Josefine Just

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Research interests: organismal responses to environmental stress and adaptation to changing environments; interdisciplinary approaches linking ecological research, creative science communication, and environmental humanities; conservation.

Education

University of Vienna | Vienna, Austria | Expected Aug 2027
M.Sc. in Ecology and Ecosystems
Thesis: *Evolution of organismal stress responses: gene expression of five moss species following metal stress*
Advisor: Norman Wickett, Ph.D.

Colby College | Waterville, Maine, USA | May 2019
B.A. with Honors in Biology, Chemistry minor, summa cum laude

Research Experience

Student Assistant for Research and Teaching | Oct 2025–present
University of Vienna, Department of Functional and Evolutionary Ecology | Vienna, Austria
Supervisor: Ingeborg Lang, Ph.D.
Research responsibilities within a combined research and teaching appointment:

- Investigate bryophyte metal-stress responses using metal exposure, PAM fluorometry, and stereomicroscopy.
- Co-develop bryophyte sample-drying procedures for trace-metal quantification by ICP-MS.
- Maintain and optimize axenic bryophyte cultures.
- Develop, maintain, and optimize standard operating procedures and research-data management systems.
- General organization and coordination of the Lang research group.

Ph.D. Student | Sep 2020–Sep 2021
Harvard University, Department of Organismic and Evolutionary Biology | Cambridge, Massachusetts, USA (remote)
Advisor: Cassandra Extavour, Ph.D.

- Completed doctoral coursework and conducted literature research on ovarian development in insects.
- Served as co-laboratory safety officer.
- Program discontinued in September 2021 following COVID-19-related disruptions.

Researcher | Apr–May 2020
Confidence DNA-Analysen GmbH (DNA Analysis Laboratory) |Vienna, Austria
Advisor: Susanne Haas, Mag. rer. nat.

- Performed COVID-19 diagnostic testing using PCR.

Undergraduate and Post-Baccalaureate Researcher | Sep 2016–Sep 2019
Colby College, Department of Biology | Waterville, Maine, USA
Advisor: David Angelini, Ph.D.

- Investigated insect sex-determination mechanisms using RNA interference, qRT-PCR, phylogenetic tools, and geometric morphometrics.
- Maintained insect cultures and managed artificial-selection crosses.
- Conducted field surveys, insect dissection, DNA extraction, and anatomical measurements.
- Created standard operating procedures for insect dissection.
- Mentored an undergraduate student through two research projects.
- Trained incoming Colby Achievement Program in the Sciences students in field specimen collection, species identification, data analysis, and DNA extraction.

Undergraduate Researcher | Feb 2018–Dec 2018
Colby College and University of Hiroshima, Departments of Chemistry | Waterville, Maine, USA; Hiroshima, Japan
Advisors: Dasan Thamattoor, Ph.D., and Manabu Abe, Ph.D.

- Synthesized, characterized, and purified phenanthrene-based carbene precursors using NMR, GC/MS, and column chromatography.
- Investigated carbene rearrangements using laser flash photolysis and matrix isolation photolysis.

Research Intern | Jan 2018
Max F. Perutz Laboratories, Vienna BioCenter | Vienna, Austria
Advisor: Thomas Leonard, Ph.D.

- Amplified, purified, and characterized a protein kinase using molecular cloning, cell culture, colony PCR, and SDS-PAGE.

Teaching & Mentoring

Student Assistant for Research and Teaching | Oct 2025–present
University of Vienna, Department of Functional and Evolutionary Ecology | Vienna, Austria
Supervisor: Ingeborg Lang, Ph.D.
Teaching and mentoring responsibilities within a combined research and teaching appointment:

- Co-supervise B.Sc. and M.Sc. research projects and rotations in ecology, biodiversity, and botany.
- Mentor bachelor thesis students through experimental design, laboratory methods, data collection, analysis, and writing.
- Serve on a university committee to improve teaching across the institution.

Academic Writing and Study Group Host | Feb 2026; Jul–Sep 2026
University of Vienna | Vienna, Austria

- Hosted academic writing and study groups for university students.

Teaching Assistant, Introductory Biology Laboratory | Fall 2016
Colby College | Waterville, Maine, USA
Supervisor: Allison Moloney, Ph.D.

- Supported laboratory instruction, safety, technique training, and student data analysis.

Outreach & Environmental Engagement

Independent Nature and Sustainability Educator | Nov 2019–present
Vienna, Austria, and virtual

- Develop and facilitate workshops for teenagers and adults on local ecosystems, active citizenship, inclusive decision-making, project planning, reflection, and regeneration.
- Work with contract partners including WWF Austria, the Vienna City Development Office, Waldschaukel, Youth for Our Planet, and Eat4Change.
- Certified Work That Reconnects facilitator

Science Educator | Oct 2023–Sep 2025
Science Pool | Vienna, Austria

- Co-developed and facilitated science workshops for preschool and school classes.
- Participated in professional-development seminars on teaching methods.

Freelance Medical Science Writer | Apr–Jul 2022
MedTrix GmbH / Med-Online | Vienna, Austria

- Wrote articles on recent medical research findings for healthcare professionals.

Wilderness Trip Leader and Leader Trainer | Nov 2016–May 2019
Colby College Department of Outdoor Education | Waterville, Maine, USA
Supervisor: Ryan Linehan, M.A.Ed.

- Co-facilitated weekend-long leader training excursions and theoretical workshops.
- Revised the leader-training curriculum to include modules on diversity and inclusion.
- Planned, and co-led multiple week-long hiking and rock climbing trips for college students.

Intern in Coordination and Instruction | Sep 2014–May 2015
WWF Austria, Department of Education for Sustainable Development | Vienna, Austria

- Assisted with the development, organization, and instruction of Europe-wide trainings on project management and group building for young people interested in environmental activism.

Publications

Peer-reviewed publications
(* denotes equal contribution)

1. Young, M.G., **Just, J.**, Lee, Y.J., McMahon, T., Gonzalez, J., Fuentes, P., Noh, S., & Angelini, D.R. (2025). Seasonally increasing parasite load is associated with microbiota dysbiosis in wild bumblebees. *mSystems*. https://doi.org/10.1128/msystems.01184-25

2. **Just, J.***, Laslo, M.*, Lee, Y.J., Yarnell, M., Zhang, Z., & Angelini, D.R. (2023). Distinct developmental mechanisms influence sexual dimorphisms in the milkweed bug *Oncopeltus fasciatus*. *Proceedings of the Royal Society B: Biological Sciences*. https://doi.org/10.1098/rspb.2022.2083

3. Laslo, M.*, **Just, J.***, & Angelini, D.R. (2022). Theme and variation in the evolution of insect sex determination. *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution*, 1–20. https://doi.org/10.1002/jez.b.23125

4. Le, N.N.T., **Just, J.**, Pankauski, J.M., Rablen, P.R., & Thamattoor, D.M. (2019). Ring expansion of alkylidenecarbenes derived from lactams, lactones, and thiolactones into strained heterocyclic alkynes: A theoretical study. *Molecules*, 24(3), 593. https://doi.org/10.3390/molecules24030593

Preprints and manuscripts in preparation

1. Chan, W.-P., Angier, K., Dankowicz, E., Elson, C., Frigyik, E., Greiner, J., **Just, J.**, Edwards, J., Zoll, R., Dendy, S., Hoki, E., Ashe, S., Chang, C.-Y., Wu, S., & Pierce, N. (2024). Morphological traits of the eyes of Lepidoptera indicate selection for binocular vision in both diurnal butterflies and nocturnal moths. *Research Square*. https://doi.org/10.21203/rs.3.rs-4203706/v1

2. Noyes, H., Anika, N., Combs, J., Khan, T., **Just, J.**, Fitzpatrick, S., Graham Angelini, R., & Angelini, D.R. (2026). Host specificity, seasonality, and urbanicity shape the gut microbiome of a synanthropic insect. *bioRxiv.* https://doi.org/10.64898/2026.10.28.762591

3. Lee, Y.J., Wen, Q., Moratori, M., **Just, J.**, Young, M.G., O'Brien, D.M., & Angelini, D.R. (in prep). Bumble bee (*Bombus*) mouthpart morphology is constrained by foraging niche breadth.

Selected Presentations

Poster presentations
(* denotes equal contribution)

1. **Just, J.**, Wickett, N., & Lang, I. (Sep 2026). *Evolution of organismal stress responses: Differential gene expression of five moss species following heavy metal stress.* Meeting of Austrian Botanists, Vienna, Austria.

2. **Just, J.**, Gall-Andreici, T., Schillaci, L., & Lang, I. (May/Jun 2025). *Impacts of heavy metals and substrate pH on the growth of two moss species.* Austrian Society for Plant Biology, Tulln, Austria.

3. **Just, J.**, Laslo, M., Lee, Y.J., & Angelini, D.R. (Jul/Aug 2019). *Structure-specific genetic requirements for sexual dimorphism in the large milkweed bug, Oncopeltus fasciatus.* Pan-American Society for Evolutionary Developmental Biology, Miami, Florida, USA.

4. Laslo, M.*, **Just, J.***, & Angelini, D.R. (Jan 2019). *Beyond D. melanogaster: Sex determination in the large milkweed bug.* Society for Integrative and Comparative Biology, Tampa, Florida, USA.

Oral presentations

1. **Just, J.** (Sep 2026). *Evolution of organismal stress responses: Gene expression of five moss species following heavy metal stress.* evolVienna Symposium, Rising Stars Flash Talk Session, Vienna, Austria.

2. **Just, J.** (May 2019). *Insects and the evolution of developmental pathways: Functional analysis of genetic sex determination in the large milkweed bug.* Colby Liberal Arts Symposium, Biology Honors Theses Session, Waterville, Maine, USA.

Honors & Awards

- 2025 — Leistungsstipendium, University of Vienna, awarded for high academic achievement
- 2019 — Alan Samuel Coit Biology Prize, Colby College, awarded for high achievement in Biology
- 2019 — Charles A. Dana Scholar, Colby College, awarded for academic achievement and campus leadership
- 2018 — Outdoor Leadership Award, Colby College
- 2018 — Phi Beta Kappa Honor Society, Colby College
- 2017 — Julius Seelye Bixler Scholar, Colby College, awarded for academic achievement

Technical Skills

Field and ecological methods: Insect and bryophyte specimen collection; ecological field surveys; stereomicroscopy; PAM fluorometry; bryophyte sample preparation by freeze-drying and low-temperature drying; ICP-MS sample preparation; soil sample collection and processing.

Molecular and laboratory methods: Axenic bryophyte and insect culture; culture-media preparation; RNA interference; nucleic-acid extraction from plants and animals; PCR, qRT-PCR, and digital PCR; agarose-gel electrophoresis and DNA purification; molecular cloning; bacterial cell culture; SDS-PAGE; insect dissection.

Data analysis and programming: R; Python.

Languages: German (native); English (native-level proficiency).