Damien Beau Wilburn (he/him)

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The Ohio State University
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EDUCATION

Ph.D.	University of Louisville Biochemistry and Molecular Biology Adviser: Dr. Richard Feldhoff Dissertation: MECHANISMS OF ACTION AND CO-OPTIVE EVOLUTION FOR HYPERVARIABLE COURTSHIP PHEROMONES IN PLETHODONTID SALAMANDERS	Aug 2009 - May 2014
B.S.	University of Louisville Biology (Genetics/Subcellular), Mathematics (Probability/Statistics) Grawemeyer Research Scholarship *Summa cum laude*	Aug 2005 - May 2009

PROFESSIONAL EXPERIENCE

2022 –	Assistant Professor, Department of Chemistry and Biochemistry, The Ohio State University.
2021 – 2022	National Institutes of Health Postdoctoral Fellow, Wexner Medical Center, The Ohio State University.
2018 – 2021	National Institutes of Health K99 Acting Instructor, Department of Genome Sciences, University of Washington.
2014 – 2018	National Institutes of Health F32 Senior Fellow, Department of Genome Sciences, University of Washington.
2009 – 2014	National Science Foundation Graduate Research Fellow, Department of Biochemistry and Molecular Biology, University of Louisville School of Medicine.

GRANTS AND FELLOWSHIPS

1. Ohio State University Center for RNA Biology Collaborative Seed Grant Program. “Develop an analytical workflow for curating transcriptional variation and quantifying its effect on the proteome without the need for an annotated reference genome.” Direct Costs: $50,000, Wilburn and Belyy are Co-PIs each with 50% funding.
2. National Institutes of Health Maximizing Investigators Research Award (MIRA) for Early Stage Investigators R35 GM150583. “Integration of biophysics and deep learning to understand species-specificity of fertilization and the rapid evolution of protein disorder.” Direct Costs: $1,250,000 September 2023 – August 2028
3. National Institutes of Health Maternal and Pediatric Precision in Therapeutics (MPRINT) R24 HD113024. “Developing extracellular vesicle based MPRINT translational resource platform for monitoring therapeutics response during pregnancy.” Total Award: $4,524,247 to PI Maged; Wilburn is Co-I with 5% effort.
4. Ohio State University – JobsOhio Research and Innovation Faculty Startup Award. Direct costs: $200,000, September 2022 – August 2026.
5. National Institutes of Health Pathway to Independence Award K99/R00 HD090201. “Integrating ‘omics’, evolution, and structural biochemistry to understand animal fertilization.” Direct Costs: $549,039, August 2018 – July 2023.
6. National Institutes of Health NRSA Individual Postdoctoral Fellowship F32-GM116298. “Structural mechanisms and evolution of egg-sperm interactions.” Direct Costs: $104,000, September 2015 – August 2017.
7. Highlands Biological Station Grant in Aid. “Molecular and Co-Evolutionary Investigations of Fertilization Proteins in Plethodontid Salamanders.” $900, August 2015
8. University of Washington Department of Genome Sciences. Genome Training Grant, NIH T32 Fellowship. October 2014 – September 2015.
9. National Science Foundation Doctoral Dissertation Improvement Grant. “DISSERTATION RESEARCH: Pheromone signaling and molecular dissection of olfactory neurons in red-legged salamanders.” Direct Costs: $17769, July 2013 – June 2014.

10. Highlands Biological Station Grant in Aid, Thelma Howell Memorial Scholarship. “Effects of a temperature-responsive RNA binding protein on plethodontid pheromone synthesis.” $1750, May 2012 – August 2012.
11. Highlands Biological Station Grant in Aid. “Evaluation of synergistic pheromone activities in the red-legged salamander.” $1400, August 2011.
12. National Science Foundation Graduate Research Fellowship. “Mechanisms of Action and Evolution for a Hypervariable Vertebrate Courtship Pheromone.” Direct Costs: $126,000, June 2011 – May 2014.
13. Highlands Biological Station Grant in Aid, Bruce Family Scholarship in Herpetology. “Histological and Molecular Characterization of a Developing Pheromone Gland.” $1750, May 2010 – September 2010.
14. University of Louisville Undergraduate Research Grant. “Genetic and Proteomic Analyses of Two Multigene Families of Courtship Pheromones in *Plethodon shermani*”. $3000, January 2009 – May 2009.
15. National Science Foundation Research Experience for Undergraduates. Supplement to IOS-0416834, "Collaborative Research: The Evolution of Pheromone Signals and Their Role in Behavioral Isolation”. Direct Costs: $5775, May 2008 – August 2009.
16. University of Louisville Undergraduate Research Scholar Grant. “Genomic Sequencing of Plethodontid Modulating Factor in *P. shermani* salamanders”. $300, January 2008 – May 2008.

PUBLICATIONS

1. Smith, J.W., **Wilburn, D.B.**, and Belyy, V. (2025). Direct optical activation of human IRE1 identifies unique patterns of transcriptional and post-transcriptional mRNA regulation in the unfolded protein response. *Journal of Biological Chemistry:* 111067. *doi: 10.1016/j.jbc.2025.111067*.
2. Lautenbacher, L., Yang, K.L., Kockmann, T., Panse, C., Gabriel, W., Bold, D., Kahl, E., Chambers, M., MacLean, B.X., Li, K., Yu, F, Searle, B.C., **Wilburn, D.B.**, Shahneh, M.R.Z., Hong, Y., Tang, H., Wang, M., Gabriels, R., Bouwmeester, R., Devreese, R., Angelis, J., Sabidó, E., Schmidt, T.K., Nesvizhskii, A.I., Wilhelm, M. (2025). Koina: democratizing machine learning for proteomics research. *Nature Communications*, 16: 9933. *doi: 10.1038/s41467-025-64870-5*
3. **Wilburn, D.B.** (2025). Gamete Structure: Egg, Comparative Vertebrate. In M. K. Skinner (Ed.), *Encyclopedia of Reproduction (3rd edition)*. 6: 257-262. *doi: 10.1016/B978-0-443-21477-6.00408-9*
4. Sidharthan, V., Sibley, C., Dunne-Dombrink, K., Yang, M., Zahurancik, W.J., Balaratnam, S., **Wilburn, D.B.**, Schneekloth, J.S., and Gopalan, V. (2025). Use of a small molecule microarray screen to identify inhibitors of the catalytic RNA subunit of *Methanobrevibacter smithii* RNase P. *Nucleic Acids Research*, 53(1): gkae1190. doi: *10.1093/nar/gkae1190*.
5. Brisbin, M.M., McIlvin, M.R., **Wilburn, D.B.**, Saunders, J.K., Cohen, N.R., Bhatia, M., Kujawinski, E., Searle, B.C., and Saito, M.A. (2025). Validation and community sharing of ocean spectral libraries generated by machine learning for data independent acquisition ocean proteomic analyses. *Proteomics*, 25(13): e13971. *doi: 10.1002/pmic.13971*
6. Edgington, R.M. and **Wilburn, D.B.** (2024). Mass spectral feature analysis of ubiquitylated peptides provides insights into probing the dark ubiquitylome. *Journal of the American Society of Mass Spectrometry*, 35(12): 2849-2858. doi: *10.1021/jasms.4c00213*
7. Searle, B.C., Shannon, A.E., and **Wilburn, D.B.** (2023). Scribe: next-generation library searching for DDA experiments. *Journal of Proteome Research*, 22(2): 482-490. *doi: 10.1021/acs.jproteome.2c00672*
8. Witus, S.R., Tutltle, L.M., Li, Wenjing, Zelter, A., Meiling, W., Kermoade, K.E., **Wilburn, D.B.**, Zhao, W., Davis, T.N., Brzovic, P.S., and Klevit, R.E. (2023). Multivalent BARD1-nucleosome interactions facilitate H2A ubiquitylation by BRCA1/BARD1. *EMBO J*, 42: e113565, *doi: 10.15252/embj.2023113565*
9. DeBruin, J.H., **Wilburn, D.B.**, Feldhoff, R.C., and Staub, N.L. (2023). Presence of sodefrin precursor-like factor pheromone candidates in mental and dorsal tail base glands in the plethodontid salamander, *Karsenia koreana*. *PLOS One*, 18(8): e0289296. *doi: 10.1371/journal.pone.0289296*
10. **Wilburn, D.B.**, Kunkel, C.L, Feldhoff, R.C., Feldhoff, P.W., and Searle, B.C. (2022). Recurrent co-option and recombination of cytokine and three finger proteins in multiple reproductive tissues throughout salamander evolution. *Frontiers in Cellular and Developmental Biology*, 10: 828947. *doi: 10.3389/fcell.2022.828947*
11. Rivera, A.M., **Wilburn, D.B.**, and Swanson, W.J. (2022). Domain expansion and functional diversification of vertebrate reproductive proteins. *Molecular Biology and Evolution*, 39(5): msac105. *doi: 10.1093/molbev/msac105*
12. Richards, A.L., Chen, K., **Wilburn, D.B.**, Stevenson, E., Polacco, B.J., Searle, B.C., and Swaney, D.L. (2022). Data-independent acquisition protease-multiplexing enables increased proteome sequence coverage across multiple fragmentation modes. *Journal of Proteome Research*, 21(4): 1124-1136. *doi: 10.1021/acs.jproteome.1c00960*
13. **Wilburn, D.B.** Richard, A.L., Swaney, D.L., and Searle, B.C. (2021). CIDer: a statistical framework for interpreting differences in CID and HCD fragmentation. *Journal of Proteomic Research*, 20(4): 1951-1965. *doi: 10.1021/acs.jproteome.0c00964*

14. Killingbeck, E.E., **Wilburn, D.B.**, Merrihew, G.E., MacCoss, M.J., and Swanson, W.J. (2021). Proteomics support the threespine stickleback egg coat as a protective oocyte envelope. *Molecular Reproduction and Development*, 88(7): 500-515. *doi: 10.1002/mrd.23517*
15. Tuttle, L.M. Pacheco, D., Warfield, L., **Wilburn, D.B.**, Hahn, S., and Klevit, R.E. (2021). Mediator subunit Med15 dictates the conserved "fuzzy" binding mechanisms of yeast transcription activators Gal4 and Gcn4. *Nature Communications*, 12: 2220 (2021). *doi: 10.1038/s41467-021-22441-4*
16. Layton, E.D., Barman, S., **Wilburn, D.B.**, Yu, K.K.Q., Smith, M.T., Altman, J.D., Scriba, T.J., Tahiri, N., Minnaard, A.J., Roederer M., Sedar, R.A., Darrah, P.A., and Seshadri, C. (2021). T cells specific for a mycobacterial glycolipid expand after intravenous Bacillus Calmette-Guérin vaccination. *Journal of Immunology*, 206(6): 1240-1250. *doi: 10.4049/jimmunol.2001065*
17. **Wilburn, D.B.**, Tuttle, L.M., Klevit, R.E., and Swanson, W.J. (2019). Indirect sexual selection drives rapid sperm protein evolution in abalone. *eLife*, 8: e52628. *doi:10.7554/eLife.52628*
18. **Wilburn, D.B.** and Feldhoff, R.C. (2019). An annual cycle of gene regulation in the red-legged salamander mental gland: from hypertrophy to expression of rapidly evolving pheromones. *BMC Developmental Biology*, 19: 10. *doi:10.1186/s12861-019-0190-z*
19. Yu, K.K.Q, **Wilburn, D.B.**, Hackney, J.A., Darrah, P.A., Foulds, K.E., James, C.A., Smith, M.T., Jing, L., Sedar, R.A., Roederer, M., Koelle, D.M., Swanson, W.J., and Seshadri, C. (2019). Conservation of molecular and cellular phenotypes of invariant NKT cells between human and non-human primates. *Immunogenetics*, 71: 465-478. *doi:10.1007/s00251-019-01118-9.*
20. **Wilburn, D.B.**, Tuttle, L.M., Klevit, R.E., and Swanson, W.J. (2018). Solution structure of sperm lysin yields novel insights into molecular dynamics of rapid protein evolution. *Proceedings of the National Academy of Sciences*, 115(6): 1310-1315. *doi:10.1073/pnas.1709061115*
21. **Wilburn D.B.** and Swanson, W.J. (2018). Gamete Structure: Egg, Comparative Vertebrate. In M. K. Skinner (Ed.), *Encyclopedia of Reproduction*. 6: 204-209. *doi:10.1016/B978-0-12-809633-8.20557-8*.
22. DeWitt, W., Quan, K.K., **Wilburn, D.B.**, Sherwood, A., Vignali, M., DeRosa, S.C., Day, C.L., Scriba, T.J., Robins, H, Swanson, W.J., Emerson, R., and Seshadri, C. (2018). A diverse lipid antigen-specific T cell receptor repertoire is clonally expanded during active tuberculosis. *Journal of Immunology*, 201(3): 888-896. *doi:10.4049/jimmunol.1800186*.
23. Pereira, K.E., Crother, B.I., Sever, D.M., Fontenot, C.L., Pojman, J.A., **Wilburn, D.B.**, and Woodley, S.K. (2018). Skin glands of an aquatic salamander vary in size and distribution and release antimicrobial secretions effective against chytrid fungal pathogens. *Journal of Experimental Biology*, 183707. *doi:101242/jeb.183707*.
24. **Wilburn, D.B.**, Arnold, S.J., Houck, L.D., Feldhoff, P.W., and Feldhoff R.C. (2017). Gene duplication, co-option, structural evolution, and phenotypic tango in the courtship pheromones of plethodontid salamanders. *Herpetologica*, 73(3): 206-219. *doi:10.1655/Herpetologica-D-16-00082.1*
25. **Wilburn, D.B.** and Swanson, W.J. (2017). The "ZP domain" is not one, but likely two independent domains. *Molecular Reproduction and Development*, 84(4): 284-285. *doi:10.1002/mrd.22781*
26. McCreight, J.M., Schneider, S., **Wilburn, D.B.**, and Swanson, W.J. (2017). Evolution of microRNA in primates. *PLOS One,* 12(6): e0176596. *doi:10.1371/journal.pone.0176596*
27. **Wilburn, D.B.**, Doty, K.A., Chouinard, A.J., Eddy, S.L., Woodley, S.K., Houck, L.D., and Feldhoff, R.C. (2017). Olfactory effects of a hypervariable multicomponent pheromone in the red-legged salamander, *Plethodon shermani*. *PLOS One*, 12(3): e0174370. *doi:10.1371/journal.pone.0174370*
28. **Wilburn, D.B.** and Swanson, W.J. (2016). From molecules to mating: rapid evolution and biochemical studies of reproductive proteins. *Journal of Proteomics*, special issue: "omics" in evolutionary ecology, 135: 12-25. *doi:10.1016/j.jprot.2015.06.007*
29. Doty, K.A., **Wilburn, D.B.**, Bowen, K.E., Feldhoff, P.W., and Feldhoff, R.C. (2016). Co-option and evolution of non-olfactory proteinaceous pheromones in a terrestrial lungless salamander. *Journal of Proteomics*, special issue: "omics" in evolutionary ecology, 135: 101-111. *doi:10.1016/j.jprot.2015.09.019*
30. Eddy, S.L., **Wilburn, D.B.**, Chouinard, A.J., Doty, K.A., Kiemnec-Tyburczy, K.M., and Houck, L.D. (2016). Male terrestrial salamanders demonstrate sequential mate choice based on female gravidity and size. *Animal Behaviour*, 113: 23-29. *doi:10.1016/j.anbehav.2015.12.016*
31. **Wilburn, D.B.**, Eddy, S.L., Chouinard, A.J., Arnold, S.J., Feldhoff, R.C., and Houck, L.D. (2015). Pheromone isoform composition differentially affects female behaviour in the red-legged salamander, *Plethodon shermani*. *Animal Behaviour*, 100: 1-7. *doi:10.1016/j.anbehav.2014.10.019*
32. **Wilburn, D.B.**, Bowen, K.E., Feldhoff, P.W., and Feldhoff, R.C. (2014). Proteomic analyses of courtship pheromones in the redback salamander, *Plethodon cinereus*. *Journal of Chemical Ecology*, 40(8): 928-939. *doi:10.1007/s10886-014-0489-y*
33. **Wilburn, D.B.**, Bowen, K.E., Doty, K.A., Arumugam, S., Lane, A.N., Feldhoff, P.W., and Feldhoff, R.C. (2014). Structural insights into the evolution of a sexy protein: novel topology and restricted backbone

flexibility in a hypervariable vertebrate pheromone from the red-legged salamander. *PLOS One*, 9(5): e96975. *doi:10.1371/journal.pone.0096975*

34. Chouinard, A.J., **Wilburn, D.B.**, Houck, L.D., and Feldhoff, R.C. (2013). Individual variation in pheromone isoform ratios of the red-legged salamander, *Plethodon shermani*. In: *Chemical Signals in Vertebrates XII*, pp 99-115; East, M.L. and Dehnhard, M., Editors, Springer, New York, NY. *doi 10.1007/978-1-4614-5927-9*.
35. **Wilburn, D.B.**, Bowen, K.E., Gregg, R.G., Cai, J., Feldhoff, P.W., Houck, L.D., and Feldhoff, R.C. (2012). Proteomic and UTR analysis of a rapidly evolving hypervariable family of vertebrate pheromones. *Evolution*, 66(7): 2227-2239. *doi: 10.1111/j.1558-5646.2011.01572.x*
36. **Wilburn, D.** Outcomes research in hydrocephalus treatment. (2010). In: *Cases on Health Outcomes and Clinical Data Mining: Studies and Frameworks*. Cerrito, P.B., Editor. IGI Publishing. 225-244.
37. **Wilburn, D.** Exploratory analyses and modeling of summary statistics and relative costs for infants afflicted with hydrocephalus. (2009). In: *A Casebook of Pediatric Diseases*. Cerrito, P.B., Editor. Bentham Science. 1-24.

MANUSCRIPTS IN REVIEW

1. **Wilburn, D.B.**, Shannon, A.E., Spicer, V., Richard, A.L., Yeung, D., Swaney, D.L., Krokhin, O.V., and Searle, B.C. Deep learning from harmonized peptide libraries enables retention time prediction of diverse post translational modifications. (2023). Preprint available at https://www.biorxiv.org/content/10.1101/2023.05.30.542978v1.abstract
2. Ciubotariu, I.I., **Wilburn, D.B.**, Bosch, G., Gopalan, V. (2026) Strengthening the philosophical basis of graduate science education. Trends in Biochemical Sciences (revision invited by editor)

RESEARCH AWARDS

1. Society for Molecular Biology and Evolution: Young Investigator Travel Award, 2016. Support to attend annual society meeting in Gold Coast, Australia.
2. University of Louisville: “Guy Stevenson Award for Excellence in Graduate Studies.” 2014. Highest award to a doctoral student.
3. University of Louisville Department of Biochemistry: 1st place student poster, 2013. Dept. of Biochemistry Biennial Retreat
4. National Science Foundation Graduate Research Fellowship. “Mechanisms of Action and Evolution for a Hypervariable Vertebrate Courtship Pheromone”. 2011-2014. Fellow.
5. National Science Foundation Graduate Research Fellowship. “Mechanisms of Action and Evolution for a Hypervariable Vertebrate Courtship Pheromone”. 2010. Honorable mention.
6. University of Louisville: "Outstanding Senior Thesis Award." 2009. Highest rated senior thesis for 2009.
7. University of Louisville Department of Biology: "David Smith Memorial Award for Excellence in Undergraduate Research." 2009. Most enthusiastic undergraduate research scholar.
8. University of Louisville Department of Biology: "Harvey B. and Ethel W. Lovell Award for Excellence in Biology." 2009. Highest Biology GPA for the class of 2009.

RESEARCH PRESENTATIONS

1. **Wilburn, D.B.** “From molecules to mating: multi-omic investigations of rapidly evolving pheromones in lungless salamanders.” Ohio State University Department of Molecular Genetics, Invited Seminar (October 1 2025)
2. **Wilburn, D.B.** “Characterization of rapidly evolving gamete recognition proteins in marine abalone by Nanopore-based genomics.” Society for the Study of Evolution (Oral presentation; June 2025)
3. **Wilburn, D.B.** “Probabilistic modeling of peptide chromatography with Chronologer-NF provides novel insights into reverse phase chemistry.” American Society of Mass Spectrometry (Oral presentation; June 2023)
4. **Wilburn, D.B.** “Recurrent co-option and recombination of cytokine and three finger proteins in multiple reproductive tissues throughout salamander evolution.” Biology of Plethodontid Salamanders (Oral presentation; May 2023)
5. **Wilburn, D.B.** “Direct and indirect sexual selection drive rapid sperm protein evolution.” Duquesne University Department of Biological Sciences (Invited seminar speaker, November 2019).
6. **Wilburn, D.B.**, Tuttle, L.M., Klevit, R.E., and Swanson, W.J. “Indirect sexual selection drives rapid evolution of an intrinsically disordered sperm protein.” Gordon Research Conference, Fertilization and Activation of Development (Poster and selected talk; August 2019)

7. **Wilburn, D.B.**, Tuttle, L.M., Klevit, R.E., and Swanson, W.J. “Indirect sexual selection drives rapid evolution of an intrinsically disordered sperm protein.” Protein Society Annual Meeting (Poster; July 2019)
8. **Wilburn, D.B.** and Swanson, W.J. “Indirect sexual selection drives rapid evolution of an intrinsically disordered sperm protein.” Society for Molecular Biology and Evolution Annual Meeting (Poster; July 2018)
9. **Wilburn, D.B.** and Swanson, W.J. “Structural insights into abalone egg-sperm interactions and the possible limits of X-ray crystallography in studying rapid evolution.” Society for Molecular Biology and Evolution Annual Meeting (Poster; July 2017)
10. **Wilburn, D.B.** and Swanson, W.J. “A ‘sexy’ co-evolutionary arms race: structural insights into the rapid evolution of egg-sperm interactions in Pacific abalone.” Society for the Study of Evolution Annual Meeting (Oral presentation; June 2017)
11. **Wilburn, D.B.** “A ‘sexy’ co-evolutionary arms race: structural insights into the rapid evolution of egg-sperm interactions in Pacific abalone.” Temple University Institute for Genomics and Evolutionary Medicine (iGEM) (Invited seminar speaker, May 2017)
12. **Wilburn, D.B.** “From molecules to mating: rapid evolution and biochemical studies of reproductive proteins.” Gonzaga University Department of Biology (Invited seminar speaker, October 2016)
13. **Wilburn, D.B.**, Arnold, S.J., Houck, L.D., Feldhoff, P.W., and Feldhoff R.C. “From molecules to mating: characterizing 100 million years of gene duplication, co-option, and structural evolution in plethodontid courtship pheromones.” Special Highlands Conference on Plethodontid Salamander Biology (Invited speaker; August 2016)
14. **Wilburn, D.B.** and Swanson, W.J. “A ‘sexy’ co-evolutionary arms race: insights from structural and biochemical studies of egg-sperm interactions in Pacific abalone” Society for Molecular Biology and Evolution Annual Meeting (Oral presentation; July 2016)
15. **Wilburn, D.B.** and Swanson, W.J. “Co-evolution of sexy proteins: characterizing the structural interactions of egg and sperm fertilization proteins by NMR.” Society for Molecular Biology and Evolution Annual Meeting (Oral presentation; July 2015)
16. **Wilburn, D.B.** and Feldhoff, R.C. “Co-Option of an RNA Binding Protein in the Translational Regulation of a Hypervariable Vertebrate Pheromone, Plethodontid Modulating Factor.” Society for the Study of Evolution Annual Meeting (Oral presentation; June 2014)
17. **Wilburn, D.B.**, Bowen, K.E., Feldhoff, P.W., Houck, L.D., and Feldhoff, R.C. “Evolutionary decoupling of pheromone composition and mode of delivery in plethodontid salamanders.” Animal Behavior Society Annual Meeting (Oral presentation; July 2013).
18. **Wilburn, D.B.** and Feldhoff, R.C. “From molecules to mating: gene regulation in an annual cycle of organogenesis and pheromone synthesis in the red-legged salamander.” ASBMB Evolution and Core Processes in Gene Regulation (Poster; July 2013).
19. **Wilburn, D.B.**, Bowen, K.E., Doty, K.A., Arumugam, S., Lane, A.N., Feldhoff, P.W.,and Feldhoff, R.C. “How to make a sexy protein: structural evolution in a three-finger protein pheromone.” Society for the Study of Evolution Annual Meeting (Oral presentation; June 2013)
20. **Wilburn, D.B.** “From molecules to mating behavior: what can humans learn from salamanders?” Highlands Biological Station, Zahner Lecture Series (Invited speaker; July 2012).
21. **Wilburn, D.B.**, Chouinard, A.J., Leichty, K.A., Eddy, S.L., Houck, L.D., Woodley, S.K., and Feldhoff, R.C. “Olfactory effects of isoform variability in female red-legged salamanders.” Animal Behavior Society Annual Meeting (Oral presentation; June 2012).
22. **Wilburn, D.B.**, Eddy, S.L., Chouinard, A.J., Feldhoff, R.C., and Houck, L.D. “Synergistic effects of a hypervariable courtship pheromone in the red-legged salamander.” Animal Behavior Society Annual Meeting (Oral presentation; June 2011).
23. **Wilburn, D.B.**, Bowen, K.E., Gregg, R.G., Cai, J., Feldhoff, P.W., Houck, L.D., & Feldhoff, R.C. “An inversion in molecular paradigm: using conserved UTRs to characterize a hypervariable family of vertebrate courtship pheromones.” Society for the Study of Evolution Annual Meeting (Oral presentation; June 2010).
24. **Wilburn, D.** “Exploratory analyses and modeling for relative costs of infants with hydrocephalus.” International Society of Pharmacoeconomics and Outcomes Research Annual Meeting (Poster; May 2009).
25. **Wilburn, D.B.**, Bowen, K.E., Leichty, K.A., Feldhoff, P.W., Feldhoff, R.C. “Vertebrate Courtship Pheromones: Assembly PCR for Codon-Optimized Expression of a Highly Disulfide-Bonded 7 kDa Protein in *Pichia pastoris*.” ABRF Annual Meeting (Poster; February 2009).
26. **Wilburn, D.B.**, Bowen, K.E., Leichty, K.A., Feldhoff, P.W., Feldhoff, R.C. “Sequence analyses of a large multigene family of 7 kDa pheromones from *Plethodon shermani*.” Kentucky Academy of Science Annual Meeting (Oral presentation; November 2007).

TEACHING AND MENTORING EXPERIENCE

2023 – Physical Biochemistry Instructor. At the Ohio State University, I teach both the undergraduate (BIOCHEM 5721) and the graduate version (BIOCHEM 6765) of Physical Biochemistry. In both courses, I have developed multiple coding exercises that both emphasize fundamental physical principles and provide foundations of computer programming that are routine in modern scientific investigations.

2020 Co-lecturer for Genome414: Molecular Evolution. I taught a series of lectures and computational exercises in the UW GS "Molecular Evolution" focused on protein structure determination, *in silico* structure prediction, and integration with molecular evolutionary data to better characterize protein function over evolutionary time.

2018 – 2019 Science Olympiad WA State Event Coordinator. Science Olympiad is a national science competition for middle and high school students. I prepare exams and proctor the genetics and protein modeling events for regional, state, and invitational tournaments, as well as oversee undergraduate and graduate student volunteers.

2017 University of Washington Graduate School: "Outstanding Postdoc Mentoring Award." A university wide award to the best postdoctoral mentor of graduate students. I was nominated by a group of 6 Genome Sciences graduate students from 5 laboratories and was an invited speaker at the 2017 UW Biomedical PhD hooding ceremony.

2017 – 2020 Seattle-area Molecular Evolution Supergroup. Katherine Xue (Genome Sciences graduate student) and I co-founded and co-organize a monthly meeting on molecular evolution for scientists in the Seattle area, which includes UW, Fred Hutcherson Cancer Research Institute, and Pacific Northwest Research Institute. Each meeting includes two chalk talks (predominantly by graduate students and postdoctoral fellows) on current or new research ideas.

2014 – 2021 Mentorship of graduate students in the Swanson lab. During my postdoctoral training, I have helped mentor four graduate students in the Swanson lab, and I am responsible for daily laboratory oversight in addition to facilitating data analysis and preparing research presentations and manuscripts.

- Killingbeck, E.E., **Wilburn, D.B.**, Merrihew, G.E., MacCoss, M.J., and Swanson, W.J. Proteomics support the threespine stickleback egg coat as a protective oocyte envelope. Molecular Reproduction and Development, *in review*.
- McCreight, J.M., Schneider, S., Wilburn, D.B., and Swanson, W.J. (2017). Evolution of microRNA in primates. PLOS ONE 12(6): e0176596. *doi:10.1371/journal.pone.0176596*

2011 Graduate Teaching Assistant, Biochemistry II. A required course for all basic science graduate students in the UofL School of Medicine, I was responsible for proctoring and grading quizzes and exams, grading student homework, and holding weekly office hours for additional student questions and tutoring.

2009 – 2014 Mentorship of undergraduate and masters students in the Feldhoff lab. During my PhD training, I mentored 5 undergraduate scholars through the UofL summer research opportunity program, which included daily laboratory oversight, supervising field research in North Carolina, as well as preparation of oral and poster presentations during the program. Two students (Kari Leichty and Andrew Knight) continued their research to complete undergraduate senior theses; additionally, Ms. Leichty also conducted masters research in the laboratory that I supervised, and Mr. Knight visited UW for one summer to continue his research under my mentorship.

- Doty, K.A., Wilburn, D.B., Bowen, K.E., Feldhoff, P.W., and Feldhoff, R.C. (2016). Co-option and evolution of non-olfactory proteinaceous pheromones in a terrestrial lungless salamander. J. Proteomics, special issue: "omics" in evolutionary ecology, 135: 101-111. *doi:10.1016/j.jprot.2015.09.019*

2005 – 2008 Science Olympiad KY Regional Event Coordinator. Science Olympiad is a national science competition for middle and high school students, and as an event coordinator for the Louisville KY regional tournament, I would prepare exams and proctor events in genetics, ecology, and chemistry.

2005 – 2014 Russell High School Science Olympiad Assistant Coach. Science Olympiad is a national science competition for middle and high school students, and as an assistant coach, I was responsible for preparing students to compete in events spanning genetics, ecology, chemistry, mechanics/optics, protein modeling, robotics, and other diverse topics. This included running tutoring sessions, preparing study materials, administering practice exams, and attending state and national tournaments. During one invitational tournaments per year (usually in Ohio), I was responsible for coordinating events in molecular biology, genetics, or protein modeling.

PROFESSIONAL SERVICE

Reviewer for *eLife, Journal of the American Society of Mass Specrometry, Molecular Biology and Evolution*, *Evolution*, *BMC Evolutionary Biology*, *Journal of Molecular Evolution, Scientific Reports, Molecular Reproduction and Development, Journal of Proteomics*, *Acta Zoologica*, *Frontiers in Zoology, PLOS ONE*, *Biological Journal of the Linnean Society, Animals,* and *Reproduction Fertility and Development*.