

Paul David Nabity

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Academic Appointments

- Assistant Professor of Plant-Insect Ecology. January 2017. Department of Botany and Plant Sciences.
Cooperating Faculty Member: Departments of Entomology, and of Evolution, Ecology, and Organismal Biology, University of California, Riverside.
- Assistant Professor. 2015-2016. Department of Entomology. Washington State University.

Professional Preparation

- USDA-NIFA Postdoctoral Fellow. 2012-2014. University of Arizona. Department of Ecology and Evolutionary Biology.
- Doctorate of Philosophy. 2012. University of Illinois at Urbana-Champaign. Plant Biology.
- Master of Science. 2005. University of Nebraska, Lincoln. Entomology.
- Bachelor of Science. 2002. University of Nebraska, Lincoln. Majors: Environmental Studies, Water Science.

Grants, Fellowship, and Awards

- 1/1/2018-12/31/2019. University of California Office of the President (UCOP) Instructional Learning Technology Initiative (ILTI) \$227,000. Ecology and Conservation Biology; Global Change Ecology
- 3/1/2016-2/28/2019. Washington Tree Fruit Research Commission. PI. \$164,987.
Assessment of apple immune responses to woolly apple aphid saliva
- 2012. AFRI-USDA-NIFA Postdoctoral Fellowship. \$130,000

Publications

In Prep:

- Phylloxera Genome Project: Insights on the genome evolution and invasion routes of grape phylloxera
- Zhao C, Rispe C, Nabity PD. Ankyrin. A novel family of ankyrin proteins evolved as plant-manipulating effectors in grape phylloxera (*Daktulosphaira vitifoliae*)

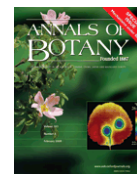
In Review:

- Evolution of herbivory remodels a *Drosophila* genome **bioRxiv preprint**
- Nabity PD, Barron-Gafford G, Whiteman NK. Intraspecific competition for host resources in a parasitic plant

In Revision:

- Rafferty NR, Agnew L, Nabity PD. Parasitism modifies the direct effects of warming on a hemiparasite and its host. PLoS One
- Zhao C, Rispe C, Nabity PD. Secretory RING finger proteins function as effectors in a grapevine galling insect. BMC Genomics

24. Zhao C, **Nabity PD**. 2017. Phylloxerids share ancestral carotenoid biosynthesis genes of fungal origin with aphids and adelgids. PLoS One
<https://doi.org/10.1371/journal.pone.0185484>
23. Zhao C, **Nabity PD**. 2017. Plant manipulation through gall formation constrains amino acid transporter evolution in sap-feeding insects. BMC Evolutionary Biology 17:153. DOI: 10.1186/s12862-017-1000-5
22. Rafferty NE, **Nabity PD**. 2017. A global test for phylogenetic signal in shifts in flowering time under climate change. Journal of Ecology. DOI: 10.1111/1365-2745.12701. *Editor's Choice, cover photo*
21. **Nabity PD**. 2016. Insect-induced plant phenotypes: Revealing mechanisms through comparative genomics of galling insects and their hosts. American Journal of Botany 103:979-981.
20. **Nabity PD**, MJ Haus, MR Berenbaum, EH DeLucia. 2013. Leaf-galling phylloxera on grapes reprograms host metabolism and morphology. PNAS 110:16663-16668.
19. **Nabity PD**, JA Zavala, EH DeLucia. 2013. Herbivore induction of jasmonic acid and chemical defenses reduces photosynthesis in *Nicotiana attenuata*. Journal of Experimental Botany 64:685-694.
18. Zavala JA, **PD Nabity**, EH DeLucia. 2013. An emerging understanding of mechanisms governing insect herbivory under elevated CO₂. Annual Review of Entomology 58:79-97.
17. Zangerl AR, S Miresmailli, **PD Nabity**, A Lawrence, A Yanahan, CA Mitchell, KJ Anderson-Teixeira, MB David, MR Berenbaum, EH DeLucia. 2012. Role of arthropod communities in biofuel crop litter decomposition. Insect Science 20:671-678.
16. DeLucia EH, **PD Nabity**, JA Zavala, MR Berenbaum. 2012. Climate change: resetting plant insect interactions. Plant Physiology 160:1677-1685.
15. Donovan MD, **PD Nabity** EH DeLucia. 2012. Salicylic acid mediated reductions in yield in *Nicotiana attenuata* challenged by aphid herbivory. Arthropod Plant Interactions 7:45-52.
14. **Nabity PD**, S Miresmailli, R Orpet, MR Berenbaum, EH DeLucia. 2012. Silica-based defenses of crops selected for biofuel production. Journal of Economic Entomology 105:878-883.
13. **Nabity PD**, ML Hillstrom, RL Lindroth, EH DeLucia. 2012. Elevated CO₂ interacts with herbivory to alter chlorophyll fluorescence and leaf temperature in *Betula papyrifera* and *Populus tremuloides*. Oecologia 169:905-913.
12. **Nabity PD**, AR Zangerl, MR Berenbaum, EH DeLucia. 2011. Bioenergy crops *Miscanthus x giganteus* and switchgrass (*Panicum virgatum*) reduce growth and survivorship of *Spodoptera frugiperda* (Lepidoptera: Noctuidae). Journal of Economic Entomology 104:459-464.
11. De Freitas Bueno A, de Freitas Bueno RC, **PD Nabity**, LG Higley, OA Fernandes. 2009. Photosynthetic response of soybean to two-spotted spider mite (Acari: Tetranychidae) injury. Brazilian Archives of Biology and Technology 52:825-834.
10. Zavala JA, CL Casteel, **PD Nabity**, MR Berenbaum, EH DeLucia. 2009. Role of cysteine proteinase inhibitors in preference of Japanese beetles (*Popillia japonica*) for soybean (*Glycine max*) leaves of different ages and grown under elevated CO₂. Oecologia 161:1432-1439.
9. **Nabity PD**, JA Zavala, EH DeLucia. 2009. Indirect effects of arthropod herbivory on leaf-level photosynthesis. Annals of Botany 103:655-663. (Cover photo)
8. DeLucia EH, CL Casteel, **PD Nabity**, BF O'Neill. 2008. Insects take a bigger bite out of plants in a warmer, higher carbon dioxide world. PNAS 105:1781-1782.



7. Spomer SM, **PD Nability**, ML Brust. 2008. Larval description of *Cicindela (Dromochorus) pruina* (Casey) (Coleoptera: Carabidae: Cicindelinae) with notes on habitat and adult behavior Coleopterists' Bulletin 62:37-41.
6. **Nability PD**, LG Higley, TM Heng-Moss. 2007. Light-induced variability in development of forensically important blow fly, *Phormia regina* (Diptera: Calliphoridae). Journal of Medical Entomology 44:351–358.
5. **Nability PD**, TM Heng-Moss, LG Higley. 2006. Effects of insect herbivory on physiological and biochemical (oxidative enzyme) responses of the halophyte *Atriplex subspicata* (Chenopodiaceae). Environmental Entomology 35:1677–1689.
4. **Nability PD**, LG Higley, TM Heng-Moss. 2006. Effects of temperature on development of *Phormia regina* and use of development data in determining time intervals in forensic entomology. Journal of Medical Entomology 43:1276–1286.
3. **Nability PD**, KD Hoagland. 2006. Seedbank viability of potential saline wetland restoration sites in agro-ecosystems. Great Plains Research 16:173–180.
2. Brust ML, WW Hoback, SM Spomer, WJ Allgeier, **PD Nability**. 2005. New county records for Nebraska tiger beetles. Cicindela 37:37–58.
1. Spomer, SM, WJ Allgeier, **PD Nability**. 2004. A fall collecting trip to southwestern and western Nebraska and a new state record for *Cicindela decemnotata*. Cicindela 36:57–59.

Teaching

Teaching Experience:

- *Winter 2018, 2019 University of California-Riverside*, Senior Seminar in Plant Biology, BIOL 193, 2 credits, undergraduate capstone course for botany majors.
- *Fall 2017, 2019 University of California-Riverside*, Foundations of Plant Biology, BIOL 104, 4 credits, undergraduate student course on plant form and function.
- *Spring 2017, University of California-Riverside*, Plant Biology Core, BPSC 200B, Co-Instructor
2 credits, graduate student course on professional development.
- *Fall 2015, 2016, Washington State University*, General Entomology (Entomology 343), 3 credits, upper level undergraduate, **writing intensive** course required by majors related to agriculture, >65 students;

Presentations

Invited Talks (Bold venues are Departmental Seminars)

- *Insect effector function and evolution*. UCR Center for Infectious Disease and Vector Research, retreat April 5, 2019.
- *Molecular mechanisms underlying function and evolution of insect extended phenotypes*. Pacific Branch Entomological Society of America. San Diego, CA. Apr 3, 2019 (JW Presenting)
- *Mechanisms underlying insect-induced phenotypes in plants*. **Department of Entomology. University of Georgia**. Mar 18, 2019.
- *Manipulation of plant primary metabolism by a galling insect, grape phylloxera*. Entomological Society of America. Vancouver, BC. Nov 11-14, 2019.
- *Competition for resources between desert mistletoe on mesquite*. Ecological Society of America, New Orleans, LA. Aug 11-16, 2018.
- *Discovery and validation of plant-manipulating effector proteins in grape phylloxera*. Entomological Society of America and International Aphid Genomics Consortium meeting. Denver, CO. Nov 5-8, 2017. (CZ presenting)
- *Understanding how insects manipulate plant resources: Implications for resource use under climate-change*. In the symposium: Insect-plant Interactions in a Changing Climate: Effects

on Populations Dynamics and Biological Control, International Congress of Entomology, Orlando, FL. Sept 25-30, 2016.

- *Mechanisms underlying insect-induced phenotypes in plants.* **Department of Botany and Plant Science, University of California-Riverside.** Jun 27, 2016
- *Genes underlying insect-induced phenotypes in the Phylloxeridae.* **Department of Entomology, North Carolina State University.** Apr 18, 2016.
- *How do the Phylloxeridae co-opt plant form and function?* Pacific Branch Entomological Society of America. Honolulu, HI. Apr 5, 2016
- *Defining the Cecidome: Mechanisms underlying insect-induced phenotypes in plants.* Molecular Plant Science Recruitment Weekend, WSU. Mar 5, 2016
- *Mechanisms underlying insect-induced phenotypes in plants.* **Molecular Plant Science Program, Washington State University.** Feb 17, 2016.
- *Genomic basis of insect-induced phenotypes within the Phylloxeridae.* IN Insects, Pathogens, and Plant Reprogramming: From effector molecules to ecology. Tours, France. Oct 4, 2015.
- *Genomic basis of insect induced phenotypes.* Pacific Branch Entomological Society of America. Coeur d'Alene, ID. Apr 13, 2015.
- *Reduced antagonism by a galling parasite through a novel induced phenotype.* Entomological Society of America. Portland, OR. Nov 19, 2014.
- *The extended phenotype of grape-phylloxera interactions.* **Department of Entomology, University of Arizona.** Oct 3, 2013.
- *The extended phenotype of gall forming insects.* **Department of Ecology and Evolutionary Biology, University of Arizona.** Sept 25, 2012.

Posters

- *Apple immune response to woolly apple aphid.* 2016. Washington Tree Fruits Research Center, Research Review.
- **Nabity PD**, RT Lapoint, NK Whiteman. 2014. *How do insect herbivores live inside their plant hosts: genomic architecture underlying the transition to endophagy.* Pacific Branch Entomological Society of America. Tucson, AZ.
- **Nabity PD**, MR Berenbaum, EH DeLucia, RT LaPoint, NK Whiteman. 2013. *Physiological and genomic basis for herbivore induced phenotypes in plants.* Gordon Research Conference on Plant-Herbivore Interactions. Ventura, CA.
- **Nabity PD**, MJ Segura, MR Berenbaum, EH DeLucia. 2012. *Insect-induced stomata attenuate sink strength and enhance parasite fitness.* New Phytologist Symposium on Stomata. Manchester, England.

Post Doctoral Researcher and Visiting Scientist Mentoring

- Dr. Mohamed Ali, functional genomics of aphid-plant interactions 2020-2022
- Jiri Skorepa, summer 2019, genes underlying plant hormone synthesis by insects
- Dr. Chaoyang Zhao, 2015-present: aphidomorph effector functional genetics and evolution
- Wenhua Tian, 2017-2018: aphidomorph effector functional genetics
- Eva Morton, 2016-2017: molecular ID of hosts and insects, and pollinator-herbivore-phenology studies

Graduate Student Mentoring

- Patrick Thomas, PhD candidate in Botany & Plant Science 2017-present (committee member)
- Joshua Wemmer, MS student in Entomology, 2016- 2019 (advisor)

- Karol Krey, PhD candidate in Entomology, 2015-2017 (committee member), graduated
- Léa Fléchon, PhD student in Entomology 2015-2016, left program.
- Qualifying exam committee member 2019: BPSC (1), MPP (1). 2018: BPSC (1).

Undergraduate Mentoring at UCR

- Ashil Koranne – *Buchnera* genome analysis of a galling aphid, 2018-2019
- Tamara Taylor – Phylloxerid effector identification and validation *Honors Thesis of High Distinction*, 2017-2019
- Timothy Dang – DNA extraction and sequence phylogenetics, 2017-2018
- Emmanuel Cuevas, REU student, CEPCEB: Center for Plant Cell Biology, 2017
- Rachel Maughan – plant care and DNA extraction, 2017
- Skyler Kim – Bioinformatics: transcriptome analyses, 2017
- Richard Ellis – worked on carotenoid gene characterization and bioinformatics pipeline development, 2016

Professional Experience at UCR

2019 reviews: PLoS Genetics, Insect Molecular Biology, **Israel Science Foundation**

2018 reviews: Journal of Economic Entomology, Environmental Entomology, Current Biology, Frontiers Plant Science, Genome Biology & Evolution, Molecular Plant Microbe Interactions, PLoS Genetics, Vitis; **NSF ad hoc, PBI, CAREER; Israel Science Foundation**

2017 reviews: Environmental Entomology, Journal of Economic Entomology, Journal of Insect Science, Oecologia, Biological Control, Annales Botanici Fennici,

Previously Reviewed for:

- American Journal of Botany, Arthropod-Plant Interactions, Basic and Applied Ecology, Climatic Change, Ecological Entomology, Environmental Entomology, Global Change Biology, International Journal of Plant Science, Journal of Experimental Botany, New Phytologist, Oecologia, Photosynthesis Research, Plant, Cell & Environment, Plant Physiology, Plants, PLoS Biology, PLoS One, Scientific Reports
- Israel Science Foundation, Austria Science Foundation

Service, Outreach, & Extension:

Internal

- 2018- Greenhouse & Environmental Facilities Academic Advisory Committee, CNAS
- 2018-2021 University of California, Riverside Division Committee on Memorial Resolutions, UC Senate
- 2018- Undergraduate Education and Advisory Committee, departmental
- 2018- Merit review committee; Coordinator/Scientist seeking advancement, departmental
- 2017- 2018 Awards committee, departmental
- 2017 Merit review committee; Specialist seeking advancement, departmental

Current Professional Memberships

- American Society of Plant Biologists (2010-present)
- Entomological Society of America (2004-present)