

# Sheina Biason Sim, PhD

## PERSONAL DETAILS

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## PROFESSIONAL EXPERIENCE

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### GS 13 Research Biologist

10/2021-present

*USDA-ARS*

Research focus:

- Developing and implementing bioinformatic pipelines for genome assembly and analysis of non-model organisms
- Developing foundational genomic tools for insect species
- Functional and structural genomic investigation of telomeres, centromeres, and structural polymorphisms in Tephritidae
- Determining the genetic basis of simple and complex traits using multi-omics tools
- Developing efficacious, cost-effective, and environmentally acceptable and sustainable methods to control, suppress, and eradicate tropical arthropod pests impacting US Agriculture
- Improving the sterile insect technique (SIT) through genetic trait phenotyping and fitness assessments

### GS 12 Research Biologist

09/2018-10/2021

*USDA-ARS*

Research focus:

- Developing molecular diagnostic tools for insect detection
- Developing foundational genomic tools for insect species
- Determining the genetic basis of simple and complex traits using classical genetics and multi-omics tools
- Improving the sterile insect technique (SIT) through genetic trait phenotyping and fitness assessments

### GS 11 Research Biologist

01/2017-09/2018

*USDA-ARS*

Advisor: Dr. Scott Geib

Research focus:

- Improving performance of genetic sexing strains of economically important Tephritidae released for the sterile insect technique
- Genetic (linkage) mapping phenotypic traits of genetic sexing strains used for the sterile insect technique
- Using targeted genome editing to validate gene function and generate insect genetic sexing strains *de novo*
- Population genetic and genomic analysis of economically important Tephritidae
- Improving draft genome assemblies through chromosome conformation contact, optical, and traditional linkage mapping
- Developing genomic resources in non-model systems
- Developing custom bioinformatic pipelines for genomic analysis
- Developing high-molecular weight DNA extraction protocols for single molecule and linked-read sequencing platforms

### Junior Research Faculty

09/2013-01/2017

*University of Hawaii, Manoa*

Advisor: Dr. Scott Geib

Research focus:

- Generating genomic resources for economically important Tephritidae
- Identifying the genetic basis of traits necessary for the sterile insect technique
- Developing diagnostic tool for species identification and source determination of intercepted material

## Post-Baccalaureate Researcher

09/2006-08/2007

*Max Planck Institut fur Pflanzenzuchtforschung*

Advisor: Dr. Johanna Schmitt

Research focus:

- Investigating genotype and environmental effects on life history traits in *Arabidopsis thaliana*
- Identifying the genetic basis of photoperiod sensitivity in *A. thaliana*

## ACADEMIC QUALIFICATIONS

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### Ph.D. Evolutionary Biology (Degree conferred: January, 2014)

08/2007-09/2013

*University of Notre Dame, Notre Dame, IN, USA*

Advisor: Dr. Jeffrey L. Feder

Thesis Title: The frontier of ecological speciation: investigating western populations of *Rhagoletis pomonella*.

Research focus:

- Understanding the invasion of the agricultural pest *Rhagoletis pomonella*, the apple maggot, into the Pacific Northwest from its native range in the eastern United States
- Testing for evidence of host associations in western populations of *R. pomonella*
- Elucidating the process of speciation in sympatry
- Testing for behavioral and genetic evidence of newly diverged host races of *R. pomonella* in the West
- Understanding the invasion of *R. pomonella* in the Mountain West region of the United States
- Using methods in scientific communication to raise awareness for invasive species using food

### B.S Ecology and Evolutionary Biology

09/2002-06/2006

*University of California, Irvine, Irvine, CA, USA*

Advisor: Dr. Arthur Weis

Thesis Title: Flowering phenology of *Brassica rapa* evolves in response to climate change in Southern California.

Research focus:

- Investigating the evolution of flowering time phenology of *B. rapa* in response to drought
- Usage of the resurrection paradigm to phenotype parental populations concurrently with offspring populations

## SELECTED PUBLICATIONS

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1. Tietjen, M., Stahlke, A. R., Luecke, D., Saelao, P., **Sim, Sheina B.**, Geib, S. M., Scheffler, B. E., Childers, A. K., Kneubehl, A. R., Teel, P. D., *et al.* Genome report: whole-genome assembly of the relapsing fever tick *Ornithodoros turicata* Dugès (Acari: Argasidae). *G3: Genes, Genomes, Genetics*, jkaf103 (2025).
2. Siderhurst, M. S., Ladizinsky, N., Hurst, A. L. & **Sim, Sheina B.** Harmonic Radar Tags for Insect Tracking: Lightweight, Low-cost, and Accessible. *Journal of Visualized Experiments (JoVE)*, e67812 (2025).
3. Arnold, H., Dupuis, J., Rubinoff, D., Haines, W., Geib, S. M. & **Sim, Sheina B.** Genomic analysis of *Vanessa tameamea*, the threatened Hawaiian endemic butterfly, reveals population genetic structure relevant to conservation efforts. *Accepted for publication at Conservation Genetics* (2025).
4. Lyu, H., **Sim, Sheina B.**, Geib, S. M., Imamura, J. S. L., Corpuz, B. L., Corpuz, R. L., Kauwe, A. N., Simmonds, T. J., Arakawa, C. N., Myers, R. Y., Keith, L. M., Yu, Q., Matsumoto, T. K., Amore, T. D. & Suzuki, J. Y. Chromosome-level genome assembly and annotation of *Anthurium amnicola*. *Scientific Data* **12**, 605 (2025).

5. Parys, K. A., Schweizer, R. M., Benavides, L., Geib, S. M., **Sim, Sheina B.**, Evans, J. D. & Branstetter, M. G. Chromosome-level genome assembly of *Protandrena* (*Anthemurgus*) *passiflorae* (Hymenoptera: Andrenidae), a host-plant specialist bee. *G3 Genes/Genomes/Genetics*, jkaf096 (May 2025).
6. Paulo, D. F., Nguyen, T. N. M., Ward, C. M., Corpuz, R. L., Kauwe, A. N., Rendon, P., Ruano, R. E. Y., Cardoso, A. A. S., Gouvi, G., Fung, E., Crisp, P., Okada, A., Choo, A., Stauffer, C., Bourtzis, K., **Sim, Sheina B.**, Baxter, S. W. & Geib, S. M. Functional genomics implicates ebony in the black pupae phenotype of tephritid fruit flies. *Communications Biology* **8**, 60 (2025).
7. McGinty, S. P., Kaya, G., **Sim, Sheina B.**, Corpuz, R. L., Quail, M. A., Lawniczak, M. K. N., Geib, S. M., Korlach, J. & Dennis, M. Y. CiFi: Accurate long-read chromatin conformation capture with low-input requirements. *bioRxiv*. eprint: <https://www.biorxiv.org/content/early/2025/02/05/2025.01.31.635566.full.pdf> (2025).
8. Cohen, Z. P., Perkin, L. C., Rasnick, T. J., **Sim, Sheina B.**, Geib, S. M., Childers, A. K., Sword, G. A. & Suh, C. P.-C. Pangenomics Links Boll Weevil Divergence With Ancient Mesoamerican Cotton Cultivation. *Molecular Ecology Resources* **25**. e14054 MER-24-0238.R2, e14054 (2025).
9. Congrains, C., **Sim, Sheina B.**, Paulo, D. F., Corpuz, R. L., Kauwe, A. N., Simmonds, T. J., Simpson, S. A., Scheffler, B. E. & Geib, S. M. Chromosome-scale genome of the polyphagous pest *Anastrepha ludens* (Diptera: Tephritidae) provides insights on sex chromosome evolution in *Anastrepha*. *G3 Genes/Genomes/Genetics* **14**, jkae239 (Oct. 2024).
10. Jones, B. M., Webb, A. E., Geib, S. M., **Sim, Sheina B.**, Schweizer, R. M., Branstetter, M. G., Evans, J. D. & Kocher, S. D. Repeated Shifts in Sociality Are Associated With Fine-tuning of Highly Conserved and Lineage-Specific Enhancers in a Socially Flexible Bee. *Molecular Biology and Evolution* **41**, msae229 (Nov. 2024).
11. Glover, A. N., Sousa, V. C., Ridenbaugh, R. D., **Sim, Sheina B.**, Geib, S. M. & Linnen, C. R. Recurrent selection shapes the genomic landscape of differentiation between a pair of host-specialized haplodiploids that diverged with gene flow. *Molecular Ecology*, e17509 (2024).
12. Herrig, D. K., Ridenbaugh, R. D., Vertacnik, K. L., Everson, K. M., **Sim, Sheina B.**, Geib, S. M., Weisrock, D. W. & Linnen, C. R. Whole Genomes Reveal Evolutionary Relationships and Mechanisms Underlying Gene-Tree Discordance in *Neodiprion* Sawflies. *Systematic Biology*, syae036 (July 2024).
13. Koch, J. B. U., **Sim, Sheina B.**, Scheffler, B., Lozier, J. D. & Geib, S. M. Chromosome-scale genome assembly of the hunt bumble bee, *Bombus huntii* Greene, 1860, a species of agricultural interest. *G3 Genes/Genomes/Genetics*, jkae160 (July 2024).
14. Molik, D. C., Stahlke, A. R., Sharma, S. P., Simmonds, T. J., Corpuz, R. L., Kauwe, A. N., Schrader, J. E., Mason, C. J., **Sim, Sheina B.** & Geib, S. M. otb: an Automated HiC/HiFi Pipeline Assembles the *Prosapia bicincta* Genome. *G3 Genes/Genomes/Genetics* (2024).
15. **Sim, Sheina B.**, Congrains, C., Velasco-Cuervo, S. M., Corpuz, R. L., Kauwe, A. N., Scheffler, B. & Geib, S. M. Genome Report: Chromosome-scale Genome Assembly of the West Indian fruit fly *Anastrepha obliqua* (Diptera: Tephritidae). *G3 Genes/Genomes/Genetics*. eprint: <https://academic.oup.com/g3journal/advance-article-pdf/doi/10.1093/g3journal/jkae024/56541258/jkae024.pdf> (Feb. 2024).
16. Schweizer, R. M., Meidt, C. G., Benavides, L. R., Wilson, J. S., Griswold, T. L., **Sim, Sheina B.**, Geib, S. M. & Branstetter, M. G. Reference genome for the Mojave poppy bee (*Perdita meconis*), a specialist pollinator of conservation concern. *Journal of Heredity*, esad076 (2023).
17. Huang, Q., **Sim, Sheina B.**, Geib, S. M., Childers, A., Liu, J., Wei, X., Han, W., Posada-Florez, F., Xue, A. Z., Li, Z. & Evans, J. D. Identification of sex chromosomes and primary sex ratio in the small hive beetle, a worldwide parasite of honey bees. *GigaScience* **12**, giad056 (2023).
18. Koch, J. B. U., **Sim, Sheina B.**, Scheffler, B., Geib, S. M. & Smith, T. A. Chromosome-scale genome assembly of the rusty patched bumble bee, *Bombus affinis* (Cresson) (Hymenoptera: Apidae), an endangered North American pollinator. *G3 Genes/Genomes/Genetics*. eprint: <https://academic.oup.com/g3journal/advance-article-pdf/doi/10.1093/g3journal/jkad119/50614631/jkad119.pdf> (June 2023).

19. Davis, J. S., **Sim, Sheina B.**, Geib, S., Scheffler, B. & Linnen, C. R. Whole-genome resequencing data support a single introduction of the invasive white pine sawfly, *Diprion similis*. *Journal of Heredity* **114**, 246–258 (2023).
20. Stahlke, A. R., Chang, J., Tembrock, L. R., **Sim, Sheina B.**, Chudalayandi, S., Geib, S. M., Scheffler, B. E., Perera, O. P., Gilligan, T. M., Childers, A. K., *et al.* A chromosome-scale genome assembly of a *Helicoverpa zea* strain resistant to *Bacillus thuringiensis* Cry1Ac insecticidal protein. *Genome Biology and Evolution* **15**, evac131 (2023).
21. Cohen, Z. P., Perkin, L. C., **Sim, Sheina B.**, Stahlke, A. R., Geib, S. M., Childers, A. K., Smith, T. P. & Suh, C. Insight into weevil biology from a reference quality genome of the boll weevil, *Anthonomus grandis grandis* Boheman (Coleoptera: Curculionidae). *G3* **13**, jkac309 (2023).
22. Paulo, D. F., Cha, A. Y., Kauwe, A. N., Curbelo, K., Corpuz, R. L., Simmonds, T. J., **Sim, Sheina B.** & Geib, S. M. A Unified Protocol for CRISPR/Cas9-Mediated Gene Knockout in Tephritid Fruit Flies Led to the Recreation of White Eye and White Puparium Phenotypes in the Melon Fly. *Journal of Economic Entomology* **115**, 2110–2115 (2022).
23. **Sim, Sheina B.**, Simmonds, T. J. & Geib, S. M. Occurrence of adapter sequence in PacBio HiFi reads and their impacts on genome assembly. *Submitted to: BMC Genomics* (2021).
24. **Sim, Sheina B.**, Curbelo, K. M., Manoukis, N. & Cha, D. H. Evaluating *Bactrocera dorsalis* (Diptera: Tephritidae) response to methyl eugenol: comparison of three common bioassay methods. *Submitted to: Journal of Economic Entomology* (2021).
25. Childers, A. K., Geib, S. M., **Sim, Sheina B.**, Poelchau, M. F., Coates, B. S., Simmonds, T. J., Scully, E. D., Smith, T. P., Childers, C. P., Corpuz, R. L., Hackett, K. & Scheffler, B. The USDA-ARS Ag100Pest Initiative: High-quality genome assemblies for agricultural pest arthropod research. *Insects* (2021).
26. Ward, C. M., Aumann, R. A., Whitehead, M. A., Nikolouli, K., Leveque, G., Gouvi, G., Fung, E., Reiling, S. J., Djambazian, H., Hughes, M. A., Whiteford, S., Caceres-Barrios, C., Nguyen, T. N. M., Choo, A., Crisp, P., **Sim, Sheina B.**, Geib, S. M., Marec, F., Haecker, I., Ragoussis, J., Darby, A. C., Bourtzis, K., Baxter, S. W. & Schetelig, M. F. White pupae phenotype of tephritids is caused by parallel mutations of a MFS transporter. *Nature Communications* **12**, 491 (2021).
27. Bellinger, M. R., Paudel, R., Starnes, S., Kambic, L., Kantar, M. B., Wolfgruber, T., Lamour, K., Geib, S., **Sim, Sheina**, Miyasaka, S. C., Helmkampf, M. & Shintaku, M. Taro Genome Assembly and Linkage Map Reveal QTLs for Resistance to Taro Leaf Blight. *G3: Genes, Genomes, Genetics* **10**, 2763–2775 (2020).
28. Hood, G. R., Powell, T. H. Q., Doellman, M. M., **Sim, Sheina B.**, Glover, M., Yee, W. L., Goughnour, R. B., Mattsson, M., Schwarz, D. & Feder, J. L. Rapid and repeatable host plant shifts drive reproductive isolation following a recent human-mediated introduction of the apple maggot fly, *Rhagoletis pomonella*. *Evolution* **74**, 156–168 (2020).
29. Helmkampf, M., Bellinger, M., Geib, S., **Sim, Sheina B.** & Takabayashi, M. Draft genome of the rice coral *Montipora capitata* obtained from linked-read sequencing. *G3: Genes, Genomes, Genetics* **11** (2019).
30. **Sim, Sheina B.**, Kauwe, A. N., Ruano, R. E., Rendon, P. & Geib, S. The ABCs of CRISPR in Tephritidae: developing methods for inducing heritable mutations in the genera *Anastrepha*, *Bactrocera*, and *Ceratitis*. *Insect Molecular Biology* **28** (2019).
31. Reil, J. B., Doorenweerd, C., San Jose, M., **Sim, Sheina B.**, Geib, S. & Rubinoff, D. Transpacific coalescent pathways of coconut rhinoceros beetle biotypes: resistance to biological control catalyzes resurgence of an old pest. *Molecular Ecology* (2018).
32. Geib, S. M., Hall, B., Derego, T., Bremer, F. T., Cannoles, K. & **Sim, Sheina B.** Genome Annotation Generator: A simple tool for generating and correcting WGS annotation tables for NCBI submission. *GigaScience*, giy018 (2018).
33. Liang, G. H., Fu, L. Q., Zheng, J. X., Lin, H. Y., Lin, J. H., **Sim, Sheina B.**, Jang, E. B., Heller, W. P. & Geib, S. M. Molecular characterization of interspecific competition of *Diachasmimorpha longicaudata* (Ashmead) and *Fopius arisanus* (Sonan) parasitizing the oriental fruit fly, *Bactrocera dorsalis* (Hendel). *Biological Control* **118**, 10–15 (2018).

34. Gundersen, D., Adrianos, S., Allen, M., Becnel, J., Chen, Y., Choi, M., Estep, A., Evans, J., Garczynski, S., Geib, S., Ghosh, S., Handler, A., Hasegawa, D., Heerman, M., Hull, J., Hunter, W., Kaur, N., Li, J., Li, W., Ling, K., Nayduch, D., Oppert, B., Perera, O., Perkin, L., Sanscrainte, N., **Sim, Sheina B.**, Sparks, M., Temeyer, K., Vander Meer, R., Wintermantel, W., James, R., Hackett, K. & Coates, B. Arthropod genomics research in the United States Department of Agriculture-Agricultural Research Service: Applications of RNA interference and CRISPR gene editing technologies in pest control. *Trends in Entomology*, 109–137 (2017).
35. **Sim, Sheina B.**, Doellman, M. M., Hood, G. R., Yee, W. L., Powell, T. H. Q., Schwarz, D., Goughnour, R. B., Egan, S. P., Jean, G. S., Smith, J. J., Arcella, T. E., Dzurisin, J. D. K. & Feder, J. L. Genetic Evidence for the Introduction of *Rhagoletis pomonella* (Diptera: Tephritidae) into the Northwestern United States. *Journal of Economic Entomology*, tox248 (2017).
36. **Sim, Sheina B.**, Ruiz-Arce, R., Barr, N. B. & Geib, S. M. A New Diagnostic Resource for *Ceratitis capitata* Strain Identification Based on QTL Mapping. *G3: Genes/Genomes/Genetics*. eprint: <http://www.g3journal.org/content/early/2017/09/08/g3.117.300169.full.pdf> (2017).
37. Geib, S. M., Liang, G. H., Murphy, T. D. & **Sim, Sheina B.** Whole Genome Sequencing of the Braconid Parasitoid Wasp *Fopius arisanus*, an Important Biocontrol Agent of Pest Tepritid Fruit Flies. *G3: Genes/Genomes/Genetics* (2017).
38. **Sim, Sheina B.** & Geib, S. M. A Chromosome-Scale Assembly of the *Bactrocera cucurbitae* Genome Provides Insight to the Genetic Basis of white pupae. *G3: Genes/Genomes/Genetics* (2017).
39. Dupuis, J. R., **Sim, Sheina B.**, San Jose, M., Leblanc, L., Hoassain, M. A., Rubinoff, D. Z. & Geib, S. M. Population genomics and comparisons of selective signatures in two invasions of melon fly, *Bactrocera cucurbitae* (Diptera: Tephritidae). *Biological Invasions* (Nov. 2017).
40. Dupuis, J. R., Bremer, F. T., Jombart, T., **Sim, Sheina B.** & Geib, S. M. mvmapper: Interactive spatial mapping of genetic structures. *Molecular Ecology Resources*, n/a–n/a.
41. Papanicolaou, A. *et al.* The whole genome sequence of the Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann), reveals insights into the biology and adaptive evolution of a highly invasive pest species. *Genome Biology* **17**, 192 (2016).
42. Suzuki, J., Geib, S., Carlsen, M., Henriquez, C., Amore, T., **Sim, Sheina B.**, Matsumoto, T., Keith, L. & Myers, R. *Development of chloroplast single nucleotide polymorphisms (SNPs) as a tool towards interspecies typing of Anthurium germplasm in I International Symposium on Tropical and Subtropical Ornamentals* 1167 (2016), 257–270.
43. **Sim, Sheina B.**, Yoneishi, N. M., Brill, E., Geib, S. M. & Follett, P. A. Molecular Markers Detect Cryptic Predation on Coffee Berry Borer (Coleoptera: Curculionidae) by Silvanid and Laemophloeid Flat Bark Beetles (Coleoptera: Silvanidae, Laemophloeidae) in Coffee Beans. *Journal of Economic Entomology* **109**, 100–105 (2016).
44. **Sim, Sheina B.**, Calla, B., Hall, B., DeRego, T. & Geib, S. M. Reconstructing a comprehensive transcriptome assembly of a white-pupal translocated strain of the pest fruit fly *Bactrocera cucurbitae*. *Gigascience* **4** (2015).
45. Calla, B., **Sim, Sheina B.**, Hall, B., DeRego, T., Liang, G. H. & Geib, S. M. Transcriptome of the egg parasitoid *Fopius arisanus*: an important biocontrol tool for Tephritid fruit fly suppression. *GigaScience* **4**, 36 (2015).
46. Arcella, T., Hood, G. R., Powell, T. H. Q., **Sim, Sheina B.**, Yee, W. L., Schwarz, D., Egan, S. P., Goughnour, R. B., Smith, J. J. & Feder, J. L. Hybridization and the spread of the apple maggot fly, *Rhagoletis pomonella* (Diptera: Tephritidae), in the northwestern United States. *Evolutionary Applications* **8**, 834–846 (2015).
47. Shintaku, M., Kimball, H., Brown, A., Miyasaka, S., **Sim, Sheina B.** & Geib, S. *Using genotyping by sequencing (GBS) to identify loci in Colocasiae esculenta linked to Phytophthora colocasiae resistance in XXIX International Horticultural Congress on Horticulture: Sustaining Lives, Livelihoods and Landscapes (IHC2014)*: 1118 (2014), 131–138.

48. **Sim, Sheina B.** *The Frontier of Ecological Speciation: Investigating western populations of Rhagoletis pomonella* Thesis (2014).
49. Green, E., Almskaar, K., **Sim, Sheina B.**, Arcella, T., Yee, W. L., Feder, J. L. & Schwarz, D. Molecular Species Identification of Cryptic Apple and Snowberry Maggots (Diptera: Tephritidae) in Western and Central Washington. *Environmental Entomology* **42**, 1100–1109 (2013).
50. Hood, G. R., Yee, W., Goughnour, R. B., **Sim, Sheina B.**, Egan, S. P., Arcella, T., Saint-Jean, G., Powell, T. H. Q., Xu, C. C. Y. & Feder, J. L. The Geographic Distribution of *Rhagoletis pomonella* (Diptera: Tephritidae) in the Western United States: Introduced Species or Native Population? *Annals of the Entomological Society of America* **106**, 59–65 (2013).
51. Linn, C. E., Yee, W. L., **Sim, Sheina B.**, Cha, D. H., Powell, T. H. Q., Goughnour, R. B. & Feder, J. L. Behavioral evidence for fruit odor discrimination and sympatric host races of *Rhagoletis pomonella* flies in the western United States. *Evolution* **66**, 3632–3641 (2012).
52. **Sim, Sheina B.**, Mattsson, M., Feder, J. L., Cha, D. H., Yee, W. L., Goughnour, R. B., Linn, C. E. & Feder, J. L. A field test for host fruit odour discrimination and avoidance behaviour for *Rhagoletis pomonella* flies in the western United States. *Journal of Evolutionary Biology* **25**, 961–971 (2012).
53. Cha, D. H., Yee, W. L., Goughnour, R. B., **Sim, Sheina B.**, Powell, T. H. Q., Feder, J. L. & Linn, C. E. Identification of Host Fruit Volatiles from Domestic Apple (*Malus domestica*), Native Black Hawthorn (*Crataegus douglasii*) and Introduced Ornamental Hawthorn (*C. monogyna*) Attractive to *Rhagoletis pomonella* Flies from the Western United States. *Journal of Chemical Ecology* **38**, 319–329 (2012).
54. Ragland, G. J., **Sim, Sheina B.**, Goudarzi, S., Feder, J. L. & Hahn, D. A. Environmental interactions during host race formation: host fruit environment moderates a seasonal shift in phenology in host races of *Rhagoletis pomonella*. *Functional Ecology* **26**, 921–931 (2012).
55. Michel, A. P., **Sim, Sheina B.**, Powell, T. H. Q., Taylor, M. S., Nosil, P. & Feder, J. L. Widespread genomic divergence during sympatric speciation. *Proceedings of the National Academy of Sciences of the United States of America* **107**, 9724–9729 (2010).
56. Giakountis, A., Cremer, F., **Sim, Sheina B.**, Reymond, M., Schmitt, J. & Coupland, G. Distinct Patterns of Genetic Variation Alter Flowering Responses of Arabidopsis Accessions to Different Daylengths. *Plant Physiology* **152**, 177–191 (2010).
57. Ragland, G. J., **Sim, Sheina B.**, Feder, J. L. & Hahn, D. A. Divergence of diapause physiology in a speciating insect: do changes in diapause energetics accompany the evolution of seasonal timing in the apple maggot fly? *Integrative and Comparative Biology* **49**, E140–E140 (2009).
58. Wilczek, A. M., Roe, J. L., Knapp, M. C., Cooper, M. D., Lopez-Gallego, C., Martin, L. J., Muir, C. D., **Sim, Sheina B.**, Walker, A., Anderson, J., Egan, J. F., Moyers, B. T., Petipas, R., Giakountis, A., Charbit, E., Coupland, G., Welch, S. M. & Schmitt, J. Effects of Genetic Perturbation on Seasonal Life History Plasticity. *Science* **323**, 930–934 (2009).

## **RECENT PRESENTATIONS AND INVITED SYMPOSIA**

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1. **Sim, Sheina B.** *Applied tephritisid genomic for improved rearing and diagnostics* in *San Miguel Petapa Moscamed* (San Miguel Petapa City, Guatemala, May 2025).
2. **Sim, Sheina B.** *So you want to assemble a genome: Insect genome sequencing and analysis and applications to pest management* in *University of Illinois Urbana-Champaign* (Virtual, Mar. 2025).
3. **Sim, Sheina B.** *Multiple Genetic Mechanisms Unexpectedly Confer Insecticide Resistance across Local Field Populations of a Global Pest. I will survive: determining the genetic basis for insecticide resistance in a global pest* in *Plant and Animal Genome* (San Diego, CA, Jan. 2025).
4. **Sim, Sheina B.** *Applications of insect genome sequencing and analysis to state and federal pest management programs* in *Purdue University* (Virtual, Feb. 2024).

5. Sim, Sheina B. *Fantastic bees and how to assemble them: a framework for assembling insect genomes* in Entomological Society of America Annual Meeting (National Harbor, MD, Nov. 2023).
6. Sim, Sheina B. *Identifying translocation breakpoints in tephritid genomes* in 11th International Symposium on Fruit Flies of Economic Importance (Sydney, Australia, Nov. 2022).
7. Sim, Sheina B. *Application of next-gen technology to Queensland longhorned beetle management* in Hawaii Invasive Species Council Invasive Pest Mini-Conference (Virtual, Feb. 2021).
8. Sim, Sheina B. *Next generation solutions for agricultural pest management: using insect genomics and biology to our advantage* in University of Georgia, Spring Entomology Seminar (Virtual, Feb. 2021).
9. Sim, Sheina B. *Genomics through the lens of pest management: How reference-quality assemblies and global collaboration are bringing the sterile insect technique to the 21st century* in Entomological Society of America Annual Meeting (Virtual, Nov. 2020).
10. Sim, Sheina B. *Science policy-friendly approaches to genetic pest management: Knowledge gaps and considerations* in Entomological Society of America Annual Meeting (Virtual, Nov. 2020).
11. Sim, Sheina B. *Insect genomics and its applications to protecting what's for dinner.* in Kansas State University, Fall Graduate Seminar (Virtual, Nov. 2020).
12. Sim, Sheina B. *Fruit flies when you're having fun: a brief introduction to tephritid genomics and implications for the sterile insect technique* in University of Hawaii at Hilo, Tropical Conservation Biology and Environmental Science Graduate Program Weekly Seminar (Virtual, Oct. 2020).
13. Sim, Sheina B. & Geib, S. M. *Using chromosome-scale assemblies to characterize genetic sexing in Tephritidae* in Biodiversity Genomics (Virtual, Sept. 2020).
14. Sim, Sheina B. *Instant chromosome-scale assemblies: just add DNA!* in Arthropod Genomics Annual Meeting (Virtual, July 2020).
15. Sim, Sheina B. *Foundational resource and methods development in Anastrepha ludens and other Tephritidae* in USDA-APHIS Mexfly Subject Matter Experts Summit (Virtual, May 2020).
16. Sim, Sheina B. *Queensland Longhorned Beetle* in Local growers meeting (Hilo, HI, USA, Feb. 2020).
17. Sim, Sheina B., Barr, N. B., Rendon, P. & Geib, S. *Advancing SIT genomics through interagency collaborations* in Entomological Society of America Annual Meeting (St. Louis, MO, USA, Nov. 2019).

## **SELECTED AWARDS AND GRANTS**

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<b>USDA-ARS Headquarters</b>	2025
<i>USDA Agricultural Research Service</i>	
\$225,000	
<b>Plant Protection Act 7721</b>	2025
<i>USDA Animal and Plant Health Inspection Service</i>	
\$185,000	
<b>SCINet Artificial Intelligence-Center of Excellence</b>	2023-2024
<i>USDA Agricultural Research Service</i>	
Recommended for award of \$100,000	
<b>SCINet/AI-COE</b>	2023-2024
<i>USDA Agricultural Research Service</i>	
\$223,738	
<b>Plant Protection Act 7721</b>	2020-2024

<i>USDA Animal and Plant Health Inspection Service</i>		
\$603,000		
<b>Plant Protection Act 7721</b>		2020-2021
<i>USDA Animal and Plant Health Inspection Service</i>		
\$120,000		
<b>Competitive Research Grant</b>		2019-2021
<i>Hawaii Invasive Species Council</i>		
\$32,527		
<b>Science Policy Fellowship</b>		2018-2020
<i>Entomological Society of America</i>		
\$10,000 for travel		
<b>Post-Doctoral Fellowship</b>		2017-2019
<i>NIFA-AFRI Education &amp; Literacy Initiative</i>		
\$152,000		
<b>PhD Fellowship</b>		2007-2012
<i>NSF Integrative Graduate Education and Research Traineeship</i>		
\$75,000		
<b>Post-Baccalaureate Fellowship</b>		2006-2007
<i>NSF Frontiers in Integrative Biological Research</i>		
\$35,000		
<b>Robert B. Ernst Prize</b>		2006
<i>University of California, Irvine</i>		
Excellence in Research in Plant Sciences		
<b>Undergraduate Fellowship</b>		2004
<i>NSF Research Experience for Undergraduates</i>		
\$3,000		
<b>Undergraduate Fellowship</b>		2004
<i>University of California, Irvine SURP</i>		
\$1,500		

## **LANGUAGES**

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Python	Advanced
R	Advanced
Bash	Advanced
LaTeX	Advanced
English	Fluent
Tagalog (Filipino)	Fluent
German	Intermediate
Spanish	Intermediate
Japanese	Beginner

## **PEER REVIEW**

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G3  
 Genetics  
 BMC Genomics  
 Journal of Economic Entomology  
 Molecular Ecology  
 Molecular Ecology Resources  
 Scientific Reports  
 Annals of the Entomological Society of America  
 PLOS ONE  
 Entomologia Experimentalis et Applicata