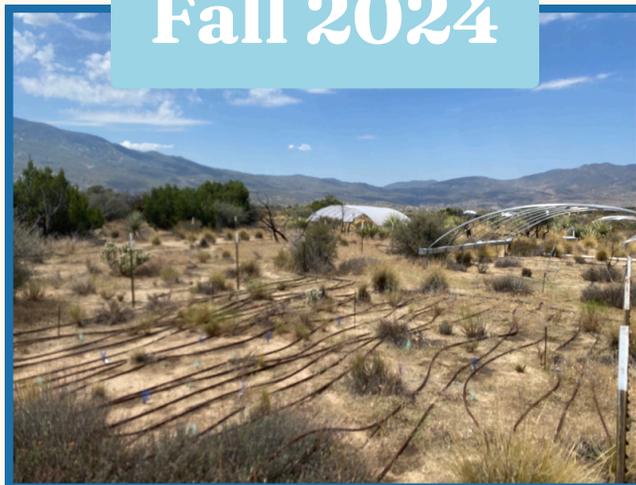


# Evolution, Ecology, and Organismal Biology @ University of California Riverside

Fall 2024



Boyd Deep Canyon. Photo by Sophie Crehan

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## Announcements!

Congratulations to our most recent doctors who defended their dissertations in the Summer and Fall of 2024:

- **Tesa Madsen-Hepp** (Spasojevic Lab) "Unraveling the processes of plant community assembly in an era of global change: insights from a dryland ecosystem"
- **Sam Kubica** (Springer Lab) "The evolution of mammalian vertebral number"
- **Ayala Berger** (Clark & Campbell Labs) "A 'tail' of two signals: acoustic courtship displays in Anna's and Costa's hummingbirds"
- **Clara Woodie** (Anderson Lab) "Predators that eat their competitors: Mechanisms of food web stability"
- **Sarah Gardner** (Campbell Lab) "Exploring the prenatal microbiome in *Mus*"
  
- Rebeca Hernández Gutiérrez (postdoc in Ostevik Lab) accepted a position as an Assistant Professor in the Center for Research and Advanced Studies at CINVESTAV-IPN, Irapuato.

# Announcements!

Welcome our newest cohort of students!

- Swopnil Adhikari
  - Zach Cadima
  - Sophie Crehan
  - Oscar Cuellar Valencia
  - Jimena Dominguez
  - Marisol Ibarra Zea
  - Elisabeth Leung
  - Teddy Reitman
- Brennan Silva, Gangothri, and Rajesh Neupane presented posters at the Evolution Meetings in Montreal.
  - Gangothri and Conner Lay presented posters at ESA in Long Beach.

## Upcoming Event!

UC-Riverside will host the first ever Southern California Conference on Ecological Change on Feb 14, 2025 with the theme of Connectivity and Collaborations to bring together a diverse group of ecologists to chat about our science, initiate collaborations, and make new connections. This free one-day event will include two plenary talks, breakout groups, panels, and a poster session to brainstorm ways in which we can collectively tackle scientific and environmental issues in Southern California. A light breakfast, coffee, and lunch will be provided. Please register at [socalecology.com](https://socalecology.com) as seats are limited, and email [socalecology@gmail.com](mailto:socalecology@gmail.com) with any questions.

## Awards!

Ellie Armstrong received a grant from the **National Science Foundation Partnership to Advance Conservation Science and Practice (NSF-PACSP)** to study brown bear decline and recovery in the lower 48 states. The grant is collaborative between UCR, UCSC, and the Interagency Grizzly Bear Study Team.

Tesa Madsen-Hepp (Spasojevic Lab) was awarded the **2024 Robert P. McIntosh Award** for best paper in vegetation ecology by the Ecological Society of America for her 2023 paper: Madsen-Hepp, T.R., Franklin, J., McFaul, S., Schauer, L. and Spasojevic, M.J., 2023. Plant functional traits predict heterogeneous distributional shifts in response to climate change. *Functional Ecology*, 37(5), pp.1449-1462.

Mikhail Plaza (Samuk Lab) received **the 2024 UCR Agriculture Fellowship** for work in investigating recombination evolution in plants and applications in plant breeding!

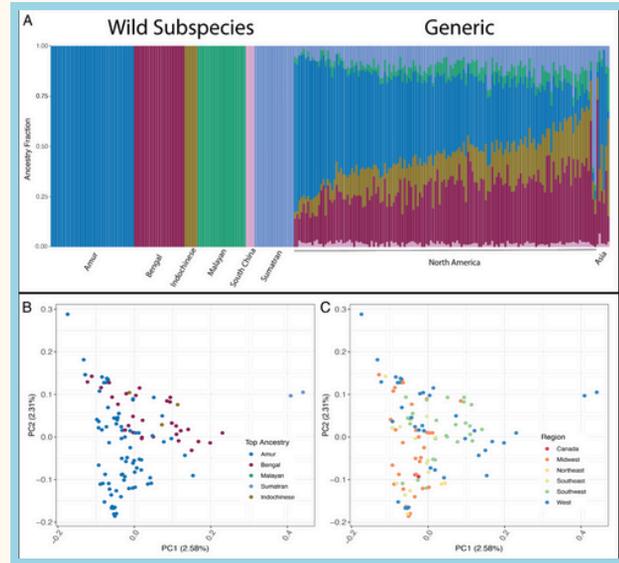
MR Tucker (Clark Lab) was awarded the **Shipleigh-Skimmer Conservation Award** and the **Mayhew Award!**

Jenny Wong (Clark Lab) received the **American Museum of Natural History Chapman Award 2024**, **Society of Systematic Biologists Graduate Student Research Award 2024**, and **the Mayhew Graduate Research Award 2024!**

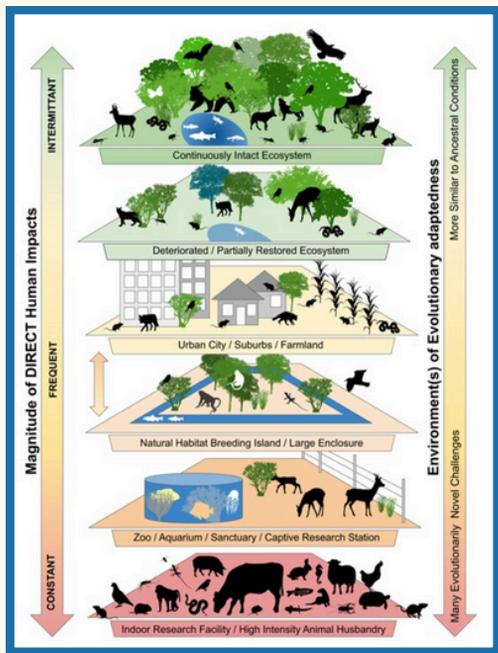
# Recent Publications

**Armstrong, E. E., Mooney, J. A., Solari, K. A., Kim, B. Y., Barsh, G. S., Grant, V. B., & Hadly, E. A. (2024).** Unraveling the genomic diversity and admixture history of captive tigers in the United States. *Proceedings of the National Academy of Sciences*, 121(39), e2402924121.

**Henn, J. J., Anderson, K. E., Brigham, L. M., Bueno de Mesquita, C. P., Collins, C. G., Elmendorf, S. C., Green, M. D., Huxley, J. D., Rafferty, N. E., Rose-Person, A., & Spasojevic, M. J. (2024).** Long-Term Alpine Plant Responses to Global Change Drivers Depend on Functional Traits. *Ecology Letters*, 27(10), e14518.



Armstrong et al. 2024 (Figure 1)

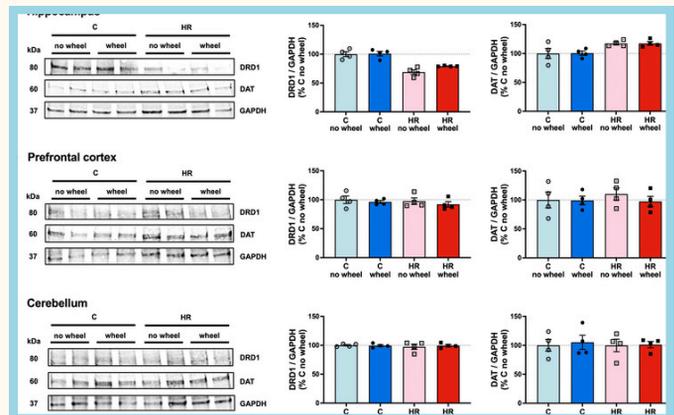


Josefson et al. 2024 (Figure 1)

**Josefson, C. C., Fitzwater, B. M., Beltran, R. S., Costa, D. P., Fornara, J. H., Garland Jr., T., Harris, B. N., Hinde, K., Hood, W. R., Hunt, E., Kenagy, G. J., Liebl, A. L., Litmer, A. R., Lopes, P. C., Misra, D., Meuti, M., Place, N. J., Powers, L. E., Saltzman, W., & Orr, T. J. (2024).** Balancing act: an interdisciplinary exploration of trade-offs in reproducing females. *Integrative and Comparative Biology*, icac092.

**Morrison, K., Zuniga-Vega, J. J., Travis, J., & Reznick, D. (2025).** The evolution of a placenta accelerates the evolution of post-copulatory reproductive isolation. *Evolution*, in press.

**Phan, J. M.-P., Yi, J., Foote, J. H. A., Ayabe, A. R. K., Guan, K., Garland, T., & Parfitt, K. D. (2024).** Hippocampal long-term potentiation is modulated by exercise-induced alterations in dopaminergic synaptic transmission in mice selectively bred for high voluntary wheel running. *Restorative Neurology and Neuroscience*. doi: 10.1177/09226028241290400

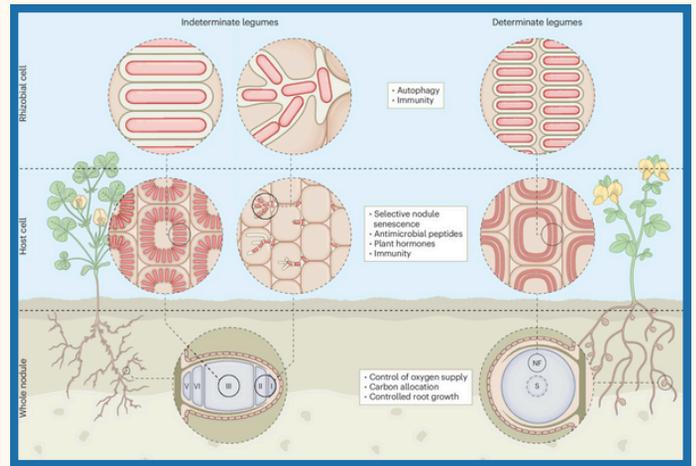


Phan et al. 2024 (Figure 3)

# Recent Publications

**Porter, S. S., Dupin, S. E., Denison, R. F., Kiers, E. T., & Sachs, J. L. (2024).** Host-imposed control mechanisms in legume-rhizobia symbiosis. *Nature Microbiology*, 9, 1929-1939.

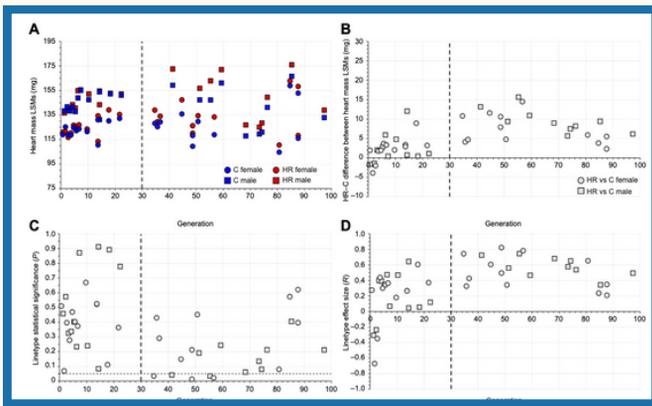
**Rose-Person, A., Spasojevic, M. J., Forrester, C., Bowman, W. D., Suding, K. N., Oldfather, M. F., & Rafferty, N. E. (2024).** Early snowmelt advances flowering phenology and disrupts the drivers of pollinator visitation in an alpine ecosystem. *Alpine Botany*, 1-10.



Porter et al. 2024 (Figure 3)

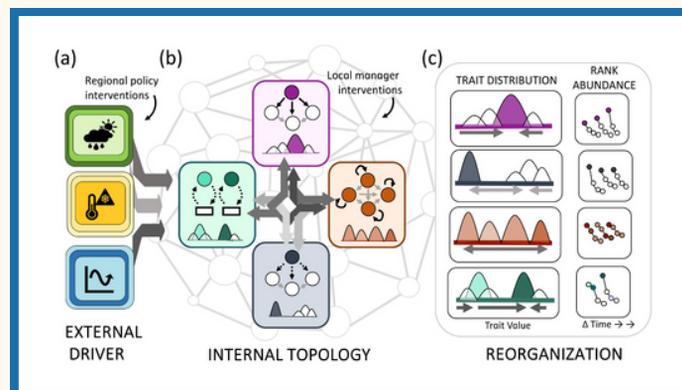
**Schwartz, N., & Garland Jr., T. (2024).** A meta-analysis of whole-body and heart mass effect sizes from a long-term artificial selection experiment for high voluntary exercise. *Journal of Experimental Biology*, 227, jeb249213.

**Schwartz, N. E., Schmill, M. P., Cadney, M. D., Castro, A. A., Hillis, D. A., McNamara, M. P., Rashid, J. O., Lampman, W., DeLaCruz, D. F., Tran, B. D., Trutalli, N. L., & Garland Jr., T. (2024).** Maternal exercise opportunity before, during, and after pregnancy alters maternal care behavior, offspring development, and offspring survival, but has few effects on offspring adult physical activity or body composition. *Physiology & Behavior*, in press.



Schwartz & Garland 2024 (Figure 3)

**Suding, K. N., Collins, C. G., Hallett, L. M., Larios, L., Brigham, L. M., Dudney, J., Farrer, E. C., Larson, J. E., Shackelford, N., & Spasojevic, M. J. (2024).** Biodiversity in changing environments: An external-driver internal-topology framework to guide intervention. *Ecology*, 105(8), e4322.



Suding et al 2024 (Figure 1)

# Meet the Second Years

Here is a spotlight on some of the second years and what they have been up to!



## **Raya Esplin (Armstrong Lab)**

Hello! I'm Raya, a JDP student in the Armstrong Lab at UCR and the Sethuraman Lab at SDSU. I'm interested in speciation genomics and developing pipelines to elucidate these mechanisms. For my first-year project, I developed a coalescent simulator wrapper called *CoalMiner* that generates thousands of random topologies to be tested with *fastsimcoal2*. I am currently working on a project to improve sex chromosome genome assemblies in software such as BUSCO. In the future, I plan on using machine learning frameworks to model and predict speciation mechanisms to aid conservation efforts and pest control initiatives.

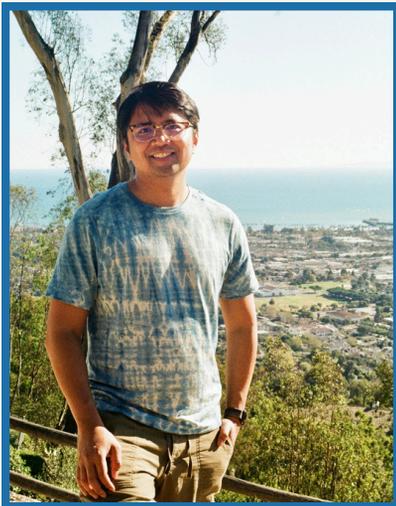
## **Brittney Nguyen (Delaney Lab)**

I study both biology education and evolutionary biology. Specifically, I'm interested in how non-conventional teaching tools like emotions and art can improve university biology curricula, as well as how phenotypic integration across angiosperm taxa may enhance our understanding of large-scale, macroevolutionary processes (such as diversification rates and patterns). I'm currently finishing a series of biology textbook analyses as part of my first year project. In the future, you might find me in the herbarium measuring loads of floral morphological characters, or on set filming lecture "episodes" for Lucy's BIOL 005B course!



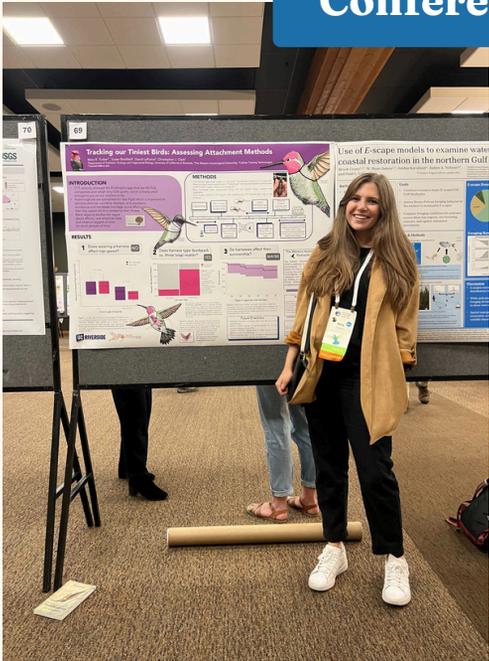
## **Mikhail Plaza (Samuk Lab)**

Hey everyone! My research focuses on recombination evolution, specifically, how recombination can be adaptive in periods of rapid evolutionary change. For my first year project, I am conducting a heat stress recombination assay to study how *Arabidopsis thaliana* populations from different climate regions respond to temperature. This work will provide novel insight on how species' recombination rate can change in light of global warming. My future research will also investigate the evolution of genes important to meiosis and crossovers in plants and understanding how recombination rate modifiers can be beneficial in applications in plant breeding.

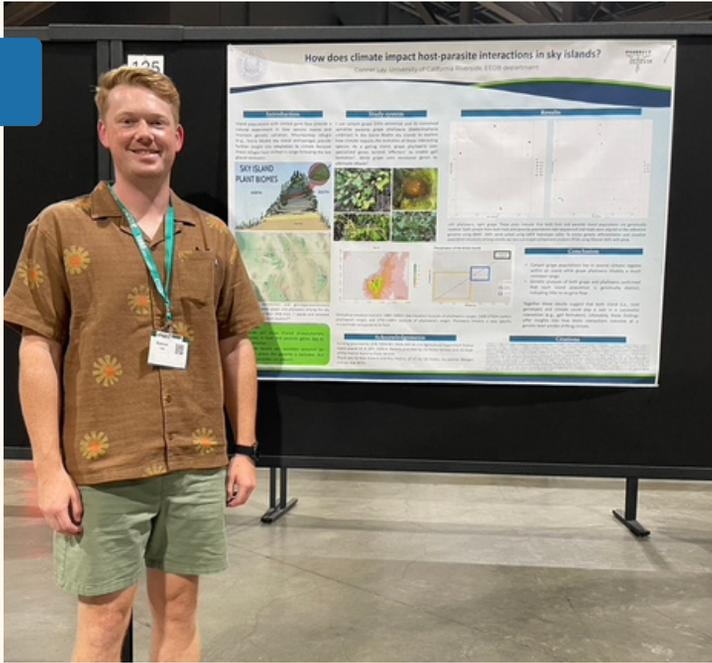


# EEOB in Action!

## Conferences



MR Tucker presented her first-year research at the American Ornithological Society in Colorado, where it was featured by the Western Hummingbird Partnership and Cellular Tracking Technologies.



Conner Lay presented a poster at ESA.

## Workshops



The Moen Lab led a week workshop on phylogenetic comparative methods in Owens Valley this August.



Rajesh Neupane, Kate Ostevik, Gangothri, and Brennan Silva attended Evolution this summer.

# EEOB in Action!

## Outreach



Elisabeth Leung, Alex Sumarli, and Zul Alam led a bear-themed booth at the Ameal Moore Nature Center

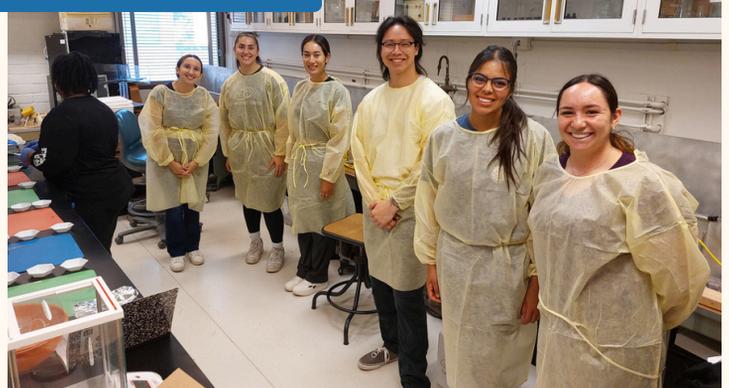


The Ostevik Lab visited University Heights Middle School with STEMivate to teach evolution to 7th and 8th graders

## Collaboration



Sam Loudon led a lab tour as part of the TRIO program run by the Moreno Valley College over the summer



Monica McNamara (left), former EEOB Ph.D. student and currently Assistant Professor at Whittier College, visited the Garland Lab for a project with several of her undergraduate students.

**Future Submissions!** Do you have news to share with the department? Whether it's upcoming events, resources, new publications, grants, awards, stories, or photos, it would be great to feature them in the next newsletter!

Send them to me (Elisabeth Leung): [eleun001@ucr.edu](mailto:eleun001@ucr.edu)

# Happy Holidays!