

## April M. Goebl - Curriculum Vitae

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### 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

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### 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

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### 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 Goebel**, 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 Goebel**, 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 Goebel**, 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 Goebel**, E Gasarch & T R 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 Goebel**, 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 Goebel**, 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 Goebel**, 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 Goebel**, E Aizawa, N Kim, J Kim, I Dubova, Y Li, R Ren, C Benner, A del Sol, J

Bueren, J Pablo Trujillo, J Surrallés, E Cappelli, C Dufour, C Rodríguez 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 Goebel**, J Kim, R D Soligalla, I Dubova, J Thompson, J Yates III, C Rodríguez 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 Goebel**, 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 Goebel**, 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 Goebel**, 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 Goebel**, 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 Goebel**, M Clark, R Hufft. **2022.**

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

## Mentoring

2024-present Dillon Andrews, University of Colorado Colorado Springs, CO, MPA  
internship and capstone project mentor

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

2022	Evan Okolovitch, School of Mines, CO; volunteer mentor
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2017-18	Tianna, University of Colorado Boulder, CO; independent study mentor
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2016-2018 Haley Monahan, University of Colorado Boulder, CO; volunteer mentor

2017	Ellie Bach, University of Colorado Boulder, CO; volunteer mentor
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2016-17 Zach Litoff, Monarch High School, BVSD science program mentor

2024-	Mentor for student program; SACNAS (Advancing Chicanos/ Hispanics & Native Americans in Science)
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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
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2023 & 24	Research activity leader and panelist for High School Service Days; Denver Botanic Gardens Chatfield Farms
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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
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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

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### Conferences and Seminars

‡ Denotes A. Goebel was the presenter

#### Symposium Organizer

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

#### Invited Talks

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

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 *Eriogonum brandegeei*.

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.

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### **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

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### **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

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### **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

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, Uttaranchal, India

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### **Workshops**

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

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### **Computational Programs and Platforms**

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

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### **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.