. Survival and energetic costs of repeated cold exposure in the Antarctic midge, *Belgica antarctica:* a comparison between frozen and supercooled larvae. Ohio Valley Entomological Association, Columbus, OH, October 29, 2010.

6. Teets, N.M. and Denlinger, D.L. The role of calcium signaling during cellular cold-sensing and rapid cold-hardening in the goldenrod gall fly, *Eurosta solidaginis.* Department of Entomology Delong Competition, May 25, 2010.

5. Teets, N.M., Phelan, P.L and Denlinger, D.L. Metabolomic analysis of seasonal cold acclimation in the goldenrod gall fly, *Eurosta solidaginis*. Entomological Society of America, Indianapolis, IN, December 14, 2009.

4. Teets, N.M. and Denlinger, D.L. The role of calcium signaling during cellular cold-sensing and rapid cold-hardening in the goldenrod gall fly, *Eurosta solidaginis*. Ohio Valley Entomological Association, Cincinnati, OH, November 6, 2009.

3. Teets, N.M. and Denlinger, D.L. Role of heat shock proteins during thermal stress in the milkweed bug, *Oncopeltus fasciatus.* Entomological Society of America, Reno, NV, November 17, 2008.

2. Teets, N.M., Elnitsky, M.A., Benoit, J.B., Lopez-Martinez, G., Denlinger, D.L. and Lee, R.E. Role of calcium and calmodulin in the cold tolerance of the Antarctic midge, *Belgica antarctica.* North Central Branch of the Entomological Society of America, Columbus, OH, March 25, 2008.

1. Teets, N.M., Elnitsky, M.A., Benoit, J.B., Lopez-Martinez, G., Denlinger, D.L. and Lee, R.E. *In vivo* and *in vitro* rapid cold-hardening in the Antarctic midge, *Belgica antarctica*. American Physiological Society Intersociety Conference: Comparative Physiology 2006: Integrating Diversity, Virginia Beach, VA, October 10, 2006.

TEACHING

List of Courses Taught at University of Kentucky:

1. **ENT 110 – Insect Biology**. For this course, I adapted our popular general entomology course for non-majors to an online format. I designed and recorded 36 video lectures, adapted the laboratory activities to a remote format, and I designed all new assessments. This course was the first online course offered by the Department of Entomology.

2. **HON 152** – **Climate Change: Scientific Evidence, Biological Impacts, and Societal Responses.** I designed this brand-new course for the Honors Program to fulfill the natural sciences requirement. In this class, we discuss the science behind climate change, how it is affecting humans and wildlife, and what our societies can do about it.

3. **ENT 770** – **Grant Writing**. In this graduate seminar co-taught with Jen White, we discussed elements of grant writing and helped students develop their own proposals. Several students applied for fellowships with materials prepared during the course, and one student was successfully awarded a USDA predoctoral fellowship.

4. **ENT 770** – **Insects and Climate Change.** In this graduate seminar, we discussed current literature on climate change responses in insects. Students selected and presented research

articles, and each student also completed a writing exercise.

5. **ABT 460 – Intro Molecular Genetics.** This is a senior-level required course for the Agricultural and Medical Biotechnology major at University of Kentucky. Covers core concepts in molecular genetics, including DNA replication, gene expression, and protein synthesis.

6. **ABT 101 – Introduction to Biotechnology.** This is a first-year course for students majoring in Agricultural and Medical Technology. The course brings in guest speakers from around the campus community to discuss concepts related to biotechnology.

Results of Teacher Course Evaluations (on a 5-point scale):

Term	Course #	Title	# students	TCE Course Quality	TCE Teaching Quality
Fall 2023	ABT 101	Intro Biotechnology	47	3.9	4.3
Spring 2023	ENT 110	Insect Biology	152	4.1	4.6
Fall 2022	ABT 460	Molecular Genetics	23	4.7	4.8
Fall 2021	ENT 110	Insect Biology	49	4.6	4.8
Fall 2021	ABT 101	Intro Biotechnology	58	4.3	4.9
Spring 2021	ENT 770	Grant Writing	12	4.5	4.8
Fall 2020	ABT 460	Molecular Genetics	20	4.4	4.8
Fall 2020	ENT 110	Insect Biology	52	4.7	4.9
Spring 2020	ENT 110	Insect Biology	48	4.5	4.9
Fall 2019	HON 152	Climate Change	9	4.4	4.4
Fall 2019	ENT 110	Insect Biology	32	4.4	4.6
Summer 2019	ENT 110	Insect Biology	13	4.4	4.9
Spring 2019	ENT 770	Grant Writing	10	4.4	4.7
Spring 2018	HON 152	Climate Change	14	4.5	4.5

Non-course teaching activities:

1. **High school student research mentoring.** I have hosted eight high school students (Maya Hillis, Miles Whitlock, Tatum Fowler, Cisco Haddon, Faisal Syed, Sophia Zhou, Nico Lee, and Benjamin Burch) in my laboratory. These students hailed from the Math Science Technology Center at Dunbar High School, the STEAM Academy in Lexington, and the Biotechnology Program at Lafayette High School. Thus far three of these students are co-authors on three separate publications.

2. **Undergraduate research mentoring.** In my time at UK, many undergraduate students have worked in my lab. Several of these completed senior projects for the Agricultural and Medical Biotechnology program, and four have been coauthors on manuscripts. Aerianna Littler has presented three papers at national conferences, was awarded a summer research fellowship from the UK Office of Undergraduate Research, and is lead author on a peer-reviewed publication.

3. **Curriculum development.** In my outreach work with Living Arts and Science Center (see below), we developed a new curriculum for using Antarctic science to explain adaptations

and life history to students. Also, in collaboration with PhD student Leslie Potts and postdoc Mark Garcia, we developed a laboratory activity to address phenotypic plasticity and climate change using flies, and this activity was published in *CourseSource*, a peer-reviewed journal for college teaching resources/

4. **High School Genetics Bootcamp.** For our NSF-funded research of *Drosophila* thermal tolerance, one of our broader impacts initiatives is to lead a week-long High School Genetics Bootcamp for local students. We have held workshops in 2021 (20 students), 2022 (30 students), and 2023 (30 students) in which we developed and implemented five days of hands-on activities that covered a variety of topics in genetics, including PCR, molecular barcoding, heredity, and quantitative traits. An abbreviated version of this program was also offered as part of Kentucky's annual 4H Teen Conference.

Academic Advising:

Advisor for Agricultural and Medical Biotechnology Program. I typically have seven advisees and participate in group advising for merit weekends, summer orientation, and fall freshman advising.

Teaching prior to appointment at University of Kentucky:

1. Co-Instructor for Molecular Biology Techniques Summer Workshop, University of Florida (2014)

2. Instructor for PAST Foundation Summer Entomology Course (2010: Ohio State University; 2012: Kelley's Island Field School).

3. Instructor for Insect Physiology Laboratory, Ohio State University (2009 and 2011)

4. Supplemental Instructor for General and Organic Chemistry, Miami University (2004-2007)

5. Peer-Led Team Learning Workshop Leader for General Chemistry, Miami University (2004-2007)

SERVICE AND RECOGNITION

Departmental Service

1. Ad hoc Student Recruitment Committee (2024-present)
2. Insect Molecular Biologist Search Committee member (2023-2024)
3. Insect Genomics Search Committee chair (2021-2022)
4. Department of Entomology Steering Committee (2018-present)
5. Department of Entomology Faculty Secretary. Prepare and distribute meeting minutes for every faculty meeting. (2016-2017)
6. Department of Entomology Curriculum Committee (2016-present; chair since 2020)
7. Member of search committee for Public Health Entomologist faculty hire (2017)

College Service

1. Elected Member to College Faculty Council (2021-present)
    a. Co-organized college-wide promotion and tenure workshop
    b. Served as chair of council from 2022-2024.
2. Served on periodic review committee for Agricultural and Medical Biotechnology Program (2022)
3. Member of Agricultural and Medical Biotechnology Steering Committee.

University Service

1. Search Committee for Instructor, Lewis Honors College (2020)
2. Served on University's AR 6:2 (Title IX) hearing panel (2021-present)

Editorial Service

1. Editor in Chief, *Physiological Entomology* (2024-present)
2. Subject Editor, *Environmental Entomology* (2023-present)
3. Guest Editor, *Current Opinion in Insect Science* (2022-present)
4. Guest Editor, *Frontiers in Insect Science* (2022-present)
5. Guest Editor, *Comparative Physiology and Biochemistry - Part A: Molecular and Integrative Physiology* (2020-2021)
6. Associate Editor, *Physiological Entomology* (2020-2024)
7. Editorial Board, *Insects* (2019-2023)

Review Service:

1. USDA grant Panel Member (2023)
2. Ad Hoc Reviewer for NSF Postdoctoral Research Fellowship (2023)
3. Reviewed >100 manuscripts since 2016. (Journals Include: Journal of Insect Physiology, Journal of Thermal Biology, Insect Molecular Biology, Proceedings of the Royal Society B, Environmental Entomology, Journal of Experimental Biology, Physiological Entomology, PNAS, PLoS One, PeerJ, International Journal of Molecular Sciences, Insect Biochemistry and Molecular Biology, Scientific Reports, Evolution, Comparative Biochemistry and Physiology, BMC Genomics, BMC Evolutionary Biology, Autophagy, Physiological Genomics, Journal of Comparative Physiology D, Insects, Evolutionary Applications, Polar Biology, Genetics and Molecular Biology, Pest Management Science, Archives of Insect Biochemistry and Physiology, Journal of Biological Rhythms, Journal of Economic Entomology)
4. NSF Review Panel member (2020, 2022)
5. Ad hoc reviewer for National Science Foundation (2017-present)
6. Reviewer for New Generation of Polar Reviewers competition (2019)
7. Reviewed a scientific book proposal for Elsevier (2017)
8. Reviewer for University of Texas San Antonio Internal Grant Competition (2017).

Service to Professional Societies:

1. Chair of Entomological Society of America North Central Branch Student Awards Committee (2023-present)
2. Entomological Society of America: Physiology, Biochemistry, and Toxicology Awards Committee (2022-present)

3. Entomological Society of America: Judge for John Henry Comstock Award (2022)
4. Entomological Society of America: Judge for North Central Branch Student Scholarship (2022)
5. Entomological Society of America: Judge for John Henry Comstock Award (2021)
6. Entomological Society of America: Judge for North Central Branch Student Scholarship (2021)
7. Society for Integrative and Comparative Biology session chair (2021)
8. Entomological Society of America: Judge for Lillian and Alex Feir Travel Award (2020)
9. Entomological Society of America: Judge for John Henry Comstock Award (2020)
10. Society for Integrative and Comparative Biology: Judge for student poster competition (2020)
11. Entomological Society of America: Organized symposium titled "Novel Applications and Risk Management of Genetic Technologies for Pest Management" for annual meeting.
12. Entomological Society of America: Judge for Lillian and Alex Feir Travel Award (2019)
13. Entomological Society of America: Judge for John Henry Comstock Award (2019)
14. Society for Integrative and Comparative Biology: Judge for student poster competition (2019)
15. Entomological Society of America: Writer for ESA Science Policy Position Statement on Climate Change (2018)
16. Ohio Valley Entomological Association: Judge for student talks (2018)
17. Entomological Society of America: Student Paper Judge and Session Chair (2016-present)
18. Entomological Society of America: Judging panel for Early Career Professionals Travel Award (2016)
19. Entomological Society of America: Judging Panel, International Graduate Student Showcase (2016)

<u>Public Outreach</u>

1. Hosted students from The Lexington School for a presentation on Antarctic research and a lab tour
2. Wellington Elementary STEM Night, January 25, 2024. Attended by 450 students and community members.
3. Led activities on insect biology at Wellington Elementary School, attended by 250 students (2022 and 2023).
4. Led public event titled "Bugs are Beautiful" at the Amherst Public Library, attended by 100 members of the public, July 26, 2021.
5. Antarctic outreach at Garden Springs Elementary School for Summer Ignite Program, 90 students, July 9, 2021
6. Led a Girl Scouts activity to earn an Entomology Badge for 15 girl scouts, May 5, 2021
7. Presentation on insects at Little Blessings preschool, 40 students, April 27, 2021
8. Presentation on Insects and Antarctica to The Learning Center, 10 students, May 22, 2020
9. Insect Display at Wellington Elementary School STEM Day, 700 students, February 28, 2020
10. Presentation titled "Frozen Bugs on the White Continent: Entomology in Antarctica" for Everything is Science event in Lexington, KY, February 26, 2020

11. Presentation on Antarctic Science and hands-on activity with flies, Lafayette High School, 90 students, February 21, 2020
12. Hands-on fly activity for Living Arts and Sciences Exploration Night, 200 students and parents, April 17, 2019
13. Teacher for Living Arts and Science Center "Science Explorer's Program." Designed and implemented classroom activities about Antarctica for six underserved elementary schools in Lexington, KY, 2018
14. Volunteer at Department of Entomology Insect Safari, 2016-present

Media Contributions and Coverage:

1. Featured in a children's book titled "How Do Meerkats Order Pizza? Wild Facts about Animals and the Scientists Who Studeyt Them" by Brooke Barker.
2. Featured in a documentary title "Desynchronized" produced by Real Good Films about insects and climate change, which was played at several film festivals in 2021.
3. Interviewed for a podcast titled "Grubbing in the Filth," which aired on May 3, 2021.
4. Helped write script for *SciShow* episode titled "The Insect That Thrives in Antarctica." First aired June 27, 2020 and has >430,000 views as of August 2021. Can be viewed at https://www.youtube.com/watch?v=SeeNyOAcviI.
5. Interviewed for article titled "Insects in the Extreme" for the *Antarctic Sun*, a news outlet sponsored by the National Science Foundation. Published June 29, 2020 and can be viewed at https://antarcticsun.usap.gov/science/4427/.
6. Edited children's book titled *Polar Opposites: Animal Adaptations for Survival at the Ends of the Earth,* published in 2021. Provided edits in January, 2020.
7. Interviewed by local NPR affiliate WUKY for story titled "Kentucky May Become Ideal for the Deadliest Animal on Earth." First aired December 21, 2019 and can be viewed at https://www.wuky.org/post/kentucky-may-become-ideal-deadliest-animal-earth#stream/0.
8. Work on Antarctic midge feature in *Smithsonian Magazine* in article titled "How Antarctica's Only Native Insect Survives the Freezing Temperatures." Published September 10, 2019 and can be viewed at https://www.smithsonianmag.com/smart-news/how-antarcticas-only-insect-resident-survives-freezing-temperatures-180973087/
9. Interviewed for *New York Times* article titled "How Does Antarctica's Only Native Insect Survive Extreme Cold?" Published September 9, 2019 and can be viewed at https://www.nytimes.com/2019/09/09/science/antarctica-insects-midge-cold.html?searchResultPosition=1.
10. Interviewed for *Lexington Herald Leader* article titled "Has climate change affected a bug that can stay frozen for 9 months? This UK researcher will find out. Published September 2, 2019 and can be viewed at https://www.kentucky.com/news/local/education/article233335292.html

PROFESSIONAL DEVELOPMENT AND TRAINING:

1. University of Kentucky Center for Enhancement of Teaching and Learning Distance Learning Workshop Series, September 19-October 17, 2018.
2. University of Kentucky/University of Tennessee Grant Writer's Workshop, Knoxville, TN, March 16-17, 2017.