

CV

**STEVEN H. STRAUSS**

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**PROFESSIONAL EXPERIENCE**

7/09-present **Distinguished Professor**, Oregon State University  
1/18-present **Graduate Faculty**, Environmental Sciences  
1/18-present **Graduate Faculty**, Environmental Sciences  
3/14 **Visiting Scientist**, Scion (Forest Biotechnology), New Zealand  
11/04-12/13 **Director**, Outreach in Biotechnology, Oregon State University  
2003-2012 **Editor**, New Phytologist  
7/95-present **Professor**, Forest Ecosystems and Society; Molecular & Cellular Biology  
1/01-4/01 **Visiting Senior Fellow**, Linacre College, Oxford University, UK  
1/01-4/01 **Visiting Scientist**, Department of Plant Science, Oxford Forestry Institute, UK  
7/90-6/95 **Associate Professor**, Department of Forest Science, OSU  
7/94-present **Director, Tree Genomics and Biosafety Research Cooperative**, OSU  
7/99-6/04 **Director, National Science Foundation Center for Tree Genetics**  
(Industry/University Cooperative Research Centers Program)  
6/93-8/93 **Visiting Scientist**, INRA, Versailles & Orleans, France  
9/91-6/92 **Visiting Professor**, Australian National University, Canberra, Australia  
9/91-6/92 **Visiting Scientist**, CSIRO Division of Plant Industry, Canberra, Australia  
6/90-7/90 **Visiting Scientist**, Department of Botany, Tromsø University, Norway  
7/85-6/90 **Assistant Professor**, Department of Forest Science and Genetics Program, OSU  
7/85-9/85 **Visiting Scientist**, US Forest Service, Berkeley, California (Sederoff laboratory)

**EDUCATION**

Ph.D. 1985 **University of California at Berkeley**, Forest Resources (Genetics)  
M.F.S. 1980 **Yale University**, School of Forestry and Environmental Studies (Forest Science)  
B.S. 1978 **Cornell University**, College of Agriculture and Life Science (Biology)

## PROFESSIONAL CONTRIBUTIONS

### Honors and Professional Work

#### Summary

- ◆ Peer review publications: >175. Other articles: >68. Edited books/symposia volumes: 3. Invited lectures: >273.
- ◆ Obtained grants from NSF, DOE, USDA, NIH, EPA, forest industries, and other sources totaling >24 million dollars.
- ◆ Trained 29 graduate students, 30 postdoctoral scientists, and more than 50 technical/professional employees (BS or higher degrees).

#### Professional recognition

- ◆ Oregon State University Industry Partnering Award, 2014
- ◆ Barrington-Moore Memorial Award from the Society of American Foresters, recognizing outstanding achievement in biological research leading to the advancement of forestry, 2011.
- ◆ Fellow, American Association for the Advancement of Science, 2009
- ◆ Forest Biotechnologist of the Year, Forest Biotechnology Partners, Institute of Forest Biotechnology, 2009
- ◆ Distinguished Professor of Forest Biotechnology, Oregon State University, 2008

#### Scientific meetings organized or co-organized

- ◆ Chair and organizer of New Phytologist Symposium on "Physiological Sculpture of Plants," Mt. Hood, Oregon, September 2008.
- ◆ Chair Scientific Organization Committee, Workshop on Horticultural, Urban Forestry, Health and Environmental Benefits of Flowering Modification in Transgenic Trees, Institute for Forest Biotechnology/North Carolina Biotechnology Center, February 2003.
- ◆ Lead organizer, International Symposia on Ecological and Societal Aspects of Transgenic Plantations, and International Organization of Forest Research Organizations (IUFRO) Section on Molecular Biology of Forest Trees. Stevenson, Washington, USA, 2001.
- ◆ Co-convenor of session on tree biotechnology, AAAS Pacific Division Meeting, Corvallis, OR, 1997

#### Science advisory committees

- ◆ Member, Science Review Committee, The American Chestnut Foundation, Virginia, 2018
- ◆ Chair, Scientific Advisory Committee, Forest Health Initiative, Institute of Forest Biotechnology, NC, 2012-2017.
- ◆ Member, Scientific Advisory Committee, Forest Health Initiative, Institute of Forest Biotechnology, NC, 2009-2011.
- ◆ Scientific Advisory Committee, Genome BC Applied Genomics Innovation Program, "Optimized *Populus* feedstocks and novel enzyme systems for a British Columbia bioenergy sector," 2008-2011

- ◆ Chair, Scientific Advisory Board, Genome Canada-Quebec research consortium “Arborea,” studying “Functional Genomics of Regulation of Trees,” Quebec City, Canada, 2003-2006.
- ◆ Leopold Leadership Fellow, Stanford Institute for the Environment, 2005
- ◆ Awarded “Extraordinary Performance” recognition as result of five-year Post-Tenure Review in the College of Forestry, Oregon State University, September 2002
- ◆ Mentor’s Hall of Fame, Oregon State University Apprenticeships in Science and Engineering, 2006 (Mentor 1993-2011)
- ◆ NSF Presidential (Young) Investigator, 1989
- ◆ Phi Kappa Phi, Oregon State University, Emerging Scholar Award, 1989
- ◆ Dean’s Award for Outstanding Achievement, OSU College of Forestry, 1998
- ◆ Chairman, International Union of Forestry Research Organizations Working Party on Molecular Genetics of Forest Trees, S.04-06, 1995-1999
- ◆ External Review Committee, Michael Smith (formerly Biotechnology) Laboratories, University of British Columbia, April 2005
- ◆ Steering Committee Member, International Poplar Genome Sequence, organized by Joint Genomics Institute, Department of Energy, 2001-2003.

#### Policy and outreach in transgenic biotechnologies

- ◆ Member, Governor’s Task Force on Genetically Engineered Seeds and Agricultural Products, Governor John Kitzhaber, State of Oregon. June 2014 - January 2015.
- ◆ Panelist, Corvallis City Club, Oregon ballot measure 92 on GMO labels, fall 2014
- ◆ Testimony, Citizens Review Initiative Panel on Measure 92, GMO labeling in Oregon, fall 2014
- ◆ Testimony, Citizens Review Panel for Jackson County Measure 15-119, GMO ban, spring 2014
- ◆ Organizer of Food for Thought public outreach lecture series at Oregon State University (filmed and available via web, with curriculum guides for teachers), 2005-2013
- ◆ Committee member, National Research Council, Review and Future Goals for the National Plant Genome Research Program, 2007.
- ◆ Committee member, National Research Council Workshop on Environmental Effects of GMOs. Dept. of the Interior. 2007.
- ◆ Presented invited lectures to federal judges and law professors at the Foundation for Research on Economics and the Environment, July and September 2002 & June 2003, June 2008 and 2009, Bozeman, Montana
- ◆ Invited participant at Institute for Forest Biotechnology Symposium on Genetically Engineered Forest Trees: A Workshop to Identify Priorities for Ecological Risk Assessment. May 3-4, 2007, Raleigh, NC.
- ◆ Invited speaker at Pew Initiative / USDA APHIS sponsored workshop: Emerging Challenges for Biotechnology-Derived Specialty Crops, Washington, DC (January 2007).
- ◆ Invited member of State of Oregon Committee charged to formulate recommendations to the governor on regulation of biopharm crops in Oregon (2005-2006).
- ◆ Led in providing recommendations to USDA APHIS on regulation of genetically engineered crops that were supported by more than 60 scientists, March 2004.

- ◆ Invited speaker at USDA Workshop on Public Research and Regulatory Review of Small-Market Biotechnology-Derived Crops, November 2004, Washington, DC.
- ◆ Invited participant, Pew Initiative on Biotechnology, Workshop on Impacts of Biotech Regulation on Small Business and University Research: Possible Barriers and Potential Solutions, June 2004.
- ◆ Invited speaker in forest biotechnology symposium at United Nations (UNIDO) Global Forum on Biotechnology, Concepcion, Chile, March 2004.
- ◆ Invited speaker at Canadian Forest Service / Canadian Food Inspection Service panel on Regulatory Challenges in Forest Biotechnology, World Forestry Congress, Quebec City, Canada, September 2003.
- ◆ Invited to present lecture on “state of science” at USDA APHIS national meeting on regulation of genetically engineered trees, Greenbelt, MD, July 2003.
- ◆ Invited Science Facilitator at Stakeholder Meeting on USDA Biotechnology Risk Assessment Grant Program Review, Washington, D.C., June 2003.
- ◆ Planning Committee, National Agricultural Biotechnology Council Annual Meeting, Seattle, WA, 2002-2003
- ◆ Steering Committee Member, National Workshop on Risks of Field Testing of Transgenic Crops with Novel Genes, Information Systems for Biotechnology, 2001-2002.
- ◆ Planning Committee, Institute for Forest Biotechnology, Research Triangle Park, North Carolina, 1999-2000
- ◆ Invited to make formal presentation on forest biotechnology to New Zealand Royal Commission on Genetic Modification, 2000.
- ◆ Group Leader, Information Systems for Biotechnology/USDA APHIS Workshop on Ecological Effects of Pest Resistance Genes, 1999

#### Grant review panels

- ◆ Genome Canada, Large Scale Applied Forest Genomics Research Projects, 2013
- ◆ USDA Biotechnology Risk Assessment, 2011
- ◆ USDA Agricultural Research Service, Ornamentals 2007
- ◆ Consortium for Plant Biotechnology Research, 2006
- ◆ Panel Manager, Biotechnology Risk Assessment Grants, 1999
- ◆ National Science Foundation
  - IGERT: Interdisciplinary Graduate Education Research & Training, 2001
  - Population Biology & Physiological Ecology, 1991
  - Conservation & Restoration Biology, 1990
- ◆ U.S. Department of Agriculture Competitive Grants Review
  - Biotechnology Risk Assessment, 1998
  - Forest Biology, 1990

#### National Research Council service

- ◆ Plant Genome Research Program, 2007
- ◆ Workshop on Impacts of GMOs on Department of Interior Lands, 2007
- ◆ Reviewer, Biological Confinement of Genetically Engineered Organisms, 2004
- ◆ Review of Biofuels Research Program of the U.S. Department of Energy, 1999

- ◆ Intellectual Property Issues in Plant Biotechnology, 1996
- ◆ NSF Graduate Fellowship, 1993

#### Member of editorial boards

- ◆ New Phytologist, 2003-2012
- ◆ Biomedcentral Plant Biology Editorial Adviser, 2004-present
- ◆ Tree Genetics and Genomes, 2004-2006
- ◆ New Zealand Journal of Forestry Science, 2005-2010
- ◆ Forestry: An International Journal of Forestry Research, 2002-2010
- ◆ Forest Genetics, 1994-96

#### **REFEREED PUBLICATIONS –2000-present**

*Note that in my scientific discipline last author position connotes the directing, sponsoring, and/or mentoring author. This is often the principal or secondary author (after the first author) in overall contribution to the work.*

#### Review/analysis

1. Lu H., Strauss S. et al. 2020. Reconfiguring Plant Metabolism for Biodegradable Plastic Production. *BioDesign Research*. Volume 2020 | Article ID 9078303.  
<https://doi.org/10.34133/2020/9078303>
2. Allona, I., Kirst, M., Boerjan, W., Strauss, S., & Sederoff, R. 2019. [Editorial: Forest Genomics and Biotechnology](#). *Frontiers in Plant Science*, 10.
3. Chang, S, E.L. Mahon, H.A. MacKay, W.H. Rottmann, S.H. Strauss, P.M. Pijut, W.A. Powell, V. Coffey, H. Lu, S.D. Mansfield, T.J. Jones. 2018. [Genetic engineering of trees: progress and new horizons](#). *In vitro Cell. Develop. Biol.* 54:341-376.  
DOI:10.1007/s11627-018-9914-1.
4. Nagle M, Déjardin A, Pilate G, Strauss SH. 2018. [Opportunities for Innovation in Genetic Transformation of Forest Trees](#). *Frontiers in Plant Science*.
5. Bogdanove AJ, Donovan DM, Elorriaga E, Kuzma J, Pauwels P, Strauss SH, Voytas DF. 2018. [Genome Editing in Agriculture: Methods, Applications, and Governance](#). Council on Agricultural Science and Technology. 60:24pp.
6. McGarry RC, Klocko A, Pang M, Strauss SH, Ayre BG. 2017. [Virus-Induced Flowering: An Application of Reproductive Biology to Benefit Plant Research and Breeding](#). *Plant Physiology*. 173:47-55.
7. Strauss S.H., Jones K.N., Lu H., Petit J.D., Klocko A., Betts M.G., Brosi B.J., Fletcher R.J., Needham M.D. 2017. [Reproductive modification in forest plantations: impacts on biodiversity and society](#). *New Phytologist* 213:1000-1021.
8. Strauss S., Sax J.K. 2016. [Ending Event-Based Regulation of GMO Crops](#). *Nature Biotechnology*. 34:474-477.
9. Strauss SH, Ma C, Ault K, Klocko A. 2016. [Lessons from Two Decades of Field Trials with Genetically Modified Trees in the USA: Biology and Regulatory Compliance](#). Biosafety of

- Forest Transgenic Trees, edited by Cristina Vettori, Fernando Gallardo, Hely Häggman, Vassiliki Kazana, Fabio Migliacci, Gilles Pilate, and Matthias Fladung. Forestry Sciences Series 82:101–124.
10. Strauss, S.H., A. Costanza, and A. Seguin. 2015. [Genetically engineered trees: Paralysis from good intentions](#). *Science* 349:794-795.
  11. Bräutigam K., Vining K.J., Lafon-Placette C., Fossdal C.G., Mirouze M., Gutiérrez Marcos J., Fluch S., Fernández Fraga M., Guevara M.A., Abarca D., Johnsen Ø., Maury S., Strauss S.H., Campbell M.M., Rohde A., Díaz-Sala C., Cervera M.T. 2013. [Epigenetic regulation of adaptive responses of forest tree species to the environment](#). *Ecology and Evolution*. 3:366-415.
  12. Vining, K.J., R. Contreras, M. Ranik, and S.H. Strauss. 2012. Genetic Methods for [Mitigating Invasiveness of Woody Ornamental Plants: Research Needs and Opportunities](#). *HortScience* 47:1210–1216.
  13. Viswanath V, Albrechtsen BR, Strauss SH. 2012. [Global regulatory burden for field testing of genetically modified trees](#). *Tree Genetics & Genomes*. 8:221-226.
  14. Strauss, S.H. 2011. [Why Are Regulatory Requirements a Major Impediment to Genetic Engineering of Horticultural Crops?](#) In B. Mou and R. Scorza (eds) *Transgenic Horticultural Crops: Challenges and Opportunities*. Boca Raton, Florida: CRC Press, Taylor & Francis Group
  15. Busov, V., S.H. Strauss, and G. Pilate. 2010. [Transformation as a tool for genetic analysis in Populus](#). p. 113-133 in: *Genetics and Genomics of Populus*, S. Jansson et al. eds., Springer.
  16. Yuceer, C., Hsu, C-H., Brunner, A.M., and Strauss, S.H. 2011. [Regulation of Flowering Time in Poplar](#). In: *Genetics, Genomics, and Breeding of Poplar*, C.P. Joshi, S. DiFazio, and C. Kole (eds.). Science Publishers, New Hampshire USA. Chapter 11, pp. 272-303
  17. Strauss, S.H., D.L. Kershen, J.H. Bouton, T.P. Redick, H. Tan, and R. Sedjo. 2010. [Far-reaching deleterious impacts of regulations on research and environmental studies of recombinant DNA-modified perennial biofuel crops in the USA](#). *BioScience* 60:729-741.
  18. Strauss, S.H., H. Tan, W. Boerjan, and R. Sedjo. 2009. [Strangled at birth? Forest biotech and the Convention on Biological Diversity](#). *Nature Biotechnology* 27:519-527.
  19. Flachowsky, H., M.-V. Hanke, A. Peil, S.H. Strauss, and M. Fladung. 2009. [A review on transgenic approaches to accelerate breeding of woody plants](#). *Plant Breeding* 128:217-226.
  20. Busov, V.B., A.M. Brunner and S.H. Strauss. 2008. [Genes for control of form and stature in plants](#). *New Phytol.* (Tansley review) 177: 589-607.
  21. Brunner, A., J. Li, S. DiFazio, O. Shevchenko, R. Mohamed, B. Montgomery, A. Elias, K. Van Wormer, S.P. DiFazio, & S.H. Strauss. 2007. [Genetic containment of forest plantations](#). *Tree Genetics & Genomes* 3: 75-100. (Strauss is co-senior author)
  22. Arias, R., S. Filichkin, and S.H. Strauss. 2006. [Divide and conquer: development and cell cycle genes in plant transformation](#). *Trends Biotechnol.* 24:267-273.
  23. Busov, V.B., M. Fladung, A. Groover, and S.H. Strauss. 2005. [Insertional mutagenesis in Populus: Relevance and feasibility](#). *Tree Genet. & Genomes* 1:135-142.

24. Bradford, K., N. Gutterson, A. Van Deynze, W. Parrott, and S.H. Strauss. 2005. [Regulating biotech crops sensibly: Lessons from plant breeding, biotechnology and genomics](#). *Nature Biotechnol.* 23:439-444.
25. Busov, V.B., A.M. Brunner, R. Meilan, S. Filichkin, L. Ganio, S. Gandhi, and S.H. Strauss. 2005. [Genetic transformation: A powerful tool for dissection of adaptive traits in trees](#). *New Phytol.* 167:219-228.
26. Strauss, S.H., A.M. Brunner, V. Busov, C. Ma, and R. Meilan. 2004. [Ten lessons from 15 years of transgenic \*Populus\* research](#). *Forestry* 77:455-465.
27. Brunner, A.M., V. Busov, and S.H. Strauss. 2004. [The poplar genome sequence: functional genomics in an ecologically dominant plant species](#). *Trends Plant Sci.* 9:49-56.
28. Slavov, G.T., S.P. DiFazio, and S.H. Strauss. 2003. [Gene flow in forest trees: Gene migration patterns and landscape modeling of transgene dispersion in hybrid poplar](#). In H.C.M den Nijs, D. Bartsch and J. Sweet (Eds.), *Introgression from Genetically Modified Plants into Wild Relatives*, CAB International, UK, pp. 89-106.
29. Strauss, S.H. 2003. [Genomics, genetic engineering, and domestication of crops](#). *Science* 300:61-62.
30. Campbell, M.M., A.M. Brunner, H.M. Jones, and S. H. Strauss. 2003. [Forestry's Fertile Crescent: The application of biotechnology to forest trees](#). *Plant Biotech. J.* 1:141-154.
31. Strauss, S.H., and A. M. Brunner. 2004. [Tree biotechnology in the 21st century: Transforming trees in the light of comparative genomics](#). In: *The BioEngineered Forest: Challenges to Science and Society*, S.H. Strauss and H.D. Bradshaw, Eds. Resources for the Future, Washington, D.C., pp. 76-97.
32. Adams, J.M., G. Piovesan, S.H. Strauss, and S. Brown. 2002. [The case for genetic engineering of native and landscape trees against introduced pests and diseases](#). *Conserv. Biol.* 16:874-879.
33. Strauss, S.H., M.M. Campbell, S.N. Pryor, P. Coventry, and J. Burley. 2001. [Plantation certification and genetic engineering: Banning research is counterproductive](#). *J. Forestry* 99(12):4-7.
34. Strauss, S.H., P. Coventry, M.M. Campbell, S.N. Pryor, and J. Burley. 2001. [Certification of genetically modified forest plantations](#). *Internat. Forestry Rev.* 3(2):87-104.
35. Strauss, S.H., S. DiFazio, and R. Meilan. 2001. [Genetically modified poplars in context](#). *Forestry Chron.* 77(2):1-9.
36. Bradshaw, H.D., Jr., and S.H. Strauss. 2000. [Breeding strategies for the 21<sup>st</sup> century: Domestication of poplar](#). In: Dickmann, D.I., Isebrands, J.G., Eckenwalder, J.E. and Richardson, J. (eds.). *Poplar Culture in North America*, Part 2, Chapter 14. NRC Research Press, National Research Council of Canada, Ottawa, ON K1A 0R6, Canada, p. 383-394.
37. Thompson, P.B., and S.H. Strauss. 2000. [Research ethics for molecular silviculture](#). P. 585-611 In: *Molecular Biology of Woody Plants*, S.M. Jain & S.C. Minocha, Eds., Kluwer Academic Publishers, The Netherlands.
38. Skinner, J.S., R. Meilan, A.M. Brunner, and S.H. Strauss. 2000. [Options for genetic engineering of floral sterility in forest trees](#). In: S.M. Jain and S.C. Minocha (Eds.), *Molecular Biology of Woody Plants*, volume 1. Kluwer Academic Publishers, Dordrecht,

The Netherlands, pp. 135-153.

### **Research reports**

39. Lu H., Strauss S. et al. 2020. [Extensive transcriptome changes during seasonal leaf senescence in field-grown black cottonwood \(\*Populus trichocarpa\* Nisqually-1\)](#). Scientific Reports (Nature). In press
40. An X, Gao K, Chen Z, Li J, Yang X, Yang X, Zhou J, Guo T, Zhao T, Huang S et al.. In Press. [Hybrid origin of \*Populus tomentosa\* Carr. identified through genome sequencing and phylogenomic analysis](#). bioRxiv
41. Bagley, J. C., Heming, N. M., Gutiérrez, E. E., Devisetty, U. K., Mock, E., Eckert, A. J., & Strauss, S. H. 2020. Genotyping-by-sequencing and ecological niche modeling illuminate 2 phylogeography, admixture, and Pleistocene range dynamics in quaking 3 aspen (*Populus tremuloides*). *Ecology and Evolution*. In press
42. Monson, R. K., Winkler, B., Rosenstiel, T. N., Block, K., Merl-Pham, J., Strauss, S. H., Ault, K., Maxfield, J., Moore, D. J. P., Trahan, N. A., Neice, A. A., Shiach, I., Barron-Gafford, G. A., Ibsen, P., McCorkel, J. T., Bernhardt, J., & Schnitzler, J.-P. 2020. [High productivity in hybrid-poplar plantations without isoprene emission to the atmosphere](#). *Proceedings of the National Academy of Sciences*, 117(3), 1596–1605.
43. Buhl, C., Strauss, S. H., & Lindroth, R. L. 2019. [Genetic down-regulation of gibberellin results in semi-dwarf poplar but few non-target effects on chemical resistance and tolerance to defoliation](#). *Journal of Plant Ecology*, 12(1), 124–136.
44. Chhetri, H. B., Macaya-Sanz, D., Kainer, D., Biswal, A. K., Evans, L. M., Chen, J., Collins, C., Hunt, K., Mohanty, S. S., Rosenstiel, T., Ryno, D., Winkler, K., Yang, X., Jacobson, D., Mohnen, D., Muchero, W., Strauss, S. H., Tschaplinski, T. J., Tuskan, G. A., & DiFazio, S. P. 2019. [Multitrait genome-wide association analysis of \*Populus trichocarpa\* identifies key polymorphisms controlling morphological and physiological traits](#). *New Phytologist*, 223(1), 293–309.
45. Cope, K. R., Bascaules, A., Irving, T. B., Venkateshwaran, M., Maeda, J., Garcia, K., Rush, T. A., Ma, C., Labbé, J., Jawdy, S., Steigerwald, E., Setzke, J., Fung, E., Schnell, K. G., Wang, Y., Schleif, N., Bücking, H., Strauss, S. H., Maillet, F., ... Ané, J.-M. 2019. [The Ectomycorrhizal Fungus \*Laccaria bicolor\* Produces Lipochitooligosaccharides and Uses the Common Symbiosis Pathway to Colonize \*Populus\* Roots](#). *The Plant Cell*, 31(10), 2386–2410.
46. Li, W, L Zhai, SH Strauss, H Yer, E Merewitz, J Chen, X Wang, W Zhuang, C Fang, Y Chen, R McAvoy, Z Han and Y Li. 2019. [Transgenic reduction of cytokinin levels in roots inhibits root-sprouting in \*Populus\*](#). *Plant Physiology*. 180(4), 1788–1792.
47. Lu H, AL Klocko, AM Brunner, C Ma, A Magnuson, G Howe, X An, and SH Strauss. 2018. [RNAi suppression of \*AGAMOUS\* and \*SEEDSTICK\* alters floral organ identity and impairs floral organ determinacy, ovule differentiation, and seed-hair development in \*Populus\*](#). *New Phytologist*.
48. Elorriaga E, Klocko AL, Ma C, Strauss SH. 2018. [Variation in mutation spectra among CRISPR/Cas9 mutagenized poplars](#). *Frontiers in Plant Science*.
49. Klocko A, Lu H, Magnuson A, Brunner AM, Ma C, Strauss SH. 2018. [Phenotypic Expression and Stability in a Large-Scale Field Study of Genetically Engineered Poplars](#)



[Containing Sexual Containment Transgenes](#). *Frontiers in Bioengineering & Biotechnology*

50. Buhl C, R Lindroth, SH Strauss. 2018. [Genetic down-regulation of gibberellin results in semi-dwarf poplar but few non-target effects on chemical resistance and tolerance to defoliation](#). *Journal of Plant Ecology* (<https://doi.org/10.1093/jpe/rty003>)
51. Klocko, A, A Brunner, J Huang , R Meilan, H Lu , C Ma , A Morel, D Zhao , K Ault , M Dow, G Howe, and O Shevchenko. 2016. [Containment of transgenic trees by suppression of LEAFY](#). *Nature Biotechnology* 34:918–922.
52. Klocko, A, E Borejsza-Wysocka, A Brunner, O Shevchenko, H Aldwinckle, and SH Strauss. 2016. [Transgenic suppression of AGAMOUS genes in apple reduces fertility and increases floral attractiveness](#). *PLOS One* 11(8): e0159421. doi:10.1371/journal.pone.0159421
53. Lu H, Klocko A, Dow M, Ma C, Amarasinghe V, Strauss SH. 2016. [Low frequency of zinc-finger nuclease-induced mutagenesis in Populus](#). *Molecular Breeding*. 36:1-13.
54. Ault, K, V Viswanath, J Jayawickrama, C Ma, J E, R Meilan, G Beauchamp, W Hohenschuh, G Murthy, and SH Strauss. 2016. [Improved growth and weed control of glyphosate-tolerant poplars](#). *New Forests* 47:653–667.
55. Lu, H, V Viswanath, C Ma, E Etherington, P Dharmawardhana, O Shevchenko, SH Strauss. 2015. [Recombinant DNA modification of gibberellin metabolism alters growth rate and biomass allocation in Populus](#). *Tree Genetics & Genomes* 11:127. DOI 10.1007/s11295-015-0952-0
56. Howe GT, Horvath DP, Dharmawardhana P, Priest HD, Mockler TC and Strauss SH (2015) [Extensive Transcriptome Changes During Natural Onset and Release of Vegetative Bud Dormancy in Populus](#). *Front. Plant Sci.* 6:989. doi: 10.3389/fpls.2015.00989
57. Buhl, C. S.H. Strauss, R.L. Lindroth. 2015. [Down-regulation of gibberellic acid in poplar has negligible effects on host-plant suitability and insect pest response](#). *Arthropod-Plant Interactions* 9:85–95.
58. Klocko, A.L., Ma, C., Robertson, S., Esfandiari, E., Nilsson, O., and Strauss, S.H. (2015). [FT overexpression induces precocious flowering and normal reproductive development in Eucalyptus](#). *Plant Biotechnology Journal*, doi: 10.1111/pbi.12431
59. Elorriaga, E., R Meilan, C. Ma, J.S. Skinner, E. Etherington, A. Brunner, and S.H. Strauss. 2014. [A tapetal ablation transgene induces stable male-sterility and slows field growth in Populus](#). *Tree Genet. Genomes* 10:1583–1593.
60. Vining, K., E. Romanel; R. Jones, A. Klocko, M. Alves-Ferreira, C. Hefer, V. Amarasinghe, P. Dharmawardhana, S. Naithani, M. Ranik, J. Wesley-Smith, P. Jaiswal, A. Myburg, L. Solomon, S.H. Strauss. 2014. [The floral transcriptome of Eucalyptus grandis](#). *New Phytologist*. doi: 10.1111/nph.13077
61. Yordanov, Y.S., C. Ma, S.H. Strauss and V.B. Busov. 2014. [EARLY BUD-BREAK 1 \(EBB1\) is a regulator of release from seasonal dormancy in poplar trees](#). *Proc. Natl. Acad. Sci. USA* 111:10,001–10,006. doi: 10.1073/pnas.1405621111
62. Myburg, Z., ...S.H. Strauss...(total 79 authors). [The genome of Eucalyptus grandis - a global tree for fiber and energy](#). *Nature*. 510:356-362.
63. Klocko, A., R. Meilan, R.R. James, V. Viswanath, C. Ma, P. Payne, L. Miller, J.S. Skinner, B. Oppert, G.A. Cardineau, and S.H. Strauss 2014. [Cry3Aa transgene expression reduces](#)

- [insect damage and improves growth in field-grown hybrid poplar](#). *Can. J. For. Res.* 44: 28–35.
64. Chen, Y, YS Yordanov, C Ma, SH Strauss, VB Busov. 2013. [DR5 as a reporter system to study auxin response in Populus](#). *Plant Cell Rep* 32:453–463.
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39. Strauss, S.H., K. Raffa and P. List. 2000. [Ethics and transgenic plantations](#). *J. Forestry* 98(7):47-48.
  40. Strauss, S.H., S. DiFazio, and R. Meilan. 2000. Challenges to commercial uses of transgenic trees in forest plantations: The case of poplars. Pp. 191-195 In Proceedings of the 6<sup>th</sup> International Symposium on Biosafety of Genetically Modified Organisms, C. Fairbairn, G. Scoles, and A. McHughen, Eds., University of Extension Press, University of Saskatchewan, Saskatoon, Canada.
  41. Strauss, S., and R. Meilan. 2000. Tree Genetic Engineering Research Cooperative. *Western Forester* 45(2):14.
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**GRANTS – since 2000** (as project director except where indicated)

1. Fibria Celulose/Suzano, Induction of male-sterility in Eucalyptus by CRISPR mutation of the hap2 gene. 02/2019-01/2023, \$250,000.
2. USDA - Biotechnology Risk Assessment, CRISPR-Cas gene editing for genetic containment of forest trees. \$500,000 (Strauss PI, Klocko coPI)
3. National Science Foundation, Plant Genome Research Program. Analysis of genes affecting plant regeneration and transformation in poplar, 01/2017-12/2021, \$4 million
4. J. Frank Schmidt Family Charitable Foundation, \$7,470, 09/14 – 08/15 (Magnuson and Strauss), Collecting Pacific variety aspens for rooting and cultivar development by J. Frank Schmidt
5. J. Frank Schmidt Family Charitable Foundation, Direct alteration of apple flowering genes to reduce invasiveness and increase floral attractiveness., \$10,000, 09/14 – 08/15 (Klocko and Strauss)
6. J. Frank Schmidt Family Charitable Foundation, Suppression of LFY for sterility, \$5,000, 09/14 – 08/15 (Klocko and Strauss)
7. USDA - Biotechnology Risk Assessment, RNAi for genetic containment: Field assessment of sterility and gene suppression in poplar. \$500,000 (Strauss PI, Klocko and Betts coPIs).
8. USDA Feedstock Genomics, Structural polymorphisms as causes of heterosis in Populus, \$1,000,000, 9/ 13 – 8/16.
9. USDA AFRI Bioenergy Centers, Systems for Advanced Biofuels Production from Woody Biomass in the Pacific Northwest, Strauss portion \$550,000, 11/11 – 10-16.
10. USDA - Biotechnology Risk Assessment Research, Genetic containment of plants using zinc-finger nucleases, \$400,000, 09/10 – 08/13 (Strauss PI, Tzfira and Thomson coPIs).

11. J. Frank Schmidt Family Charitable Foundation, Field performance of transgenic Sweetgum trees: Growth, coloration, gene expression, and flowering, \$10,000, 01/11 – 12/11 (Strauss and Martin, PIs).
12. Oregon BEST, Feasibility of biopolymer production in poplar (match funds for SunGrant of same name), \$15,750, 01/10 – 03/12.
13. American Society of Plant Biologists, Informing the public about the science of agricultural biotechnology and environment, \$27,000, 09/09 – 08/11.
14. USDA-ARS, Development of sterile nursery plants, \$143,342, 09/09 – 08/11.
15. Sun Grant, US Dept. Transportation, Feasibility of PHB production in poplar, \$157,000, 8/2009 – 7/ 2011.
16. USDA-DOE, Epigenomics of development in *Populus*, \$1.2 million, 9/08-8/11.
17. USDA Biotechnology Risk Assessment Grants Program, Accelerated testing of sterility genes in grafted poplar using the FT gene, \$370,000, 9/08 – 8/11.
18. Arborgen, Inducible flowering in poplar using the FT gene (match funds for CPRB grant of same name), \$50,000, 1/08-12/09.
19. Consortium for Plant Biotechnology, Inducible flowering in poplar using the FT gene, \$93,523, 08-09.
20. Resources for the Future/Mellon Foundation, Regulation of Tree Biotechnology: Implications for Research and Commercial Development, \$92,000, 10/07-9/09 .
21. American Society of Plant Biologists Education Foundation, Presenting the Food for Thought Lecture Series via Web-Based Streaming Video, \$10,450, 9/06-8/08 (Strauss and Harry, PIs).
22. Department of Energy, Department of Energy, Poplar genome based research for carbon sequestration in terrestrial ecosystems, \$1,148,452 (OSU portion), 8/05-7/08, Genetic modification of gibberellic acid signaling to promote carbon sequestration in tree roots and stems (Strauss & Busov PIs, Kosola, Dharmawardana, Morrell, Kennedy, Kelley coPIs)
23. Department of Energy, Department of Energy, Poplar genome based research for carbon sequestration in terrestrial ecosystems, \$684,100 (OSU portion), 8/05-7/08, , Genes for enhancing carbon sequestration in poplar (Flavell/Ceres Co. PI, Strauss coPI)
24. Forest Industries, \$125,000, 7/04-6/05, Tree Genomics and Biosafety Research Cooperative (Strauss and Brunner)
25. National Science Foundation Industry/University Cooperative Research Centers, \$30,000, 9/04-8/05, "OSU-Purdue Center for Tree Genetics," (Strauss and Brunner)
26. Arborgen and the Consortium for Plant Biotechnology Research, \$70,632, 3/05-2/07, "Modification of Gibberellin Metabolism to Enhance Productivity, Wood Quality and Biosafety" (Strauss and Busov, joint PIs)
27. Consortium for Plant Biotechnology Research, \$80,000, 9/05-8/07, "Activation tagging in the reference Nisqually-1 poplar genome." (Strauss and Busov, joint PIs)
28. USDA Biotechnology Risk Assessment Research, \$360,000, 9/04-8/08, "Field evaluation of dwarfing genes for biosafety of transgenic woody plants." (Busov & Strauss)
29. USDA Plant Genome, \$430,000, 9/04-8/07, "Efficiency of activation tagging for functional gene discovery in *Populus*." (Busov, Strauss, Ganio & Gartner) (\$229,999 to OSU)

30. USDA Biotechnology Risk Assessment Research, \$358,000, 9/03-8/06, "Field tests of transgene confinement strategies in trees: Evaluation of ablation, gene suppression, and flowering onset genes in poplar." (Strauss & Brunner)
31. USDA-ARS, \$225,000, 9/03-8/06, "Developing Non-Invasive Nursery Crops," (Strauss & Brunner)
32. Department of Energy, Terrestrial Carbon Sequestration using the Poplar Genome, \$1,180,026, 5/03-4/06 "Genome-Enabled Discovery of Carbon Sequestration Genes in *Populus*," (Strauss & Brunner; coPIs on collaborative linked grants are G. Tuskan, Oak Ridge Nat. Lab., and J. Davis, U. Florida: total effort ~\$4.9 million).
33. College of Forestry Innovative Grants Competition, Oregon State University, \$60,000, 11/02-10/05, "Douglas-fir Genomics in Interdisciplinary Research in Forest Science." (Brunner, Howe, Bond, Meilan & Strauss)
34. J. Frank Schmidt Family Charitable Foundation, \$16,000, 10/02-9/04, "Development of fruitless tree varieties via biotechnology." (Strauss, Pellett, Aldwinckle, Meilan & Brunner)
35. National Science Foundation, \$3,430, 5/02-8/03, "Recruitment trip to Thailand for Tree Genetics I/UCRC Center." (Meilan & Strauss)
36. Consortium for Plant Biotechnology, \$70,000, 8/00-7/04, "Genetic engineering to maintain high biomass productivity in non-flowering transgenic trees." (Strauss, Brunner, Meilan & Skinner)
37. Consortium for Plant Biotechnology, \$52,000, 8/02-7/04, "Activation tagging of genes controlling tree development." (Strauss, Brunner & Meilan)
38. DOE, \$50,000 (to OSU), 1/02-12/02, "Accelerated domestication of *Populus*." (Bradshaw, Strauss, Tschaplinski, Wullschleger, and Tuskan)
39. DOE/Agenda 2020, \$587,893, 10/01-9/04, "Development and validation of sterility systems for trees." (Brunner, Meilan & Strauss)
40. Scottish Forestry Trust Foreign Study Grant, \$9,000, 1/01-4/04, "Risks and benefits of genetically modified trees for industrial plantations." (Strauss)
41. USDA IFAFS, \$539,000, 9/00-8/04, "Flowering control in transgenic trees: Stability and RNAi gene suppression." (Strauss, Meilan, Brunner & DiFazio)

**VOLUNTEERED POSTERS & PRESENTATIONS** can be viewed at [this web site](#)

**INVITED PRESENTATIONS** – since 2000 (PDFs or recordings can be viewed [this web site](#))

2018

1. Biotech in agriculture and food: Science, status and new developments, Young Farmers and Ranchers Conference, Oregon Farm Bureau. Eagle Crest, OR
2. UnDisciplined: The Wetland Ecologist And The Forest Biotechnologist, Interview with UnDisciplined, Utah Public Radio
3. Ten big things about GE/GMO crops and foods, Science Pub hosted by Salem Environmental Education Organization, Salem, OR

4. Genetically Modifying Trees, Interview with Think Out Loud, Oregon Public Broadcasting
5. Modifying Reproductive Traits of Forest Trees, Keynote lecture given at International Symposium on Forest Tree Molecular Biology and Biotechnology, Harbin, China
6. [Project Overview: Analysis of genes affecting plant regeneration and transformation in poplar](#), presentation to SMILE teachers at Teachers Conference, OSU
7. RNAi suppression of AGAMOUS-like genes causes field sterility in Populus, Forest Tree Workshop, Plant and Animal Genome XVI, San Diego, CA
8. Identifying the genomic basis of adventitious rooting in Populus, Genomics of regeneration in plants and animals workshop, Plant and Animal Genome XVI, San Diego, CA

2017

9. Navigating the perfect storm? Biotech, society, and forest health, University of Florida
10. GMO crops: The science, impacts, and controversy, Salem Public Library, Oregon
11. GMO crops: The science, impacts, and controversy. Sheldon High School, Eugene, OR
12. CRISPR Technology and Gene Editing Possibilities, Mint Industry Research Council National Meeting, San Diego, CA
13. Why Biotech Solutions are Needed to Address Forest Health, National Academy of Sciences, Washington DC

2016

1. Genetically Engineered Trees, American Chemical Society, Philadelphia, PA
2. CRISPR/Cas9 Efficiency and Biological Impacts in Transgenic Poplars and Eucalyptus Annual Society of Plant Biologists, Austin, TX
3. Strauss presentation to National Research Council Committee on Biotech Regulation San Francisco
4. GMO crops: Their use, impacts, and evolution, Webinar presented to Regulatory Framework Information Forum of Biotechnology, Mexico
5. GBS Analysis of aspen phylogeography, Willamette Valley Habitat and Restoration Annual Meeting, Corvallis Public Library
6. Are we using GMOs wisely? Salem, Oregon Chamber of Commerce
7. GMOs in Regulation & the Marketplace, American Association for the Advancement of Science National Meeting, Washington DC
8. Tree Biotech 101, Pankow Foundation Workshop, Portland, OR  
Strauss, Steve H. Jan 2016

2015

9. CRISPR, gene drive, and regulatory perspectives. Webinar Presentation to National Research Council Committee on Regulation of Gene Drives.

10. GMO Crops: Science, Status, and Issues. Annual Cooperative Extension Conference, OSU, Corvallis.
11. Enabling GMOs in forestry: CRISPRs as tools to promote coexistence. University of California Plant Sciences Seminar Series, Davis, CA.
12. Tree Biotech: Progress, prospects, and paralysis. Emerald Chapter, Society of American Foresters, Eugene, OR.
13. Crop domestication, green revolution, and plant breeding. USDA Cochran Fellows Training Program, University of Missouri, MO, Sep 2015.
14. Genetic engineering methods. USDA Cochran Fellows Training Program, University of Missouri, MO.
15. The pipeline of new biotech crops. USDA Cochran Fellows Training Program, University of Missouri, MO.
16. Regulatory experiences and concepts. USDA Cochran Fellows Training Program, University of Missouri, MO.
17. Genetically engineered trees: Rationale, Constraints, and Progress. Cornell University.
18. The how, where, and why of genetically engineered plants. Apprenticeships in Science and Engineering midsummer symposium.
19. The why, how and where of genetically engineered plants. Apprenticeships in Science and Engineering Midsummer Symposium, OSU.
20. Genetically engineered trees: Rationale, Constraints, and Progress. Cornell University.
21. The science and debates over GMO crops and trees. EcoSur and El Colegio de la Frontera Sur-Unidad Campeche, San Francisco de Campeche, Mexico
22. The global debate over GMO crops: Putting the pieces together. El Instituto de Biologia de la Universidad Nacional Autonoma de Mexcio, Mexico City
23. Biotech trees: Rationale, Science and Social Issues. Cinvestav, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional, Mexico City
24. Biotech Crops: What they are? Why the global debate about them? Comision Intersecretarial de Bioseguridad de Los Organismos Geneticamente Modificados (CBIOGEM), Mexico City
25. Agricultural biotechnology as a source of innovation: Why all the debate? 3 er Encuentro, Conferencia de La Extension Rural, Secretaria de Agricultura, Ganaderia, Desarrollo Rural, Pesca, y Alimentacion (SAGARPA), Mexico City
26. Biotech (GMO) Crops: What they are, why the disputes? Keizer Rotary Club, Keizer, OR
27. Biotechnology in Agriculture: Science & Outreach. Oregon Extension Annual Training, Medford, OR
28. Biotech (GMO) Crops: What they are, why the disputes? Keizer Rotary Club, Keizer, OR
29. GMOs and herbicide resistance in trees: opportunities and drawbacks. Oregon Pesticide Applicators Training Conference. Albany, OR
30. GMOs What are they & why so controversial? Oregon Dairy Association, Annual Meeting, Salem, OR
31. Ballot Measure 2-89. Benton County Democrats Forum, Corvallis, OR
32. GMO Crops: what are they, where are they, and why all the fuss? OSU Alumni Association. Corvallis, OR

33. Ballot Measure 2-89: My views & potential impacts on OSU. Gazette Times Forum on Ballot Measure 2-89. Corvallis, OR
34. Transgenic trees. Online presentation to National Research Council Committee on GMO Crops.
35. GMOs. Corvallis Chamber of Commerce, Analysis of Ballot Measure 2-89.

2014

36. Genetic modification of trees: Remarkable progress, extraordinary constraints. Forest Molecular Genetics Programme Annual Meeting, University of Pretoria, South Africa.
37. Stepping back: How can we improve regulatory reviews to promote innovative and safe uses of genetically modified (GM) trees? International Society for Biosafety of Genetically Modified Organisms, Symposium on GM Trees, Capetown, South Africa
38. Genetic Engineering of Coexistence: Containment Technology to Enable Genetic Innovations in Trees, Biology Seminar, University of North Texas, Denton
39. Biotechnology and Biofuel Trees, Lewis and Clark College, Environmental Affairs, Symposium on Biofuels and Sustainability
40. GMO Labeling: Science, Safety, and Ethics, Oregon Health Sciences University, Graduate Program in Human Nutrition and Portland Academy of Nutrition and Dietetics
41. APEC China, Genetically modified trees: Remarkable progress, extraordinary constraints
42. Member/presenter, Citizens Initiative Review Panel on Measure 92, GMO labeling in Oregon
43. Member/presenter, Citizens Initiative Review Panel for Jackson County Measure 15-119, GMO ban
44. Presentation/panelist with Corvallis City Club subcommittee on proposed statewide GMO labeling bill
45. Presentation/consultation with Portland City Club subcommittee on proposed statewide GMO labeling bill (phone conference).
46. Lecture to Unitarian-Universalist Fellowship in Corvallis, Layers of meaning and ideology: What the GMO controversy tells us about ourselves
47. GMOs in agriculture: Good and bad. Food Quality Assurance Managers semi-annual conference, Troutdale, OR.
48. Perspectives on ballot measure in Josephine County to ban GMOs, lecture and panelist. Fruitdale Grange, Grants Pass, OR.
49. GMOs in agriculture: Taking the long view. Americans for Prosperity, lecture/panel on GMOs in relation to prohibitory ballot measure in Jackson County, Central Point, OR.
50. Analysis of ballot measure to ban GMOs in Jackson County. Rotary Club, Medford, OR.
51. GMOs in agriculture: The good, the bad and the righteous. Oregon Museum of Science and Industry Science Pub, Eugene, OR.
52. Sterility technologies in trees as a means for avoiding the "wilding" problem with exotic and transgenic forest trees: State of science. New Zealand national government multi-agency meeting, Wellington, New Zealand.
53. Status of crop biotechnology in the USA: Science and regulation. New Zealand national government agency meeting, Wellington, New Zealand.

54. Forest biotechnology: The communication challenges and opportunities. Scion Research Institute, New Zealand.
55. GMO crops: What they are and why they are contentious? Linn County Extension Association Annual Meeting and Banquet, Albany, OR.
56. The controversy over GMO crops: Finding our way. Institute of Food Technology, Oregon Division, Annual Meeting, Portland, OR.

2013

57. Transgenic crops: What are they, and are they safe? Benton County Farm Bureau, Annual Meeting, Corvallis, OR.
58. Methylome reorganization during in vitro dedifferentiation and regeneration in *Populus*. Instituto de Tecnologia Química e Biológica, Lisbon, Portugal.
59. Gene flow mitigation and analysis: Valuable tools for managing coexistence in forest trees. 13<sup>th</sup> Congress on Coexistence of Genetically Modified Crops. Lisbon, Portugal.
60. Guest panelist, The Nature of the Unnatural, Lewis and Clark Annual Environmental Affairs Symposium, Portland, OR.
61. Science Pub: Finding our way through the controversy over genetic engineering in agriculture: The good, the bad, and the righteous. Majestic Theatre, Corvallis, Oregon.
62. GMOmics: High throughput biology to inform transgenic bioenergy applications. Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, Department of Energy.
63. How biotechnology and genetic engineering affects our lives. Columbia Forum, Astoria, Oregon.
64. GMOs in Agriculture: What they are, who likes them, and who hates them. Oregon Women in Agriculture Annual Meeting, Salishan, Oregon.

2012

65. Of precaution, pragmatism, and population genetics: GMOs for fuels and forests. William Main Seminar Series, University of California at Berkeley, School of Environmental Science, Policy, and Management.
66. Of precaution, pragmatism, and population genetics: An odyssey of forest biotechnology. School of Forestry, Northern Arizona University.

2011

67. The science behind the Forest Health Initiative. Society of American Foresters Annual Meeting.
68. Biotech crops and foods: Science, myths, and madness. Science Pub, Bend, Oregon.
69. Transgenic forest trees: What a long strange trip its been. IUFRO International Conference on Tree Biotechnology, Porto Segundo, Brazil.
70. Epigenomics DNA methylation in the poplar genome. New Phytologist Symposium on Bioenergy Trees, Nancy, France.



71. Genome and developmental variation in DNA methylation in poplar. Department of Energy, Feedstock Genomics Contractors, Washington, DC.
72. Proposals for improved environmental assessment and regulation of new types of GM plants: An academic perspective. Expert Panel Meeting on Research to Support Risk Assessment of Genetically Modified Plants in the EU, Amsterdam, Netherlands.
73. Associations between genome-scale gene expression and DNA methylation during onset and release from vegetative dormancy in field-grown poplar. Plant Dormancy Workshop, 19th International Plant and Animal Genome Conference, San Diego, CA.
74. Genes for enhancement of transformation during organogenic regeneration of poplar, Advancement in Plant Transformation Technology Workshop, 19th International Plant and Animal Genome Conference, San Diego, CA.

## 2010

75. Genetically modified crops: Social and scientific potential and obstacles. International Forum for Adaptability Sciences II: Technologies for a Sustainable Society. University of Tohoku, Sendai, Japan.
76. Genetically engineered trees: A powerful tool gathering dust? Society of American Foresters, Portland, Oregon Chapter.
77. Transgenic forest trees: Accomplishments, potentials, and realities. International Biotechnology Exposition, Rimini, Italy (keynote).
78. Forest Biotechnology and Society: What have we accomplished and where are we going? International Poplar Symposium, Orvieto, Italy (keynote).
79. Epigenomics of development in *Populus*. ForestTrac Workshop, European Union, Madrid, Spain.
80. Field trials of GM trees – an essential research and development tool. FuncFibre International Meeting on Tree Biorefineries and Biotechnology, Örnköldsvik, Sweden.
81. Environmental Regulation of Tree Biotechnology for Wood and Bioenergy: Effect of USDA and EPA Regulations on Research, Breeding, and Commercial Products. Resources for the Future, Washington, DC.
82. Transgenic modification of forest trees: Forest scientist views of how federal regulations affect research and commercial development. Wood Science and Engineering Seminar Series, Oregon State University, Corvallis, OR.
83. Epigenome of *Populus trichocarpa*: DNA methylation in dormant vegetative buds Plant and Animal Genome Conference, San Diego, CA.

## 2009

84. Scientist views of regulatory constraints on transgenic forest biotechnology. Forest Health Initiative, Vectors Workshop, Institute of Forest Biotechnology, Raleigh, NC.
85. Transgenic modification of gibberellic acid function to promote the productivity and value of woody biomass crops. IUFRO Tree Biotechnology, Whistler, British Columbia.
86. Cisgenic and intragenic approaches to genetic modification of growth and form in poplar. Society for In Vitro Biology, Charleston, SC.

87. Growth and form modification in poplar via transgenic modification of gibberellic acid signaling. Poplar Symposium, Goettingen, Germany.
88. Cisgenic and intragenic approaches to genetic modification of growth and form in poplar. Society for In Vitro Biology, Charleston, SC.
89. Growth and form modification in poplar via transgenic modification of gibberellic acid signaling. Poplar Symposium, Goettingen, Germany.
90. Field trial to evaluate mutagenesis in activation tagged poplars. Consortium for Plant Biotechnology Research Annual Meeting, Washington, DC
91. Steven in wonderland: Views of the regulatory constraints and scientific potential of forest biotechnology. Institute of Forest Biotechnology Annual Board Meeting, Raleigh-Durham, North Carolina.
92. The need for a complete rethinking of the proposed gene flow guidelines: Perspectives from a tree biotechnologist. Scientific Advisory Panel on EPA Proposed Test Guidelines for Plant-Incorporated Protectants (OPPTS 890.4300), Arlington, Virginia.
93. Intragenic improvement of growth rate in poplar. Workshop on Intragenics, USDA ARS Research Center, Berkeley/Albany, California.

2008

94. Cisgenics as a tool for generalized crop improvement? Gates Foundation, Seattle, Washington.
95. Public sector research on genetically modified trees. Public Research and Regulation Initiative, COP 9: Conference of the Parties of the United Nations Convention on Biological Diversity, Bonn, Germany.
96. Impacts of regulation on research and development of genetically modified woody biofuels crops. Iowa State University BIGMAP (Biosafety Institute) Annual Meeting.
97. Global transcript profiling in *Populus trichocarpa* stems during the transition from elongation to secondary growth. Plant and Animal Genome Conference, Forest Trees Workshop, San Diego, CA.
98. Stability of transgene expression and RNAi suppression in field grown poplars. Plant and Animal Genome Conference, Forest Trees Workshop, San Diego, CA.
99. Public sector research on genetically modified trees in the northern hemisphere. Public Research and Regulation Initiative, Thirteenth Meeting of the Subsidiary Body on Scientific, Technical, and Technological Advice, United Nations Convention on Biological Diversity, Rome, Italy.

2007

100. Understanding Biotechnology. Oregon Seed Growers League Annual Conference, Salem, Oregon.
101. Transgenic domestication of forest trees: Collision of genomics and society. Department of Botany and Plant Pathology, Oregon State University.
102. Why the regulatory system for transgenic specialty crops fails spectacularly, and is getting worse. Workshop on Emerging Challenges for Specialty (Transgenic) Crops, Pew

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Initiative for Food and Biotechnology and the USDA Animal and Plant Health Inspection Service, Washington, DC.

2006

103. Value and obstacles in use of tree genetic engineering for short rotation woody crops. Seventh Biannual Meeting of the SRWC Production Systems Working Group, IUFRO-Society of American Foresters, Pasco, WA.
104. Gibberellic acid genes for physiological sculpture of trees. Center for Genome Research and Biocomputing at OSU annual retreat, Eagle Crest, Redmond, OR.
105. Genes useful for physiological sculpture of trees: Gibberellic acid signaling genes in poplar (*Populus*). American Society of Plant Biologists/Canadian Society of Plant Physiologists Joint Annual Meeting, Boston, MA.
106. Genetic containment of poplar plantations. International Poplar Symposium IV, Nanjing, China.
107. Genetic engineering approaches to breeding sterility and reduced invasiveness. Second USDA-ARS floral and nursery crops workshop, Portland, OR.
108. Ecological science vs. popular environmentalism: A view from the world of crop biotechnology. Department of Fisheries and Wildlife, Oregon State University.
109. Development and validation of sterility systems for trees. Department of Energy, Agenda 2020 Conference, Atlanta, GA.
110. Genetic engineering of sterility in trees. Arborgen Company, Sumerville, SC.
111. Ten years of transgenic poplar research on genetic containment. Agriculture Canada Oakanagan Research Center, Sumerland, British Columbia, Canada.
112. Genetic containment of forest plantations. In Growing Trees and Stemming Risks: Symposium on Ecological Impacts Associated with the Products and Practices of Forest Biotechnology. Institute of Forest Biotechnology, Vancouver, British Columbia, Canada.
113. GMOs (genetic modified organisms) and forest certification. Department of Wood Science and Engineering, Oregon State University, Corvallis, OR.
114. Tree domestication: Modifying tree architecture, chemistry, and flowering via gibberellin signaling genes. Department of Forest Science, Oregon State University, Corvallis, OR.
115. The GMO debate: Dissonance of science, environmentalism, and society. University of Colorado at Boulder, Ecology/Evolution Colloquium, CO.

2005

116. Poplars for biotechnology and genomics research: Ceres Company, Los Angeles, CA.
117. Domestication of poplar for bioenergy: Can genomics and transformation change the rules? Department of Energy/British Petroleum Joint Workshop on Plant Genomics, Washington, DC.
118. Environmental benefits and risks of genetically modified trees. Austrian College of Agriculture-US Land Grant College Consortium, Vienna.

119. Activation tagging of major genes for tree development. Consortium for Plant Biotechnology Annual Meeting, Washington, DC.
120. Activation tagging for functional gene discovery in poplar. DOE/Batelle Pacific Northwest Laboratories, Richland, WA.

2004

121. Genetically modified organisms, trees, and public policy: Cutting through the chaos. University of Washington, Seattle.
122. Proposal to establish a public biotech crop trait program (BCTP) to assist in regulatory approval for "minor" biotech crops. USDA Workshop on Public Research and Regulatory Review of Small-Market Biotechnology-Derived Crops, Washington, DC.
123. Beyond myths and miracles: Biological potentials and social obstacles to use of gene modified trees in plantation forestry. University of Alberta, Edmonton, Canada.
124. Genetic engineering and natural resources: Potentials, problems, future? OSU Alumni Academy for Lifelong Learning, Corvallis, Oregon.
125. Genetic engineering as a conservation tool: The case for tree biotechnology. Biotechnology & Biodiversity Symposium, Society for Conservation Biology Annual Meeting, Columbia University, New York City.
126. Activation tagging for functional gene discovery in trees. Department of Environmental Science, University of Parma, Italy.
127. Managing gene flow in transgenic and exotic poplars. Brussolera-Branca Foundation Workshop on Biodiversity and Management of Poplars, Milan, Italy.
128. Modification of flowering in transgenic trees. Forestry Department, Sabah, Malaysia.
129. Ten lessons from 15 years of transgenic poplar research. Department of Biology, Bandung Institute of Technology, Indonesia.
130. Genome exploration via activation tagging. Department of Agricultural Biotechnology, Kasart University, Thailand.
131. Ten lessons from 15 years of transgenic poplar research. Global Forum on Biotechnology, Concepcion, Chile.
132. Functional gene discovery in trees via activation tagging. Department of Horticulture, Oregon State University, Corvallis.
133. Transforming trees for the 21<sup>st</sup> century: Genome exploration and domestication of forest trees. University of Georgia, College of Forest Resources, Athens.

2003

134. Poplar genomics research and state of commercialization. Poplar Genomics Workshop, Genome Canada, Toronto.
135. Activation tagging and dwarfism in trees: Breakthrough ideas or fringe notions? Laval University and Canadian Forest Service, Quebec City, Canada.
136. Scientific considerations for regulation of GE trees. Canadian Food Inspection Agency/Canadian Forest Service Workshop on Regulatory Challenges in Forest Biotechnology, XII World Forestry Congress, Quebec City, Canada.

137. Goals, benefits and safety of transgenic forest trees: The state of the science. USDA APHIS Public Meeting on Tree Biotechnology Regulations, Washington, DC.
138. Technical and environmental promises and pitfalls of crop biotechnology. Foundation for Research on Economics and the Environment, Judges/Law Professors Seminar: Can technology spare the earth?, Bozeman, MT.
139. A panoply of social problems strangle crop biotechnology. Foundation for Research on Economics and the Environment, Judges/Law Professors Seminar: Can technology spare the earth?, Bozeman, MT.
140. Grant writing strategies for the USDA Biotechnology Risk Assessment Grants Program. Workshop on Future Directions and Research Priorities for the USDA BRARGP, Washington, DC.
141. Gene flow control in trees: Technology development in transgenic poplars. Society for In Vitro Biology Congress, Portland, Oregon. [http://www.sivb.org/inva\\_39\\_s03.1-59.pdf](http://www.sivb.org/inva_39_s03.1-59.pdf)
142. "Eco"sabotage against tree breeding and plant biotechnology. Testimony before Oregon State Senate Agriculture and Natural Resources Committee on Senate Bill 385 (providing expanded powers to prosecute ecosabotage crimes), March 14.
143. Context, rationale, precaution, and truth in the wars over crop biotechnology. Eugene Environmental Law Conference, Eugene, OR.
144. Functional genomics of trees: Leveraging the poplar genome sequence. Arborgen/MeadWestvaco Companies, Summerville, SC.
145. Horticultural tree biotechnology and flowering modification. Institute of Forest Biotechnology/North Carolina Biotechnology Center Workshop on Modification of Flowering in Urban Trees, Research Triangle Park, NC.
146. Gene flow in transgenic trees: Analysis of gene dispersal and landscape modeling of domestication genes in hybrid poplars. International conference on Introgression from genetically modified plants into wild relatives and its consequences. University of Amsterdam, Netherlands.

2002

147. The poplar genome. Cold Spring Harbor Symposium on Comparative Plant Genomics, New York.
148. Molecular domestication of tree crops: Genomic power, ecological questions, social controversies. Reed College, Department of Biology, Portland, OR.
149. Trees and bioconfinement of transgenes: Context, tools, and regulation in the age of genomics. National Research Council Committee on Bioconfinement of Transgenic Plants. Washington, DC.
150. Agricultural and forest biotechnology: Biological, ecological and social issues. Foundation for Research on Economics and the Environment, Judges/Law Professors Seminar: Globalization and the environment, Bozeman, MT.
151. Agricultural and forest biotechnology: Biological, ecological and social issues. Foundation for Research on Economics and the Environment, Federal Judges Seminar: The ecology, economics and ethics of biotechnology, East Yellowstone, MT.

152. Forest biotechnology futures: Ethical views, social licenses, and technology paths. Weyerhaeuser Technology Center, Tacoma, WA.
153. A biological view of field testing. Information Systems for Biotechnology/USDA APHIS Workshop on Criteria for Field Testing of Plants with Engineered Regulatory, Metabolic and Signaling Pathways, Washington, D.C.
154. Tree biotechnology: A powerful means for increasing pulp yield and pulping efficiency? International Pulp Bleaching Conference, TAPPI (Technical Assn of the Pulp and Paper Industry), Portland, Oregon.
155. Application of biotechnology to the study of trees and forests. Forest Biology Symposium, University of Victoria, B.C., Canada (keynote speaker).
156. Genetic engineering as a tool for applied tree breeding. Biology Colloquium, Oregon State University.
157. University-industry collaborative research in forestry: The case of transgenic poplar in the Pacific Northwest. University & Industry Consortium, Portland, Oregon.
158. Genetic engineering and intensive forestry: Technologies and contexts. William H. Main Distinguished Visitor Program, Department of Environmental Science, Policy, and Management, University of California, Berkeley.
159. The precautionary principle and genetically engineered crops. Panelist for biodiversity discussion group, Oregon State University.
160. Gene flow in forest trees: From empirical estimates to transgenic risk assessment. National Workshop on Gene Flow from Crops to Wild Relatives, Ohio State University.
161. Genetic engineering and forest certification. Annual Meeting of the Inland Empire Tree Improvement Cooperative, Coeur d'Alene, Idaho.
162. Genetic engineering and forest certification. University of California at Berkeley, William Main Distinguished Visitor, College of Natural Resources.
163. Biotechnology and trees: an enigma of sustainable forestry. Ideas Matter Public Lecture Series, Dept. of Philosophy, OSU.
164. Meilan, R., Skinner, J.S., Brunner, A.M., DiFazio, S.P., Leonardi, S., and Transgenic Dispersal and Control of Flowering in Poplars. Congress on In Vitro Biology, St. Louis, MO, June 2001.

2001

165. Ecoterrorism and biotechnology: the feeling, the context, and the future. Mary's Peak Chapter, Society of American Foresters.
166. Genetic engineering and sustainable forestry: technology, context and terrorism. Yale Forest Forum, Yale University School of Forestry & Environmental Studies.
167. Genetically modified trees: their place, their benefits, their risks, and their myths. Western Forest Genetics Association Annual Meeting, Davis, CA.
168. Gene flow and control of flowering in poplars in the Pacific Northwestern United States: Implications for use of GM plantations. Swedish Agricultural University, Uppsala, Sweden.
169. Gene flow and control of flowering in poplars in the Pacific Northwestern United States: Implications for use of GM plantations. Long Ashton Research Station, Bristol, UK.

170. Certification of genetically modified forest plantations. Scottish Forestry Commission, Edinburgh, Scotland, UK.
  171. Gene flow in wild and planted poplars in the Pacific Northwestern United States: Implications for use of GM plantations. Department of Natural Resources, University of Edinburgh, Scotland, UK.
  172. Gene flow and control of flowering in poplars in the Pacific Northwestern United States: Implications for use of GM plantations. Scottish Crops Research Institute, Dundee, Scotland, UK.
  173. Gene flow in wild and planted poplars in the Pacific Northwestern United States: Implications for use of GM plantations. Department of Forest Resources, University of Aberdeen, Scotland, UK.
  174. Gene flow and control of flowering in poplars in the Pacific Northwestern United States: Implications for use of GM plantations. INRA Laboratory of Forest Microbiology, Nancy, France.
  175. Gene flow and control of flowering in poplars: Implications for use of genetically modified plantations. INRA Laboratory of Cellular Biology, Versailles, France.
  176. Gene flow and control of flowering in poplars in the Pacific Northwestern United States: Implications for use of GM plantations. INRA Laboratory of Forest Biology, Orleans, France.
  177. Gene dispersal from wild stands and plantations of cottonwoods in the Pacific Northwest United States. Oxford University Department of Plant Sciences, Oxford, UK.
- 2000
178. Flowering control in transgenic trees. International Wood Biotechnology Symposium, Narita, Japan.
  179. Benefits and ecological safety of genetically modified plants: science and politics. Lewis and Clark College Symposium on Environmental Affairs, Session on Genetically Modified Organisms, Portland, OR.
  180. Genetically modified poplars: state-of-the-art and perspectives on the public controversy. International Poplar Symposium, Vancouver, WA.
  181. Challenges to commercial uses of transgenic trees in forest plantations: The case of poplars. International Symposium on Biosafety of Transgenic Crops, Saskatoon, Canada.
  182. Floral regulatory genes as tools for control of reproduction in poplars. International Society for Plant Molecular Biology, Quebec, Canada.
  183. Forest biotechnology: Benefits, challenges, and concerns of transgenic plantations. National Research Council, Standing Committee on Biotechnology, Food and Fiber Production, and the Environment. Washington, D.C.
  184. Public forum on genetically engineered crops. Dept. of Biology, Oregon State University, Corvallis, OR. (panelist)
  185. Transgenic crops: what are the facts, what are the questions. Public forum, Unitarian-Universalist Fellowship, Corvallis, OR. (panelist)

186. Transgenic poplars and the debate about genetically engineered crops: research and communication challenges. Dept. of Botany and Plant Pathology, Oregon State University, Corvallis, OR.
187. Perspectives on the science, business, and ethics behind the controversy of over biotech plants. Department of Forest Science, Oregon State University, Corvallis, OR.

#### **ADMINISTRATIVE SERVICE – OREGON STATE UNIVERSITY**

1. Member, Molecular and Cellular Biology Revision Committee, 2018-2019
2. Chair, mid-term evaluation and promotion and tenure subcommittee for Dana Warren, Department of Forest Ecosystems and Society
3. Scientific Advisory Committee, Center for Genomics and Biocomputing, 2017-2019
4. Search committee member, Assistant Professors in Complex systems in the life and environmental sciences, Center for Genomics and Biocomputing, Winter-summer 2015
5. Chair, Promotion and tenure subcommittee for Andres Schmidt, Conversion to Assistant Professor, Senior Research, fall 2014-winter 2015
6. Member, Undergraduate degree in Terrestrial Ecosystems and Society, option within Natural Resources major at OSU, winter-fall 2015.
7. Member, Curriculum Committee, Department of Forest Ecosystems and Society, 2012-present
8. Member, OSU Conflict of Interest Compliance Committee, Research Office, 2009-2011
9. Pack Essay evaluator, College of Forestry, 2009-2011
10. Member, Strachan Chair Search Committee, Dept of Forest Engineering, College of Forestry, 2008
11. Acting Chair, Academic Support Manager-College Forests Search Committee, College of Forestry, 2005
12. Member, Richardson Hall Art Review Committee, 2003-2004
13. Chair, Post-Tenure Review Committee for Professor Steve Radosevich, Forest Science
14. Developed Department of Forest Science policy on Emeritus Faculty responsibilities and resources, 2003
15. Developed and worked with Forest Science Department faculty senator (Filip) to achieve overwhelming passage of OSU Faculty Senate "Resolution against terrorism directed toward scientific research," Winter 2002
16. Organizing Committee, OSU Biology Colloquium, 2002
17. Chair, Promotion and Tenure Committee, Forest Science, 1998-2005
18. Member, OSU Recombinant DNA Biosafety Committee, 1999-2006
19. Co-chair, Search Committee, Dept of Forest Science Forest Genetics Faculty Position, 2000-2001
20. Department Head, Department of Forest Science, Search Committee, 1999-2000
21. Dean, College of Forestry, Search Committee, 1999-2000
22. Member, Scientific Advisory Committee, Center for Gene Research and Biotechnology, OSU, 1999-2001
23. Member, Richardson Hall Art Installation Committee, College of Forestry, 1999



24. Led development of policy on conversion of fixed-term professorial faculty to tenure-track, Forest Science, 2000
25. Member, Committee drafting position description for "Biodiversity/Landscape Ecology" position, Forest Science, 2000
26. Led revisions to Forest Science P&T guidelines, 1999-2000
27. Faculty Staffing Committee, Forest Science, 2000
28. Led revision of policy on courtesy and adjunct faculty, Forest Science, 1999
29. Judge, OSU graduate student poster competition, OSU, 1998
30. Led development of teaching competency requirements, Forest Science, 1998
31. Search Committee, Vice Provost for Research, OSU, 1997
32. Center for Gene Research and Biotechnology, Genomics services subcommittee, 1997
33. Intellectual property services survey for Technology Transfer Office, OSU, 1996
34. Graduate student recognition committee, Forest Science, 1996
35. Worked with Warren Kronstad, Mike Burke, Steve Knapp, and others to develop curriculum for Plant Breeding and Genetics options within revised Genetics Program, 1993-95
36. Played major role in extensive revision of Department Graduate Programs and Curriculum Book, Forest Science, in 1991 and 1993
37. Played major role in evaluating how to improve "rigor" in Forest Science Department courses (1992-93), including working with Forestry Media Center to design and administer student surveys, developed recommendations for course changes, developed addendum to course evaluation survey forms.
38. Chair, Curriculum Committee, Forest Science, 1989-1996
39. Curriculum Committee, Forest Science, 1987-1990
40. Space and Facilities Subcommittee, Forest Science, 1989-1990
41. Growth Chamber Facilities Subcommittee, Forest Science, 1987-1988
42. Social Activities Committee, Forest Science, 1985-87 (Chair)
43. Extension & Continuing Education Committee, Forest Science, 1985-1986
44. Research Committee, Forest Science, 1985-86
45. Management Committee, Forest Science, 1985-1990
46. Chair, Executive Committee, Genetics Program, OSU, 1994
47. Curriculum Committee, Genetics Program, OSU, 1994-1995
48. Admissions Committee, Molecular & Cellular Biology, 1993-1994
49. Technology Transfer Committee, OSU, 1989-1990
50. Scientific Advisory Board, Center for Gene Research & Biotechnology, OSU, 1985-1990

### **STUDENTS DIRECTED (MAJOR PROFESSOR)**

*Current positions given for students where known*

#### *Undergraduate*

1. Jacobsen, Jeremy. 2016-2019. Effects of LFY suppression on vegetative development in field grown poplar. Bioenergy Program thesis.
2. Zahl, Bahiya. 2017-2020. CRISPR for mutagenesis in eucalypts. SURE and URSA research, Biochemistry and Biophysics.

3. Feng, Mu. 2016. Testing the effectiveness of the  $\lambda$  insulator in hybrid poplar. Bachelor's Thesis, BioResources Research. Went on to PhD in Biochemistry.
4. Stepper, S. 2014. Legal and ethical dimensions of biotechnology regulations for the developing world. Honors College Thesis Project, DeLoach Scholarship. Went on to law School.
5. Colby, S. 2014. Analysis of RNA interference as a mean for engineering of floral sterility in trees. SURE Program, College of Science. Went on to medical school.
6. Ree, J. 2011. Improved transformation with the GA20-oxidase and EBB1 gene in transgenic poplar. BioResources Research thesis. Went on to PhD program, Brazil.
7. Charlton, J. 2006. Changes in poplar root:shoot allocation due to dwarfism genes. Undergraduate thesis, Dept of Horticulture, OSU. Status unknown.
8. McDonough, A. 2006. Biological considerations for a new approach to regulating genetically modified crops in the United States. Honors College Thesis. Status unknown.
9. Chapin, C. 1998. The effect of matrix attachment regions flanking gene constructs on transformant gene expression in two poplar clones. BioResources Research and University Honors College Thesis Project. Status unknown.

#### *Master of Science*

1. Nahata, Surbhi. 2020. Vegetative effects of CRISPR mutagenesis in eucalypts. Environmental Sciences program.
2. Zhu, Julia. 2013. Effects of transgenic demethylation on poplar development and gene expression. Forest Ecosystems and Society. PhD student in chemical engineering, Brigham Young University.
3. Viswanath, Venkatesh. 2012. Effects of GA transgenes on growth rate, phenology, and cold hardiness of poplar. Forest Ecosystems and Society. Patent Assistant, India.
4. Elias, A. 2009. Growth and morphology of transgenic poplars with transgenes from the Ceres Arabidopsis genomics program. PhD student, Purdue.
5. Han, K. 2009. Evaluation of promoters and genome insertion for modification of gibberellic acid metabolism in poplars. Genetics Program. PhD student, Oregon State University. PhD in engineering, OSU.
6. Bao, Y. 2008. Microarray analysis of RNA expression and meristem reporter gene development during *in vitro* regeneration in poplar. Genetics Program. Laboratory Manager, Cold Spring Harbor Laboratory, NY. MBA/Business Development, China.
7. Wei, H. 2004. Molecular buffering of cytoxin leakage in transgenic sterile poplars. Genetics Program. Postdoctoral researcher, University of Washington.
8. Mohamed, R. 1999. Effect of the *bO* gene on disease resistance in transgenic hybrid cottonwoods. Department of Forest Science. Professor, Agricultural University, Malaysia.
9. Wu, J. 1998. Mitochondrial and nuclear DNA diversity in the California Closed Cone Pines (*Pinus attenuata*, *muricata*, and *radiata*). Researcher, Duke University.
10. Aagard, J. E. 1997. Genetic diversity and differentiation in Douglas-fir from RAPD markers of nuclear and mitochondrial origin. Department of Forest Science. Postdoctoral scientist, University of Washington.
11. Corcoran, J. 1993. Non-thesis Masters. Genetics Program. Lawyer.

12. Bae, H. 1992. RFLP variation in the laminated-root-rot fungal pathogen of conifers, *Phellinus weirii*. Department of Forest Science. Research Scientist, Korea.
13. Dye, S. 2003. Structure and expression of the *Populus* homolog to the *TERMINAL FLOWER* gene. Department of Forest Science. Non-thesis. Mother of large family.
14. Krupkin, A.B. 1992. Chloroplast DNA phylogeny of hard pines (Subgenus *Pinus*): inference from site mutations and multiple small inversions. Department of Forest Science. Research technician, Oregon.
15. Tsai, C.-H. 1989. Dispersed repetitive sequences in the chloroplast genome of Douglas-fir. Department of Forest Science. Professor, Taiwan.

### Doctorate

1. Elorriaga, Estefania. 2020. CRISPR for directed mutagenesis of poplar and eucalypt floral genes. Molecular and Cellular Biology Program graduate student.
2. Lu, Haiwei. 2019. Efficiency of zinc finger nucleases for mutagenesis of poplar floral genes. Molecular and Cellular Biology graduate student. Postdoc at Oak Ridge National Laboratory.
3. Nagle, Michael. Expected 2021. HIGS for gene silencing in poplar. Molecular and Cellular Biology Program graduate student.
4. Gordon, Michael. Expected 2021. Host induced gene silencing in poplar. Molecular and Cellular Biology Program graduate student.
5. Li, Jingyi. 2006. Stability of transgene expression and RNAi-induced silencing under vegetative propagation and environmental stress in poplar. Department of Forest Science (Co-advised with A. Brunner). Research Group Leader, Biotechnology Company.
6. Mohamed, Rozi. 2006. Molecular studies of poplar genes related to disease resistance and meristem development. Department of Forest Science (Co-advised with A. Brunner). Professor, Agricultural University, Malaysia
7. Slavov, Gancho. 2007. Development of microsatellite marker for analysis of pollen contamination in Douglas-fir seed orchards. (co-advised with W. Thomas Adams and G. Howe). Department of Forest Science. Research Scientist, Wales Research Institute, Aberystwyth.
8. DiFazio, Stephen. 2002. Analysis and modeling of gene dispersal from plantations of transgenic hybrid cottonwoods. Department of Forest Science. Professor, West Virginia University.
9. Brunner, A. 1998. Isolation of *Populus trichocarpa* homologous to the floral homeotic gene *AGAMOUS*. Department of Forest Science. Professor, Virginia Technological University.
10. Sheppard, L. 1997. *PTD*, a floral homeotic gene from *Populus trichocarpa* with homology to transcription factors. Genetics Program. Technical Editor.
11. Hipkins, V.D. 1993. Repeated sequences associated with inversions and length mutations in the chloroplast genomes of *Pinus* and *Pseudotsuga*. Genetics Program. Research Geneticist, US Forest Service.
12. Hong, Y.-P. 1991. Chloroplast DNA diversity and phylogeny in the Californian closed-cone pines (Subsect. *Oocarpae*). Department of Forest Science. Professor, Korea.

13. Howe, G.T. 1991. Transformation and heterologous gene expression in hybrid poplar. Genetics Program. Professor, Oregon State University.
14. Goldfarb, B. 1990. Parameters affecting genetic transformation of Douglas-fir via microprojectiles. (Co-directed with J. Zaerr.). Professor, North Carolina State University.

#### **POSTODCTORAL SCIENTISTS ADVISED**

*Current positions given where known*

1. Greg Gorologia, 2019-2022, CRISPR locus excision and off-target mutagenesis.
2. Mewalal, Ritesh. 2018. Reproductive molecular biology in poplar. Postdoctoral researcher, Lawrence Berkeley Lab, DOE.
3. Heliwell, Emily. 2016-17. Genomic sequencing to reveal structural polymorphisms in hybrid cottonwoods. Research scientist, Vancouver, WA.
4. Klocko, Amy. 2012-2016. Floral biotechnology in poplar and eucalypts. Lecturer in Biology, Colorado College.
5. Devisetty, Upendra. 2015-2016. Genomic basis of heterosis in poplar. Bioinformatics scientist, CyVerse, University of Arizona.
6. Dow, Michael, 2011-2012, Outreach in biotechnology web development, cloning of floral sterility genes. Intellectual property law, Australia.
7. Ranik, Martin. 2010-2011. Floral transcriptomics of eucalypts. Biotechnology company researcher, South Africa.
8. Vining, K. 2009-2013. Epigenomics of development in *Populus*. Professor, Oregon State University.
9. Dalton, David (sabbatical from Reed College). 2008-2009. Production of polyhydroxy butyrate in transgenic poplar. Professor, Reed College.
10. An, Xinmin. 2/2007-7/2007. Visiting Scientist from Beijing Forestry University. Genes for floral sterility in poplar. Professor, China.
11. Dharmawardhana, P. September 2005-present. Microarray analysis of poplar gene expression. Research Scientist, Oregon State University.
12. Harry, David. 2006-2007. Outreach in Biotechnology, Associate Director. Research Professor and Genetic Consultant.
13. Arias, Rene. December 2005-June 2007. Genes promoting regeneration of transgenic tissues. Researcher, USDA.
14. Filichkin, Sergei. 2004-2007. Functional genomics tools for transgenic poplars. Research Scientist, Oregon State University.
15. Carroll, Kirstin. 2004-2006. Outreach in Resource Biotechnology Program Coordinator. Lecturer, Oregon State University.
16. Gandi, Sonali. February 2004-April 2005. Genomic approaches to genetic engineering for carbon sequestration in poplar. Researcher, Syngenta.
17. Busov, Victor. 2002-2006. Activation tagging and dwarfism in poplar. Professor, Michigan Technological University.
18. Bao, Manzhu. 10/2002-1/2003. Visiting scientist from Huazhong Agricultural University, China. Genetic engineering of flowering in sweetgum. Professor, China.

19. Yakolev, Igor. 2001-2002. Fullbright Scholar from Russia. Floral gene expression during maturation in poplar. Research Scientist, Norwegian Research Institute.
20. Southerton, Simon. Nov/Dec 2000. Genetic engineering of flowering in eucalypts. Research Scientist, CSIRO, Australia.
21. Brunner, Amy. 1998-2005. Dominant negative mutations of floral homeotic genes for engineering of sterility. Professor, Virginia Technological University.
22. Skinner, Jeffrey. 1997-2001. Recombinant DNA manipulations of poplar floral homeotic genes for induction of floral sterility. Research Scientist, Seed Company.
23. Meilan, Richard. 1995-2003. Genetic engineering of sterility and precocious flowering in poplars. Professor, Purdue.
24. Krutovskii, Konstantin. 1994-2001. Genome mapping and QTL analysis of adaptive traits in Douglas-fir and cottonwood leaf beetle. Professor, Texas A & M.
25. Han, Kyung-Hwan. 1994-1996. Genetic transformation of poplars via *Agrobacterium*. Professor, Michigan State University.
26. James, Rosalind. 1994-1997. Ecological genetics of resistance to BT transgenes in the cottonwood leaf beetle. Resarch Scientists, USDA ARS.
27. Tsumura, Yoshiko. 1994 (2 months). Visiting Scientist, Japanese Forestry and Forest Products Research Institute, Tsukuba, Japan. Inter-simple-sequence-repeat DNA markers in conifers. Research Scientist, Japan.
28. Yang, Y. 1993-94. *In vitro* propagation and transformation of triploid cottonwoods. Professor, Korea.
29. Rottmann, William. 1990-1995. Structure and expression of the poplar homolog of the floral homeotic gene *LEAFY*. Resaerch Scientist, Arborgen Co.
30. Boes, Teresa. 1990-1992. Development of floral primordia in black cottonwood (*Populus trichocarpa*). Unknown.
31. Bousquet, Jean. 1990-1991. Rates of evolution in the chloroplast gene *rbcl*. Professor, Laval University.