Samuel Leiboff, PhD https://leiboffdoesresearch.github.io

leiboffs@oregonstate.edu
OSU Botany and Plant Pathology
2701 SW Campus Way
Corvallis, OR 97331

Education

2017 PhD: Cornell University
Morphological diversity and quantitative genetics of the maize shoot apical meristem
Division of Plant Biology, School of Integrative Plant Science
Advisor: Michael J Scanlon

2010 BSc: University of California, Berkeley
Environmental Sciences, emphasis Biological Sciences
Minor Forestry and Natural Resources

Positions held

2020 – Assistant Professor, Department of Botany and Plant Pathology
Oregon State University, Corvallis, OR

2017 – 2020 Postdoctoral Fellow, Department of Plant and Microbial Biology
University of California, Berkeley, Berkeley, CA

Publications

Dao TQ, Drapek C, Jones AM, Leiboff S. **Comparing hormone dynamics in cereal crops via transient expression of hormone sensors.** In review. Preprint available: doi.org/10.1101/2023.11.14.567063

Dao TQ, Weksler N, Liu HM, Leiboff S, Fletcher JC. 2022. **Interactive CLV3, CLE16 and CLE17 Signaling Mediates Stem Cell Homeostasis in the Arabidopsis Shoot Apical Meristem.** Development 149 (19).

Rice S, Lazarus E, Anderton C, Birnbaum K, Brophy J, Cole B, Dickel D, Ehrhardt D, Fahlgren N, Frank M, Haswell E, Huang SC, Leiboff S, Libault M, Otegui MS, Povart N, Uhrig RG, Rhee SY, Plant Cell Atlas Consortium. 2022. **First Plant Cell Atlas Symposium Report.** Plant Direct 6 (6): e406.

Cole B, Bergmann D, Blaby-Haas C, Blaby I, Bouchard K, Brady S, Ciobanu D, Coleman-Derr D, [6]Leiboff S, Mortimer J, Nobori T, Rhee S, Schmutz J, Simmons B, Singh A, Sinha N, Vogel J, O'Malley R, Visel A, Dickel D. **Plant Single-Cell Solutions for Energy and the Environment.** Communications Biology, 2021. 4:962.

Leiboff S*, Strable J*, Johnston R*, Federici S, Sylvester AW, Scanlon MJ. (* equal contribution). **Network Analyses Identify a Transcriptomic Proximodistal Pre-Pattern in the Maize Leaf Primordium.** New Phytologist, 2021. 230(1):218-227

Scarpin MR, Leiboff S, and Brunkard JO. **Parallel Global Profiling of Plant TOR Dynamics Reveals a Conserved Role for LARP1 in Translation**. eLife, 2020. 9 (October): e58795.

Yu X, Leiboff S, Li X, Guo T, Ronning N, Zhang X, Muehlbauer GJ, Timmermans MCP, Schable PS, Scanlon MJ, Yu J. **Genomic Prediction of Maize Micro-Phenotypes Provides Insights for Optimizing Selection and Mining Diversity.** Plant Biotechnology Journal, 2020.

Knauer S, Javelle M, Li L, Li X, Ma X, Wimalanathan K, Kumari S, Johnston R, Leiboff S, Meeley R, Schnable PS, Ware D, Lawrence-Dill C, Yu J, Muehlbauer GJ, Scanlon MJ, Timmermans MCP. **A high-resolution gene expression atlas links dedicated meristem genes to key architectural traits.** Genome Research, 2019. 29:1962-1973.

Leiboff S, Hake S. **Reconstructing the transcriptional ontogeny of maize and sorghum supports an inverse hourglass model of inflorescence development.** Current Biology, 2019. 29:3410-3419. doi.org/10.1016/j.cub.2019.08.044

Anderson A*, St Aubin B*, Juarez JA, Shen Z, Leiboff S, Brunkard JO, Briggs S, Hake S. **The second site modifier, Sympathy for the ligule, encodes a homolog of Arabidopsis ENHANCED DISEASE RESISTANCE4 and rescues the liguleless narrow maize mutant.** The Plant Cell, 2019. 31:1829-1844. (* equal contribution)

Lunde C, Kimberlin A, Leiboff S, Koo A, Hake S. ***Tasselseed5* overexpresses a wound-inducible enzyme, *ZmCYP94B1* that affects jasmonate catabolism, sex-determination, and plant architecture in maize.** Communications biology, 2019. 2(1):114

Bucksch A, Atta-Boateng A, Azihou AF, Battogtokh D, Baumgartner A, Binder BM, Braybrook SA, Chang C, Coneva V, DeWitt TJ, Fletcher AG, Gehan MA, Diaz-Martinez DH, Hong L, Iyer-Pascuzzi AS, Klein LL, Leiboff S, Li M, Lynch JP, Maizel A, Maloof JN, Markelz RJC, Martinez CC, Miller LA, Mio W, Palubicki W, Poorter H, Pradal C, Price CA, Puttonen E, Reese JB, Rellán-Álvarez R, Spalding EP, Sparks EE, Topp CN, Williams JH, Chitwood DH. **Morphological Plant Modeling: Unleashing Geometric and Topological Potential within the Plant Sciences.** Frontiers in Plant Science. June, 2017.

Leiboff S, DeAllie C**, Scanlon MJ. **Modeling the morphometric evolution of the maize shoot apical meristem.** Frontiers in Plant Science. November, 2016. (** undergraduate author)

Leiboff S, Scanlon MJ. "Plant Stem Cells" in **Molecular Cell Biology of the Growth and Differentiation of Plant Cells**. CRC Press, Boca Raton, FL. June 14, 2016.

Leiboff S, Li X, Hu HC, Todt N, Yang J, Li X, Yu X, Muehlbauer G, Timmermans MCP, Yu J, Schnable PS, Scanlon MJ. **Genetic control of morphometric diversity in the maize shoot apical meristem.** Nature Communications, 2015. 6: 8974.

Johnston R, Leiboff S, Scanlon MJ. **Ontogeny of the sheathing leaf base in maize (Zea mays***)*. New Phytologist, 2015. 205(1):306-15

Alandete-Saez M, Ron M, Leiboff S, McCormick S. **Arabidopsis thaliana GEX1 has dual functions in gametophyte development and early embryogenesis***.* Plant Journal, 2011. 68(4):620-32

Publications in preparation

Ruggiero D, Bang M*, Leary M, Flieg H, Garcia-Lamas L*, Megraw M, Jiang D, Leiboff S, Fowler J. (* Undergraduate author). **Spatial effects of alleles on kernel distribution across the maize ear are detected by EarVision.v2.** In preparation.

Web tools and applications

COGS-RNAseq expression browser: https://leiboffdoesresearch.shinyapps.io/COGS/

Grants awarded

2024 USDA-NIFA-AFRI A1152, 2023-6701339537: $606K over 2 years [$606K to Leiboff]
Grain Gains: Dissecting The Genetic Network Limiting Grain Production In Maize And Its Crop Relatives
PD – Leiboff S, Collaborator – Bartlett M

2022 NSF-IOS-PGRP, IOS-2211434: $1.5M over 3 years [$1.06M to Leiboff]
Collaborative Research: RESEARCH-PGR: Uncovering latent vascular function in maize
PI – Leiboff S, Co-PI – Chuck G

2022 OSU Office of Research, RERF: $60K for capitalized equipment
Single cell genomics at OSU- 10x Chromium iX
PI – Leiboff S, Co-PIs – Stevens JF, Kioussi C, Tanguay R, Freitag M

2022 HP/OSU Collaborative Program: $30K over 1 year
Digital Microfluidics for Plant Cell Expression
OSU PI – Leiboff S, HP technologist – Cumbie M

2019 NSF-IOS-Developmental Systems, IOS-1922543: $370K over 3 years [$107K to Leiboff]
Understanding the evolution of maize sex determination through combined changes in transcriptional dynamics, hormone levels and genetic networks
PI – Hake S, Collaborator – Leiboff S

Fellowships

2016 NSF-NPGI-Postdoctoral Fellowship, IOS-1612268: $216K over 3 years
Exploring gene networks in maize tassel and sorghum panicle development during drought
PI – Leiboff S, Supervisor – Hake S

Invited presentations

2024 Cornell Plant Biology seminar series (Ithaca, NY):
"The secret genetics of maize veins"

2024 MSU Molecular Plant Sciences seminar series (East Lansing, MI):
"The secret genetics of maize veins"

2024 NSF Plant Genome Research Program Meeting (Alexandria, VA):
"Uncovering the secret genetics of maize leaf veins by cellular genomics and machine learning"

2024 Michael Freeling Research Symposium (Berkeley, CA):
"What machines learn about maize leaves"

2024 Northwest Regional Society for Developmental Biology, Platform speaker (Friday Harbor, WA):
"The Secret Life of Maize Veins"

2023 Meeting of the Society for Experimental Biology (Edinburgh, UK):
"The secret genetics of maize veins"

2023 Plant Center Spring Symposium (Athens, GA):
"The secret genetics of maize veins"

2023 International Plant and Animal Genome (San Deigo, CA):
"Comparing hormone dynamics in cereal crops via transient expression of hormone sensors"

2022 FASEB Mechanisms in Plant Development (2021 invite delayed due to COVID- Saxton River, VT):
"The secret genetic of veins"

2022 UMass Plant Biology Graduate Program Seminar Series (Amherst, MA):
"Branchpoints in sex determination: making maize ears, tassels, and their bisexual relatives"

2021 Center of Plant Science Innovation Plant Science Symposium (Lincoln, NE):
"Branchpoints in development: transcriptional dynamics of organ patterning"

2021 China Agricultural University National Corn Improvement Center Seminar Series (Virtual):
"Branchpoints in development: transcriptional dynamics of organ patterning"

2021 Plant Biology Meeting (Virtual due to COVID):
"The secret genetics of veins"

2021 International Conference of Arabidopsis Researchers (Virtual due to COVID):
"The secret genetics of veins"

2020 UC Davis Plant Biology Graduate Group Seminar Series (Virtual due to COVID):
"A developmental hourglass in grass inflorescence development"

2020 Plant Biology Meeting, DEI session speaker (Virtual due to COVID):
"A developmental hourglass in grass inflorescence development"

2018 Maize Genetics Conference (Saint Malo, France):
"The RNAseq Time Machine: Species-specific shifts in developmental timing and trajectory underlie morphological differences in maize tassel and sorghum panicle architecture"

2017 Round Table at Carnegie Science (Palo Alto, CA):
"Natural variation in Sorghum Inflorescence Morphology"

2015 Maize Genetics Conference (St. Charles, IL):
"Genes controlling morphometric diversity in the maize shoot apical meristem"

2014 Plant and Animal Genome (San Diego, CA):
"Creating a SAM Morphometric Space"

Teaching (prof. of record, 100% responsibility)

Fall 2024	OSU BOT 599 – Special Topics: Plant Developmental Mechanisms, 9 enrolled, grad only
Spring 2024	OSU BDS 411 – Case studies in Biological Data Sciences, 7 enrolled
Winter 2024	OSU BI 311 – Genetics, 197 enrolled
Fall 2023	OSU BOT 599 – Special Topics: Plant Developmental Mechanisms, 7 enrolled, grad only
Spring 2023	OSU BDS 411 – Case studies in Biological Data Sciences, 5 enrolled
Winter 2023	OSU BI 311 – Genetics, 189 enrolled
Fall 2022	OSU BOT 599 – Special Topics: Plant Developmental Mechanisms, 4 enrolled, grad only
Spring 2022	OSU BDS 411 – Case studies in Biological Data Sciences, 3 enrolled
Winter 2022	OSU BI 311 – Genetics, 145 enrolled
Winter 2021	OSU BI 311 – Genetics, 146 enrolled (Delivered virtually, due to COVID)

Teaching (guest lectures, workshops, TA responsibility)

Spring 2024	OSU BOT 332 – Laboratory Techniques in Plant Biology, Guest workshop: “Plant tissue microtechnique,” Prof. Valerian Dolja
Spring 2024	OSU BOT 301 – Human Impacts on Ecosystems, Guest lecture: “Domestication, Genetic Engineering, and Genome Editing” Prof. Jessica Lodwick
Spring 2023	OSU BOT 332 – Laboratory Techniques in Plant Biology, Guest workshop: “Plant tissue microtechnique,” Prof. Valerian Dolja
Spring 2023	OSU BOT 301 – Human Impacts on Ecosystems, Guest lecture: “Domestication, Genetic Engineering, and Genome Editing” Prof. Jessica Lodwick
Summer 2019	CSHL Cereal Grains, Guest workshop “RNA sequencing,” Profs. Dave Jackson and Sarah Hake
Fall 2018	UC Berkeley PLANTBI 200A, Guest lecture: “Domestication genes,” Prof. Sarah Hake
Fall 2017	UC Berkeley PLANTBI 200A, Guest lecture: “Meristem size and stem cell maintenance,” Prof. Sarah Hake
Spring 2017	UC Berkeley PLANTBI 290, Guest workshop: “Command line RNAseq and differential expression,” Profs. Michael Freeling and Devin Coleman-Derr
Spring 2013	Cornell Plant Biology TA / Course Coordinator – Issues in Social Biology, Prof. Peter Davies
Fall 2012	Cornell Plant Biology TA – Intro to Plant Evolution and Biodiversity, Prof. Karl Niklas

Department and University service

2024 –	OSU BPP Diversity, Equity, and Inclusion Committee, Chair
2023 – 2024	OSU BPP Faculty Search Committee, Plant Microbial Interactions
2023 – 2024	OSU BPP Diversity, Equity, and Inclusion Committee, Member
2022 – 2024	OSU Cordley Hall Art Installation Committee
2022 –	OSU Plant Innovation Complex Visioning Team
2022 – 2023	OSU BPP Seminar Committee
2020 – 2023	OSU BPP Graduate Studies Committee
2020 –	OSU BDS Curriculum Committee

Postdoctoral trainees

2024 –	Dr. Brian Zebosi
2023 –	Dr. Maria Camila Medina
2020 – 2022	Dr. Thai Dao, now DOE-Joint Genome Institute

Graduate students

2024 –	Araya Anderson, MSc, Botany and Plant Pathology
2023 –	Nicholas Francis, PhD, Botany and Plant Pathology
2022 – 2024	Leslie Harris, Botany and Plant Pathology
2020 –	Diana Ruggiero, PhD, Botany and Plant Pathology, 2024 USDA Predoctoral Fellow
2020 – 2021	Rachel Baschieri, MSc, Botany and Plant Pathology, now USDA

Undergraduate student researchers

2024	Megan Jensen, OSU Botany (USDA-REEU)
2024	Morgan Loutsch, OSU Chemistry (USDA-REEU)
2024 –	Jaden Lewis, OSU Biochemistry and Molecular Biology (Honors)
2024 –	Lilly Gordon, OSU BioHealth Sciences
2023 – 2024	Charles Griffin, Bioengineering (Honors)
2023	Matthew Liu, University of Kentucky, Data Science (USDA-REEU)
2023 – 2024	Nickson Wang, OSU Computer Science
2023 –	Pasquale Hendrawinata, BioResource Research
2023 –	Luc Stone, OSU Botany (URSA Engage)
2023	Brayden Tuers, OSU Biochemistry and Molecular Biology (URSA Engage)
2022 – 2024	Alexis Minyard, OSU Botany (STEM Leaders)
2022	Melissa Cochran, OSU BioResource Research (URSA engage)
2022	Sativa Maciel, OSU Botany
2021 – 2022	Haley Wolf, OSU Ecological Engineering (Honors), now UBC Plant Biology
2020 – 2021	Leslie Harris, OSU Botany
2019 – 2020	Jake Sinkowitz, UC Berkeley, Plant and Microbial Biology
2019	Ilana Price, Cornell University, Genetics
2019	Alice Gevorgyan, Cornell University, Plant Sciences
2018	Alfred Liu, UC Berkeley, Molecular and Cell Biology
2017	Madison Dunlap, UC Berkeley, Molecular and Cell Biology
2014 – 2015	Christopher DeAllie, Cornell University, Genetics

Graduate committee member

2024 –	Mary ‘Keen’ Maher, PhD, OSU Horticulture
2023 –	Harrison Bell, PhD, OSU Botany and Plant Pathology
2023 – 2024	Harrison Flieg, MS, OSU Botany and Plant Pathology
2021 –	Michele Wiseman, PhD, OSU Botany and Plant Pathology
2020 – 2021	Russel Gould, MS, OSU Botany and Plant Pathology

Undergraduate thesis committee member

2024	Coranna Akdemirbey, OSU Biochemistry and Molecular Biology (Honors)
2022	Sarah El-Husseini, OSU BioHealth Sciences (Honors)
2021	Olivia Ozguc, OSU Biochemistry and Molecular Biology (Honors)

High school student interns

2018	Giovanni Lara, Biochemistry, UC Davis
2017	Kelly Flores, Forensic Science, UC Davis

Community participation

2024	Botanical Society of America and Plant Postdoc Slack webinar, Panelist
2023	Gordon Conference, Single Cell Techniques in Plant Biology, Discussion leader
2023 – 2024	Maize Genetics Cooperation, Maize Mentoring Program, Mentor
2023	Maize Genetics Virtual Career Development Workshop, Panelist
2022 –	Bessie Coleman Elementary School Science Night, Presenter
2022 –	OSU Genetics and Genomics STEM Camp, Teacher
2022	JR Biotek-Plant Cell Atlas Africa PhD Scholars Mentoring Program, Mentor
2022 –	Plant Cell Atlas, Communications and Outreach Committee
2021	Plant Cell Atlas Academic Careers of the Future webinar, Organizer
2021 –	Plant Cell Atlas, Training and Networking Committee (Chair 2021-2023)
2021	Plant Cell Atlas Research Symposium (Virtual), Moderator and organizer
2020	Plant Postdoc Slack Webinar, Panelist
2020 –	Plant Cell Atlas, RCN Collaborator and Core Network Participant
2020 – 2021	International Conference on Arabidopsis Research (Virtual, COVID), Community session organizer
2017 – 2018	American Chemistry Society Project SEED, Mentor

2017 – 2019 PGEC Postdoc Job Club, Organizer
2012 – 2014 Cornell University Plant Biology Graduate Student Association, President

Reviewer: Current Biology, Development, Frontiers in Plant Science, G3: Genes | Genomes | Genetics, Genome, Heredity, Molecular Biology and Evolution, Nature Plants, New Phytologist, PLOS Genetics, Physiologia Plantarum, Plant Cell Reports, Plant Physiology, The Plant Cell

Adhoc: NSF-IOS-Developmental Systems, NSF-IOS-Enabling Discovery Through Genomic Tools (EDGE), NSF-IOS-Plant Biotic Interactions, NSF-IOS-Plant Genome Research Program, NSF-IOS-Understanding the Rules of Life (URoL), DFG-Emmy Noether program

Panelist: NSF-2020, 2023, 2024; BBSRC-2024; USDA-2024

Awards

2019 Outstanding short talk, FASEB Mechanisms in Plant Biology
2016 Barbra McClintock Award, Cornell CALS
2015 Poster Prize Winner, Cornell CALS, SIPS Fall 2015 Retreat
2015 Poster Prize Winner, FASEB Mechanisms in Plant Biology
2013 Cornell CALS Outstanding TA Award, Department of Plant Biology

Professional societies

2023 – Member, Society for Developmental Biology
2019 – Member, Maize Genetics Cooperation, Inc. (incorporated 2019)
2017 – Member, American Association for the Advancement of Science (AAAS)
2010 – Member, American Society for Plant Biology