

JOSEPH PARKER, PH.D.

ASSISTANT PROFESSOR OF BIOLOGY AND BIOLOGICAL ENGINEERING

California Institute of Technology

Division of Biology and Biological Engineering

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EDUCATION AND ACADEMIC APPOINTMENTS

- 2017–present Assistant Professor, Division of Biology and Biological Engineering, California Institute of Technology, Pasadena
- 2012–present Research Associate, Division of Invertebrate Zoology, American Museum of Natural History, NY
- 2008–2016 Postdoctoral Fellow, Department of Genetics and Development, Columbia University, NY (laboratory of Gary Struhl; based jointly in laboratory of Armand Leroi, Dept. of Natural Sciences, Imperial College, UK from 2008-2011).
- (2006–2007 Entomological fieldwork, Australia)
- 2005–2006 Postdoctoral Fellow (5 months), MRC Laboratory of Molecular Biology
- 2001–2005 Ph.D., University of Cambridge/MRC Laboratory of Molecular Biology, UK
Thesis title: Size Control Mechanisms in the Fly Embryo. Supervisor: Peter A. Lawrence. (Graduation date: 01/2006)
- 1998–2001 BSc (Hons), Zoology, Imperial College London, UK. 1st Class Honors (highest across the biological sciences).

FELLOWSHIPS AND AWARDS

- 08/2023 Okawa Foundation Research Grant
- 06/2023 Caltech Tianqiao and Chrissy Chen Scholarship
- 06/2022 Pew Biomedical Scholarship
- 02/2022 Rose Hills Foundation Innovator Award
- 03/2021–2/2026 NSF CAREER Award
- 02/2020–02/2022 Alfred P. Sloan Research Fellowship in Computational & Evolutionary Molecular Biology
- 09/2018–08/2023 Rita Allen Foundation Scholarship (2018 Milton E. Cassell Scholar)
- 07/2018–06/2021 Klingenstein-Simons Fellowship Award in Neuroscience
- 01/2018 Shurl and Kay Curci Foundation Grant

04/2017	American Museum of Natural History Gerstner Fellowship
08/2007–09/2011	Wellcome Trust (UK) Sir Henry Wellcome Postdoctoral Fellowship (independent investigator support with salary and research expenses)
08/2007	Jane Coffins Childs Memorial Fund Postdoctoral Fellowship (declined)
08/2007	European Molecular Biology Organisation (EMBO) Long-term Postdoctoral Fellowship (declined)
07/2005	Royal Entomological Society “Alfred Russell Wallace Award” for Best PhD Thesis of 2005
10/2001–03/2005	Medical Research Council (UK) Studentship
10/2001–10/2004	Gonville and Caius College Smart Scholarship (University of Cambridge)
10/2001	Imperial College London Forbes Memorial Medal, for most outstanding student graduating in the biological sciences
09/2001	UK Science Engineering and Technology Student of the Year Awards, 2001: “UK Biology Student of the Year”
07–09/2000	Nuffield Undergraduate Science Bursary for “Phylogeny of Pselaphinae”

PUBLICATIONS

Parker, J. (2024) Organ Evolution: Emergence of Multicellular Function. *Annual Review of Cell and Developmental Biology*, (in review)

Parker, J. (2022) The Bank Most Tangled. *Current Biology*, 32, R1328-R1330

Parker, J. (2022) Transitional Morphology and Afrotropical Affinity of a Bythinoplectine Rove Beetle from the Early Eocene of India (Coleoptera: Staphylinidae: Pselaphinae). *Palaeoentomology*, 5, 452–460

Parker, J. (2022) Interactions Between Insect Species: Their Evolution and Mechanistic Architecture. *Current Opinion in Insect Science*, 51: 100963

Davison, H.D., Pilgrim, J., Wybouw, N., **Parker, J.**, Pirro, S., Hunter-Barnett, S., Campbell, P.M., Blow, F., Darby, A.C., Hurst, G.D.D. and Siozios, S. (2021) Genomic diversity across the *Rickettsia* and ‘*Candidatus* Megaira’ genera and proposal of genus status for the Torix group. *Nature Communications* 13: 2630

Naragon, T.H, Wagner, J. and **Parker, J.** (2022) Parallel Evolutionary Paths of Rove Beetle Myrmecophiles: Replaying a Deep-Time Tape of Life. *Current Opinion in Insect Science*. 50: 100903

Kanwal, J. and **Parker, J.** (2022) The Neural Basis of Interspecies Interactions in Insects. *Current Opinion in Insect Science*, 50:100891

Parker, J. (2022) Joe Parker - Q&A. *Current Biology*, 32, R6-R8

Stuckey, K., Dua, R., Ma, Y., **Parker, J.** and Newton, P.K. (2022) Optimal Dynamic Incentive Scheduling for Hawk-Dove Evolutionary Games. *Physical Review E*, 105, 014412

- Brückner, A., Badroos, J.M., Learsch, R.W. Yousefelahiyeh, M., Kitchen, S.A. and **Parker, J.** (2021) Evolutionary Assembly of Cooperating Cell Types in an Animal Chemical Defense System. *Cell*, 184, 6138-6156
- Parker, J.** and Kronauer, D.J.C. (2021) How Ants Shape Biodiversity. *Current Biology*, 31, R1208-R1214
- Buarque de Macedoa, R., Ando, E., Joy, S., Viggiani, G., Kumar Pal, R., **Parker, J.** and Andrade, J.E. (2021) Unearthing Real-Time 3D Ant Tunneling Mechanics. *Proceedings of the National Academy of Sciences*, 118, e2102267118
- Kishi, Y. and **Parker, J.** (2021) Cell Type Innovation at the Tips of the Animal Tree. *Current Opinion in Genetics and Development*, 69, 112–121
- Beery, S., Cole, E., **Parker, J.**, Perona, P. and Winner, K. (2021) Species distribution modeling for machine learning practitioners: A review. *ACM SIGCAS conference on computing and sustainable societies, 2021*, 329-348
- Hlaváč, P., **Parker, J.**, Maruyama, M. and Ficáček, M. (2021) Diversification of Myrmecophilous Clavigeritae Beetles (Coleoptera: Staphylinidae: Pselaphinae) and their Radiation in New Caledonia. *Systematic Entomology*, 46, 422–452
- Parker, J.** and Struhl, G. (2020) Control of *Drosophila* Wing Size by Morphogen Range and Hormonal Gating. *Proceedings of the National Academy of Sciences*, 117, 31935–31944
- Parker, J.** and Rabeling C. (2020) Evolution: Shape Shifting Social Parasites. *Current Biology*, 30, PR1049–R1051
- Brückner, A. and **Parker, J.** (2020) Molecular Evolution of Gland Cell Types and Chemical Interactions in Animals. *Journal of Experimental Biology*, 223, jeb211938
- Zhou, Y.L., Ślipiński, A., Ren, D. and **Parker, J.** (2019) A Mesozoic Clown Beetle Myrmecophile (Coleoptera: Histeridae). *eLife*, 8:e44985
- Parker, J.** and Owens, B. (2018) *Batriscydmaenus* Parker and Owens, New Genus, and Convergent Evolution of a “Reductive” Ecomorph in Socially Symbiotic Pselaphinae (Coleoptera: Staphylinidae). *The Coleopterists Bulletin*, 72, 219–229
- Yin, Z., **Parker, J.**, Cai, C., Huang D., and Li, L. (2018) A New Stem Bythinine in Cretaceous Burmese Amber and Early Evolution of Specialized Predatory Behavior in Pselaphine Rove Beetles (Coleoptera: Staphylinidae). *Journal of Systematic Palaeontology*, 16, 531–541
- Yamamoto, S., Maruyama, M. and **Parker, J.** (2017) Evidence from Amber for the Origins of Termitophily. *Current Biology*, 27, R792–R794
- Parker, J.** (2017) Staphylinids: Quick Guide. *Current Biology*, 27, R43–R56
- Maruyama, M., and **Parker, J.** (2017) Deep-Time Convergence in Rove Beetle Symbionts of Army Ants. *Current Biology*, 27, 920–926
- Yamamoto, S., Takahashi, Y. and **Parker, J.** (2017) Evolutionary Stasis in Enigmatic Jacobsoniid Beetles. *Gondwana Research*, 45, 275–281

- Yamamoto, S., Maruyama, M. and **Parker, J.** (2016) Evidence for Social Parasitism of Early Insect Societies by Cretaceous Rove Beetles. *Nature Communications*, 7: 13658
- Parker, J.** (2016) Emergence of a Superradiation: Pselaphine Rove Beetles in Mid-Cretaceous amber from Myanmar and Their Evolutionary Implications. *Systematic Entomology*, 41, 541–466
- Parker, J.** (2016) Myrmecophily in Beetles (Coleoptera): Evolutionary Patterns and Biological Mechanisms. *Myrmecological News*, 22, 65–108
- Parker, J.** and Struhl, G. (2015) Scaling the *Drosophila* wing: TOR-dependent Target Gene Access by the Hippo Pathway Transducer Yorkie. *PLOS Biology* 13(10): e1002274
- Parker, J.** and Grimaldi, D.* (2014) Specialized Myrmecophily at the Ecological Dawn of Modern Ants. *Current Biology*, 24, 2428–2434
- Parker, J.** (2014). *Morphogenia*: a New Genus of the Neotropical Tribe Jubini (Coleoptera: Staphylinidae: Pselaphinae) from the Brazilian Amazon. *ZooKeys*, 373, 57–66
- Hlaváč, P., Baňář, P. and **Parker, J.** (2013) The Pselaphinae of Madagascar. II. Redescription of the Genus *Semiclaviger* Wasmann, 1893 (Coleoptera: Staphylinidae: Pselaphinae: Clavigeritae) and Synonymy of the Subtribe Radamina Jeannel, 1954. *Zootaxa*, 3736, 265–276
- Parker, J.** and Maruyama, M. (2013) *Jubogaster towai*, a New Neotropical Genus and Species of Trogastrini (Coleoptera: Staphylinidae: Pselaphinae), Exhibiting Myrmecophily and Extreme Body Enlargement. *Zootaxa*, 3630, 369–378
- Parker, J.** (2011). Morphogens, Nutrients, and the Basis of Organ Scaling. *Evolution and Development*, 13, 304–314
- Parker, J.** (2006). Control of Compartment Size by an EGF Ligand from Neighbouring Cells. *Current Biology*, 16, 2058–2065
- Parker, J.**, and Johnston, L.A. (2006). The Proximate Determinants of Insect Size. *Journal of Biology*, 5, 15

PREPRINTS

- Kitchen, S.A, Naragon, T.H., Brückner, A. Ladinsky, M.S., Quinodoz, S.A., Badroos, J.M., Viliunas, J.W., Wagner, J.M., Miller, D.R., Yousefelahiyeh, M., Antoshechkin, I.A., Eldredge, K.T., Pirro, S., Guttman, M., Davis, S.R. Aardema, M.L. and **Parker, J.** (2023), The Genomic and Cellular Basis of Biosynthetic Innovation in Rove Beetles. *bioRxiv*, 2023.05.29.542378
- Sun, J.J., Marks, M., Ulmer, A., Chakraborty, D., Geuther, B., Hayes, E., Jia, H., Kumar, V., Oleszko, S., Partridge, Z., Peelman, M., Robie, A., Schretter, C.E., Sheppard, K., Sun, C., Uttarwar, P., Wagner, J.M., Werner, E., Parker, J., Perona, P., Yue, Y., Branson, K. and Kennedy, A. (2022) The MABe22 benchmarks for representation learning of multi-agent behavior. *arXiv* arXiv:2207.10553

Perry, E.K., Siozios, S., Hurst, G.D.D. and **Parker, J.** (2021) Structure of an Ant-Myrmecophile-Microbe Community. *bioRxiv*, 2021.10.04.462948,

Kishi, Y., Brückner, A., Thomas, I.M., Eldredge, K.T., Davis, S., Coleman, R.T., **Parker, J.** *Hox*-logic underlying the evolution and biosynthetic function of defensive cell types in a rove beetle chemical weapon (in revision at *Nature Communications*; *bioRxiv* preprint of earlier version: <https://doi.org/10.1101/198945>)

CURRENT FUNDING

10/01/2022–09/30/2024	Department of Defense ICB-2022-ASR-31 / W911NF-22-F-0043 An engineered stealth beetle to explore behavioral response thresholds to small molecules \$120,000 Role: PI
01/01/2023-12/31/2025	Resnick Sustainability Institute Explorer Grant Landscape-scale tracking of insect populations \$120,000 Role: PI
08/01/2022-07/31/2027	The Pew Charitable Trusts Pew Biomedical Scholarship Molecular assembly of biosynthetic cell types and chemical innovations in animals \$300,000 Role: PI
01/01/2022–01/01/2024	The Tianqiao and Chrissy Chen Institute for Neuroscience at Caltech T&C Chen Center for Systems Neuroscience grant Evolution of anatomical novelties and their neural control \$50,000 Role: Co-PI (PIs: Michael Dickinson and Joseph Parker)
03/01/2021–02/28/2026	National Science Foundation NSF 2047472 CAREER: Genomic and Phenotypic Evolution of a Social Symbiosis \$1,159,885 Role: PI
10/01/2020–09/30/2022	Center for Environmental Microbial Interactions (CEMI) at Caltech CEMI Research Grant Horizontal transmission of an insect primary endosymbiont \$19,000

Role: PI

7/1/2019–06/30/24 ARO-MURI
W911NF18S0003 Investigating energy efficiency, information processing and control architectures of microbial community interaction networks
 \$925,000 (of \$6,250,000 total)
 Role: Co-PI (PI: J. Boedicker; Co-PIs: Parker, J. Handelsman, A. Hero, O. Venturelli, U. Mitra, P. Newton)

09/2020– 08/2023 Moore Foundation
Reconstituting the nonequilibrium biophysics of eukaryogenesis in active matter
 \$123,079 (of \$920,000 total)
 Role: Co-PI (PI: Thomson, Co-PI: Phillips)

09/01/2018–08/31/23 The Rita Allen Foundation
 Rita Allen Scholars Award
Evolutionary Neurobiology of Social and Symbiotic Behavior
 \$550,000
 Role: PI

08/2020–05/2023 National Institutes of Health
1R34NS118470-01 A neuroethological model of sensorimotor processing in animal-animal interactions
 \$749,250
 Role: PI

PAST FUNDING

07/2020–06/2022 Rosen Bioengineering Center at Caltech
Engineering species interactions by reprogramming animal glands
 \$40,000
 Role: PI
 Role: Co-PI (PIs: Joseph Parker and Matt Thomson)

06/01/2020–05/31/2022 Resnick Sustainability Institute
 Small scale grant
Modernizing Insect Censusing Technologies to Inform Conservation Models
 \$120,000
 Role: Co-PI (PIs: Michael Dickinson and Joseph Parker)

02/2020–02/2022 The Alfred P. Sloan Foundation
 Fellowship in Computational and Molecular Evolutionary Biology
Convergent Evolution of a Social Symbiosis
 \$75,000

- Role: PI
- 07/01/2018–06/30/2021 The Esther A. & Joseph Klingenstein Fund
Klingenstein-Simons Fellowship Award
Neural Architecture of a Social Symbiosis
\$225,000
Role: PI
- 01/01/2019–12/31/2020 The Tianqiao and Chrissy Chen Institute for Neuroscience at Caltech
T&C Chen Center for Systems Neuroscience grant
Platforms for behavioral analysis and brain imaging in interacting insects
\$50,000
Role: Co-PI (PIs: Michael Dickinson and Joseph Parker)
- 01/01/2018–12/31/2018 The Shurl and Kay Curci Foundation
The Shurl and Kay Curci Foundation Research Grant
Neural mechanisms underlying social symbioses
\$200,000
Role: PI
- 10/01/2017–09/30/2018 Center for Environmental Microbial Interactions (CEMI) at Caltech
CEMI Research Grant
Microbial involvement in a beetle-ant symbiosis
\$10,000
Role: PI
- 10/01/2017–09/30/2018 The Tianqiao and Chrissy Chen Institute for Neuroscience at Caltech
T&C Chen Center for Systems Neuroscience grant
The Interspecies Interface: Molecular Logic of Host Perception in Social Symbiosis
\$50,000
Role: Co-PI (PIs: Joseph Parker and Elizabeth Hong)

INVITED SCIENTIFIC LECTURES

- 06/2024 "Molecular Mechanisms of Inter-Organismal Extended Phenotypes", HHMI Janelia Research Campus, VA
- 05/2024 Genetics, Genomics and Systems Biology Seminar, University of Chicago, IL
- 04/2024 Keynote speaker, Department of Neuroscience Retreat, UT Southwestern Medical Center, TX
- 04/2024 Center for Mechanisms of Evolution, Arizona State University, AZ
- 03/2024 "Origins of new cell types: questions for the single-cell era", The Francis Crick Institute, London, UK
- 02/2024 Department of Entomology, University of Georgia, GA

01/2024 Department of Entomology, University of California Riverside, CA
12/2023 Department of Biology, University of Washington, WA
11/2023 Department of Biology, University of California San Diego, CA
10/2023 Simons Foundation Presidential Lecture, Simons Foundation, NY
10/2023 Department of Biology, New York University, NY
09/2023 Ecology and Evolution Seminar Series, University of California, Davis, CA
09/2023 Center for Ecological and Evolutionary Dynamics, University of Southern California, CA
04/2023 "Neuro-Evo: A Comparative Approach to Cracking Circuit Function III", HHMI Janelia Research Campus, VA
03/2023 Zuckerman Mind Brain Behavior Institute, Columbia University, NY
01/2023 European Molecular Biology Laboratory (EMBL), Heidelberg
11/2022 Department of Biology, Technische Universität Darmstadt, Germany
10/2022 Ecology and Evolution seminar series, University of Nevada, Reno, NV
09/2022 Basic Science Seminar, University of California San Francisco, CA
09/2022 Department of Ecology and Evolutionary Biology, Princeton University, NJ
06/2022 Max Planck Institute for Chemical Ecology, Jena, Germany "Frontiers in Chemical Ecology" symposium
04/2022 "Constancy and Plasticity in Development and Evolution" workshop, Ben-Gurion University of the Negev, Israel
04/2022 Department of Entomology, Montana State University, Bozeman, MT
08/2021 Arcadia Science Day, San Francisco, CA
06/2021 "Multi-agent Behavior: Representation, Modeling, Measurement, and Applications, Conference on Computer Vision and Pattern Recognition", Virtual meeting
04/2021 Biology Colloquium, Illinois Institute of Technology, Chicago, IL
04/2021 College of Biological Sciences, University of Minnesota, MN
03/2021 IEEE Aerospace Symposium Plenary Lecture
02/2021 Max Planck Institute for Chemical Ecology, Jena, Germany
12/2020 Department of Biology, University of Utah, UT
11/2020 Department of Zoology, University of Cambridge, UK
10/2020 Department of Physiology, McGill University, Montreal, Canada
07/2020 US Kavli Frontiers of Science Symposium
07/2020 Society for Developmental Biology 79th Annual Meeting, Chicago, IL
06/2020 Caltech Chen Institute Workshop: *Measurement and Analysis of Behavior*
06/2020 Department of Zoology, University of British Columbia, Vancouver, Canada
03/2020 Life Science Lecture Series, Cornell University, Ithaca, NY

01/2020 Ecology, Evolution, and Conservation of Biodiversity Seminar Series, Oregon State University, OR

12/2019 Watson Lecture, Caltech, Pasadena, CA

11/2019 Japan Society for the Promotion of Science 35th International Prize for Biology Symposium, Tokyo, Japan

11/2019 School of Life Sciences, Arizona State University, AZ

10/2019 Department of Biology, Occidental College, CA

06/2019 International Geobiology Symposium, Caltech, Pasadena, CA

04/2019 Caltech Alumni Association, Santa Barbara, CA

03/2019 "New Genetic Tools for Non-Model Organisms" Conference, HHMI Janelia Research Campus, VA

03/2019 Journal of Experimental Biology Symposium 2019: "Genome Editing for Comparative Physiology", Massa Marittima, Italy

02/2019 Visipedia Machine Vision Retreat, Google San Diego, CA

02/2019 Division of Biological Sciences, University of Montana, MT

01/2019 Caltech Center for Environmental Microbial Interactions Winter Gala, Pasadena, CA

12/2018 Harvard Museum of Comparative Zoology, Cambridge, MA

12/2018 Cambridge Entomological Club, Cambridge, MA

11/2018 Department of Entomology, Ohio State University, OH

11/2018 Entomological Society of America conference, Vancouver, Canada

10/2018 Department of Evolution, Ecology, and Organismal Biology, University of California Riverside, CA

07/2018 Society for Developmental Biology 77th Annual Meeting, Portland, OR

06/2018 Lorquin Entomological Society meeting, Los Angeles, CA

05/2018 Caltech Alumni Association Seminar Day, Pasadena, CA

03/2017 Department of Entomology, University of Illinois, IL

02/2017 Department of Biology, Texas A&M University, TX

02/2017 Department of Biology, University of Pennsylvania, PA

02/2017 Department of Biology, University of Rochester, NY

02/2017 Department of Biology and Biological Engineering, California Institute of Technology "New Horizons in Organismal Biology" Symposium, Pasadena, CA

01/2017 Rockefeller University, New York, NY

11/2016 New York Entomological Society, NY

11/2016 Department of Biology, New York University, NY

10/2016 Comparative Biology seminar series, American Museum of Natural History, NY

- 09/2016 Plenary speaker: The Coleopterist's Society Annual Meeting, XXV International Congress of Entomology, Orlando, FL
- 03/2016 Department of Biology and Biological Engineering, California Institute of Technology "New Horizons in Biology" Symposium, Pasadena, CA
- 02/2016 Department of Agricultural and Environmental Sciences, Clemson University, SC
- 09/2015 Department of Zoology, University of Cambridge, UK
- 02/2015 Stowers Institute for Biomedical Research, Kansas City, MO
- 09/2014 Rockefeller University, New York, NY
- 03/2014 Department of Zoology, Michigan State University, MI
- 01/2014 Division of Integrative Biology, UT Austin, TX
- 04/2013 Department of Biological Sciences, Louisiana State University, LA
- 04/2012 Department of Zoology, Miami University, OH
- 05/2011 Department of Biology, Shinshu University, Matsumoto, Japan
- 09/2006 Plenary speaker: The Wallace Award Lecture, Royal Entomological Society Ento '06 meeting, University of Bath, UK
- 09/2005 National Institute of Medical Research, Mill Hill, London, UK

TEACHING

- 09–12/2023–present **Caltech Bi270a: *Symbiosis: Origins, Mechanisms and Diversity*** (special topics graduate course, 9 units. Instructors: McFall-Ngai, Parker, Mazmanian)
- 09–12/2020–present **Caltech Bi270: *Machine Learning in Ecology and Biodiversity*** (special topics graduate course, 9 units)
- 04–07/2019–present **Caltech Bi160: *Molecular Basis of Animal Evolution*** (graduate and upper undergraduate course; 9 units, lecture series, computational evolutionary biology lab class involving fieldwork, genome sequencing and assembly, comparative genomic analyses)
- 03/2013–03/2017 ***Regulation and Evolution of Animal Size and Shape*** (Columbia University Dept. Genetics and Development, graduate course (lectures, practical and final exam).

MENTORSHIP

Postdoctoral Advisor

- 2024–present Ling Sheng Loh
- 2020–present Jess Kanwal (Helen Hay Whitney Fellowship recipient; L'Oreal for Women in Science Awardee)
- 2018–2022 Adrian Brückner (Simons Foundation Fellowship in the Life Sciences recipient)

2018–2022 Sheila Kitchen (BBE Divisional Fellowship recipient)

Graduate Student Advisor:

2023-present Tarun Sharma (Computation and Neural Systems program)
2022-present Joanni Viliunas (Biology program)
2022–present Hayley Smihula (Neurobiology program)
2021–present Hannah Ryon (Biology program)
2020–present Jean Badroos (Biochemistry and Molecular Biophysics program)
2019–2022 Tae Han Kim (Neurobiology program)
2018–present Yuriko Kishi (Biology program)
2018–2022 David Miller (Biology program)
2018–present Thomas Naragon (Chemistry program)
2018–present Julian Wagner (Biology program; NSF GRFP recipient)

Rotation Student Advisor:

2024 Manuel Holguin (Biochemistry and Molecular Biophysics program)
2023 Ayo Adewakun (Neurobiology program)
2023 Trevor Wolf (Neurobiology program)
2023 Surya Narayanan (Biology program)
2022 Vera Beilinson (Biology program)
2022 Sarah Weissflog (Biology program)
2022 Marina Lecouche (Biology program)
2022 Noah Robinson (Bioengineering program)
2021 Alec Lourenco (Biochemistry and Molecular Biophysics program)
2018 Steven Wilbert (Biology program)
2018 Jessica Griffiths (Biology program)
2018 Lev Tsy-pin (Biology program)
2018 Dylan Bannon (Biology program)

Graduate Student Committee Member:

2023-present Pratyush Kandimalla (Hong lab, BBE, Caltech)
2023-present Noah Robinson (Wang lab, BBE, Caltech)
2022-2023 Tarun Sharma (Dickinson lab, BBE, Caltech)
2022-2023 Victoria Jorgensen (Zernicka-Goetz lab, BBE, Caltech)
2022-present Noah Tashbook (Eiler/Kirschvink labs, GPS, Caltech)
2020-present Tom Roeschinger (Phillips lab, BBE, Caltech)
2020-present Hugo Urrutia (Bronner lab, BBE, Caltech)
2020-2023 Fayth Tan (Goentoro lab, BBE, Caltech)
2019–2021 Elena Perry (Newman lab, BBE, Caltech)
2019–2022 Robert Buarque de Macedo (Andrade lab, EAS, Caltech)
2019–2023 Lev Tsy-pin (Newman lab, BBE, Caltech)
2019–present Peiwei Chen (Aravin lab, BBE, Caltech)
2019–present Aditi Narayanan (Orphan lab, GPS, Caltech)
2018–2021 Alysha de Souza (Dickinson lab, BBE, Caltech)
2018–2019 James Lee (Sternberg lab, BBE, Caltech)
2018–present Francesca Ponce (Dickinson lab, BBE, Caltech)
2017–2021 Cynthia Chai (Sternberg lab, BBE, Caltech)
2017–2021 Alison Koontz (Bronner lab, BBE, Caltech)
2017–present Heather Curtis (Stathopoulos lab, BBE, Caltech)

2017–2021 Shashank Ghandi (Bronner lab, BBE, Caltech)
2016–2020 Laura Vasquez Velez (Caterino lab, Clemson University, SC)

Undergraduates mentored:

06–08/2023 AMGEN Scholar: Arianna de la Torre Roehl (UC Berkeley)
06–08/2023 SURF Scholar: Jessica Yin (Caltech)
06–08/2023 WAVE Scholar: Camila Romero (West Virginia University)
06–08/2023 WAVE Scholar: Maria Jaimes (Indiana University Bloomington)
06–08/2022 SURF Scholar: Tighe Didden (Caltech)
06–08/2022 SURF Scholar: Aditee Prabhutendolkar (Caltech)
06–08/2022 SURF Scholar: Danny Collinson (Caltech)
06–08/2022 SURF Scholar: Milan Robinson (UC Berkeley)
06–08/2022 SURF Scholar: Jonayet Lavin (Caltech)
06–08/2022 SURF Scholar: Veronica Muller (Caltech)
06–08/2022 AMGEN Scholar: Robert Hall (UW-Madison)
06–08/2022 Arianna de la Torre Roehl (UC Berkeley)
06–08/2021 SURF Scholar: Jack Nguyen (Caltech)
06–08/2021 AMGEN Scholar: Alana Weiss (Pomona College)
09/2020–present SURF Scholar: Angel Wang (Caltech)
09/2020–present SURF Scholar: Ysabel Yang (Caltech)
06–08/2019 SURF Scholar: Austin Harvard (Caltech)
06–08/2019 SURF Scholar: Natali Lelieur (Caltech)
06–08/2019 SURF Scholar: Nicole Heflin (Caltech)
06–08/2019 AMGEN Scholar: Joycelyn Yiu (Rice University)
05–09/2019 VERP Scholar: Jack Chen (University of Toronto)
06–08/2018 SURF Scholar: Shirley Zhu (Caltech)
06–08/2018 AMGEN Scholar: Christina Park (Harvard University)
06–08/2018 AMGEN Scholar: Carrie Hicks (University of Denver)
07/2014–2017 Isaiah Thomas, Columbia University, NY
05/2008–09/2009 Harrison Hsu, Columbia University, NY

High School Students mentored:

07–09/2023 Isabella Zhao, Arcadia High School, CA
05–07/2023 Michelle So, Arcadia High School, CA
04/2021–present Jasper Bagley, Webb School, Claremont, CA
06–09/2020 Arianna de la Torre Roehl, La Cañada High School, CA
08–09/2019 Katie Kirkendall, San Marino, CA
08/2018–present Kees Hood, Pasadena, CA
01/2018–06/2018 Phillip Zhou, Polytechnic School, Pasadena, CA
09/2017–06/2018 Jake Feingold, Polytechnic School, Pasadena, CA (now undergraduate in evolutionary biology at University of Chicago)
06/2012–06/2014 Alfonso Caetta, Bard High School, Queens, NY

SERVICE (CALTECH)

2023-2023 Caltech BBE Hiring Committee member: Developmental and Organismal Biology search

05/2023	Organizer and speaker: Center for Evolutionary Science Spring Symposium: "Evolution in the air, sea and soil"
2021-present	Caltech BBE Hiring Committee member: Biology and Biological Engineering (General search)
11/2020	Organizer and host: Center for Evolutionary Science Fall Symposium "The Molecular Landscape"
2020-present	Caltech BBE Seminar Committee member
09/2020	Organizer and host: Caltech Chen Neuroscience Institute workshop "Methods in Evolutionary Neuroscience"
2019-present	Caltech Resnick Sustainability Institute Education Committee member
11/2019	Organizer, host and speaker: Caltech Center for Evolutionary Science Fall Symposium Organizer
2018-present	Caltech Center for Evolutionary Science, co-founder, steering committee member
2017-present	Caltech Biology Graduate Admissions Committee

SERVICE (COMMUNITY)

02/2023-present	Journal editorial board: <i>G3: Genome Reports</i>
01/2023	Human Frontiers Science Program Long Term Fellowship reviewer
05/2022	National Science Foundation Integrative Organismal Systems (NSF IOS), panel review member
01/2021	Section editor: "Behavioral Ecology" for <i>Current Opinion in Insect Science</i> journal
07/2022	Symposium co-organizer/speaker: "Biology and Evolution of Social Insect Symbionts", XXVI International Congress of Entomology, Helsinki, Finland
2021-present	National Science Foundation Integrative Organismal Systems (NSF IOS), Symbiosis, Infection, and Immunity program, ad hoc reviewer
09/2016	Symposium co-organizer/speaker: "Biology and Evolution of Social Insect Symbionts", XXV International Congress of Entomology, Orlando, FL
11/2013	Symposium co-organizer/speaker: "Biology and Evolution of Social Insect Symbionts", Entomological Society of America conference, Austin, TX

OUTREACH ACTIVITIES

04/2023	The Huntington Library, Art Museum, and Botanical Gardens, advisory committee, History of Science exhibit
03/2023	High Point Academy (Pasadena), 2 nd Grade, laboratory visit: "Studying Insect Interactions"
02/2022	Keynote Speaker: Early Childhood STEM Conference
2020-present	Community College Mentoring program with Pasadena City College (PCC; a Hispanic serving institute). Scheme for biology professors and undergraduate students at PCC to obtain credit for immersive laboratory

and fieldwork experience in the Parker lab. Involves: training professors and students in wet lab molecular techniques, with direct mentorship by Parker lab trainees; providing resources for PCC student research experiences led by PCC instructors; enabling participation in lectures, journal clubs and laboratory classes for Caltech Bi160 course, “The Molecular Basis of Animal Evolution” (Instructor: Parker).

- 03/2020 Marengo Elementary School Science Night, South Pasadena, CA
- 2018–present STEM curriculum contributor for Children’s Center at Caltech daycare (lab tours and introductory entomology for 0–5 year olds)
- 11/2017 Invited Speaker: University of Southern California “Under L.A.: Subterranean Stories” public event organized by Huntington-USC Institute on California and the West
- 04/2016 Columbia University Library “The Art of Data Visualization” event guest seminar: “*The Evolution of Insect Images*”
- 06/2012–2016 Designed and taught annual “*Insect Diversity*” 5-day entomology course for children at Sun Foundation “Art and Science in the Woods” event, Illinois
- 11/2012–01/2013 Crowd-funding project: “*Deceiving the Superorganism: Ant-Exploiting Beetles*” at petridish.org. Project successfully funded at 174% (\$3000 goal; \$5226 raised with 97 backers), supporting a month-long expedition to Peru in September-October 2013 to collect social insect symbionts.
- 02/2013 PS/MS 278 Career Day 2012-2013, Manhattan, New York
- 12/2012 Scientific American Guest Blog article: “*The Bizarre, Beetle-Biased World of Social Insect Exploitation*”