Greg S. Goralogia, Ph.D.

Greg S. Golembeski – premarital name (he/him)

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Education

2018	Ph.D.	Biology	University of Washington, Seattle, WA
2011	M.S.	Biology	University of California San Diego, La Jolla, CA
2010	B.S.	Biology	University of California San Diego, La Jolla, CA
2010	B.A.	History	University of California San Diego, La Jolla, CA

Research experience

2019-Present
Research Associate (Postdoc), Laboratory of Steven Strauss, Ph.D., Department of Forest Ecosystems and Society, Oregon State University. Role: *Developing gene editing tools and transformation systems for clonally propagated plants.*

2011-2018
Doctoral student, Laboratory of Takato Imaizumi, Ph.D., Department of Biology, University of Washington. Role: *Studied photoperiodic control of flowering in Arabidopsis through transcriptional and post-translational control.*

2010-2011
Masters student, Laboratory of Martin Yanofsky, Ph.D., Department of Biological Sciences, University of California San Diego. Role: *Studied factors involved in auxin signaling in the Arabidopsis embryo and in fruit development.*

Publications

Google Scholar link h-index = 9 (IF = impact factor of journal, CC = # citations for article)

Michael Nagle, Surbhi Nahata, Bahiya Zahl, Alexa Niño de Rivera, Xavier Tacker, Estefania Elorriaga, Cathleen Ma, **Greg Goralogia**, Amy Klocko, Michael Gordon, Sonali Joshi, and Steven Strauss. Knockout of floral and meiosis genes using CRISPR/Cas9 produces male-sterility in *Eucalyptus* without impacts on vegetative growth. *Plant Direct*. (2023, accepted article). (IF= 3.4)

Robert L. Beschta, William J. Ripple, J. Boone Kauffman, and **Greg S. Goralogia**. Wolves and beavers potentially trigger a rare aspen seedling event in Yellowstone. *Ecology*. (2023, accepted article). (IF= 4.7)

Blair, E.J.; **Goralogia, G.S.**; Lincoln, M.J.; Imaizumi, T.; Nagel, D.H. Clock-Controlled and Cold-Induced CYCLING DOF FACTOR6 Alters Growth and Development in *Arabidopsis*. *Front. Plant Sci.* 2022, *13*, 2458. https://doi.org/10.3390/ijms231911229. (IF=6.6, CC=1)

Goralogia, G.S.; Howe, G.T.; Brunner, A.M.; Helliwell, E.; Nagle, M.F.; Ma, C.; Lu, H.W.; Goddard, A.L.; Magnuson, A.C.; Klocko, A.L.; et al. Overexpression of *SHORT VEGETATIVE PHASE-LIKE* (*SVL*) in *Populus* delays onset and reduces abundance of flowering in field-grown trees. *Hort Res.* 2021, *8*, 167. https://doi.org/10.1038/s41438-021-00600-4. (IF=7.3, CC=12)

Goralogia, G.S., Redick, T.P. & Strauss, S.H. Gene editing in tree and clonal crops: progress and challenges. *In Vitro Cell.Dev.Biol.-Plant* 57, 683–699 (2021). https://doi.org/10.1007/s11627-021-10197-x. (IF=2.3, CC=9)

Krahmer, J. , **Goralogia, G.S.**, Kubota, A. , Zardilis, A. , Johnson, R. S., Song, Y. H., MacCoss, M. J., Le Bihan, T. , Halliday, K. J., Imaizumi, T. and Millar, A. J. (2019), Time-resolved interaction proteomics of the GIGANTEA protein under diurnal cycles in Arabidopsis. *FEBS Lett*, 593: 319-338. https://doi.org/10.1002/1873-3468.13311. (IF=3.9, CC=37)

Goralogia, G.S., Liu, T-K., Zhao, L., Panipinto, P.M., Groover, E.D., Bains, Y.S. and Imaizumi, T. (2017) CYCLING DOF FACTOR 1 represses transcription through the TOPLESS co-repressor to control photoperiodic flowering in Arabidopsis. *Plant J*, 92, 244-262. https://doi.org/10.1111/tpj.13649. (IF=7.1, CC=65)

Kubota, A., Ito, S., Shim, J.S., Johnson, R.S., Song, Y.H., Breton, G., **Goralogia, G.S.**, Kwon, M.S., Laboy Cintrón, D., Koyama, T., Ohme-Takagi, M., Pruneda-Paz, J.L., Kay, S.A., MacCoss, M.J. and Imaizumi, T. (2017) TCP4-dependent induction of *CONSTANS* transcription requires GIGANTEA in photoperiodic flowering in Arabidopsis. *PLoS Genet*, 13, e1006856, https://doi.org/10.1371/journal.pgen.1006856. (IF=5.1, CC=80)

Golembeski GS, Imaizumi T. Photoperiodic regulation of florigen function in *Arabidopsis thaliana*. *Arabidopsis Book*, 2015. https://doi.org/10.1199/tab.0178. (CC=65)

Crawford BC, Sewell J, **Golembeski G**, Roshan C, Long JA, Yanofsky MF. Genetic control of distal stem cell fate within root and embryonic meristems. *Science*; 2015 Feb 6;347(6222):655-9. https://www.science.org/doi/10.1126/science.aaa0196. (IF=47.7, CC=83)

Golembeski GS, Kinmonth-Schultz HA, Song, YH, Imaizumi T. Photoperiodic flowering regulation in *Arabidopsis thaliana*. *Adv Bot Res*, 24 Jun 2014. https://doi.org/10.1016/B978-0-12-417162-6.00001-8. (IF=2.9, CC=35)

Kinmonth-Schultz HA, **Golembeski GS**, Imaizumi T. Circadian clock-regulated physiological outputs: Dynamic responses in nature. *Sem Cell Dev Biol* 2013. https://doi.org/10.1016/j.semcdb.2013.02.006. (IF=7.5, CC=79)

Manuscripts in Preparation

Goralogia GS, Andreatta I, Vining KJ, Strauss SH. Unexpectedly divergent off-target mutations found in field and greenhouse grown CRISPR/Cas9 expressing transgenic trees. (Target journal: *Frontiers in Pant Science*) Expected submission: July 2023.

Goralogia GS, Taylor D, Lawrence A, Ma C, Peremyslova E, Nagle M, Strauss SH. Altruistic transformation of poplar using shoot-inducing *Agrobacterium* oncogenes. (Target journal: *Plant Biotechnology Journal*) Expected submission: August 2023.

Patents

Compositions and methods for transgenic shoot regeneration, U.S. Provisional Application No. 63/500,085, Filed: May 4, 2023 Inventors: **Greg Goralogia** and Steven Strauss, Applicant: Oregon State University, OSU Reference: OSU-23-11

Lox sites and methods for genome engineering in plants, U.S. Provisional Application No. 63/500,072, Filed: May 4, 2023, Inventors: **Greg Goralogia** and Steven Strauss, Applicant: Oregon State University, OSU Reference: OSU-23-07

Competitive Grants

Grants awarded

- USDA-NIFA BRAG, 2023-2026. DNA methylation control for site-specific recombinases: Biosafety and efficacy. ($600,000 award). Co-PI, we plan to transfer me to PD status in coming months, Co-PIs: Strauss S, Vining K.

- USDA-NIFA BRAG, 2020-2023. Site-specific recombinases as tools for plant genome editing: Efficacy and risk. ($500,000 award). Co-PI 2020-2021. Project Director 2021-present. Co-PIs: Strauss S, Vining K.

- Bayer Grants4Ag. 2023-present. Exploring the *Agrobacterium* genome to facilitate *in planta* transformation. ($10,000 award).

- Schmidt Foundation grant. Semi-dwarf, sterile trees with purple foliage through gene editing and genetic engineering 2019-2020 ($20,000 total award).

- Developmental Biology Training Grant (NIH), 2013-2016 ($75,000 award).

- UW Department of Biology Plant Biology Fellowship 2011-2012 ($25,000 award).

Grants submitted

- NSF TRTech-PGR: Leveraging plant and bacterial diversity to improve transformation and regeneration of woody plants. (Potential $4.8 million award). Co-PI. PD: Strauss S, Other co-PIs: Anderson J, Ramsey S, Ma Y, Padilla-Miller A, Baker D, Hall T (resubmission).

- NSF URoL:ASC: Microbiome-mediated plant genetic resistance for enhanced agricultural sustainability. Key personnel (Potential $320,000 subaward). PD: Busby P. Co-PIs: Mundt C, Hagerty C, Zemetra R, Myers J, Strauss S, Delbridge T, Antle J, Capalbo S.

Grants that failed to fund

- DOE-Genomics Enabled Plant Biology for Determination of Gene Function: Gene Network Analyses to Characterize Polygenic Control of Shoot and Root Regeneration in *Populus trichocarpa*. 2023. Co-PI. PD: Strauss S. Other co-PIs: Jacobsen D, Ramsey S, Yuan J. Pre-proposal encouraged to submit.

- NSF TRTech-PGR: Using *Agrobacterium* as a teacher: Genomic and functional analyses to expand the tool kit for *in planta* transformation. 2022. Co-PI. PD: Strauss S. Other co-PIs: Anderson J, Ramsey S, Ma Y, Baker D, Hall T.

- FFAR: *In planta* transformation and developmental genes to speed gene editing and genetic engineering in diverse crops. Co-PI. PD: Strauss S. Other co-PIs: Selker J (2020) Anderson J (2021). 2020 and 2021 resubmission. Pre-proposal encouraged to submit.

- NIFA-AFRI Agricultural Innovations through Genome Editing: Development of a gene editing system for polyploid, asexually propagated crops: Application to aromatic profile enhancement in mint (*Mentha* spp.). 2019 and resubmission in 2020. Co-PI. PD: Strauss S. Other co-PIs: Vining K, Lange B. Pre-proposal encouraged to submit.

Presentations

- 2023 Western ASPB Regional Meeting – talk: *Unexpectedly divergent off-target mutations found in field and greenhouse grown CRISPR/Cas9 expressing transgenic trees*, also showcased at ISBR 2023 [link]
- 2022 ASPB National Meeting - poster: *Low rates of non-target mutations in field-and greenhouse-grown CRISPR/Cas9 expressing transgenic trees* [link]
- 2022 Co-author on two talks and one poster given at PAG and SIVB [links 1,2,3]
- 2022 NIFA-BRAG PD meeting – talk: *Site-specific recombinases as tools for plant genome editing: Efficacy and risk*
- 2021 ASPB National Meeting – talk and poster: *Excisable gene editing systems: Generation of dwarf and sterile poplars using a developmental and chemical-controlled CRISPR/recombinase excision system* [links 1, 2]
- 2021 SIVB meeting - talk: *Somatic transgene excision strategies for gene editing in clonally propagated plants: inducible excision performance in transgenic poplar* [link]
- 2021 SIVB meeting - poster: In planta *transformation in* Populus *and* Eucalyptus [link]
- 2020 ASPB National Meeting - talk: *A developmentally timed transgene excision system for somatic removal of gene editing components in asexually propagated plants* [link]
- 2019 NIFA-BRAG PD meeting – poster: *CRISPR/Cas9 mutagenesis for genetic containment of forest trees* [link]
- 2019 OSU CGRB Annual meeting, poster: *Design of a self-excising CRISPR/Cas9 editing*
- *system for asexually propagated plants* [link]
- 2017 Society for Developmental Biology NW Regional Meeting, talk
- 2016 University of Washington Department of Biology annual retreat, poster
- 2015 Western ASPB Regional Meeting, poster (best poster award won)
- 2015 UW Biology Graduate Student Symposium (GSS), talk
- 2015 Society for Developmental Biology NW regional meeting, talk
- 2015 ASPB National Meeting, poster
- 2014 Society for Developmental Biology NW regional meeting, poster
- 2014 University of Washington Department of Biology annual retreat, poster

Teaching experience

- Teaching assistant for 9 quarters over the course of Ph.D., 3 quarters over M.S., included Bio200 (Molecular, Cell, and Developmental Biology) and Bio400 (Experiments in Molecular Biology)
- Co-developed and taught a new second year laboratory class at UW “Civilizational Biology”, which leveraged topics of first year introductory classes into an applied format summer course
- Received an average course instructor rating of 4.6/5 over the course of Ph.D
- Participated in the data acquisition for active learning research and methods in biology instruction, which resulted in a highly cited instructional research article [link]
- Member of the Biology Research Education Group (BERG) at UW which discussed active teaching methodologies and implementation in classrooms
- Guest lecture series for Beijing Forestry University, Fall 2020, 3 lectures (tissue culture, transformation, and photoperiodic flowering for graduate students)

Mentorship

- Mentored 22 undergraduate students (6 months or longer period per individual), 6 graduate students at M.S. and Ph.D. level, and 3 employees (total 9 undergraduates since arriving at OSU)
- Mentored 5 students through URSA-ENGAGE program at OSU

- Served on 1 M.S. graduate committee (Nathan Ryan, M.S. thesis, FES dept.)
- Served on 2 undergraduate Honors College thesis committees (Jeremy Jacobsen and Anna Brousseau)

Service

- 2023 and 2022 OSU Summer Ag Institute (SAI) guest lectures, teaching GE/gene editing to an audience of K-12 Oregon teachers with limited experience in agriculture [link]
- 2022 Louis Stokes Alliance for Minority Participation (LSAMP) Summer Bridge Program, lecture on purple foliage editing and GE in trees. LSAMP summer bridge is a program to help acquaint incoming URM 1st year students and recruit them to various colleges/majors (COF program) [link]
- 2023 Presentation on indigenous perspectives of gene editing (for quarterly laboratory DEI meetings)
- Enrolled in USGS seminar series for Indigenous Knowledges (IK) in federal research, 2023; I am interested in exploring gene editing in crops of importance to PNW indigenous peoples (see Teaching Statement), and hope to explore how best to manage collaborations and projects in the future

Peer review

- Since 2019, reviewed articles for *Plant Physiology*, *Plant Biotechnology Journal*, *Transgenic Research*, *BMC Genomics*, *Tree Physiology*, and *Evolutionary Applications*

Professional Societies

- PlantGENE Network member 2023- (New organization for transformation and gene editing in plants)
- Society For In Vitro Biology (SIVB) member 2020-present
- American Society of Plant Biologists (ASPB) member 2010-present
- Society for Developmental Biology (SDB) member 2014-2019