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Matias Kirst

Education

Cornell University	Maize Genomics	Postodoc	2004
North Carolina State University	Genetics & Genomics	Ph.D.	2003
Federal University of Viçosa (Brazil)	Genetics and Improvement	M.Sc.	1999
Federal University of Santa Maria (Brazil)	Forestry Engineering	B.S.	1996

Professional Positions

2023-present	Distinguished Professor, School of Forest, Fisheries and Geomatic Sciences, University of Florida
2015-2023	Professor, School of Forest, Fisheries and Geomatic Sciences, University of Florida
2016-2018	Director, Plant Molecular and Cellular Biology Program, University of Florida
2014-2016	Graduate Coordinator, Plant Molecular and Cellular Biology Program, University of Florida
2011-present	Founder, Chief Executive Officer (2011-12) and scientific consultant (2013-present) of RAPiD Genomics LLC
2010-present	Associate Professor, School of Forest Resources and Conservation, University of Florida
2010-present	Co-Director Cooperative Forest Genetics Research Program, University of Florida
2005-present	Member UF Genetics Institute
2005-2009	Assistant Professor, School of Forest Resources and Conservation, University of Florida

Professional Experience

Research – Research funded by over \$25M in federal grants secured since joining UF in 2005, of which \$18M as the principal investigator. Funded research is focused on: (1) genomics and single-cell transcriptomics of bioenergy and developmental traits, (2) development of methods to predict phenotypes based on genomic data, and (3) their application to hyper-accelerate genetic improvement, (4) training of plant biologists and breeders in modern genomic technologies, and (5) characterization of newly discovered genes of economic value. The research derived from these activities is published in over 80 peer-reviewed articles (>13K citations, h-index 47 as of September 2023). Kirst also participates in Scientific Advisory Boards from projects funded by the European Union and Genome Canada, and frequently acts as an external reviewer for national and international funding agencies. Kirst has also chaired some of the largest conferences in the field of forest biotechnology, including the IUFRO Tree Biotechnology Conference 2013 and the Forest Tree Workshop at the Plant and Animal Genome Conference.

Teaching and advising – Kirst has advised 16 graduate students from the inter-college programs Genetics and Genomics, and Plant Molecular and Cellular Biology, and has been a member of

over 50 PhD/MSc student committees. Kirst is the lead instructor of GMS6231 Genomics and Bioinformatics, taught through the College of Medicine, which commonly included students from different majors and colleges. Kirst also teach and co-teach two other graduate level courses (PCB5065 Advanced Genetics, and PCB7922 Journal Colloquium). Kirst commonly hosts 2-4 visiting scholars annually, including scientists from Brazil, Canada, Finland, France, Italy, Japan and Spain.

Extension and Development – Kirst acts as the co-Director of the Cooperative Forest Genetics Research Program, the oldest pine breeding cooperative in the US. Kirst also founded RAPID Genomics in 2011, a spin-off of his laboratory at the UF Genetics Institute, created to commercialize inventions and support the development of the local economy. RAPID started operations in the Florida Innovation Hub at UF in December 2012, and currently supplies genotyping and genomic data analysis services to over 100 clients in 20 countries.

Publications

- Knaack, S.A., D. Conde, S. Chakraborty, K.M. Balmant, T. Irving, L.G.S. Maia, P.M. Triozzi, C. Dervinis, W.J. Pereira, J. Maeda, H.W. Schmidt⁶, J.M. Ané, **M. Kirst** and S. Roy. (2022) Temporal change in chromatin accessibility predicts regulators of nodulation in *Medicago truncatula*. *BMC Biology* 20:252.
- Shalev, T.J., O. Gamal El-Dien, M.M.S. Yuena, S. Shengqiang, S.D. Jackman, R.L. Warren, L. Coombe, L. van der Merwe, A. Stewart, L.B. Boston, C. Plott, J. Jenkins, G. He, J. Yan, M. Yan, J. Guo, J.W. Breinholt, L.G. Neves, J. Grimwood, L.H. Rieseberg, J. Schmutz, I. Birol, **M. Kirst**, A.D. Yanchuk, C. Ritland, J.H. Russell and J. Bohlmann. (2022) The western redcedar genome reveals extremely low genetic diversity in a highly adaptable conifer. *Genome Research* 32:1952-1964.
- Conde, D., P.M. Triozzi, W.J. Pereira, H.W. Schmidt, K.M. Balmant, S.A. Knaack, A. Redondo-López, S. Roy, C. Dervinis and **M. Kirst**. (2022) Single-nuclei transcriptome analysis of the shoot apex vascular system differentiation in *Populus*. *Development* 149(21):dev200632.
- Conde, D. and **M. Kirst M.** (2022) Decoding exceptional plant traits by comparative single-cell genomics. *Trends in Plant Sciences* 27:1095-1098.
- Gamal El-Dien, O., T.J. Shalev, M.M.S. Yuen, R. Stirling, L.D. Daniels, J.W. Breinholt, L.G. Neves, **M. Kirst**, L. Van der Merwe, A.D. Yanchuk, C. Ritland, J.H. Russell and J. Bohlmann. (2022) Genomic selection reveals hidden relatedness and increased breeding efficiency in western redcedar polycross breeding. *Evolutionary Applications* 15:1291-1312.
- Irving, T.B., S. Chakraborty, L.G.S. Maia, S. Knaack, D. Conde, H.W. Schmidt, P.M. Triozzi, C.H. Simmons, S. Roy, **M. Kirst** and J.M. Ané. (2022) An LCO-responsive homolog of NODULE INCEPTION positively regulates lateral root formation in *Populus* sp. *Plant Physiology* 190:1699-1714.
- Pereira, W.J., S. Knaack, S. Chakraborty, D. Conde, R.A. Folk, P.M. Triozzi, K.M. Balmant, C. Dervinis, H.W. Schmidt, J.M. Ané, S. Roy and **M. Kirst M.** (2022) Functional and comparative genomics reveals conserved noncoding sequences in the nitrogen-fixing clade. *New Phytologist* 234:634-649.
- Ence, D., K.E. Smith, S. Fan, L.G. Neves, R. Paul, J. Wegrzyn, G.F. Peter, **M. Kirst**, J. Brawner, C.D. Nelson and J.M. Davis. (2022) NLR diversity and candidate fusiform

- rust resistance genes in loblolly pine. *G3: Genes, Genetics, Genome* 12(2):jkab421.
- Triozzi, P.M., T.B. Irving, H.W. Schmidt, Z.P. Keyser, S. Chakraborty, K. Balmant, W.J. Pereira, C. Dervinis, K.S. Mysore, J. Wen, J.M. Ané, **M. Kirst** and D. Conde. (2022) Spatiotemporal cytokinin response imaging and ISOPENTENYLTRANSFERASE 3 function in Medicago nodule development. *Plant Physiology* 188:560-575.
- Pereira, W.J., F.M. Almeida, D. Conde, K.M. Balmant, P.M. Triozzi, H.W. Schmidt, C. Dervinis, G.J. Pappas Jr and **M. Kirst**. (2021) Asc-Seurat: analytical single-cell Seurat-based web application. *BMC Bioinformatics* 22:556.
- Conde, D., P.M. Triozzi, K.M. Balmant, A.L. Doty, M. Miranda, A. Boullosa, H.W. Schmidt, W.J. Pereira, C. Dervinis and **M. Kirst**. (2021) A robust method of nuclei isolation for single-cell RNA sequencing of solid tissues from the plant genus *Populus*. *PLoS ONE* 16(5):e0251149.
- Triozzi, P.M., H.W. Schmidt, C. Dervinis, **M. Kirst** and D. Conde. (2021) Simple, efficient and open-source CRISPR/Cas9 strategy for multi-site genome editing in *Populus tremula* × *alba*. *Tree Physiology* 41:2216-2227.
- Mavrodiev, E.V., C. Dervinis, W.M. Whitten, M.A. Gitzendanner, **M. Kirst**, S. Kim, T.J. Kinser, P.S. Soltis and D.E. Soltis. (2021) A new, simple, highly scalable, and efficient protocol for genomic DNA extraction from diverse plant taxa. *Applications in Plant Sciences* 9:e11413.
- Rios, E.F., M.H.M.L. Andrade, M.F.R. Resende, **M. Kirst**, M.D.V. de Resende, J.E. de Almeida Filho, S.A. Gezan and P. Munoz. (2021) Genomic prediction in family bulks using different traits and cross-validations in pine. *G3: Genes, Genetics, Genome* 11(9):jkab249.
- Alves FC, Balmant KM, Resende MFR Jr, Kirst M, de Los Campos G. (2020) Accelerating forest tree breeding by integrating genomic selection and greenhouse phenotyping. *Plant Genome*. 13:e20048.
- Balmant KM, Noble JD, C Alves F, Dervinis C, Conde D, Schmidt HW, Vazquez AI, Barbazuk WB, Campos GL, Resende MFR Jr, Kirst M. (2020) Xylem systems genetics analysis reveals a key regulator of lignin biosynthesis in *Populus deltoides*. *Genome Res*. 30:1131-1143.
- Noble JD, Balmant KM, Dervinis C, de Los Campos G, Resende MFR Jr, Kirst M, Barbazuk WB. (2020) The genetic regulation of alternative splicing in *Populus deltoides*. *Front. Plant Sci*. 11:590.
- Ribeiro CL, Conde D, Balmant KM, Dervinis C, Johnson MG, McGrath AP, Szewczyk P, Unda F, Finegan CA, Schmidt HW, Miles B, Drost DR, Novaes E, Gonzalez-Benecke CA, Peter GF, Burleigh JG, Martin TA, Mansfield SD, Chang G, Wickett NJ, Kirst M. (2020) The uncharacterized gene *EVE* contributes to vessel element dimensions in *Populus*. *Proc. Natl. Acad. Sci. U.S.A.* 117:5059-5066.
- Allona I, Kirst M, Boerjan W, Strauss S, Sederoff R. Editorial: Forest Genomics and Biotechnology. (2019) *Front. Plant Sci*. 10:1187.
- de Almeida Filho JE, Guimarães JFR, Fonsceca E Silva F, Vilela de Resende MD, Muñoz P, Kirst M, de Resende Júnior MFR. (2019) Genomic prediction of additive and non-additive effects using genetic markers and pedigrees. *G3* 9:2739-2748.
- de Bem Oliveira I, Resende MFR Jr, Ferrão LFV, Amadeu RR, Endelman JB, Kirst M, Coelho ASG, Munoz PR. (2019) Genomic prediction of autotetraploids; influence of relationship matrices, allele dosage, and continuous genotyping calls in phenotype prediction. *G3* 9:1189-1198.

- Acosta JJ, Fahrenkrog AM, Neves LG, Resende MFR, Dervinis C, Davis JM, Holliday JA, Kirst M. (2019) Exome resequencing reveals evolutionary history, genomic diversity, and targets of selection in the conifers *Pinus taeda* and *Pinus elliottii*. *Genome Biol. Evol.* 11:508-520.
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- Fahrenkrog AM, Neves LG, Resende MFR Jr, Dervinis C, Davenport R, Barbazuk WB, Kirst M. (2017) Population genomics of the eastern cottonwood *Populus deltoides*. *Ecol. Evol.* 7:9426-9440.
- Conde D, Moreno-Cortés A, Dervinis C, Ramos-Sánchez JM, Kirst M, Perales M, González-Melendi P, Allona I. (2017) Overexpression of DEMETER, a DNA demethylase, promotes early apical bud maturation in poplar. *Plant Cell Environ.* 40:2806-2819.
- Conde D, Le Gac AL, Perales M, Dervinis C, Kirst M, Maury S, González-Melendi P, Allona I. (2017) Chilling responsive DEMETER-LIKE DNA demethylase mediates in poplar bud break. *Plant Cell Environ.* 40:2236-2249.
- Müller BSF, Neves LG, de Almeida Filho JE, Resende MFR Jr, Muñoz PR, Dos Santos PET, Filho EP, Kirst M, Grattapaglia D. (2017) Genomic prediction in contrast to a genome-wide association study in explaining heritable variation of complex growth traits in breeding populations of *Eucalyptus*. *BMC Genomics.* 18:524.
- Tieman D, Zhu G, Resende Jr. MFR, Nguyen C, Bies D, Rambla JL, Beltran KSO, Taylor M, Zhang B, Ikeda H, Liu Z, Fisher J, Monforte A, Zamir D, Granell A, Kirst M, Huang S, Klee H. (2017) A chemical genetic roadmap to improved tomato flavor. *Science* 355:391-394.
- Fahrenkrog AM, Neves LG, Resende MF Jr, Vazquez AI, de Los Campos G, Dervinis, C, Sykes R, Davis M, Davenport R, Barbazuk WB, Kirst M. (2017) Genome-wide association study reveals putative regulators of bioenergy traits in *Populus deltoides*. *New Phytol.* 213:799-811.
- Vazquez AI, Veturi Y, Behring M, Shrestha S, Kirst M, Resende MF Jr, de Los Campos G. (2016) Increased proportion of variance explained and prediction accuracy of survival of breast cancer patients with use of whole-genome multiomic profiles. *Genetics.* 103:1425-1438.
- de Almeida Filho JE, Guimarães JF, E Silva FF, de Resende MD, Muñoz P, Kirst M, Resende MF Jr. (2016) The contribution of dominance to phenotype prediction in a pine breeding and simulated population. *Heredity (Edinb).* 117:33-41.
- Ramos SL, Dequigiovanni G, Sebbenn AM, Lopes MT, Kageyama PY, de Macêdo JL, Kirst M, Veasey EA. (2016) Spatial genetic structure, genetic diversity and pollen dispersal in a harvested population of *Astrocaryum aculeatum* in the Brazilian Amazon. *BMC Genet.* 17:63.
- Ribeiro CL, Silva CM, Drost DR, Novaes E, Novaes CR, Dervinis C, Kirst M. (2016) Integration of genetic, genomic and transcriptomic information identifies putative regulators of adventitious root formation in *Populus*. *BMC Plant Biol.* 16:66.
- Goncalves EC, Wilkie AC, Kirst M, Rathinasabapathi B. (2016) Metabolic regulation of triacylglycerol accumulation in the green algae: identification of potential targets for engineering to improve oil yield. *Plant Biotechnol J.* 14:1649-1660.
- Drost DR, Puranik S, Novaes E, Novaes CR, Dervinis C, Gailing O, Kirst M. (2015) Genetical genomics of *Populus* leaf shape variation. *BMC Plant Biol.* 15:166.
- Westbrook JW, Chhatre VE, Wu LS, Chamala S, Neves LG, Muñoz P, Martínez-García PJ, Neale DB, Kirst M, Mockaitis K, Nelson CD, Peter GF, Davis JM, Echt CS. (2015) A consensus genetic map for *Pinus taeda* and *Pinus elliottii* and extent of linkage disequilibrium in two genotype-phenotype discovery populations of *Pinus taeda*. *G3* 5:1685-1694.

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- Neves LG, Davis JM, Barbazuk WB, Kirst M. (2014) A high-density gene map of loblolly pine (*Pinus taeda* L.) based on exome sequence capture genotyping. *G3* 10:29-37.
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- Neves LG, Davis JM, Barbazuk WB, Kirst M. (2013) Whole-exome targeted sequencing of the uncharacterized pine genome. *Plant J.* 75:146-156.
- Westbrook JW, Resende MF Jr, Munoz P, Walker AR, Wegrzyn JL, Nelson CD, Neale DB, Kirst M, Huber DA, Gezan SA, Peter GF, Davis JM. (2013) Association genetics of oleoresin flow in loblolly pine: discovering genes and predicting phenotype for improved resistance to bark beetles and bioenergy potential. *New Phytol.* 199:89-100.
- Resende MF Jr, Muñoz P, Resende MD, Garrick DJ, Fernando RL, Davis JM, Jokela EJ, Martin TA, Peter GF, Kirst M. (2012) Accuracy of genomic selection methods in a standard dataset of loblolly pine (*Pinus taeda* L.). *Genetics.* 190:1503-1510.
- Harfouche A, Meilan R, Kirst M, Morgante M, Boerjan W, Sabatti M, Mugnozza GS. (2012) Accelerating the domestication of forest trees in a changing world. *Trends in Plant Sciences.* 17:64-72.
- Resende MFR, Muñoz P, Acosta JJ; Peter GF, Davis JM, Grattapaglia D, Resende MDV, Kirst M. (2012) Accelerating the domestication of trees using genomic selection: accuracy of prediction models across ages and environments. *New Phytologist.* 193:617-624.
- Novaes, E., M. Kirst, V. Chiang, H. Winter-Sederoff and R. Sederoff. (2010) Lignin and biomass: a negative correlation for wood formation and lignin content in trees. *Plant Physiology* 154:555-561.
- Drost, D.R., C.I. Benedict, A. Berg, E. Novaes, C.R. Novaes, Q. Yu, C. Dervinis, J.M. Maia, J. Yap, B. Miles and M. Kirst. (2010) Diversification in the genetic architecture of gene expression and transcriptional networks in organ differentiation of *Populus*. *Proc. Natl. Acad. Sci. USA.* 107:8492-8497.
- Drost, D.R., E. Novaes, C. Boaventura-Novaes, C.I. Benedict, R.S. Brown, T. Yin, G.A. Tuskan and M. Kirst. (2009) A microarray-based genotyping and genetic mapping approach for highly heterozygous outcrossing species localizes a large fraction of the unassembled *Populus trichocarpa* genome sequence. *Plant Journal* 58: 1054-1067.
- Grattapaglia, D., C. Plomion, M. Kirst and R.R. Sederoff. (2009) Genomics of growth traits in forest trees. *Current Opinion in Plant Biology* 12: 148-156.
- Novaes, E., L.F. Osorio, D.R. Drost, B.L. Miles, C. Boaventura-Novaes, C.I. Benedict, C. Dervinis, Q. Yu, R. Sykes, M. Davis, T.A. Martin, G.F. Peter and M. Kirst. (2009) Quantitative genetic analysis of biomass and wood chemistry of *Populus* under different nitrogen levels. *New Phytologist* 182: 878-890.
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- Novaes, E., D.R. Drost, W.G. Farmerie, G.J. Pappas Jr., D. Grattapaglia, R.R. Sederoff and M. Kirst. (2008) High-throughput gene and SNP discovery in *Eucalyptus grandis*, an uncharacterized genome. *BMC Genomics* 9: 312-325.

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- Maron, L.G., M. Kirst, C. Mao, M. Menossi and L.V. Kochian. (2008) Transcriptional profiling of Al toxicity and tolerance responses in maize roots. *New Phytologist* 179: 116-128.
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- Tuskan, G.A., et al. (2006) The genome of western black cottonwood, *Populus trichocarpa* (Torr. & Gray ex Brayshaw). *Science* 313:1596-1604.
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Grants and Contracts

- 2024 – 2026 Engineering Sporopollenin and its carbon supply (PI, Amount: \$1,750,000; Source: DOE)
- 2022 – 2025 *Populus* and sorghum gene function in biomass development (PI, Amount: \$2,306,554; Source: DOE)
- 2017 – 2023 Phylogenomic discovery and engineering of nitrogen fixation into the bioenergy woody crop poplar (PI, Amount: \$7,300,000; Source: DOE)
- 2015 – 2019 Genome and transcriptome based prediction, and regulator inference, of molecular and whole-plant phenotypes (PI; Amount: \$1,956,424; Source: NSF)
- 2013 – 2017 Accelerated development of optimal pine feedstocks for bioenergy and renewable chemicals using genome-wide selection (PI; Amount: \$1,000,000; Source: USDA)
- 2013 – 2017 Accelerated breeding by improved accuracy and mate allocation using genome-wide selection (PI; Amount: \$500,000; Source: USDA)
- 2010 – 2015 A systems biology, whole-genome association analysis of the molecular regulation of biomass growth and composition in *Populus deltoides* (PI; Amount: \$873,327; Source: DOE)
- 2009 – 2014 Advanced pine breeding through association genetics and biotechnology (PI; Amount: \$500,000; Source: USDA)
- 2009 – 2013 Mechanism of carbon partitioning regulation by cpg13 in the bioenergy woody crop poplar (PI; Amount: \$642,148; Source: USDA)
- 2009 – 2012 Identification and functional characterization of insect resistance genes in poplar using forward genetics (Co-PI; Amount: \$617,637; Source: NSF)

- 2009 – 2012 Energy intensive crop development (Co-PI; Amount: \$432,000; Source: Florida Energy Systems Consortium)
- 2008 – 2009 Gene expression networks and their regulators in a model perennial plant (PI; Amount: \$250,000; Source: NSF)
- 2008 – 2011 The Agricultural Genomics, Education and Metabolomics (GEM) Graduate Fellows Program (Co-PI; Amount: \$229,500; Source: USDA)
- 2006 – 2008 Genome-enabled discovery of carbon allocation genes in Populus: Molecular control of root proliferation and production of recalcitrant compounds (Co-PI; Amount: \$4,084,481; Source: DOE)
- 2006 – 2008 Genes for more efficient land use and conversion of forest trees into wood products (Co-PI; Amount: \$236,978; Source: CPBR)
- 2005 – 2008 Genomic mechanisms of carbon allocation and partitioning in poplar (PI; Amount: \$1,029,658; Source: DOE)
- 2005 – 2007 Genomic regulation of growth and lignin in Eucalyptus (Co-PI; Amount: \$236,000; Source: CPBR)
- 2005 – 2009 Association genetics of natural genetic diversity and complex traits in pine (Co-PI; Amount: \$5,902,886; Source: NSF)

Patents (*granted and provisional*)

- M. Kirst, M. Resende, C. Dervinis. Four provisional patents currently submitted on the application of CRISPR to genome complexity reduction and genotyping.
- M. Kirst, M. Resende, L. Neves, C. Dervinis. A method for genome complexity reduction and polymorphism detection (patent granted in 2012, currently licensed to RAPiD Genomics)

Invited Presentations (*international, invited*)

- Comparative Single-Cell Trajectory of Arabidopsis and Poplar Shoot Apical Meristem Development. Single Cell Genomics Workshop – Plant and Animal Genome Conference XXVII. January 11. San Diego, USA.
- Comparative single-cell genomics to unravel the regulation of exceptional plant traits. 10X Genomics - Non-standard and Agricultural Model Organism Symposium. October 20, Virtual.
- Engineering root nodule symbiosis in the woody crop Populus. 25th North American Symbiotic Nitrogen Fixation Conference. June 6. Madison, USA.
- Single-cell trajectory analysis uncovers developmental regulators of key plant bioenergy traits. DOE Plant Single-Cell Solutions for Energy and the Environment Workshop. April 29. Virtual.
- Phylogenomic discovery and engineering of nitrogen fixation into poplar. IUFRO Tree Biotechnology Conference. June 2019. Raleigh, USA.
- Comparative genomic discovery of plant novelties. CoAdapTree Symposium: Healthy trees for future climates. May 2019. Vancouver, Canada.
- Engineering a novel nitrogen-fixing symbiosis into Poplar. Root Nodule Symbiosis: Genetics, Evolution, and Engineering for Future Crops Workshop. Plant and Animal Genome Conference XXVII. January 2019. San Diego, USA.
- Modifying tree development for higher productivity and adaptability. International Symposium on Forest Tree Molecular Biology and Biotechnology. July 2018. Harbin, China.
- Vessel Development and the Evolution of Land Plants. University of British Columbia – Michael Smith Laboratory. November 2017. Vancouver, Canada.

From academia to industry – Can genomic selection be implemented in commercial tree breeding? IUFRO Tree Biotechnology 2017. June 2017. Concepcion, Chile.

The application of genome-wide information to tree breeding – what is coming next? Forest Genetics Conference. June 2017. Edmonton, Canada.

EVE regulation of vessel size and number. Plant Vascular Biology Conference. July 2016. Shenzhen, China.

Populus deltoides genetic and structural variation and comparison to related species. ProCoGen Conference. December 2015. Orléans, France.

From QTL to GWAS to genomic selection and back to genes. 8th Brazilian Congress of Plant Breeding. August 2015. Goiânia, Brazil.

EVE regulation of vessel development. IUFRO Tree Biotechnology Conference 2015. June 2015. Florence. Italy.

A whole-genome association analysis of Populus deltoides implicates rare alleles in phenotypic variation for biomass growth and composition. IUFRO Tree Biotechnology Conference 2015. June 2015. Florence, Italy.

Conifer genotyping approaches, and applications to population and quantitative genetics. Conifer Genome Summit. September 2015. Gysinge Herrgård, Sweden.

Tree breeding using genome information-resistant traits. University of Helsinki. October 2014. Helsinki, Finland.

Genotyping using nextgen sequencing – from GBS to sequence capture. University of São Paulo. October 2014. Piracicaba, Brazil.

How EVE led the flowering plants to dominate the world. Universidad de Alcala. February 2014. Alcala de Henares, Spain.

Maize genotyping using RAPiD-Seq (Randomly-Amplified Polymorphic DNA Sequencing). Maize Workshop, Plant and Animal Genome Conference XXI. January 2014. San Diego, USA.

Accelerated breeding of pines using advanced methods and applications of genomic prediction. Scion New Zealand Crown Research Institute and Radiata Pine Breeding Company Meeting. October 2013. Rotorua, New Zealand.

Population genomics of forestry species: in search for the genes that regulate adaptation and domestication. II International Symposium of Applied Botany. September 2013. Manaus, Brazil.

From QTL to genomic prediction – and the joys and challenges of academia in between. North Carolina State University Genetics Colloquium. August 2013. Blowing Rock, USA.

What do we need to apply genome-wide prediction? Phenotype Prediction Using Genomic Data Workshop. August 2013. Gainesville, USA.

From genetical genomics to genomic selection – adapting our forests to a changing world. Federal University of Goiás. June 2013. Goiânia, Brazil.

Advanced Pine Breeding through Association Genetics and Biotechnology. USDA and DOE Principal Investigators Meeting. January 2013. San Diego, USA.

Technology transfer from University to Industry: The experience of RAPiD Genomics. SMarT Forests Technology Advisory Transfer Committee Meeting. December 2012. Quebec City, Canada.

Accelerated, precision breeding using genome wide selection and next-generation sequencing. Horticultural Sciences Department, University of Florida. November 2012. Gainesville, USA.

Accelerating the domestication of forest species using genome-wide selection and next-generation sequencing. Noveltree Conference: Tree Breeding, Genomics and Evolutionary Biology. October 2012. Helsinki, Finland.

Exome sequencing for GWAS and genomic selection in pines. Noveltree Workshop: Genome analysis tools applied to forest tree breeding. October 2012. Vantaa, Finland.

Biotecnologia e Genômica no setor Florestal (in portuguese). VII Simpósio de Pós-Graduação em Ciências Florestais. September 2012. Viçosa, Brazil.

Surveying the genic diversity in megagenomes: exome-capture and sequencing of pines. Genome Sequencing and Annotation Symposium. April 2012. Gainesville, USA.

A systems biology, whole-genome association analysis of the molecular regulation of biomass growth and composition in *Populus deltoids*. DOE Investigator Meeting. April 2012. Washington, USA.

High-throughput targeted resequencing of plant complex genomes using sequence capture. Agilent Workshop. Plant and Animal Genome XX Conference. January 2012. San Diego, USA.

Evolutionary conservation of gene networks implicated in lignin biosynthesis. NESCent Meeting – Evolutionary Origins and Development of Woody Plants. October 2011. Durham, USA.

Genome-wide selection to hyper-accelerate genetic gain and adaptation of conifers to climate change. Virginia Tech. September 2011. Blacksburg, USA.

Capturing and genotyping the genome-wide diversity of trees for association mapping and genomic selection. IUFRO Tree Biotechnology Conference. June 2011. Arraial d'Ajuda, Brazil.

20 years in 5: Hyper-accelerating genetic gain and adaptation of conifers using genomic selection. The Conifer Translational Genomics Network Workshop. June 2011. Davis, USA.

Hyper-accelerating breeding and adaptation of loblolly pine using genomic selection. Southern Forest Tree Improvement Conference. June 2011. Biloxi, MS.

Accelerating the domestication of bioenergy trees: from genetical genomics to genomic selection. New Phytologist Symposium: Bioenergy Trees. May 2011. Nancy, France.

A systems biology, whole-genome association analysis of the molecular regulation of biomass growth and composition in *Populus deltoids*. DOE Investigator Meeting. April 2011. Washington, USA.

Genomic selection to hyper-accelerate tree breeding. Plant Biotechnology and Genomics Center. December 2010, Madrid, Spain.

Evolution of poplar transcriptional networks and their regulation of growth and development. Spanish Forest Genetic Diversity and Functional Genomics Network Meeting. December 2010. Las Navas del Marqués, Spain.

Populus genome networks and the regulation of growth and development. 5th International Poplar Symposium, September 2010, Orvieto, Italy.

Integrating quantitative genetics and genomics. VI Encontro em Genética e Melhoramento da Universidade Federal de Viçosa, November 2009, Viçosa, Brazil.

Gene and microRNA expression QTL analysis unravels transcription networks implicated in *Populus* growth and development. International Plant Molecular Biology Congress (Tree Genomics and Biotechnology Symposium), October 2009, St. Louis, USA.

The Eucalypts Genome Network (EUCAGEN) and the sequencing of the *E. grandis* genome. International Symposium on New Frontiers in Forest Genomics: Sequencing and Functional Understanding of the Conifer Genome, February 2009, Madrid, Spain.

Bridging genomics and breeding in hardwood tree models. IUFRO-CTIA Joint Conference, August 2008, Quebec City, Canada.

Plant gene expression regulatory networks. 20th South African Genetics Society Congress, March 2008, Pretoria, South Africa.

Honors and Awards

- 2022 Elected Fellow American Association for the Advancement of Science
- 2015 University of Florida Doctoral Dissertation Advisor/Mentoring Award
- 2013 University of Florida Research Foundation Professorship Award
- 2012 Science Without Borders – Special Visiting Scientist Fellowship (Brazilian Ministry of Science and Technology)
- 2009 Richard Jones Outstanding New Faculty Research Award (University of Florida)
- 2007 Elected Coordinator of “Division 2.04.10 – Genomics” of the International Union of Forest Research Organizations.
- 2005 Elected Deputy of “Division 2.04.06 – Molecular Biology of Forest Trees” of the International Union of Forest Research Organizations.

Scientific Community Participation

Proposal panel member and reviewer for NSF, USDA, DOE, BARD - United States & Israel Binational Agricultural Research and Development Fund, Deutsche Forschungsgemeinschaft, PLANT-KBBE, French National Research Agency, CPBR, Netherland Council for the Earth and Life Sciences, ERA-NET Plant Genomics, Austrian Science Fund

Reviewer for Annals of Botany, Australian Journal of Botany, BMC Genomics, BMC Plant Biology, Euphytica, Genetica, Genetics, Genetics and Molecular Research, Genome Research, Heredity, Journal of Experimental Botany, Journal of Heredity, Journal of Plant Physiology, New Forest, Molecular Breeding, Molecular Ecology, Nature Genetics, Nature Plants, New Phytologist, Oecologia, Plant Biotechnology Journal, Plant Cell, Plant Cell and Environment, Plant Journal, Plant Physiology, Plant Molecular Biology, Plant Molecular Biology Reporter, Planta, Proceedings of the National Academy of Sciences USA.

Advisory Board for Genome Canada Project Arborea II and CoAdaptTree, EU funded project NovelTree and ProCoGen.

Member of editorial board of Genetics (2009-2012) and BMC Plant Biology (2009-2012).

Chair Forest Trees Workshop (Plant and Animal Genome Conference, 2007 – 2010); IUFRO Tree Biotechnology Meeting 2013.

Scientific Advisory Committee IUFRO Tree Biotechnology Meeting 2005, 2007, 2011; IUFRO – CTIA Join Meeting: Adaptation, Breeding and Conservation in the Era of Forest Tree Genomics and Environmental Change.