

April M. Goebl - Curriculum Vitae

april.goebl@botanicgardens.org

Education

2021 Doctor of Philosophy; University of Colorado Boulder, CO, USA; Ecology and Evolutionary Biology; Advisors: Drs. Daniel Doak and Nolan Kane

2021 Doctoral Certificate in Interdisciplinary Quantitative Biology; University of Colorado Boulder, CO, USA; BioFrontiers Institute

2010 Master of Science; University of Victoria, BC, Canada; Molecular Biology

2007 Bachelor of Science; University of Victoria, BC, Canada; Biology

Research

2023-present Assistant Research Scientist; Denver Botanic Gardens, CO

2023-present Adjoint Faculty; Integrative Biology, University of Colorado Denver, CO

2021-22 Postdoctoral Researcher; Denver Botanic Gardens, CO

2020 Research Intern funded by NSF INTERN Program; Denver Botanic Gardens, CO

2015-21 Graduate Researcher (Ph.D.); University of Colorado Boulder, CO

2011-15 Research Assistant II; Salk Institute for Biological Studies, CA

2008-10 Laboratory Technician; University of Victoria, BC

2007-10 Graduate Researcher (M.Sc.); University of Victoria, BC

Publications

In preparation

1. Population genomics and trait diversity of a common prairie sub-shrub informs seed sourcing for ecological restoration. A Emery, R Hufft, E Larson, **A Goebl**. 2025.
2. Population genomic analysis of the rare, narrow endemic, *Astragalus microcymbus*. E Orr, J Neale, **A Goebl**, M DePrenger-Levin. 2025.

Peer-reviewed

13. Optimizing demographic analysis in the face of missing data years to improve conservation of threatened species. **A Goebl**, M DePrenger-Levin, R Hufft, D Doak. **Biological Conservation**. 2024.
12. Gene expression and alternative splicing contribute to adaptive divergence of ecotypes. P Innes, **A Goebl**, C Smith, K Rosenberger, N Kane. **Heredity**. 2023.

11. Adaptation to distinct habitats is maintained by contrasting selection at different life stages in sunflower ecotypes. **A Goebl**, N Kane, D Doak, L Rieseberg, K Ostevik.

Molecular Ecology. 2022.

10. Empirical test of increasing genetic variation via inter-population crossing for native plant restoration in variable environments. **A Goebl**, D Doak, N Kane. **Restoration Ecology. 2022.**

9. Complete mitochondrial genomes provide current refined phylogenomic hypotheses for relationships among ten *Hirundo* species. J Carter, P Innes, **A Goebl**, B Johnson*, M Gebert, Z Attia, Z Gabani*, R Li, T Melie, C Dart*, A Mares*, C Greidanus*, J Paterson*, B Wall*, G Cortese*, K Thirouin, G Glime, J Rutten*, C Poyd*, E Post*, A Elhadi*, K Feldmann*, A Danz, T Blanchard*, S Amato*, S Reinert, C Pogoda, E Scordato, A Hund, R Safran, N Kane. **Mitochondrial DNA Part B. 2020.** (* undergraduate student mentees as a part of a CURE course).

8. Patterns of soil bacterial richness and composition tied to plant richness, soil nitrogen, and soil acidity in alpine tundra. X Yuan, J Knelman, D Wang, **A Goebl**, E Gasarch & TR Seastedt. **Arctic, Antarctic, and Alpine Research. 2017.**

7. *In vivo* genome editing via CRISPR/Cas9 mediated homology-independent targeted integration. K Suzuki, Y Tsunekawa, R Hernandez-Benitez, J Wu, J Zhu, E J Kim, F Hatanaka, M Yamamoto, T Araoka, Z Li, M Kurita, T Hishida, M Li, E Aizawa, S Guo, S Chen, **A Goebl**, R D Soligalla, J Qu, T Jiang, X Fu, M Jafari, C R Esteban, W T Berggren, J Lajara, E Nuñez-Delicado, P Guillen, J M Campistol, F Matsuzaki, G-H Liu, P Magistretti, K Zhang, E M Callaway, K Zhang, J-C Izpisua Belmonte. **Nature. 2016.**

6. A Werner syndrome stem cell model unveils heterochromatin alterations as a driver of human aging. W Zhang, J Li, K Suzuki, J Qu, P Wang, J Zhou, X Liu, R Ren, X Xu, A Ocampo, T Yuan, J Yang, Y Li, L Shi, D Guan, H Pan, S Duan, Z Ding, M Li, F Yi, R Bai, Y Wang, C Chen, F Yang, X Li, Z Wang, E Aizawa, **A Goebl**, R D Soligalla, P Reddy, C Rodriguez Esteban, F Tang, G-H Liu, J-C Izpisua Belmonte. **Science. 2015.**

5. Targeted gene correction minimally impacts whole-genome mutational load in human-disease-specific induced pluripotent stem cell clones. K Suzuki, C Yu, J Qu, M Li, X Yao, T Yuan, **A Goebl**, S Tang, R Ren, E Aizawa, F Zhang, X Xu, R D Soligalla, F Chen, J Kim, N Kim, H-K Liao, C Benner, C Rodriguez Esteban, Y Jin, G-H Liu, Y Li & J-C Izpisua Belmonte. **Cell Stem Cell. 2014.**

4. Modelling Fanconi anemia pathogenesis and therapeutics using integration-free patient-derived iPSCs. G-H Liu, K Suzuki, M Li, J Qu, N Montserrat, C Tarantino, Y Gu, F Yi, X Xu, W Zhang, S Ruiz, N Plongthongkum, K Zhang, S Masuda, E Nivet, Y Tsunekawa, R D Soligalla, **A Goebl**, E Aizawa, N Kim, J Kim, I Dubova, Y Li, R Ren, C Benner, A del Sol, J

Bueren, J Pablo Trujillo, J Surralles, E Cappelli, C Dufour, C Rodriguez Esteban & J-C Izpisua Belmonte. **Nature Communications.** **2014.**

3. Progressive degeneration of human neural stem cells caused by pathogenic LRRK2. G-H Liu, J Qu, K Suzuki, E Nivet, M Li, N Montserrat, F Yi, X Xu, S Ruiz, W Zhang, B Ren, U Wagner, A Kim, Y Li, **A Goebl**, J Kim, R D Soligalla, I Dubova, J Thompson, J Yates III, C Rodriguez Esteban, I Sancho-Martinez & J-C Izpisua Belmonte. **Nature.** **2012.**

2. Targeted gene correction of laminopathy-associated LMNA mutations in patients-specific iPSCs. G-H Liu, K Suzuki, J Qu, I Sancho-Martinez, F Yi, M Li, S Kumar, E Nivet, J Kim, R D Soligalla, I Dubova, **A Goebl**, N Plongthongkum, H-L Fung, K Zhang, J Loring, L Laurent & J-C Izpisua Belmonte. **Cell Stem Cell.** **2011.**

1. Gaucher disease with prenatal onset and perinatal death due to compound heterozygosity for the missense R131C and null RecNcil GBA mutations. **A Goebl**, R Ferrier, P Ferreira, A Pinto-Rojas, E Matshes & F Choy. **Pediatric Developmental Pathology.** **2010.**

Reports

5. Annual Technical Report to the Bureau of Land Management: Informing seed source selection for ecological restoration in western North America grasslands. **A Goebl**, A Emery, L Wheeler, T Melhem, R Hufft. **2024.**

4. Annual Technical Report to the Bureau of Land Management: Experiments to inform seed source selection for ecological restoration in grasslands. **A Goebl**, T Melhem, A Emery, R Hufft. **2023.**

3. Annual Technical Report to the Bureau of Land Management: Experiments to inform seed source selection for ecological restoration in grasslands. A Goebl, M Clark, R Hufft. 2022.

2. Dissertation: Factors Affecting Establishment, Adaptation, and Persistence of Small Populations in Variable Environments. A Goebl. 2021.

1. Contributing author on: IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) Land Degradation and Restoration Assessment Chapter 3: Direct and indirect drivers of land degradation and restoration. **2018.**

Annotated genomes

First author of two and co-author of 51 assembled and annotated organellar genomes published on NCBI GenBank:

Parmotrema stuppeum (KY362439), *Lecanora cinereofusca* (KY594675), *Hirundo rustica transitiva* (MN840495, MN954681), *Hirundo rustica tytleri* (MN843972), *Hirundo rustica rustica* (MN829439), *Hirundo*

rustica savignii (MN830163), *Hirundo smithii* (MN853142, MN629932, MN849178), *Hirundo tahitica* (MN833781, MN849306), *Hirundo nigrita* (MN849307, MN832899), *Hirundo neoxena* (MN848412, MN844886), *Hirundo dimidiata* (MT471263, MN832869), *Hirundo atrocaerulea* (MT442038), *Hirundo angolensis* (MN849177), *Hirundo albicularis* (MN829450), *Hirundo aethiopica* (MN850676, MN844887), *Delichon urbicum* (MT427586, MN832895, MN824431, MN853682), *Helianthus atrorubens* (MW375413), *Helianthus schweinitzii* (MW381301), *Helianthus silphioides* (NC_058798, MW375415), *Helianthus verticillatus* (NC_058797, MW375414), *Helianthus atrorubens* (NC_058796, MW375413), *Helianthus simulans* (MW366800), *Helianthus cusickii* (MW366799), *Helianthus nuttallii* (MW366798), *Helianthus angustifolius* (MW366797), *Helianthus floridanus* (MW351833), *Helianthus microcephalus* (MW351834), *Helianthus laciniatus* (MW353165), *Linum lewisii* (MW375416, NC_058799), *Linum strictum* (MW364865), *Linum leonii* (MW365714), *Linum narbonense* (NC_058855), *Linum grandiflorum* (NC_058845, MW387225), *Linum stellatum* (MW366796), *Linum decumbens* (MW366795), *Linum perenne* (MW366794), *Linum narbonense* (MW376864).

Mentoring

2024-present Meredith Prentice, University of Colorado Denver, CO; MSc advisor

2024-present Dillon Andrews, University of Colorado Colorado Springs, CO, MPA

internship and capstone project mentor

2023-24 Alyson Emery, University of Denver, CO; NSF internship mentor

2023 Elizabeth Rose, Air Academy High School, CO; volunteer mentor

2021-23 Megan Clark, University of Colorado Denver, CO; thesis committee member

2022 Evan Okolovitch, School of Mines, CO; volunteer mentor

2020-22 Emily Orr, University of Colorado Denver, CO; thesis committee member

2017-18 Tianna, University of Colorado Boulder, CO; independent study mentor

2016-2018 Haley Monahan, University of Colorado Boulder, CO; volunteer mentor

2017 Ellie Bach, University of Colorado Boulder, CO; volunteer mentor

2016-17 Zach Litoff, Monarch High School, BVSD science program mentor

Academic Service & Outreach

2024- Mentor for student program; SACNAS (Advancing Chicanos/ Hispanics & Native Americans in Science)

2024 Scientific partner for Artist in Residence; Denver Botanic Gardens

2023-24 Member of program organizing committee for the 2024 Society for Ecological Restoration North America Conference

2023 & 24 Research activity leader and panelist for High School Service Days; Denver Botanic Gardens Chatfield Farms

2022-present Career and science Q&As with students from Front Range area colleges and high schools

2022 Created video content for volunteer summit event at Denver Botanic Gardens

2018-present Reviewer for Molecular Ecology, The American Naturalist; external peer-reviewer for USGS publication

2018-19 EBIO faculty search committee elected graduate student representative; University of Colorado Boulder

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| 2018-19 | Interdisciplinary Quantitative Biology Symposium co-organizer; University of Colorado Boulder |
| 2017 | EBIO non-academic careers panel co-organizer; University of Colorado Boulder |
| 2017 & 20 | EBIO new graduate student orientation panelist; University of Colorado Boulder |
| 2016-17 | Science Research Seminar mentor; Boulder Valley School District |
| 2016 | Controversial Topics Teaching Workshop volunteer; University of Colorado Boulder |
| 2007-09 | Biology Graduate Symposium co-organizer; University of Victoria, BC |

Conferences and Seminars

‡ Denotes A. Goebl was the presenter

Symposium Organizer

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| 2024 | ‡ Society for Ecological Restoration North American Conference - Understanding and conserving genetic diversity in native plant restoration. |
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Invited Talks

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| 2024 | ‡ National Conference on Ecosystem Restoration - Genetic variation & local climate adaptation in grassland species: Implications for seed sourcing. |
| 2023 | ‡ University of Denver, Integrative Biology Dept. - Diverse plant populations and robust ecological restoration. |
| 2019 | ‡ Evolution Meetings - Selection at different life history stages drives allele frequency change and maintains divergent adaptation in the face of gene flow. |

Contributed Talks

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| 2024 | ‡ National Native Seed Conference - Genetic variation & local climate adaptation: Seed sourcing for grassland restoration. |
| 2023 | Society for Ecological Restoration World Conference - Genetic variation & local climate adaptation: Seed sourcing implications for grassland restoration. |
| 2022 | ‡ Ecological Society of America - Optimizing the use of demographic data for threatened species; the case of <i>Eriogonum brandegeei</i> . |
| 2020 | ‡ North American Congress for Conservation Biology Virtual Conference - Studying the effects of increased genetic diversity for plant population conservation in variable environments. |
| 2019 | ‡ Society for Ecological Restoration: Rocky Mountains Chapter Conference - Expanded genetic variation in prairie sunflower inter-population crosses for potential native plant restoration in variable environments. |

Poster Presentations

2022 ‡ Society for Ecological Restoration: Rocky Mountains Chapter Conference - Assessing local adaptation and evolutionary potential in common grassland species to inform seed selection for restoration.

2017 ‡ Evolution Meetings - Population genomic study of adaptive divergence in a dune sunflower.

2016 ‡ Evolution Meetings - Adaptation of Sunflowers to an Extreme Environment.

2016 ‡ Colorado Seed Network Conference - Differences in Survival & Performance Across a Range of Wild Sunflower Ecotypes.

Awards and Fellowships

2020 NSF INTERN Graduate Student Supplemental Funding; 49,707\$USD

2018-19 NSERC Postgraduate Award Doctoral Level; 42,000\$CAD

2018 University of Colorado Boulder UGGS Student Group Event Grant; 750\$USD

2017 University of Colorado Boulder Student Competitive Travel Grant; 300\$USD

2015-17 University of Colorado Interdisciplinary Quantitative Biology PhD Fellow; 60,000\$USD

2008 NSERC Postgraduate Award Masters Level; 17,300\$CAD

2007 Pacific Century Grad Scholarship, BC Provincial Award; 10,000\$CAD

2007 University of Victoria Graduate Award; 3,500\$CAD

Teaching

2023 Guest Lecturer: Population Ecology; Utah State University, UT

2019 & 20 Teaching Assistant: Genomics; University of Colorado Boulder, CO

2019 Teaching Assistant: General Biology; University of Colorado Boulder, CO

2017 Teaching Assistant: Principles of Ecology; University of Colorado Boulder, CO

2010 Laboratory Coordinator & Instructor: Techniques in Molecular Biology; University of Victoria, BC

2009 Guest Lecturer: Human Molecular Genetics; University of Victoria, BC

2008 & 09 Teaching Assistant: Principles of Genetics; University of Victoria, BC

Community Service

2018-2021 Court Appointed Special Advocate (CASA) for children who are victims of abuse or neglect; Boulder County, CO

2013-14 English Language Tutor for Refugees; International Rescue Committee, San Diego, CA

2013-14 Science Education Public Outreach; Salk Institute, La Jolla, CA

2013 International Volunteer and Educator; Kipepeo Community Empowerment Program, Kima, Kenya

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| 2010 | Species Biodiversity Surveyor; Operation Wallacea, Cusuco National Park, Honduras |
| 2008-09 | Special Olympics Track and Field Coach; Victoria, BC |
| 2004-10 | Birth Control Educator and Doctor's Assistant; Island Sexual Health, Victoria, BC |
| 2004 & 06 | Childcare and Tutor; Sri Ram Orphanage, Uttarakhand, India |

Workshops

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| 2025 | Native Plant Materials Research Needs, Online, Department of Interior |
| 2020 & 22 | Population Genomics and Conservation Genetics Online Course/Workshop; University of Montana |
| 2018 | Statistical Genetics Summer Institute; University of Washington |
| 2017 | Environmental Genomics; Mount Desert Island Biological Laboratory, Maine |

Computational Programs and Platforms

R, bash, linux, high performance computing (HPC), GitHub, LaTeX

Computational Research Methods

Reproducible bioinformatic workflows to clean short read sequence data, align sequence reads to a reference genome, and call variants; *de novo* genome assembly, annotation, and submission to NCBI GenBank.