

SPCB RESEARCH TRACKING

RESEARCHER	TRACKING	CONTRACT BALANCE
<p>Dr. Dong-Hwan Choe University of California, Riverside Agreement No. 26710 “Improving Urban Pest Ants Management by Low-Impact IPM Strategies” Term Dates: 10/22/18 - 12/31/19 8/31/20</p>	<p>10/23/18 – UC Riverside notified of contract approval effective 10/22/18. 1/28/19 – received invoice #80105-001 for \$689.61 4/30/19 – Received April 2019 Progress Report 5/11/19 – received invoice #80105-002 for \$2,645.77 7/17/19 – received invoice #80105-003 for \$3,468.85 10/17/19 – received invoice #80105-004 for \$29,042.96 1/24/20 – received invoice #80105-005 for \$17,532.01 **Pending no cost extension. Extends current contract from December 31, 2019 to June 30, 2020 August 31, 2020. 4/3/20 – Contract amended to reflect new extension date 4/28/20 – received invoice #80105-006R for \$16,748.06 7/17/20 – received invoice #80105-007 for \$6,713.11 9/4/20 – emailed Dr. Choe requesting final report due beginning of December 2020. Asked Dr. Choe to prepare a presentation for March 2021 board meeting. 10/21/20 – received final report 11/4/20 – received invoice #80105-008 for \$468.63</p> <p>Total Expenditures: \$77,309.00</p>	<p>\$0.00</p>
<p>Dr. Michael Rust University of California, Riverside Agreement No. 26732 “Development and Evaluation of Baiting Strategies for Control of Pest Yellowjackets in California” Term Dates: 10/23/18 - 12/31/20 21</p>	<p>10/23/18 – UC Riverside notified of contract approval effective 10/23/18. 1/11/19 – received invoice #80108-001 for \$141.99 4/18/19 – received April 2019 Progress Report 5/11/19 – received invoice #80108-002 for \$6,093.28 7/17/19 – received invoice #80108-003 for \$21,870.43 10/16/19 -received invoice #80108-004 for \$12,361.04 1/14/20 – received invoice #80108-005 for \$18,431.65 4/6/20 – received invoice #80108-006 for \$20,484.70 7/17/2 – received invoice #801808-007 for \$16,767.87 9/5/20 – requested progress report, progress report extended to 10/4/20 to allow a more informative report. 10/14/20 – received progress report 11/5/20 – received invoice #80108-008 for \$28,328.52</p>	

<p>Total Contract: \$280,017.00</p>	<p>11/20/20 - *Pending no cost extension from December 31, 2020 to December 31, 2021. 2/4/21 – received invoice #80108-009 for \$32,369.60</p> <p>Total Expenditures: \$156,852.08</p>	<p>\$123,164.92</p>
<p>Dr. Niamh Quinn University of California, Agriculture and Natural Resources Agreement Number: 26727 “Investigation of Rodenticide Pathways in an Urban System Through the Use of Isotopically Labelled Bait” Term Dates: 10/16/18 - 12/31/20 06/30/2022</p> <p>Total Contract: \$329,749.00</p>	<p>10/16/18 – UCANR notified of contract approval effective 10/16/18. 4/30/19 – Received April 2019 Progress Report 1/27/20 – received invoice #56318501 for \$11,947.50 7/28/20 – received invoice 76c59-02 for \$0.00 9/15/20 – received progress report 11/20/20 – received invoice #59174298 for \$27,877.50 1/27/21 – No cost extension approved to change term date from 12/31/20 to 06/30/22.</p> <p>Total Expenditures: \$39,825.00</p>	<p>\$289,924.00</p>
<p>Neil Tsutsui University of California, Berkeley Agreement Number: 26735 “Diet and Colony Structure of Two Emerging Invasive Pest Ants” Term Dates: 10/18/18 - 08/31/21</p>	<p>10/18/18 – UC Berkeley notified of contract approval effective 10/18/18. 1/3/19 – received invoice #GM00159910 for \$6,079.05 1/29/19 – received invoice #GM00162310 for \$7,011.98 2/25/19 – received invoice #GM00166580 for \$2,000.00 4/7/19 – received April 2019 Progress Report 5/29/19 – received invoice #GM00175634 for \$681.23 7/2/19 – received invoice #GM00178838 for \$1,220.99 8/9/19 – received invoice #GM00184114 for \$22,099.22 8/19/19 - received invoice #GM00186274 for \$764.23 9/19/19 – received invoice #GM00188490 for \$10,290.87 10/19/19 – received invoice #GM00190757 for \$517.02 11/19/19 – received invoice #GM00193312 for \$827.24 12/19/19 – received invoice #GM00196412 for \$2,849.02 1/20/20 – received invoice #GM00197182 for \$1,259.45 2/19/20 – received invoice #GM00200261 for \$174.19 3/19/20 – received invoice #GM00204264 for \$239.20 4/20/20 – received invoice #GM00208324 for \$2,696.44 5/19/20 – received invoice #GM00212124 for \$7,394.14 6/19/20 – received invoice #GM00215027 for \$16,451.16 8/6/20 – received invoice #GM00218961 for \$6,644.52</p>	

	8/19/20 – received invoice #GM00221330 for \$6,499.04 10/12/20 – received October 2020 Progress Report 10/29/20 – received invoice #GM00228610 for \$11,816.46	
Total Contract: \$146,325.00	Total Expenditures: \$107,515.44	\$38,809.56
Dr. Andrew Sutherland University of California, Agriculture and Natural Resources Agreement Number: 26730 “Evaluation of bait station system efficacy for reduced-risk subterranean termite management in California” Term Dates: 10/10/18-08/31/ 21 -22	10/10/18 – UCANR notified of contract approval effective 10/10/18. 12/11/18 – received invoice #51140867 for \$270.67 12/19/18 – received invoice #51464298 for \$1,075.53 3/4/19 – received invoice #52326394 for \$3, 671.22 4/2/19 – received invoice #52526107 for \$2,617.68 4/26/19 – received April 2019 Progress Report 5/1/19 – received invoice #52892570 for \$4,179.03 5/30/19 – received invoice #5330024 for \$3,220.42 7/26/19 – received invoice #54113894 for \$4,040.68 10/3/19 – received invoice #54886547 for \$272.95 11/13/19 – no cost extension approved by BSO to extend contract term from August 31, 2021 to August 31, 2022 . 1/21/20 – received invoice #56314886 for \$1,475.42 3/26/20 – received invoice #57095974 for \$12,702.80 5/4/20 – received invoice #57413857 for \$6,097.63 5/14/20 – received invoice #57647938 for \$2,383.03 6/19/20 – received invoice #57984215 for \$22,324.44 7/23/20 – received invoice #58296943 for \$4,581.79 9/5/20 – requested progress report 9/14/20 – received September progress report 10/21/20 – received invoice #59172744 for \$6,091.16	
Total Contract: \$190,425.00	Total Expenditures: \$75,004.45	\$115,420.55

2/24/2021

November 17, 2020

Kristina Jackson-Duran
Administrative Analyst
Structural Pest Control Board
2005 Evergreen Street
Sacramento, CA 95815

Re: Grant # 00026732

Dear Kristina,

On behalf of Dr. Rust, we are requesting an extension of the above-referenced grant through December 31, 2021. The justification, provided by the P.I., Dr. Michael Rust, is as follows:

1. The funds came so late in 2018 that they could not be spent on the project. The yellowjacket season ended just as the funds arrived. All the research conducted in 2018 (July to Oct) was actually supported by UC funds or the other cooperators.
2. COVID 19 has prevented us from traveling and interacting in person with the collaborators at Berkeley and Lake Tahoe. This has resulted in us saving a considerable sum in travel expenses.
3. COVID 19 has prevented us from paying and utilizing undergraduates from working in the lab counting and processing our field-collected samples. Unfortunately, this has put a strain on the staff that is capable of working. I have been able to use my wife as a volunteer to help fill this gap.
4. COVID 19 has changed the way in which the research has been conducted at the Orange County parks. More of the costs have been absorbed by them than originally anticipated. They have been doing work that we had planned on doing because of travel restrictions.
5. Our cooperators at the San Diego Animal Safari Park in San Diego have donated their services and paid for various chemicals and expenses since joining the project in 2018. This has created a significant windfall.
6. If we extend the grant until Dec. 31, 2021, we will then pick up next summer's yellowjacket season that was lost in 2018.

We would also like to rebudget the remaining funds. Do you need to approved the revised budget, or do we have authorization to rebudget funds among existing budget line items.

For questions regarding technical matters, please contact Dr. Rust at michael.rust@ucr.edu or at (951) 827-5327. Business or administrative questions should be directed to the undersigned at (951) 827-3692 or via email to karen.garcia@ucr.edu.

Sincerely,



Karen Garcia
Senior Grant & Contract Officer

C: Dr. Michael Rust; Breanne Juarez

June 2nd, 2021
Kristina Jackson-Duran
Staff Services Analyst
Structural Pest Control Board
Evergreen Street, Suite 1500
Sacramento, CA 95815

Re: SPCB Agreement #26727, No-Cost Extension Request
"Investigation of Rodenticide Pathways in an Urban System Through the Use of
Isotopically Labelled Bait"; PI: Niamh Quinn

Dear Ms. Jackson-Duran,

I am writing to request a no-cost extension on the above referenced agreement to June 30, 2023. The reason for this request is that in addition to the other delays experienced, the lab we are using for method development and testing in Colorado has flooded and considerable damage has been done. There is not an option to outsource this work elsewhere.

Thank you for your consideration.

Sincerely,



Niamh Quinn
Human-Wildlife Interactions Advisor

7601 Irvine Blvd., Irvine, CA 92618 (949) 301-9182



SPONSORED PROJECTS OFFICE
1608 4TH STREET
SUITE 220, MC 5940

BERKELEY, CA 94710-5940
TEL: (510) 642-0120/FAX: (510) 642-8236
[HTTP://SPO.BERKELEY.EDU](http://SPO.BERKELEY.EDU)

Via electronic mail only

February 25, 2021

SUBJECT: No-cost Extension for “Diet and Colony Structure of Two Emerging Invasive Pest Ants”
UCB Ref. 045778; UCB PI: Neil Tsutsui
Sponsor Ref. 26735

Dear Authorized California Department of Consumer Affairs Officials:

The above referenced award was made to The Regents of the University of California and has a current end date of August 31, 2021. The principal investigator on this project is Dr. Neil Tsutsui. Dr. Tsutsui has requested a no-cost extension to complete the work being undertaken on this project for the following reasons:

During the past year, our progress on this research project has been substantially slowed by the COVID-19 shelter in place. Some personnel in the lab found it necessary to take COVID19 leave for childcare and for many weeks we did not have complete access to our research facilities. At the same time similar challenges were faced by collaborators and vendors with whom we conduct business, adding additional unforeseen delays. Finally, even aside from COVID, the pace of our research has been proceeding slower than expected, partly as a result of delayed or cancelled field work in previous years due to an unexpectedly rainy winter in 2019 and wildfire smoke in all of the past three years.

The Regents of the University of California has carefully reviewed the request and concurs therein. **We request that the termination date be changed from August 31, 2021 to June 30, 2022.** All other terms and conditions would remain unchanged.

If you have any questions or concerns, or I can be of further assistance, please do not hesitate to contact me.

Upon acceptance, please sign the document and send a pdf copy to me at peter.gudlewski@berkeley.edu.

Kind regards,

A handwritten signature in black ink, appearing to be 'Peter Gudlewski'.

Peter Gudlewski
Contract and Grant Officer

Sincerely,

A handwritten signature in black ink, appearing to be 'Neil Tsutsui'.

Neil Tsutsui
Principal Investigator



NEIL D. TSUTSUI, PH.D.
PROFESSOR
ABRAHAM E. & MARTHA M. MICHELbacher CHAIR OF SYSTEMATIC ENTOMOLOGY
DEPARTMENT OF ENVIRONMENTAL SCIENCE, POLICY & MANAGEMENT
UC BERKELEY
130 MULFORD HALL
BERKELEY, CA 94720-3114

PHONE (510) 684-5572

[HTTP://NATURE.BERKELEY.EDU/TSUTSUI/LAB/](http://NATURE.BERKELEY.EDU/TSUTSUI/LAB/)
EMAIL: NTSUTSUI@BERKELEY.EDU

8 June 2021

Dear Board Members,

I am writing to request a substitution of Key Personnel on my contract with the California Structural Pest Control Board, "*Diet and colony structure of two emerging invasive pest ants*".

In June 2019, I requested (and received) approval for a post-doctoral researcher in my lab, Dr. Maria Tonione, to perform the day-to-day research for this project. However, in March 2020, Dr. Tonione was forced to go on COVID leave due to childcare responsibilities arising from her childrens' schools closing. She was never able to resume this research, and her post-doctoral appointment at UC Berkeley ended in August 2020. Since then, we have continued to move this research project forward, with some delays, with participation of myself and undergraduate and graduate students in the lab.

The experiments and data collection described in the proposal include collection of ant colonies in the field, lab experiments to measure dietary preference, behavioral mapping of colonies in the field, and preparation of ants for stable isotope quantification.

I am now requesting that this role be filled by a current post-doctoral researcher in my lab, Dr. Elizabeth Cash (CV attached). Dr. Cash has extensive experience performing relevant field and laboratory research, data analysis, and manuscript writing, and she has performed all of the techniques required for this role. She is an excellent candidate for the successful completion of this research project.

This personnel substitution will not require any budgetary change; I will pay the balance of Dr. Cash's salary from other sources.

Please feel free to contact me if you have any additional questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Neil D. Tsutsui".

Neil D. Tsutsui
Professor and Michelbacher Chair of Systematic Entomology

ELIZABETH I. CASH PHD

EVOLUTION, BEHAVIOR, & CHEMICAL ECOLOGY OF SOCIAL INSECTS

Department of Environmental Science, Policy, and Management
University of California, Berkeley
130 Mulford Hall # 3114
Berkeley, CA 94720-3114

E-mail: eicash@berkeley.edu
Phone: 1 (513) 722-5800
Web: www.elizabethcash.com

APPOINTMENT

2016 **Postdoctoral Research Scholar** (2016-present)
University of California, Berkeley
Department of Environmental Science, Policy, and Management
P.I.: Neil Tsutsui

EDUCATION

2016 **Ph.D. Biology**
Arizona State University
School of Life Sciences
Committee: Jennifer Fewell, Jürgen Gadau (chair), Bert Hölldobler, Jürgen Liebig, Kenro Kusumi

2009 **B.Sc. Biology**
The Ohio State University
Center for Life Sciences Education
Advisors: Joseph Raczkowski, Steven Rissing, John Wenzel

PUBLICATIONS

- 10 Dennis AB, Ballesteros GI, Robin S, Schrader L, ...**Cash E** (11/39 authors), ...and Gadau J. (2020) Functional insights from the GC-poor genomes of two aphid parasitoids, *Aphidius ervi* and *Lysiphlebus fabarum*. *BMC Genomics* 21: 376.
- 9 Oeyen JP, Benoit JB, Beukeboom L, ...**Cash E** (7/84 authors), ...and Niehuis O. (2020) Draft genomes of two sawflies reveal evolutionary acquisitions that fostered the megaradiation of parasitoid and eusocial Hymenoptera. *Genome Biology and Evolution* evaa106.
- 8 Buellesbach, J, Whyte B, **Cash E**, Gibson JD, Scheckel KJ, Sandidge R, and Tsutsui N. (2018) Desiccation resistance and micro-climate adaptation: cuticular hydrocarbon signatures of different Argentine ant supercolonies across California. *Journal of Chemical Ecology* 44: 1101-1114
- 7 Buellesbach, J, **Cash E**, and Schmitt T. (2018) Communication, Insects. In Swanson P & Skinner MK (Eds.), *Encyclopedia of Reproduction*, 2nd Edition, Volume 6: Comparative Reproduction (pp. 78-83). Academic Press.
- 6 **Cash E**[†], Helmkampf M[†], and Gadau J. (2015) Evolution of the insect desaturase gene family with an emphasis on social Hymenoptera. *Molecular Biology and Evolution* 32: 2366-2372.
[†] These authors contributed equally to this work.

- 5 Simola DF, Wissler L, Donahue G, ...**Cash E** (18/38 authors), ...and Gadau J. (2013) Social insect genomes exhibit dramatic evolution in gene composition and regulation while preserving regulatory features linked to sociality. *Genome Research* 23: 1235-1247.
- 4 Gibson JD, Niehuis O, Peirson BRE, **Cash EI**, and Gadau J. (2013) Genetic and developmental basis of F2 hybrid breakdown in *Nasonia*. *Evolution* 67: 2124-2132.
- 3 Smith CR, Smith CD, Robertson HM, ...**Cash E** (11/45 authors), ...and Gadau J. (2011) A draft genome of the red harvester ant, *Pogonomyrmex barbatus*: a model for reproductive division of labor and social complexity. *Proceedings of the National Academy of Sciences of the United States of America* 108: 5667-5672.
- 2 Smith CD, Zimin A, Holt C, ...**Cash E** (6/50 authors), ...and Tsutsui ND. (2011) The draft genome of the globally widespread and invasive Argentine ant (*Linepithema humile*). *Proceedings of the National Academy of Sciences of the United States of America* 108: 5673-5678.
- 1 Suen G, Teiling C, Li L, ...**Cash E** (9/49 authors), ...and Currie CR. (2011) The genome sequence of the leaf-cutter ant *Atta cephalotes* reveals insights into its obligate symbiotic lifestyle. *PLoS Genetics* 7: e1002007.

IN REVISION, UNDER REVIEW, & IN PREPARATION

- 6 Pomerantz A, Siddique RH, **Cash EI**, Kishi Y, Pinna C, Hammar K, Gomez D, Elias M, Patel NH. (under review) Developmental, cellular, and biochemical basis of transparency in the glasswing butterfly *Greta oto*.
- 5 **Cash E** and Gadau J. (in preparation) Experience and seasonality shape nestmate recognition and territorial aggression in the red harvester ant, *Pogonomyrmex barbatus*.
- 4 **Cash E**, Liebig J, and Gadau J. (in preparation) Genetic and ontogenetic factors of cuticular hydrocarbon variation in the red harvester ant, *Pogonomyrmex barbatus*.
- 3 Sandidge R, Buellesbach J, **Cash EI**, Scheckel KJ, Whyte BA, Gibson JD, and Tsutsui ND. (in preparation) Desiccation resistance in the Argentine ant: body mass, cuticular hydrocarbons, and stable isotopes.
- 2 **Cash E**, Setayesh A, and Tsutsui ND. (in preparation) Antimicrobial properties of a multifunctional, Argentine ant pheromone.
- 1 **Cash E**, Smith AA, Tsutsui ND, and Suarez A. (in preparation) The evolution of acyl-CoA desaturase genes in *Odontomachus* trap-jaw ants.

*Undergraduate student authors underlined.

FUNDING & AWARDS

- 2019 UC Berkeley sponsored projects for undergraduate research (SPUR) award, **\$1000**
- 2018 North American Section of IUSSI and the USDA, conference travel award, **\$1500**
- 2016 Graduate college dissertation fellowship, Arizona State University, **\$17,000**
- 2015 Graduate training award for the California Academy of Science's Ant Course, ASU, **\$1150**
- 2015 USDA NIFA, Foundational Programs, CSHL conference travel award, **\$500**
- 2014 President's Prize, 2nd Place, Entomological Society of America, 62nd annual meeting, **\$50**
- 2014 Arizona State University, School of Life Sciences, conference travel award, **\$400**
- 2014 Graduate excellence award, Arizona State University, School of Life Sciences, **\$350**

- 2013 North American Section of IUSSI, conference travel award, **\$500**
- 2013 Graduate research scholarship, Arizona State University, School of Life Sciences, **\$6182**
- 2012 University graduate fellowship, Arizona State University, School of Life Sciences, **\$6075**
- 2011 Study abroad scholarship to attend a tropical field biology course at the Smithsonian Tropical Research Institute in Panama, Arizona State University, School of Life Sciences, **\$750**
- 2010 Arizona State University, School of Life Sciences, conference travel award, **\$300**
- 2009 Denman Undergraduate Research Forum, 3rd place in Biological Sciences, The Ohio State University, **\$200**
- 2007 National SMART grant, The Ohio State University, Center for Life Sciences Education, **\$8000**

INVITED TALKS

- 2019 Symposium speaker, Evolutionary trade-offs shape functional cuticular hydrocarbon variation in the unicolonial Argentine ant (*Linepithema humile*), Entomological Society of America, St. Louis, MO.
- 2019 Seminar speaker and panelist, Citizen Science can be an Extraordinary Gateway to STEM Learning and Engagement! Coalition for Education & Outreach, University of California, Berkeley, CA.
- 2018 Seminar speaker, Ant societies: studies of genetic and environmental influences on colony identity, Eco/Evo Seminar, Stanford University, Stanford, CA.
- 2017 Seminar speaker, The evolution of nestmate recognition and the ontogeny of territoriality in ants. Essig Museum Seminar, University of California, Berkeley, CA.
- 2015 Symposium speaker, The effects of non-nestmate experience and familiarity on territorial aggression in red harvester ants. ASU-UWü International Symposium and Workshop on Frontiers in Insect Biology, Arizona State University, Tempe, AZ.
- 2015 Symposium speaker, Genetics and gestalt: the grapples with understanding ant recognition, 3rd International Meredith Gould Conference, CICESE, Ensenada, Mexico.
- 2014 Symposium speaker, Evolution of desaturases in ants, ASU-UWü International Symposium and Workshop on Frontiers in Insect Behavior, Social Organization, and Evolution. Würzburg, Germany.

CONFERENCE PRESENTATIONS

- 2019 Antimicrobial properties of a multifunctional pheromone in the Argentine ant, *Linepithema humile*. (Poster) Microbiology Symposium, Berkeley, CA.
- 2018 Functional genetic study of chemical recognition systems in Argentine ants. (Talk) XVIIIth Congress of IUSSI, Guarujá, SP, Brazil.
- 2016 Contextualizing combat: the effects of prior experience, cuticular hydrocarbons, and seasonality on territorial aggression in the red harvester ant, *Pogonomyrmex barbatus*. International Congress of Entomology, Orlando, FL.
- 2015 Genomic and genetic patterns of desaturase gene functional variation in ants. (Talk) Biology & Genomics of Social Insects, Cold Spring Harbor Laboratory, NY.
- 2014 Developing the Gestalt: Nestmate recognition cues in the red harvester ant, *Pogonomyrmex barbatus*. (Poster) 62nd annual Entomological Society of America meeting, Portland, OR.

- 2013 The evolution of desaturase genes in ants. (Talk) 61st annual Entomological Society of America meeting, Austin, TX.
- 2013 Nasty neighbors: The effect of cuticular hydrocarbons and prior experience on nestmate recognition behavior in the red harvester ant, *Pogonomyrmex barbatus*. (Poster) 61st annual Entomological Society of America meeting, Austin, TX.
- 2012 Capturing that air of distinction: Desaturase gene diversity as a contributor to nestmate recognition in seven newly sequenced ant species. (Talk and Poster) Gordon Research Seminar on Genes & Behavior, Galveston, TX.
- 2011 Uncovering the genetic basis of colony recognition: desaturase gene diversity in seven newly sequenced ant species. (Poster) Evolution Meeting, Norman, OK.
- 2010 The genetic basis of colony recognition: desaturase genes in the newly sequenced genomes of *Pogonomyrmex barbatus* and *Linepithema humile*. (Poster) Fourth Annual Arthropod Genomics Symposium, Kansas City, MO.
- 2009 The function of pheromones in worker ants: the parasitism of *Lasius alienus* by *Lasius claviger*. (Poster) The Richard J. and Martha D. Denman Undergraduate Research Forum, Ohio State University, Columbus, OH.
- 2008 Comparison of annual changes in arthropod abundance and diversity in a central Ohio oldfield community. (Talk) Conservation Biology, The Ohio State University, Columbus, OH.

TEACHING & MENTORSHIP

Guest lecturer

- 2020 Insects and Human Society, Environmental Science, Policy, and Management, UCB
- 2019 Insect Behavior, Environmental Science, Policy, and Management, UCB
- 2019 Insects and Human Society, Environmental Science, Policy, and Management, UCB
- 2019 Molecular Approaches to Environmental Problem Solving, ESPM, UCB
- 2018 Insects and Human Society, Environmental Science, Policy, and Management, UCB
- 2018 Molecular Approaches to Environmental Problem Solving, ESPM, UCB
- 2016 Insect Behavior, Environmental Science, Policy, and Management, UCB

Instructor

- 2015 InnovationSpace, Spring (Biomimicry co-instructor), The Design School, ASU
- 2014 InnovationSpace, Fall (Biomimicry co-instructor), The Design School, ASU
- 2014 InnovationSpace, Spring (Biomimicry co-instructor), The Design School, ASU
- 2013 InnovationSpace, Fall (Biomimicry co-instructor), The Design School, ASU
- 2013 InnovationSpace, Spring (Biomimicry co-instructor), The Design School, ASU

Teaching assistant

- 2016 Organic Evolution, online course, School of Life Sciences, ASU
- 2015 Organic Evolution, online course, School of Life Sciences, ASU
- 2014 Organic Evolution, online course, School of Life Sciences, ASU
- 2013 Organic Evolution, School of Life Sciences, ASU
- 2012 General Entomology Lab, School of Life Sciences, ASU
- 2012 General Biology, Molecular and Cellular Lab, School of Life Sciences, ASU
- 2011 General Entomology Lab, School of Life Sciences, ASU

- 2011 General Biology, Evolution and Ecology Lab, School of Life Sciences, ASU
 2010 General Genetics, School of Life Sciences, ASU
 2009 Introductory Biology Lab for non-majors, School of Life Sciences, ASU

Research mentorship

University of California, Berkeley

- 2020 Ali Setayesh^{§,¶,‡}, Undergraduate research (2017-2020), Conservation & Resource Studies
 2020 Skyler Anderson[‡], Undergraduate research (2019-2020), Conservation & Resource Studies
 2020 Jasper Chao, Undergraduate research (2019-2020), Integrative Biology, Eco/Evo
 2020 Gary Chen*, Undergraduate research (2019-2020), Molecular Environmental Biology
 2019 Emily Myles, Undergraduate research (2019), Molecular & Cell Biology
 2019 Prabmehar Sodhi[†], Undergraduate research (2019), Cell & Developmental Biology
 2019 Emily Kinnaman, Undergraduate research (2019), Molecular Environmental Biology
 2018 Charlotte Knopp[‡], Undergraduate intern (2018), Mount Holyoke College, Biology
 2018 Buzz Chen^{§,*}, Undergraduate research (2017-2018), Molecular Environmental Biology
 2017 Emily Takeuchi, Undergraduate research (2017), Integrative Biology

Arizona State University

- 2015 David Contreras[‡], Undergraduate research (2015-2016), Genetics
 2015 Marie-Luise Hagitte, International high school student intern (2015), Biology
 2015 Kathleen Fowler[‡], Undergraduate research (2015), Genetics
 2013 Rafael Testai^{§,*;‡}, Undergraduate research (2013-2014), Genetics
 2012 Harry Grissom*, Undergraduate research (2012-2013), Biology
 2012 Anna-Lena Roll, International high school student intern (2012), Biology
 2012 Chad Allen[‡], Undergraduate research (2012), Biology
 2010 Bitu Vaghari^{†,‡}, Undergraduate research (2010-2011), Biology
 2009 Lakshmi Ghanta^{*,‡}, Undergraduate research (2009-2010), Biology

* Students accepted to graduate school.

† Students accepted to medical or dental school.

§ Students working on independent or honor's thesis research.

¶ Student co-authors.

‡ Students employed in scientific or medical fields.

PUBLIC OUTREACH

K-12 STEM education

- 2019 Co-organizer and instructor, *Backyard Biodiversity* summer camp activity; Designed and co-led insect diversity lesson & hands-on activities for 4th-6th grade students, UC Berkeley *Academic Talent Development Program* (ATDP), Richmond, CA
 2019 Co-instructor, *Smell Me if You Can* science lesson; Conducted insect-themed hands-on, inquiry-based biology learning activities for 4th and 5th grade students, *Bay Area Scientists in Schools*, Community Resources for Science, Berkeley, CA and Richmond, CA
 2018 Mentor, *Be A Scientist* research mentorship; Advised 7th grade students in a 6-week, independent, science research project, *Community Resources for Science*, Berkeley, CA

- 2018 Workshop co-organizer, *ANT-mazing: How females rule the social insect world* STEM workshop; Conducted hands-on, inquiry-based learning activities about social insect biology for 5th-8th grade girls, *Expanding Your Horizons*, University of California, Berkeley, CA
- 2017 Co-instructor, *Smell Me if You Can* science lesson; Conducted insect-themed, hands-on, inquiry-based biology learning activities for 4th and 5th grade students, *Bay Area Scientists in Schools*, Community Resources for Science, Oakland, CA
- 2016 Co-organizer and instructor, *STEM Day* weekly after-school program; Developed and conducted science learning activities for K-12 students in a weekly after-school education and assistance program, *Flight 33*, Pascua Yaqui Tribe, Guadalupe, AZ
- 2013 Co-organizer and instructor, *Animal Behavior* summer camp activity; Developed active learning exercises to teach camp attendees (grades 5-9) the process of using the scientific method while studying social insects, *BEST Summer Program*, Arizona State University, Tempe, AZ
- 2013 Content developer, *InsectARium* digital insect models; Created 3D insect models for use in an online learning & research tool, *BioKIC*, Arizona State University, Tempe, AZ
- 2010 Project consultant, *CompuGirls* logo design; Served as a design project consultant in a technology program for adolescent girls interested in computer sciences, *Center for Gender Equity in Science and Technology*, Arizona State University, Tempe, AZ
- 2000 Volunteer, *Project Connect* after-school program; Volunteered as an after-school tutor for students (grades K-6), *Cincinnati Public Schools*, Cincinnati, OH

Community science

- 2019 Volunteer, *Nature Nerd BioBlitz*; Served as an expert entomologist to survey and identify insects in a 4h BioBlitz, Pt. Molate Beach Park, Richmond, CA
- 2019 Volunteer, *Jasper Ridge Ant Survey*; Surveyed and identified ants in a biological preserve, Stanford, CA
- 2019 Volunteer, *Save Mt. Diablo BioBlitz*; Served as an expert entomologist to survey and identify insects in a 24h BioBlitz, Mt. Diablo regional area, CA
- 2019 Co-organizer, *City Nature Challenge*; Local/online biodiversity survey event, El Cerrito, CA
- 2018 Volunteer, *Jasper Ridge Ant Survey*; Surveyed and identified ants in a biological preserve, Stanford, CA
- 2018 Co-organizer, *Undergraduate Engagement in Citizen Science*; Helped lead 15 undergraduate students in a 24h BioBlitz survey of insects, Save Mt. Diablo BioBlitz, Walnut Creek, CA
- 2017 Volunteer, *Jasper Ridge Ant Survey*; Surveyed and identified ants in a biological preserve, Stanford, CA
- 2017 Volunteer, *Save Mt. Diablo BioBlitz*; Served as an expert entomologist to survey and identify insects in a 24h BioBlitz, Mt. Diablo regional area, CA

Community events

- 2019 Co-organizer, *Insect and Spider Research at UC Berkeley* outreach exhibit; Created and implemented hands-on learning activities to teach attendees about the characteristics of ants and other insects, and how entomologists study them, Discovery Day at Oracle Park, *Bay Area Science Festival*, San Francisco, CA, 30,000 attendees
- 2019 Co-organizer (2 events), *Tiny* (ant themed) and *Women in Science* outreach exhibits; Presented videos, information displays, ant specimens, and experimental demonstrations to

- inform public attendees about ant behavior and ant diversity in the Bay Area, *NightLife*, California Academy of Sciences, San Francisco, CA, 1,000 attendees
- 2019 Co-organizer, *Tsutsui Lab* outreach exhibit; Created ant displays, AR “ant masks,” and hands-on activities for annual UC Berkeley open house attendees, *Cal Day*, Berkeley, CA, 40,000 attendees
- 2018 Co-organizer, *The Ant Lab at UC Berkeley* outreach exhibit; Created exhibit displays and insect behavior demonstrations to teach attendees about the characteristics of ants and other insects, and how entomologists study them, Discovery Day at AT&T Park, *Bay Area Science Festival*, San Francisco, CA, 30,000 attendees
- 2018 Co-organizer, *Tsutsui Lab* outreach exhibit; Created ant displays, lab stickers, and hands-on activities for annual UC Berkeley open house attendees, *Cal Day*, 40,000 attendees
- 2018 Co-organizer (2 events), *Women in Science* and *Curious Creatures* outreach exhibits, *NightLife*, California Academy of Sciences, San Francisco, CA, 1,000 attendees
- 2017 Co-organizer (3 events), *Star Wars*, *80’s Horror*, and *Sound* (all ant themed) outreach exhibits, *NightLife*, California Academy of Sciences, San Francisco, CA 1,500 attendees
- 2016 Co-organizer, *Insect Research at UC Berkeley* outreach exhibit; Created and implemented hands-on learning activities to teach attendees about the characteristics of ants and other insects, and how entomologists study them, Discovery Day at AT&T Park, *Bay Area Science Festival*, San Francisco, CA, 30,000 attendees
- 2016 Co-organizer, *Social Insect Research Group* outreach exhibit; Exhibited live insects and ant colony displays for university open house attendants, *Night of the Open Door*, Arizona State University, Tempe, AZ, 10,000 attendees
- 2016 Co-organizer, *School of Life Sciences* outreach exhibit; Presented live insects and ant colony displays for university homecoming attendants, *Homecoming Block Party*, Arizona State University, Tempe, AZ, 10,000 attendees
- 2014 Volunteer (4 events), *Sonoran Desert Insects* outreach exhibit; Served as an expert entomologist to inform public attendees about insect diversity of the Sonoran Desert, *Summer Flashlight Tours*, Desert Botanical Garden, Phoenix, AZ, 1,000 attendees
- 2014 Guide, *SOLS Takes a Hike*; Led guided hikes to teach local attendees about insects of the Sonoran Desert, *School of Life Sciences*, Arizona State University, Gilbert Riparian Preserve, Gilbert, AZ, 100 attendees
- 2011 Co-organizer, *Ask-a-Biologist* outreach exhibit; Exhibited insect specimens, DIY activities, and informational displays for public attendees, *Social Insect Expo*, Desert Botanical Garden, Phoenix, AZ, 150 attendees

SCIENCE COMMUNICATION

Print and online interviews

- 2019 “Kidnapper Ants Steal Other Ants' Babies — And Brainwash Them,” *KQED science*
- 2019 “Social Insects,” Feature on citizen science in the Tsutsui Lab, *Breakthroughs*
- 2018 “Ant Speak,” Spotlight on Argentine ant research, *The Berkeley Science Review*

Television and video contributions

- 2019 “Nature’s Cleanup Crew,” *The Nature of Things*, CBC
- 2019 “Kidnapper Ants Steal Other Ants' Babies — And Brainwash Them,” *Deep Look*, KQED

- 2016 “The Incredible Indian Jumping Ant,” *Strange Truth*, National Geographic Channel
- 2015 “Why Does Ant Diversity Matter?” *Ant Course Presents*, California Academy of Sciences
- 2015 “Mark-Recapture Technique,” *Ant Course Presents*, California Academy of Sciences
- 2014 “Tournament of the Ants,” *Science Take*, The New York Times
- 2014 “Student Spotlight,” *InnovationSpace*, The Design School, ASU Herberger Institute
- 2013 “SIRG & friends,” *Social Insect Research Group*, Arizona State University
- 2012 “Flight of the Sexuels,” *Social Insect Research Group*, Arizona State University

Photography contributions

- 2019 “Social Insects,” *Breakthroughs*, (print and online)
- 2019 “Inquiline social parasites as tools to unlock the secrets of insect sociality,” *Philosophical Transactions of the Royal Society B*, (print and online)
- 2018 “Ant Speak,” *The Berkeley Science Review*, (print and online)
- 2015 “Launch of ASU center prompts discussion of nature as source for sustainable ideas,” *ASU Now*, (online)
- 2014 “Student Spotlight,” *InnovationSpace*, The Design School, Arizona State University (online)
- 2014 “Battle of the sexes in sperm-parasite ants,” *Dispatches, Frontiers in Ecology and the Environment*, (print and online)
- 2014 “Langzeitstudie aus den USA: Ameisen gegen den Klimawandel,” *Berliner Zeitung*, (online)
- 2014 “Can Ants Save the World from Climate Change?,” *Live Science*, (online)
- 2014 “The Power of Poison,” *American Museum of Natural History*, (exhibit)
- 2013 “Alum taps InnovationSpace for product development, improvements,” *ASU Now*, (online)
- 2013 “Finding 'Mr. Right': How insects sniff out the perfect mate,” *ASU Now*, (online)
- 2012 “Shaking Hands with a Sloth: What designers and biologists can learn from one another, and from nature,” *Places Journal*, (online)

Digital, graphic, and web designs

- 2018 “Ant masks,” Augmented reality photo lenses, *Snapchat*
- 2018 “Bearded Lady Club - Psammophores Rule!,” Promotional graphic design, *IUSSI 2018*
- 2016 “California Pools Project,” Project graphic design, *Backyard Biodiversity Project*
- 2016 “Tsutsui Lab,” Website and graphic design, *University of California, Berkeley*
- 2015 “Arizona Beekeepers Association,” Logo design
- 2015 “The Biomimicry Center,” Promotional poster series design, *Arizona State University*
- 2014 “I heart ants” and “I heart bees,” Promotional graphic design, *Social Insect Research Group*, Arizona State University
- 2013 “SIRG & friends,” Logo design, *Social Insect Research Group*, Arizona State University
- 2013 “Gadau Lab,” Website and graphic design, School of Life Sciences, Arizona State University

ACADEMIC SERVICE

University service

- 2016 Biomimicry consultant for senior undergraduate student capstone projects, InnovationSpace, The Design School, Arizona State University, Tempe, AZ
- 2015 Co-organizer, The Biomimicry Center launch symposium and exhibits, Arizona State University, Tempe, AZ, 20 speakers, 500 attendees

- 2014 Faculty hiring committee, Graduate student representative, School of Life Sciences, Arizona State University, Tempe, AZ
- 2013 Biomimicry consultant for the architectural redesign of ASU's Life Sciences A-wing building lobby and courtyard space, The Design School, Arizona State University, Tempe, AZ
- 2012 Seminar co-organizer, "Social Insect Research Group," Weekly seminar series, School of Life Sciences, Arizona State University, Tempe, AZ, 31 speakers (24 ASU, 3 other US institutions, 4 international)

Journal reviewer/referee

Biological Invasions, Comparative Biochemistry and Physiology - Part B: Biochemical and Molecular Biology, International Journal of Molecular Sciences, PLOS ONE, Revista Brasileira de Entomologia, Scientific Reports

Professional memberships

Animal Behavior Society (ABS), Association for Women in Science (AWIS), International Union for the Study of Social Insects (IUSSI), The Entomological Society of America (ESA), The National Society of Collegiate Scholars (NSCS), The Society for the Study of Evolution (SSE)

ADDITIONAL TRAINING & PROFESSIONAL EXPERIENCE

- 2019 Summer Institute for Preparing Future Faculty, University of California, Berkeley, CA
- 2019 Integrating Research with Education and Outreach, University of California, Berkeley, CA
- 2015 Ant Course, California Academy of Sciences, STRI Southwest Research Station, Portal, AZ
- 2011 Tropical Field Biology, Smithsonian Tropical Research Institute, Gamboa, Panama
- 2005 Designer, Jones Apparel Group, New York, NY
- 2004 Product Development & Design Manager, Ecko Unlimited, New York, NY
- 2002 Product Development & Design Associate, Nesi Apparel Group, New York, NY
- 1999 Design Foundations, DAAP, University of Cincinnati, Cincinnati, OH

PROFESSIONAL REFERENCES

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