Thomas Werner, PhD

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Summary Vita:

Very broadly defined, Dr. Thomas Werner is an entomologist working on different biological questions in drosophilids ("fruit flies") and lepidopterans (butterflies and moths). He published in the journals ***Nature*, *Science*, *Cell*, *PNAS*,** among many others. Dr. Werner has received funding from the **NSF**, the **NIH**, and the Huron Mountain Wildlife Foundation. He research-**mentored more than 110 undergraduate** and **7 graduate students.** For his excellence in undergraduate research-mentoring and teaching, he was bestowed with the **state-wide Michigan Distinguished Professor of the Year Award 2021.** Dr. Werner also won Michigan Tech's **Distinguished Teaching Award twice** (only three other faculty won it twice in the history of Michigan Tech) for teaching Genetics, Immunology, Genomics, and Developmental Biology. He also discovered a new fruit fly species, which he named after his student Tessa Steenwinkel, who won 9 research awards (e.g., the Barry Goldwater Fellowship and the NSF Graduate Research Fellowship) and published 17 articles/books under his mentorship. The species is called ***Amiota tessae*.** Furthermore, Dr. Werner is the founder of the open-access book series **"The Encyclopedia of North American Drosophilids",** which serves the Drosophila research community, teachers, and students with currently three published volumes and nearly 12,000 worldwide downloads. These books transformed two campus libraries (U. of Rochester, NY and Michigan Tech) into open-access book publishers, promoting science and education at no cost.

Education:

April 1998 – May 2005 **Ph.D. in Cell and Molecular Biology: February 16, 2005**

Umeå Center for Molecular Pathogenesis
Umeå, **SWEDEN**
Thesis advisor: **Dr. Dan Hultmark**
Thesis title: "Peptidoglycan recognition proteins in *Drosophila melanogaster*"

Sept. 1991 – March 1997 **M.S. in Biology**

Specializations in Microbiology, Medical Microbiology, Zoology, and Botany
Friedrich-Schiller-University Jena
Jena, **GERMANY**
Thesis advisor: **Dr. Andreas Henke**
Thesis title: **"**Fusion of the CVB 3 capsid proteins VP1 and VP2 with the reporter gene *lacZ* for DNA immunization of *Balb/c* mice" (Thesis in German)

Professional Positions:

2023 – Present **Professor** (tenured)
Michigan Technological University
Department of Biological Sciences
740 Dow ESE building
1400 Townsend Drive
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2018 – 2023 **Associate Professor** (tenured)
Michigan Technological University
Department of Biological Sciences
740 Dow ESE building
1400 Townsend Drive
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August 2010 – 2018 **Assistant Professor** (tenure-track)
Michigan Technological University
Department of Biological Sciences
740 Dow ESE building
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June 2005 – August 2010 **Postdoctoral Fellow**
University of Wisconsin-Madison
Department of Molecular Biology
Madison, **USA**
Postdoctoral advisor: **Dr. Sean B. Carroll**
Funded by a Human Frontiers Science Program Fellowship (June 2005 – May 2008) and the Howard Hughes Medical Institute (June 2008 – August 2010).
Topic: The evolution of complexity and diversity of *Drosophila* wing pigmentation patterns.

Active Grants:

NIH R15 (2024 – 2026) (Co-PI): “Computationally Guided Approach to Produce Ratiometric Red and Near-infrared Probes to Differentiate pH Levels within Organelles” $436,635. Funded, project start January 1st, 2024.

GLRC Seed Grant: Cyanobacteria blooms in Lake Superior: Is it an environmental trigger for neurodegenerative diseases?

Completed Grants:

Huron Mountain Wildlife Foundation grant (2018 – 2024) (PI) “Species distribution shifts of drosophilids and lepidopterans - a quantitative long-term study to assess the influence of climate change on insect populations”, $5,000.

NSF/DOB/DEB (2017 – 2023) (PI) "Dimensions: Collaborative Research: Integrating phylogenetic, genetic, and functional approaches to dissect the role of toxin tolerance in shaping Drosophila", $397,019. Funded, project start: September 1st, 2017.

NIH/NIGMS R15 (2016 – 2020) (PI) “The role of toolkit genes in generating complex color patterns in *Drosophila*”, $436,031. Funded, project start: February 1st, 2016.

Research Excellence Seed Grant - internal to Michigan Tech (2015 – 2016) (PI) "Color pattern evolution in an emerging fruit fly model organism", $20,000.

Huron Mountain Wildlife Foundation grant (2014 – 2017) (PI) "The Lepidoptera and Drosophilidae of the Huron Mountains", $4,850.

Research Excellence Grant (2013-2014) (Co-PI) Purchase of a GS Junior system for genome sequencing and metagenome analysis (Infrastructure grant), $50,000.

Research Excellence Mentoring Grant - internal to Michigan Tech (2012 – 2013) (PI) "Mentoring in Evolutionary Ecology", my mentor is Dr. John Jaenike (University of Rochester, NY), $6,100.

Research Excellence Seed Grant - internal to Michigan Tech (2012 – 2014) (PI) "The evolution of mushroom toxin resistance in *Drosophila*", $27,000.

Submitted Proposals:

NIH R15 (Co-PI) Near-infrared Flourescent Probes for Ratiometric Sensitive Detection on Zn(II) ions and NO in Live Cells. $469,500. PI: Dr. Haiying Liu (Department of Chemistry at Michigan Tech)

NSF Equipment: MRI: Track I: "Acquisition of Fluorescence-Activated Cell Sorter (FACS) to Promote Interdisciplinary Research and Collaborative Education in Rural Michigan" $1,013,145.

NIH/NIGMS R15 (Co-PI) "Pharmacological modulation of autophagy in a Drosophila model of sarcopenia", $469,500. PI: Dr. Lanrong Bi (Department of Chemistry at Michigan Tech).

NIH/NIGMS R15 (Co-PI) "Role of mitophagy in aging", $469,500. PI: Dr. Lanrong Bi (Department of Chemistry at Michigan Tech).

NIH/NIGMS R15 (Co-PI) "Ratiometric Near-infrared Fluorescent Probes for Sensitive Detection of Viscosity in Live Cells with Dual Fluorescence Channels", $469,500. PI: Dr. Haiying Li (Department of Chemistry at Michigan Tech), Co-PIs: Rudy Luck (Department of Chemistry at Michigan Tech), Thomas Werner.

Peer-reviewed Publications:

To date, more than 110 undergraduates, 4 M.S., and 3 Ph.D. students have conducted research in my Michigan Tech laboratory. In 83 instances, a student of mine gained authorship or co-authorship on one of our papers. The following articles and books cover the areas of *Drosophila* immunology, evo-devo of pigmentation patterns, genetics of mushroom toxin resistance, natural history/ecology of wild *Drosophila* species, and the use of *Drosophila* as an *in vivo* model to test fluorescent probes developed for human disease detection.

*** my undergraduate student, ** my graduate student *** corresponding author**

61) Hensley, M.S., Hutchings, D., Ismail, A., **Geborkoff, M.R.*, Werner, T.,** Tanasova, M. (2025) Correction: Turn-on fluorescent glucose transport bioprobe enables wash-free real-time monitoring of glucose uptake activity in live cells and small organisms. ***RSC Chemical Biology,*** 6: 987-995.

60) Agyemang, P., Dwivedi, S., Lanquaye, H., You, C. Guo, A., **Beatty, A.*,** Zhang, Y., Ata, A., **Werner, T.,** Liu. H. (2025) Cyanine-based dual-emission sensor for ratiometric NAD(P)H imaging in cells, renal tissues, and entire organisms. ***ACS Applied Bio Materials***

59) Dwivedi, S., Lanquaye, H., Waters, M., Amoli, A., Wang, C., Agyemang, P., Aworinde, O., Gregersen, T., **Geborkoff, M.*,** Ata, A., Zhang, Y., **Werner, T.,** Liu, H. (2025) A quinolinium hemicyanine dye with amine linkage for ratiometric NAD(P)H sensing in live cells, kidney tissues, and *Drosophila melanogaster*. ***ACS Applied Materials & Interfaces***

58) Dwivedi, S.K., Amoli, A., Norouszi, M., Wang, C., Guo, A., Olowolagba, A.M., Gregersen, T., Zhang, Y., **Geborkoff, M.*,** Ata, A., **Werner, T.**, Liu, H. (2025) Methylquinolinium-enhanced near-infrared hemicyanine dye for ratiometric NAD(P)H sensing in live cells via carbon-carbon bond conjugation. **Accepted** at ***Journal of Materials Chemistry B***

57) Arachchige, D.L., Dwivedi, S.K., Lanquaye, H., Agyemang, P., Peters, J., Zhang, Y., **Beatty, A.C.*,** Plansinis, M., Ata, A., **Werner, T.**, Liu, H. (2025) Deep-red cyanine-based fluorescent probes with 6-quinolinium acceptors for mitochondrial NAD(P)H imaging in live cells and human diseased kidney tissues. ***ACS Applied Bio Materials,*** 8 (4): 3205-3217.

56) **Werner, T.***, Steenwinkel, T.E.**,** Jaenike, J. (2025) The Encyclopedia of North American Drosophilids: Volume 3: Drosophilids of the Northwest. (Version 1) ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 979-8-9914191-0-9 (Book, 388 pages) https://digitalcommons.mtu.edu/oabooks/11/

55) **Werner, T.***, Steenwinkel, T.E.**,** Jaenike, J. (2025) The Encyclopedia of North American Drosophilids: Volume 2: Drosophilids of the Southeast. (Version 2) ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 978-1-7326524-9-1 (Book, 437 pages) https://digitalcommons.mtu.edu/oabooks/3/

54) **Werner, T.***, Steenwinkel, T.E.**,** Jaenike, J. (2025) The Encyclopedia of North American Drosophilids: Volume 1: Drosophilids of the Midwest and Northeast. (Version 4) ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 978-1-7326524-8-4 (Book, 441 pages) https://digitalcommons.mtu.edu/oabooks/1/

53) Lanquaye, H., Dwivedi, S.K., Li, X., Agyemang, P., Rickauer, G., Arachchige, D.L., Peters, J., Zhen, I., **Knighton, I.*,** Ata, A., **Werner, T.**, Liu, H. (2025). A rhodamine-based ratiometric fluorescent sensor for dual-channel visible and near-infrared emission detection of NAD(P)H in living cells and fruit fly larvae. ***ACS Applied Bio Materials***, https://doi.org/10.1021/acsabm.4c01912

52) Olowolagba, A.M., Aworinde, O.R., Dwivedi, S.K., Idowu, M.O., Arachchige, D.L., **Graham, O.R.*,** Wang, C., Peter, J., Rickauer, G., **Werner, T.,** Luck, R.L., Liu, H. (2025) Near-infrared probes designed with hemicyanine fluorophores featuring rhodamine and 1,8-naphthalic derivatives for viscosity and HSA detection in live cells. ***ACS Applied Bio Materials***, 8 (1): 879-892.

51) Jaeger, S., Lanquaye, H., Dwivedi, S., Arachchige, D., Xia, J., Waters, M., **Bigari, B.*,** Olowolagba, A., Agyemang, P., Ata, A., Kathuria, I., Luck, R., **Werner, T.,** Liu, H. (2024) Near-infrared visualization of NAD(P)H dynamics in live cells and *Drosophila melanogaster* larvae using a coumarin-based pyridinium fluorescent probe. ***ACS Applied Bio Materials***, 7 (12): 8465-8478.

50) Norouszi, M., Amoli, A., Zhang, Y., **Beatty, A.*,** Jarvi, A., Ata, A., **Werner, T.**, Liu, H. (2024) Deep-red and near-infrared compact cyanine dyes for sensitive NAD(P)H sensing in live cells and kidney disease. ***ACS Applied Bio Materials***, 7 (12): 8552-8564.

49) Olowolagba, A.M., Idowu, M., Arachchige, D.L., Aworinde, O., Dwivedi, S.K., **Graham, O.R.*, Werner, T.,** Luck, R.L., Liu, H. (2024) Syntheses and applications of coumarin-derived fluorescent probes for real-time monitoring of NAD(P)H dynamics in living cells across diverse chemical environments. ***ACS Applied Bio Materials*,** 7 (8): 5437-5451.

48) Dwivedi, S.K., Arachchige, D.L., Olowolagba, A.M., Peter, J., **Beatty A.B.*,** Guo, A., Wang. C., **Werner, T.,** Luck, R.L., Liu, H. (2024) Dynamic insights into mitochondrial function: monitoring viscosity and SO_2 levels in living cells. ***Journal of Photochemistry and Photobiology B: Biology*,** 258: 112986.

47) Kim, B.Y., Gellert, H.R., Church, S.H., Suvorov, A., Anderson, S.S., Barmina, O., Beskid, S.G., Comeault, A.A., Crown, K.N., Diamond, S.E., Dorus, S., Fujichika, T., Hemker, J.A., Hrcek, J., Kankare, M., Katoh, T., Magnacca, K.N., Martin, R.A., Matsunaga, T., Medeiros, M.J., Miller, D.E., Pitnick, S., Simoni, S., Steenwinkel, T.E.**, Schiffer, M., Syed, Z.A., Takahashi, A., Wei, K.H-C., Yokoyama, T., Eisen, M.B., Kopp, A., Matute, D., Obbard, D.J., O'Grady, P.M., Price, D.K., Toda, M.J., **Werner, T.,** Petrov, D.A. (2024) Single-fly genome assemblies fill major phylogenomic gaps across the Drosophilidae tree of life. ***PLoS Biology*,** doi:10.1371/journal.pbio.3002697

46) Dwivedi, S.K., Arachchige, D.L., Waters, M., Jaeger, S., Mahmoud, M, Olowolagba, A.M., Tucker, D.R., **Geborkoff, M.R.*, Werner, T.**, Luck, R.L., Godugu, B., Liu, H. (2023) Near-infrared absorption and emission probes with optimal connection bridges for live monitoring of NAD(P)H dynamics in living systems. ***Sensors and Actuators B: Chemical*,** 402, 135073.

45) Arachchige, D.L., Dwivedi, S.K., Waters, M., Jaeger, S., Peters, J., Tucker, D.R., **Geborkoff, M.R*., Werner, T.,** Luck, R.L., Godugu, B., Liu, H. (2023) Sensitive monitoring of NAD(P)H levels within cancer cells using mitochondria-targeted near-infrared cyanine dyes with optimized electron-withdrawing acceptors. ***Journal of Materials Chemistry B*,** 12 (2), 448-465.

44) Nyansa, M.M.S., Oronova, A., Gora, N.; **Geborkoff, M.*; Ostlund, N.*, Fritz, D.*, Werner, T.,** Tanasova, M. (2023) Turn-on rhodamine glycoconjugates enable real-time GLUT activity monitoring in live cells and *in vivo*. ***Chemical & Biomedical Imaging***, 17 (1), 57-61.

43) Arachchige, D.L., Dwivedi, S.K., Jaeger, S., Olowolagba, A.M., Mahmoud, M., Tucker, D. R., **Fritz, D.R.*, Werner, T.,** Tanasova, M., Luck, R.L., Liu, H. (2023) Highly sensitive cyanine dyes for rapid sensing of NAD(P)H in mitochondria and first-instar larvae of *Drosophila melanogaster*. ***ACS Applied Bio Materials*,** 6 (8), 3199-3212. https://doi.org/10.1021/acsabm.3c00320

42) Dwivedi, S.K., Arachchige, D.L., Olowolagba, A., Mahmoud, M., Cunnien, J., Tucker, D., **Fritz, D.R.*, Werner, T.,** Luck, R.L., Liu, H. (2023) Thiophene-based organic

dye with large stokes shift and deep red emission for live cell NADH detection under varying chemical stimuli. ***J Mater Chem B***, 11 (27), 6296-6307.

41) **Kokate, P.P.**, Werner, T.*****. (2023) Mycotoxin tolerance affects larval competitive ability in *Drosophila recens*. ***J Insect Sci***, 23 (3), 18.

40) Dwivedi, S.K., Arachchige, D.L., Vohs, T., Tang, J., Usimaki, K., Olowolagba, A.M., **Fritz, D.R.*,** Luck, R.L., **Werner, T.*****, Liu, H. (2023) Near-infrared rhodol dyes bearing salicylaldehyde moieties for ratiometric pH sensing in live cells during mitophagy and under hypoxia conditions. ***J Mater Chem B***, 11 (13), 2852-2861. ("hot paper" collection)

39) **Raja, K.K.**, Bachman, E.A.*, Fernholz, C.*, Trine, D.*, Hobmeier, R.E.*, Maki, N.*, Massoglia, T.*, Werner, T.***** (2023) The genetic mechanisms underlying the concerted expression of the *yellow* and *tan* genes in complex patterns on the abdomen and wings of *Drosophila guttifera*. ***Genes***, (14), 304.

38) **Steenwinkel, T.E.**, Hamre, K.K.*, Werner, T.***** (2022) The use of non-model *Drosophila* species to study natural variation in TOR pathway signaling. ***PLoS One***, 17 (9), e0270436.

37) Murugesan, S.N., Connahs, H., Matsuoka, Y., das Gupta, M., Huq, M., Gowri, V., Monroe, S., Deem, K.D., **Werner, T.,** Tomoyasu, Y., Monteiro, A. (2022) Butterfly eyespots evolved via co-option of the antennal gene-regulatory network. ***Proc Natl Acad Sci USA***, 119 (8), e2108661119.

36) Wan, S., Vohs, T., **Steenwinkel, T.E.**,** Lara-Ramirez, A., White, R., Luck, R.L., **Werner, T.*****, Tanasova, M., Liu, H. (2022) Near-infrared fluorescent probes with new amine-incorporated xanthene platforms for detection of hypoxia. ***ACS Applied Bio Materials***, 5 (9), 4294-4300.

35) **Kokate, P.**, Smith, M.*, Hall, L.*,** Zhang, K., **Werner, T.***** (2022) Inter- and intra-specific variation in mycotoxin tolerance: A study of four *Drosophila* species. ***Ecol Evol***, 12 (7), e9126.

34) **Raja, K.K.B.**, Shittu, M.O.**, Nouhan, P.M.E.*, Steenwinkel, T.E.*, Bachman, E.A.*, Kokate, P.P.**, McQueeney, A.H.*, Mundell, E.A.*, Armentrout, A.A.*, Peabody, A.M.*, Werner, T.***** (2022) The regulation of a pigmentation gene in the formation of complex color patterns in *Drosophila* abdomens. ***PLoS One***, 17 (12), e0279061.

33) Monteiro, A., **Werner, T.***** (2021) Editorial Overview: Cool, colorful, and complex animal systems. ***Curr Opin Genet Dev***, 69, 3-5.

32) Finet, C., Kassner, V.A., Carvalho, A.B., Chung, H., Day, J.P., Day, S., Delaney, E.K., De R., Francine C., Dufour, H.D., Dupim, E., Izumitani, H.F., Gautério, T.B., Justen, J., Katoh, T., Kopp, A., Koshikawa, S., Longdon, B., Loreto, E.L., Nunes, M.D.

S., Raja, K.K.B.**, Rebeiz, M., Ritchie, M.G., Saakyan, G., Sneddon, T., Teramoto, M., Tyukmaeva, V., Vanderlinde, T., Wey, E.E., **Werner, T.,** Williams, T.M., Robe, L.J. Toda, Masanori J., Marlétaz, F. (2021) DrosoPhyla: genomic resources for drosophilid phylogeny and systematics. ***Genome Biol Evol,*** 13 (8), 179.

31) **Kokate, P.**,** Techtmann, S.M., **Werner, T.***** (2021) Codon usage bias and dinucleotide preference in 29 *Drosophila* species. ***G3-Genes Genom Genet,*** 11 (8), p.jkab 191.

30) **Shittu, M.O.**, Steenwinkel, T.E.**, Dion, W.A.**, Ostlund*, N. Raja, K.K.B.**, Werner, T.***** (2021) RNA *in situ* hybridization for detecting gene expression patterns in the abdomens and wings of *Drosophila* species. ***MDPI Methods and Protocols,*** 4 (1), 20.

29) Wan, S., Xia, S., Medford, J. Durocher, E., **Steenwinkel**,** T.E., Rule, L., Luck, R.L., **Werner, T.***,** Liu, H. (2021) Near-infrared fluorescent probes based on a reactive cyanine dye for mitochondrial pH detection. ***J Mater Chem B,*** 9, 5150-5161.

28) **Dion, W.A., Steenwinkel, T.E.*, Werner, T.***** (2021) From *Aedes* to *Zeugodacus*: A review of dipteran body coloration studies regarding evolutionary developmental biology, pest control, and species discovery. ***Curr Opin Genet Dev,*** 69, 35-41.

27) **Werner, T.***, Steenwinkel, T.E.*,** Jaenike, J. (2020) The Encyclopedia of North American Drosophilids: Volume 1: Drosophilids of the Midwest and Northeast. (Version 3) ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University.*** Houghton, Michigan. ISBN: 978-1-7326524-1-5 (Book, 351 pages) https://digitalcommons.mtu.edu/oabooks/1/

26) **Werner, T.***, Steenwinkel, T.E.*,** Jaenike, J. (2020) The Encyclopedia of North American Drosophilids: Volume 2: Drosophilids of the Southeast. (Version 1) ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University.*** Houghton, Michigan. ISBN: 978-1-7326524-2-2 (Book, 334 pages) https://digitalcommons.mtu.edu/oabooks/3/

25) **Shittu, M.O.**, Steenwinkel, T.E.*,** Koshikawa, S., **Werner, T.***** (2020) The making of transgenic *Drosophila guttifera*. ***MDPI Methods and Protocols,*** 3 (2), 31.

24) **Dion, W.A.**, Shittu, M.O.**, Steenwinkel, T.E.*, Raja, K.K.B.**, Kokate, P.P.**, Werner, T.***** (2020) The modular expression patterns of three pigmentation genes prefigure unique abdominal morphologies seen among three *Drosophila* species. ***Gene Expr Patterns,*** 38, 119132.

23) Zhang, Y., Yan, Y., Xia, S., Wan, S., **Steenwinkel, T.E.*,** Medford, J., Durocher, E., Luck, R.L., **Werner, T.***, Liu, H. (2020) Cell membrane-specific fluorescent probe

featuring dual and aggregation-induced emissions. ***ACS Appl Mater Interfaces***, 12 (18), 20172-20179.

22) Zhang, Y., Xia, S., Mikesell, L., **Steenwinkel, T.E.*,** Whisman, N., Medford, J., Wan, S., Tajiri, M., Luck, R.L., **Werner, T.***,** Liu, H. (2020) Ratiometric detection of glutathione using a near-infrared fluorescent probe based on disulfide linkage rupture between a FRET coumarin donor and a near-infrared rhodamine acceptor. ***Chembiochem***, 22 (13), 2282-2291.

21) Xia, S., Wang, J., Zhang, Y., Whisman, N., Bi, J., **Steenwinkel, T.E.*,** Wan, S., Medford, J., Tajiri, M., Luck, R.L., **Werner, T.***,** Liu, H. (2020) Ratiometric fluorescent probes based on through-bond energy transfer of cyanine donors to near-infrared hemicyanine acceptors for mitochondrial pH detection and monitoring of mitophagy. ***J Mater Chem B***, 8, 1603-1615.

20) Zhang, Y., Xia, S., Mikesell, L., Whisman, N., Fang, M., **Steenwinkel, T.E.*,** Chen, K., Luck, R.L., **Werner, T.***,** Liu, H. (2019) Near-infrared hybrid rhodol dyes with spiropyran switches for sensitive ratiometric sensing of pH changes in mitochondria and *Drosophila melanogaster* first-instar larvae. ***ACS Applied Bio Materials***, 2 (11), 4986-4997.

19) Xia, S., Zhang, Y., Fang, M., Miksell, L., **Steenwinkel, T.E.*,** Wan, S., Phillips, T., Luck, R.L., **Werner, T.***,** Liu, H. (2019) A FRET-based near-infrared fluorescent probe for ratiometric detection of cysteine in mitochondria. ***Chembiochem***, 20 (15),1986-1994.

18) **Werner, T.***, Steenwinkel, T.*,** Jaenike, J. (2018) Drosophilids of the Midwest and Northeast. (Version 2) ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 978-1-7326524-0-8 (Book, 345 pages) https://digitalcommons.mtu.edu/oabooks/1/

17) Scott-Chialvo, C.H. and **Werner, T.*** (2018) *Drosophila*, destroying angels, and deathcaps! Oh my! A review of mycotoxin tolerance in the genus *Drosophila*. ***Front Biol***, April 24, 1-12.

16) **Werner, T.*** (2018) The drosophilids of a pristine old-growth northern hardwood forest. ***Great Lakes Entomol***, 50 (2), 68-78. (Cover)

15) **Werner, T.*** and Jaenike, J. (2017) Drosophilids of the Midwest and Northeast. (Version 1) ***River Campus Libraries, University of Rochester***. Rochester, New York. ISBN: 978-0-9988372-0-8 (Book, 256 pages)

14) Zhang, J., Li, C., Dutta, C., Zhang, S., Tiwari, A., **Werner, T.***,** Luoc, F.-T., Liu, H. (2017) A novel near-infrared fluorescent probe for sensitive detection of β-Galactosidase. ***Anal Chim Acta***, 968, 97-104.

13) **Mitchell, C.M.**, Latuszek, C.E.*,** Vogel, K.R., **Greenlund, I.M.*, Hobmeier, R.E.*, Ingram, O.K.*, Dufek, S.R.*, Pecore, J.L.*, Nip, F.R.*, Johnson, Z.J.*,** Ji, X., Wei, H., Gailing, O., **Werner, T.***** (2017) Alpha-amanitin resistance in *Drosophila melanogaster*: a genome-wide association approach. ***PLoS One***, 12 (2), e0173162. doi: 10.1371/journal.pone.0173162. eCollection 2017.

12) Koshikawa, S., Giorgianni, M.W., Vaccaro, K., Yoder, J.H., **Werner, T.**, Carroll, S.B. (2015) Gain of *cis*-regulatory activities underlies novel domains of *wingless* gene expression in *Drosophila*. ***Proc Natl Acad Sci USA***, 112 (24), 7524-7529.

11) **Werner, T.** *** (2015) Leopard Spots and Zebra Stripes on Fruit Fly Wings. ***Nature Education***, 8 (2), 1-3.

10) **Mitchell, C.M.**, Yeager, R.D.*, Johnson, Z.J.*, D'Annunzio, S.E.*,** Vogel, K.R., **Werner, T.***** (2015) Long-term resistance of *Drosophila melanogaster* to the mushroom toxin alpha-amanitin. ***PLoS One***, 10 (5), e0127569. doi: 10.1371/journal.pone.0127569

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5) Williams, T.M., Selegue, J.E., **Werner, T.**, Gompel, N., Kopp, A., and Carroll, S.B. (2008) The regulation and evolution of a genetic switch controlling sexually dimorphic traits in *Drosophila*. ***Cell***, 134 (4), 610-623. (Cover)

4) Jeong, S., Rebeiz, M., Andolfatto, P., **Werner, T.**, True J., Carroll, S.B. (2008) The Evolution of Gene Regulation Underlies a morphological difference between two *Drosophila* sister species. ***Cell***, 132 (5), 783-93.

3) **Werner, T.**, Borge-Renberg, K., Mellroth, P., Steiner, H. and Hultmark, D. (2003) Functional diversity of the *Drosophila PGRP-LC* gene cluster in the response to LPS and peptidoglycan. ***J Biol Chem***, 278 (29), 26319-26322.

2) Choe, K.M., **Werner, T.**, Stoven, S., Hultmark, D., Anderson, K.V. (2002) Requirement for a Peptidoglycan Recognition Protein (PGRP) in Relish activation and antibacterial immune responses in *Drosophila*. ***Science***, 296 (5566), pp. 359-362.

1) **Werner, T.**, Liu, G., Kang, D., Ekengren, S., Steiner, H. and Hultmark, D. (2000) A family of peptidoglycan recognition proteins in the fruit fly *Drosophila melanogaster*. ***Proc Natl Acad Sci USA***, 97 (25), 13772-13777.

Non-peer-reviewed Publications:

4) Doll, A, Werner, T, **Steenwinkel, T.E.**,** Jaenike, J (2021) Free the Fruit Flies! An Open Education Journey (Media contribution about how to publish open-access books, featuring the authors of “The Encyclopedia of North American Drosophilids”)

3) Bergsten, J., Ekerholm, P., Gabrielsson, F., Hellqvist, S., Pettersson, R., **Werner, T.**, Ström, L., Chauvet, S., Dalecky, A. (2003). Insekter, spindlar och landsnäckor från Bjuröklubbs naturreservat i Västerbotten (in Swedish). ***Natur i Norr, Umeå*** 24 (1), pp. 1-21.

2) Bergsten, J., Ekerholm, P., Hellquist, S., Hilszszanski, J., Nilson, A., Pettersson, R., **Werner, T.** (2003). Insekter och spindeldjur från Romelsön (in Swedish). ***Natur i Norr, Umeå*** 22 (2), pp. 65-87.

1) Bergsten, J., Lundgren, M., **Werner, T.** (2002). Gaddsteklar, fjärilar och andra insekter från Härjedalen (in Swedish). ***Natur i Norr, Umeå*** 21 (2), pp. 73-76.

Science documentary:

All the Litte Things https://vimeo.com/1030416398?share=copy PW: f1i3z24

Sponsored Book Publications:

As part of my **Special Topics in Biology** course, I mentored my M.S. student Molly Fitzgerald in book writing, illustrating, and open-access publishing through Digital Commons. I gave feedback on the contents, edited the texts, and provided ideas and examples to be featured in the books. Molly, who is a very talented artist, illustrated and typeset the books. Thus far, we published two books over two semesters (one more book is in preparation about mimicry). The target audience is middle-school kids:

3) **Fitzgerald, M.**** (2022) Flea the Flyentist: Mimicry! Oh My! ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 978-1-7326524-6-0 (Book, 20 pages). This book teaches about mimicry in animals.
https://digitalcommons.mtu.edu/oabooks/7/

2) **Fitzgerald, M.**** (2022) Flea the Flyentist: What's the difference? ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 978-1-7326524-5-3 (Book, 20 pages). This book unravels common misconceptions between closely related animals.
https://digitalcommons.mtu.edu/oabooks/6/

1) **Fitzgerald, M.**** (2021) Flea the Flyentist: What is an invasive species? ***J. Robert Van Pelt and John and Ruanne Opie Library, Michigan Technological University***. Houghton, Michigan. ISBN: 978-1-7326524-4-6 (Book, 20 pages). This book introduces common invasive plant and animal species in the U.S.
https://digitalcommons.mtu.edu/oabooks/5/

My Citations:

As of August 20th, 2025, I have been cited 3718 times:
https://scholar.google.com/citations?user=Ky0h5r4AAAAJ&hl=en

Graduated M.S. Students:

Beth Elledge (2012) – Alpha-amanitin resistance in *Drosophila melanogaster*. (Report)

Chelsea Mitchell (2015) – The mechanisms of alpha-amanitin resistance in the fruit fly *Drosophila melanogaster*. (Thesis)

William Dion (2020) – The development of complex abdominal spot patterns in three *Drosophila* species. (Thesis)

Matthew Tocco (2021) (Coursework student)

Tessa Steenwinkel (2021) – The effect of nutrition on longevity and fertility in diverse *Drosophila*: A TOR-mediated process. (Thesis). She was the best student I have ever mentored. Besides earning 12 co-authorships (and five manuscripts in preparation or under review) under my guidance, she was bestowed with the following honors and awards:

9) **NSF** Graduate Research Fellowship ($138,000)
8) Outstanding Graduate Scholarship Award 2021
7) Barry **Goldwater** Fellowship ($15,000) 2019 – 2021
6) Provost's Award for Scholarship ($800) 2019
5) Departmental Scholarship ($200) 2019
4) SURF Award ($4,000) 2019
3) Songer Research Award ($4,000) 2019
2) Soyring Foundation Fellowship ($1,000) 2018
1) Michigan Tech Scholar of Prominence 2017 – 2021

Molly Fitzgerald (2022) (Coursework student, with whom I published three books)

Graduated Ph.D. Students:

Komal Kumar Bollepogu Raja (2017) – The role of toolkit genes in the evolution of complex color patterns in *Drosophila guttifera* (Thesis)

Mujeeb Shittu (2020) – Functional genetic approaches to provide evidence for the role of toolkit genes in the evolution of complex color patterns in *Drosophila guttifera* (Thesis)

Prajakta Kokate (2021) – Quantitative genetic variation in mycotoxin tolerance, associated fitness costs, and study of codon usage bias in *Drosophila* species. (Thesis)

Invited Talks:

Pacific Entomology and Botany Meeting 2025, Honolulu, Hawaii, USA (2025). "The Encyclopedia of North American Drosophilids - taking a research lab into the wilderness".

Molecular Mechanisms of Resistance Symposium, Michigan State University, East Lansing, USA (2024): "Unraveling mushroom toxin resistance mechanisms in *Drosophila* and discovering non-model drosophilid species in the wild."

North Coast and Cascades Science days 2024, virtual meeting, Washington, USA (2024): Conference for researchers working in and around Olympic National Park, Washington: “Drosophilids of the Northwest - taking a research lab into the wilderness.”

Houghton, Michigan, USA (2022): Departmental Seminar at the Department of Biological Sciences at Michigan Tech. Title: “Drosophilids of the Northwest - taking a research lab into the wilderness.”

Olympic Science Days, virtual meeting, Washington, USA (2022): Conference for researchers working in Olympic National Park, Washington: “Drosophilids of the Northwest - taking a research lab into the wilderness.”

Fort Myers, Florida, USA (2022): Alumni fundraiser meeting: “Fruit Flies: Enemies of the Kitchen - Heroes of Genetics” Co-presented with my former undergraduate/M.S. student Tessa Steenwinkel.

Houghton, Michigan, USA (2022): Husky Bites Lecture Series (Alumni outreach over Zoom, audience from all over the U.S.): “Butterflies, Moths, and Fruit Flies of the Keweenaw -- and Beyond” Co-presented with my former undergraduate/M.S. student Tessa Steenwinkel.

Houghton, Michigan, USA (2022): Reception for prospective Michigan Tech student leaders: “Fruit Flies: Enemies of the Kitchen - Heroes of Genetics”

Houghton, Michigan, USA (2021): Board of Trustees meeting at Michigan Tech: “Fruit Flies: Enemies of the Kitchen - Heroes of Genetics”

Rutgers University, USA (2021): Departmental Seminar: “Evo-devo of color patterns in fruit flies”.

Houghton, Michigan, USA (2021): Free the fruit flies! An Open Education Journey.

Houghton, Michigan, USA (2020): Departmental Seminar at the Department of Biological Sciences at Michigan Tech. Title: "My Sabbatical in Singapore: How I Finally Got to Study Butterflies”.

Singapore, SINGAPORE (2019): National University of Singapore. Title: “Evo-devo of color patterns in fruit Flies - How I (almost) never got to study butterflies.”

Madison, Wisconsin, USA (2018): Sean B. Carroll Symposium. Title: "Memories and Research Highlights”.

Houghton, Michigan, USA (2017): Departmental Seminar at the Department of Biological Sciences at Michigan Tech. Title: "My fruit flies, my job, my career: How an army of undergraduates can help you succeed”.

Houghton, Michigan, USA (2017): Michigan Tech Faculty & UPHS Physician Social Title: “Fruit fly pigmentation patterns.”

University of Rochester, NY, USA (2017): Open access book launch. Title: "Drosophilids of the Midwest and Northeast."

Houghton, MI, USA (2017): Houghton High School "Butterflies and Moths of the Keweenaw Peninsula"

Houghton, MI, USA (2016): Houghton High School "Butterflies and Moths of the Keweenaw Peninsula"

Watersmeet, MI, USA (2015): Department for National Resources Seminar "Butterflies and Moths of the Keweenaw Peninsula"

Bessemer, MI, USA (2013): Bessemer High School "Butterflies and Moths of the Keweenaw Peninsula"

Calumet, MI, USA (2013): Calumet Public Library "Butterflies and Moths of the Keweenaw Peninsula"

Houghton, MI, USA (2013): Rotary Club "Butterflies and Moths of the Keweenaw Peninsula"

University of Rochester, NY, USA (2013): Departmental Seminar Series. Title: "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*."

Stockholm, SWEDEN (2013): International and National Departmental Seminar Series. Title: "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*."

Umeå, SWEDEN (2013): International and National Departmental Seminar Series. Title: "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*."

Cornell University, USA (2013): Evo Day. Keynote presentation. Title: "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*."

Houghton, Michigan, USA (2013): Department of Chemistry. Title: "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*."

Houghton, Michigan, USA (2013): Department of Chemical Engineering. Title: "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*."

Houghton, Michigan, USA (2013): Invited speaker at the Career Proposal Workshop, Michigan Tech. "Agency Engagement: Biosketches, White Papers, and Agency Visits".

Cincinnati, Ohio, USA (2012): 50th Annual Midwest Developmental Biology Meeting. Title: “The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*.”

Tampere, FINLAND (2011): Non-mammalian model organisms course minisymposium. Title: “Modern paintings on ancient wingscapes: Generation of a novel wing color pattern by the Wingless morphogen.”

Umeå, SWEDEN (2011): International and National Departmental Seminar Series. Title: “Modern paintings on ancient wingscapes: Generation of a novel wing color pattern by the Wingless morphogen.”

Edmonton, Alberta, CANADA (2010): 6th International Conference on the Biology of Butterflies. Title: “Modern paintings on ancient wingscapes: Generation of a novel wing color pattern by the Wingless morphogen.”

Skellefteå, SWEDEN (2004): Department Retreat. Title: “Innate immune response in *Drosophila melanogaster*: The family of Peptidoglycan recognition proteins.”

Uppsala, SWEDEN (2003): National Invertebrate Immunology Meeting. Title: “Innate immune response in *Drosophila melanogaster*: The family of Peptidoglycan recognition proteins.”
Szeged, HUNGARY (2003): Invited talk at the Biological Research Center of the Hungarian Academy of Science. Title: “Innate immune response in *Drosophila melanogaster*: The family of Peptidoglycan recognition proteins.”

Trest, CZECH REPUBLIC (2003): EMBO Workshop “Pattern Recognition Proteins and Receptors”. Title: “Innate immune response in *Drosophila melanogaster*: The family of Peptidoglycan recognition proteins.”

Bergen, NORWAY (2002): Conference “Receptor-Ligand Interactions”. Title: “Innate immune response in *Drosophila melanogaster*: The family of Peptidoglycan recognition proteins.”

Poster Presentations:

In 59 instances, a student of mine gained authorship or co-authorship on one of our posters.

*** my undergraduate student, ** my graduate student *** corresponding author**

P presenter

Portland, OR, USA "Drosophilids of the Midwest and Northeast" **Thomas Werner***** **P** and John Jaenike, presented at the Society of Developmental Biology 77th Annual Meeting, July 19th – 24th, 2017.

Portland, OR, USA "The regulation of the *yellow* gene in the evolution of a complex abdominal color pattern in *Drosophila guttifera*" Komal K.B. Raja** **P**, Peter Nouhan*, Evan Bachmann*, Alexander McQueeney*, Elizabeth Mundell*, Alexandri Armentrout*, Amber Peabody*, Shittu Mujeeb**, and **Thomas Werner** *** **P**, presented at the Society of Developmental Biology 77th Annual Meeting, July 19th – 24th, 2017.

Portland, OR, USA "The regulation of the *tan* gene in the evolution of complex wing and abdominal color patterns in *Drosophila guttifera*" Komal K.B. Raja** **P**, David Trine*, Catrina Latuszek*, Nathaniel Maki*, Timothy Massoglia*, Rebecca Hobmeier*, Jackson Waugh*, and **Thomas Werner***** **P**, presented at the Society of Developmental Biology 77th Annual Meeting, July 19th – 24th, 2017.

Madison, WI, USA "Alpha-amanitin resistance in *Drosophila melanogaster*: physiology and gene expression characterizing the trait" Chelsea L. Mitchell**, Michael C. Saul, Liang Lei, Hairong Wei, Roger D. Yeager*, Zachary J. Johnson*, Stephanie E. D'Annuzio*, Kara R. Vogel, Prajakta P. Kokate** **P**, **Thomas Werner***** **P**, presented at the Population, Evolutionary and Quantitative Genetics Conference of the Genetics Society of America, May 13th – 16th, 2018.

Madison, WI, USA "Alpha-amanitin resistance in *Drosophila melanogaster*: a genome-wide association approach" Chelsea L. Mitchell**, Catrina E. Latuszek*, Kara R. Vogel, Ian M. Greenlund*, Rebecca E. Hobmeier*, Olivia K. Ingram*, Shannon R. Dufek*, Jared L. Pecore*, Felicia R. Nip*, Zachary J. Johnson*, Xiaohui Ji, Hairong Wei, Oliver Gailing, and **Thomas Werner***** **P**, presented at the Population, Evolutionary and Quantitative Genetics Conference of the Genetics Society of America, May 13th – 16th, 2018.

Minneapolis, MN, USA "Drosophilids of the Midwest and Northeast" **Thomas Werner***** **P** and John Jaenike, presented at the Society of Developmental Biology 76th Annual Meeting, July 13th – 17th, 2017.

Minneapolis, MN, USA "The regulation of the *yellow* gene in the evolution of a complex abdominal color pattern in *Drosophila guttifera*" Komal K.B. Raja** **P**, Peter Nouhan*, Evan Bachmann*, Alexander McQueeney*, Elizabeth Mundell*, Alexandri Armentrout*, Amber Peabody*, Shittu Mujeeb** **P**, and **Thomas Werner***** **P**, presented at the Society of Developmental Biology 76th Annual Meeting, July 13th – 17th, 2017.

Minneapolis, MN, USA "The regulation of the *tan* gene in the evolution of complex wing and abdominal color patterns in *Drosophila guttifera*" Komal K.B. Raja** **P**, David Trine*, Catrina Latuszek*, Nathaniel Maki*, Timothy Massoglia*, Rebecca Hobmeier*, Jackson

Waugh*, and **Thomas Werner*** P**, presented at the Society of Developmental Biology 76th Annual Meeting, July 13th – 17th, 2017.

Minneapolis, MN, USA "The role of toolkit genes in the evolution of the abdominal color pattern of *Drosophila guttifera*" Komal K.B. Raja** P, Evan Bachman*, Alexander McQueeney*, Elizabeth Mundell*, Amber Peabody*, Alexandri Armentrout*, and **Thomas Werner*** P**; presented at the Society of Developmental Biology 76th Annual Meeting, July 13th – 17th, 2017.

Boston, MA, USA "The role of toolkit genes in the evolution of the abdominal color pattern of *Drosophila guttifera*" **Thomas Werner*** P**, Komal K.B. Raja**, Evan Bachman*, Alexander McQueeney*, Elizabeth Mundell*, Amber Peabody*, Alexandri Armentrout*; presented at the Society of Developmental Biology 75th Annual Meeting, August 3rd – 8th, 2016.

Cancun, MEXICO (2013) "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*" **Thomas Werner*** P**, Koshikawa Shigeyuki, Thomas A. Williams, Komal K.B. Raja**, and Sean B. Carroll; presented at the Society of Developmental Biology 72nd Annual Meeting, June 16th – 20th, 2013.

Montreal, CANADA (2012) "The role of toolkit genes in the evolution of complex wing, thorax, and abdominal color patterns in *Drosophila guttifera*" **Thomas Werner*** P**, Koshikawa Shigeyuki, Thomas A. Williams, Komal K.B. Raja**, and Sean B. Carroll; presented at the Society of Developmental Biology 71st Annual Meeting, July 19th – 23rd, 2012.

Lövånger, SWEDEN (2003). "Innate immune response in *Drosophila melanogaster*: The family of peptidoglycan recognition proteins." **Thomas Werner P** and Dan Hultmark; presented at the Molecular Biology Meeting organized by Umeå University.

Split, CROATIA (2001) "Innate immune response in *Drosophila melanogaster*: The family of peptidoglycan recognition proteins." **Thomas Werner P** and Dan Hultmark; presented at the *EMBO Lecture Course: Cellular Signaling in Development and Disease*.

Awards and Nominations:

Michigan Distinguished Professor of the Year Award 2021 (Michigan-wide award recognizing excellence in research-mentoring and teaching related to undergraduate education.)

Distinguished Teaching Award (Michigan Tech, university-wide, tenured professor category, awarded after first nomination) (2019)

Distinguished Teaching Award (Michigan Tech, university-wide, lecturer and tenure-track assistant professor category, awarded after second nomination) (2013)

Induction into the **Academy of Teaching Excellence** (2012)

Nominated for the Distinguished Teaching Award (Michigan Tech, university-wide, lecturer and tenure-track assistant professor category) (2012)

Postdoctoral long-term fellowship HFSP for the USA (Human Frontier Science Program), June 2005 – May 2008.

Postdoctoral long-term fellowship EMBO for the USA (European Molecular Biology Organization) – I decided not to accept it in favor of the HFSP fellowship.

Graduate fellowship in Sweden (Umeå University), April 1998 – March 2000.

Special award at the **national youth science and technology competition** "**Jugend Forscht**" for a project about butterflies and moths. Mainz, GERMANY, 1990.

Sponsored Graduate Research Awards:

Emily Geiger: Alumni Association Graduate Award (2011)

Emily Geiger: King-Chavez-Parks Future Faculty Fellowship (2011)

Sponsored Undergraduate Research Awards:

Tessa Steenwinkel: NSF Graduate Research Fellowship (2022-2025)

Morgan Smith: Songer Research Award (2021-2022)

Morgan Smith: Undergraduate Research Internship Award (2021-2022)

Morgan Smith: Summer Undergraduate Research Fellowship (2021)

Tessa Steenwinkel: Barry **Goldwater** Fellowship (2019-2021)

Tessa Steenwinkel: Songer Undergraduate Research Award (2019-2020)

Tessa Steenwinkel: Summer Undergraduate Research Fellowship (2019)

Tessa Steenwinkel: Departmental Scholarship Award (2019)

Tessa Steenwinkel: Provost Award for Scholarship (2019)

Tessa Steenwinkel: Soyring Award (2018)

Emma Byrne: Summer Undergraduate Research Fellowship (2018)

David Trine: Summer Undergraduate Research Fellowship (2016)

Jared Pecore: Best Poster Award at the Undergraduate Research Expo (2015)

Peter Nouhan: Summer Undergraduate Research Fellowship (2015)

Mark Keranen: Summer Undergraduate Research Fellowship (2014)

Felicia Nip: Best Poster Award at the Undergraduate Research Expo (2012)

Felicia Nip: Summer Undergraduate Research Fellowship (2012)

Zac Johnson: Summer Undergraduate Research Fellowship (2012)

Luke Whitehouse: Finan Endowment Michigan Tech Fund Grant (2011)

Professional Memberships:

2018 – Present	Genetics Society of America
2012 – Present	Michigan Tech Academy of Teaching Excellence
2011 – Present	Society for Developmental Biology
2010 – Present	Michigan Tech Health Research Institute (HRI)

Departmental Service:

2024 – 2025	Early Career Management Committee: **Chair**
2024 – Present	Graduate Committee Member
2022– 2023	Space Committee (Member)
2022 – 2023	Seminar Committee (Member)

2021 – 2022	Tenure and Promotion Committee: **Chair**
2021 – Present	Grievance Committee: **Chair**
2020 – 2021	Early Career Management Committee: **Chair**
2020 – 2021	Tenure and Promotion Committee: Member
2020 – 2021	Graduate Program **Director** and Graduate Committee **Chair**
2018 – 2019	Chair Evaluation Committee: Member
2017 – 2018	Faculty Search Committee: Member
2015 – Present	**Director** of the Biological Honors Program
2015 – 2016	Faculty Search Committee: Member
2012 – Present	Student Orientation for Biology Freshmen
2011 – 2019	Student organization “Phi Sigma Honor Society”: Faculty Advisor
2011 – 2018	Budget and Finance Committee: Member
2011 – Present	Grievance Committee: Member
2010 – 2018	Graduate Committee: Member
2010 – Present	Diverse outreach activities for high school students
2010 – Present	Open House Student Recruitment
2010 – Present	Graduate advising committee member for 15 graduate students

University Service:

2022	Presenter at Future Husky Leader Reception at Michigan Tech
2022	Internal SURF reviewer for Michigan Tech
2022	Fundraising for Michigan Tech through 2 presentations to alumni
2021	Faculty Marshall at mid-year commencement
2021	Internal SURF reviewer for Michigan Tech
2020 – 2021	Early Career Management: Committee **Chair**

2019	Internal SURF reviewer for Michigan Tech
2018	Internal SURF reviewer for Michigan Tech
2017	Internal REF mentoring grant proposal reviewer
2017	Internal REF research seed grant reviewer for Michigan Tech
2016	Internal REF mentoring grant proposal reviewer
2015	Canterbury House Council: Board Member
2015	Internal REF mentoring grant proposal reviewer
2014	Internal REF mentoring grant proposal reviewer
2013	Internal SURF reviewer for Michigan Tech
2013	Internal REF mentoring grant proposal reviewer
2012 – 2019	Student organization “NOSOTROS”: Faculty Advisor
2012 – 2019	Student organization “Canterbury House Council”: Faculty Advisor
2010 – Present	Poster judge at Michigan Tech’s undergraduate and graduate research symposia
2010 – Present	Leading Scholar Program, Interview Host (Most prospective students whom I hosted won the full ride to Michigan Tech, and I offered them jobs in my research lab.)
2010 – Present	Adviser of 9 PhD and 6 MS committees

Peer-Review and Editorial Service:

2025	Reviewer *Zootaxa*
2025	Reviewer for *Biology of Sex Differences*
2024	Reviewer for *Science Advances*
2024	Reviewer for *STAR Protocols*
2024	Reviewer for *Insects MDPI*
2024	Reviewer for *Scientific Reports*

2024	Reviewer for *Bulletin of the American Museum of Natural History*
2024	Grant proposal Reviewer for the Wellcome Fund (Britain)
2023	Reviewer for the *Journal of Insect Science*
2022	Tenure and promotion evaluator for the American University of Beirut, Lebanon
2022	Reviewer for 2 papers for the journal *BMC Biology*
2022	Reviewer for the journal *Molecular Biology and Evolution*
2022	Reviewer for the journal *Synthetic and Systems Biotechnology*
2022	Reviewer for the journal *Genes*
2021	Reviewer for the journal *PLoS ONE*
2021	Reviewer for the journal *Frontiers in Cell and Developmental Biology*
2020	Reviewer for the journal *G3-Genes Genomes Genetics*
2019 – 2021	Guest editor for a special issue in Current Opinion in Genetics and Development (I reviewed and edited 11 papers) of the 22-paper issue entitled: “Developmental Mechanisms, patterning and evolution“. I also contributed two articles to the issue, one editorial article and one review article.
2018	Reviewer for the journal *Insect Molecular Biology*
2018	Reviewer for research proposal from the University of Beirut, Lebanon
2018	Reviewer for the journal *Scientific Reports*
2017	Reviewer for the journal *PLoS ONE*
2017	Reviewer for the *Journal for Immunology Research*
2017	Reviewer for the NSF (IOS - Evolution of Developmental Mechanisms)
2017	Reviewer for the journal *Molecular Biology and Evolution*
2017	Reviewer for the journal *PNAS*
2017	Reviewer for the journal *Genetics*
2017	Reviewer for the journal *BMC Plant Biology*

2016	Reviewer for the journal *BMC Plant Biology*
2016	Reviewer for the journal *International Journal for Molecular Sciences*
2016	Reviewer for the journal *Chemosphere*
2016	Reviewer for the NSF (IOS - Evolution of Developmental Mechanisms)
2015	Reviewer for the journal *BMC Genomics*
2015	Reviewer for the journal *Stem Cells International*
2015	Reviewer for the journal *Scientific Reports*
2014	NSF pre-proposal panel: Reviewer
2014	Reviewer for the journal *PLoS ONE*
2013	Reviewer for the journal *PLoS ONE*
2013	Reviewer for the journal *Developmental & Comparative Immunology*
2003	Reviewer for the *Journal of Molecular Evolution*

Society Service:

2012 – Present	Poster and talk judge at meetings of the Society for Developmental Biology

Public Service and Outreach:

2015 – Present	Community partner for Houghton High School's "Lake Superior Stewardship Initiative"
2013	Butterfly presentation at the Best of Bugs Camp (elementary school)

2011 – Present	Presentation “Life in East Germany and the Fall of the Berlin Wall” (at public libraries, high schools, Kiwanis Club, Rotary Club, student organizations, other clubs and organizations)
2010 – Present	Presentation “The Butterflies and Moths of the Upper Peninsula of Michigan" (at public libraries, high schools, Kiwanis Club, Rotary Club, student organizations, other clubs and organizations)
2010 – Present	Instructing salsa dancing classes, paused during COVID pandemic

Consulting Experience:

2014	Consultant for Dr. Mike Gibson at Washington State University (cloning strategies)

Teaching Experience:

I won the university-wide **Distinguished Teaching Award** at Michigan Tech in **2013** at the Assistant Professor/Lecturer Level and won the award again in **2019** at the Associate/Full Professor level. Every semester since I started teaching at Michigan Tech, I have been **consistently ranked among the top 10% of teachers at Michigan Tech.** My teaching load is close to 600 student credit hours per academic year (fall and spring semesters combined). In 2021, I won the **Michigan Distinguished Professor of the Year Award** for undergraduate mentoring and teaching.

2023 – Present	**General Biology I** lecture (3 credits), Michigan Tech, USA (~130 students at the 1000 level in the spring semester; I designed the course from scratch)
2023 – Present	**General Biology I** lab, 5 sections, 3 hours each (1 credit), Michigan Tech, USA (100 students total at the 1000 level in the spring semester; I designed the course from scratch)
2021 – Present	**Special Topics in Biology** (3 credits), Michigan Tech, USA (2 students at the 5000 level, publishing biology books for kids)

2021 – 2023	**Graduate Seminar in Biology** (1 credit), Michigan Tech, USA (~10 students at the 5000 level, grading seminar summaries)
2020 – Present	**Developmental Biology** lecture (3 credits), Michigan Tech, USA (~10 students at the 4000 and 5000 levels in the spring semester; I designed the course from scratch)
2016 – 2022	**Introduction to Genomics** lecture (3 credits), Michigan Tech, USA (~40 students in the fall semester; no teaching assistant assigned; I designed the course from scratch)
2012 – 2019	**Genetics** lecture (3 credits), Michigan Tech, USA (~75-95 students in the fall semester; no teaching assistant assigned; I designed the course from scratch)
2011 – Present	**General Immunology** lecture (3 credits), Michigan Tech, USA (~55-90 students in the fall semester; no teaching assistant assigned; I designed the course from scratch)
2010 – 2019	**Genetic Techniques** lab morning and afternoon session (3 hours each (1 credit), Michigan Tech, USA (~10 students per session, I redesigned a pre-existing course)
2004	**Innate Immunity** lab, Umeå University, SWEDEN
2001 – 2002	**Faunistic Course** lecture and lab, Umeå University, SWEDEN

Relevant Past Employment:

1995 – 1996	Thüringer Landesanstalt für Umwelt (equivalent to the Department of Natural Resources), GERMANY: Reviser of databank entries for butterfly and moth species
1992 – 1996	Bioservice Jena, GERMANY: Ecological expert's opinions for planning permissions (highways, railways). I surveyed areas that were planned to be destroyed for endangered butterfly species.

Languages:

German (native speaker)

English (fluent)

Swedish (fluent)

Spanish (intermediate)