

CURRICULUM VITAE: CANDICE HIRSCH

Rank: Assistant Professor

Address

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Education

2010 Ph.D., Plant Breeding and Plant Genetics, University of Wisconsin, Madison (GPA: 4.000)
2006 B.Sc., Genetics, University of Wisconsin, Madison (GPA: 3.617)

Appointments

2013- Assistant Professor, Department of Agronomy and Plant Genetics, University of
Minnesota, St. Paul, MN.
2010-13 Visiting Research Associate, Plant Biology Department, Michigan State University, East
Lansing, MI.
2006-10 Graduate Student Research Assistant, Department of Agronomy, University of
Wisconsin, Madison, WI.
2005 Summer Intern, Integrated Biological Sciences Summer Research Program, University of
Wisconsin, Madison, WI.
2002-06 Undergraduate Research Assistant, Department of Agronomy, University of Wisconsin,
Madison, WI.

Awards and Fellowships

2013 Maize Genetics Steering Committee Travel Award
2010 Gerald O. Mott Meritorious Graduate Student Award in Crop Science Recipient.
2009 Gabelman-Shippo Endowed Fellowship in Plant Breeding and Plant Genetics, University
of Wisconsin (2009-11).
2009 O.N. Allen Graduate Scholarship Recipient, University of Wisconsin.
2008 D.C. Smith Outstanding Graduate Student Award and Fellowship, University of
Wisconsin (2008-09).

Synergistic Activities

- Maize Editorial Board member (2013-present)
- Ad hoc reviewer for Crop Science, Frontiers in Plant Genetics and Genomics, Gene, Genes Genomes and Genetics (G3), Genome Research, Nucleic Acids Research, PLoSOne, Plant Physiology, and Theoretical and Applied Genetics (TAG)
- Instructor in Applied Bioinformatics Workshop for the Beginner User (Michigan State University, July 2013)
- Instructor in Applied Bioinformatics Workshop for the Intermediate User (Michigan State University, July 2013)
- Guest lecturer in Principles and Applications of Plant Genomics (Michigan State University, Plant Biology 812, September 2012)
- Instructor in Plant Breeding, Genetics, and Biotechnology Program Bioinformatics Workshop (Michigan State University, May 2012)
- Teaching assistant in Biometrical Procedures in Plant Breeding (University of Wisconsin, Agronomy/Horticulture 811, 2009).

- Mentor to a Great Lakes Bioenergy Research Center summer fellow at Michigan State University (2012)
- Mentor to a USDA funded undergraduate summer intern at the University of Wisconsin (2009)
- President of the Plant Sciences Graduate Student Council and coordinator of the Plant Breeding and Plant Genetics Graduate Student Journal Club at the University of Wisconsin-Madison (2009)
- On-site co-manager of the University of Wisconsin Corn Winter Nursery in Puerto Rico (2007) and Puerto Vallarta (2009)

Memberships

Crop Science Society of America
American Society of Plant Biologists

Invited Presentations

Insights into the Maize (*Zea mays* L.) Pan Genome and Transcriptome. 55th Maize Genetics Conference. St. Charles, IL. March 15, 2013.

Retrospective View of North American Potato Breeding in the 20th and 21st Centuries. Plant and Animal Genome XXI Conference. San Diego, California. January 12, 2013.

A Century of Potato Breeding: Improvement, Diversification, and Diversity. SolCAP workshop at the 96th Annual Meeting of the Potato Association of America. Denver, CO. August 12, 2012.

Genome Diversity as Revealed by RNA-sequencing. 54th Maize Genetics Conference. Portland, OR. March 17, 2012.

Maize Genome Diversity as Revealed by RNA-sequencing. Horticulture/Crop and Soil Sciences Seminar Series, Michigan State University. February 16, 2012.

How to Align Sequences. Plant Breeding and Genomics eXtension Community of Practice Plant Breeding and Genomics Training Series Webinars. October 29, 2011.

Variation for compositional attributes of maize plant parts across hybrids and associations between plant development stages. North Central Region Corn Breeding Annual Meeting (NCCC167). Monticello, IL. March 11, 2009.

Research Publications (Publications listed under C. Hirsch and C. Hansey)

Publications in Peer-Reviewed Journals:

Hirsch, C.D., J. Evans, C.R. Buell, **C.N. Hirsch**. Reduced representation approaches to interrogate genome diversity in large, repetitive plant genomes. Briefings in Functional Genomics. (*in press*)

Jansen, C., N. de Leon, N. Lauter, **C. Hirsch**, L. Ruff, T. Lübberstedt. 2013. Genetic and morphometric analysis of cob architecture and biomass-related traits in the intermated B73xMo17 recombinant inbred lines of maize. *BioEnergy Research*. 6:903-916.

Beissinger, T., **C. Hirsch**, R. Sekhon, J. Foerster, J. Johnson, G. Muttoni, B. Vaillancourt, C.R. Buell, S. Kaeppler, N. de Leon. 2013. Marker density and read-depth for genotyping populations using genotyping-by-sequencing. *Genetics*. 193:1073-1081.
**Selected as an editors highlight

Hirsch, C.N., C.D. Hirsch, K. Felcher, J. Coombs, D. Zarka, A. Van Deynze, W. De Jong, R. Veilleux, S. Jansky, P. Bethke, D. Douches, C.R. Buell. 2013. Retrospective view of North American potato (*Solanum tuberosum* L.) breeding in the 20th and 21st centuries. *Genes Genomes and Genetics*. 3:1003-1013.
**On the cover

Hirsch, C., C.R. Buell. 2013. Tapping the promise of genomics in species with complex, non-model genomes. *Annual Review of Plant Biology*. 64:89-110.

Sekhon, R., R. Briskine, **C. Hirsch**, C. Myers, N. Springer, C.R. Buell, N. de Leon, S. Kaeppler. 2013. Maize gene atlas developed by RNA sequencing and comparative evaluation of transcriptomes based on RNA sequencing and microarray. *PLoSOne*. 8(4):e61005.

- Felcher, K., J. Coombs, A. Massa, **C. Hansey**, J. Hamilton, R. Veilleux, C.R. Buell, D. Douches. 2012. Integration of Two Diploid Potato Linkage Maps with the Potato Genome Sequence. *PLoSOne*. 7(4):e36347.
- Hansey, C.**, B. Vaillancourt, R. Sekhon, N. de Leon, S. Kaeppler, C.R. Buell. 2012. Maize (*Zea mays* L.) Genome Diversity as Revealed by RNA-sequencing. *PLoSOne*. 7(3):e33071.
- Smith, A., **C. Hansey**, S. Kaeppler. 2012. TCUP: A novel *hAT* transposon active in maize tissue culture. *Frontiers in Plant Science*. 3.
- Davidson, R.**, **C. Hansey****, M. Gowda, K. Childs, H. Lin, B. Vaillancourt, R. Sekhon, N. de Leon, S. Kaeppler, N. Jiang, C.R. Buell. 2011. Utility of RNA-seq for Analysis of Maize Reproductive Transcriptomes. *The Plant Genome*. 4:191-203.
**These authors contributed equally to this work.
- Hamilton, J., **C.Hansey**, B. Whitty, K. Stoffel, A. Massa, A. Van Deynze, W. De Jong, D. Douches, C.R. Buell. 2011. Single Nucleotide Polymorphism Discovery in Elite North American Potato Germplasm. *BMC Genomics*. 12:302.
- Sekhon, R., H. Lin, K. Childs, **C. Hansey**, C.R. Buell, N. de Leon, S. Kaeppler. 2011. Genome-wide atlas of transcription through maize development. *Plant Journal*. 66(4):553-563.
**On the cover
- Hansey, C.**, J. Johnson, R. Sekhon, S. Kaeppler, N. de Leon. 2011. Genetic Diversity of a Maize Association Population with Restricted Phenology. *Crop Sci*. 51:704-715.
- Hansey, C.** and N. de Leon. 2011. Biomass Yield and Cell Wall Composition of Corn with Alternative Morphologies Planted at Variable Densities. *Crop Sci*. 51:1005-1015.
- Hansey, C.**, A. Lorenz and N. de Leon. 2010. Variation for compositional attributes of maize (*Zea mays* L.) plant parts across hybrids and associations between plant development stages. *BioEnergy Research*. 3(1): 28-37.
- Lorenz, A.J., N. de Leon, **C. Hansey**, J. Coors and S. Kaeppler. 2010. Genetic Analysis of Agronomic and Cell Wall Traits Relevant to Cellulosic Ethanol Production in Maize (*Zea mays* L.). *Crop Sci*. 50: 1-11.

Book chapters:

- Hansey, C.** Genomic Sequence and Structural Diversity in Plants. In *Encyclopedia of Molecular Life Science*. (*submitted*)

Proceedings:

- de Leon, N. and **C. Hansey**. 2010. Breeding Corn for Lignocellulosic Biofeedstock Production. *Proc. Annu. Corn Sorghum Res. Conf.*, 65th, Chicago, IL. 7-10 Dec. 2010. American Seed Trade Association, Inc, Washington, DC.

Abstracts:

- Kaeppler, S., M. Casler, C.R. Buell, **C. Hirsch**, J. Evans, J. Kim, B. Vaillancourt, E. Crisovan. 2014. Analysis of natural variation in switchgrass and maize at GLBRC. *Plant and Animal Genome XXII Conference*. San Diego, CA. January 11-15.
- Haase, N., T. Beissinger, J. Foerster, G. Muttoni, J. Johnson, **C. Hirsch**, B. Vaillancourt, C.R. Buell, S. Kaeppler, N. de Leon. 2013. Genetic Dissection of Quantitative Traits Using a Bulk and Resequencing Method on a Large Segregating Population of Maize. *North Central Region Corn Breeding Annual Meeting (NCC167)*. Chicago, IL. December 9-10.
- Salvo, S., J. Cook, A. Carlson, **C. Hirsch**, S. Kaeppler, H. Kaeppler. 2013. Genetic and Genomic Characterization of Regeneration Ability in Maize. *North Central Region Corn Breeding Annual Meeting (NCC167)*. Chicago, IL. December 9-10.
- Childs, K., J. Evans, J. Kim, A. Nandety, **C. Hirsch**, E. Gongora-Castillo, B. Vaillancourt, E. Crisovan, S. Kaeppler, M. Casler, C.R. Buell. 2013. Transcript and Genome Diversity in Switchgrass. *GLBRC Science Retreat*. South Bend, IN. May 21-23.
- Hirsch, C.**, J. Foerster, J. Johnson, R. Sekhon, G. Muttoni, B. Vaillancourt, F. Penagaricano, N. de Leon, S. Kaeppler, C.R. Buell. 2013. Natural variation controlling vegetative and floral transition in the

- context of the maize (*Zea mays* L.) pan genome and transcriptome. GLBRC Science Retreat. South Bend, IN. May 21-23.
- Sekhon, R., M. Breitzman, **C. Hirsch**, C.R. Buell, N. de Leon, S. Kaeppler. 2013. Systems approach to investigate the role of source-sink relationships in senescence. GLBRC Science Retreat. South Bend, IN. May 21-23.
- Beissinger, B., **C. Hirsch**, B. Vaillancourt, C.R. Buell, S. Kaeppler, D. Gianola, N. de Leon. 2013. Genomic impact of artificial selection for number of ears per plant in maize. 55th Maize Genetics Conference. St. Charles, IL. March 14-17.
- Haase, N., T. Beissinger, J. Foerster, G. Muttoni, J. Johnson, **C. Hirsch**, B. Vaillancourt, C.R. Buell, S. Kaeppler, N. de Leon. 2013. Genetic Dissection of Quantitative Traits Using a Bulk and Resequencing Method on a Large Segregating Population of Maize. 55th Maize Genetics Conference. St. Charles, IL. March 14-17.
- Haro von Mogel, K., **C. Hirsch**, B. De Vries, W. Tracy, S. Kaeppler. 2013. The mapping, genetic analysis, and phenotypic characterization of *sugary enhancer (se1)*. 55th Maize Genetics Conference. St. Charles, IL. March 14-17.
- Muttoni, G., J. Foerster, J. Johnson, N. Haase, T. Beissinger, S. Stelpflug, **C. Hirsch**, R. Sekhon, C.R. Buell, S. Kaeppler, N. de Leon. Phenotypic and Genetic Dissection of Maize Internode Length. 55th Maize Genetics Conference. St. Charles, IL. March 14-17.
- Salvo, S., **C. Hirsch**, C.R. Buell, S. Kaeppler, H. Kaeppler. 2013. Whole transcriptome profiling of maize inbred line A188 during early somatic embryogenesis reveals altered expression of stress factors and embryogenesis-related genes. 55th Maize Genetics Conference. St. Charles, IL. March 14-17.
- Sekhon, R., M. Breitzman, **C. Hirsch**, C.R. Buell, N. de Leon, S. Kaeppler. 2013. Systems approaches to understand the role of source-sink relationships in senescence. 55th Maize Genetics Conference. St. Charles, IL. March 14-17.
- Foerster, J., **C. Hirsch**, E. Riedeman, T. Beissinger, G. Muttoni, J. Johnson, R. Sekhon, W. Tracy, H. Kaeppler, C.R. Buell, N. de Leon, S. Kaeppler. 2013. Large Effect QTL for the Timing of Vegetative Phase Change Detected in a Maize Nested Association Mapping Population and Wisconsin Diversity Panel. Plant and Animal Genome XXI Conference. San Diego, California. January 12-16.
- Kaeppler, S., **C. Hirsch**, J. Foerster, J. Johnson, G. Muttoni, R. Sekhon, B. Vaillancourt, N. de Leon, C.R. Buell. 2013. Characterizing The Maize Transcriptome Using RNAseq. Plant and Animal Genome XXI Conference. San Diego, California. January 12-16.
- Massa, A., **C. Hirsch**, J. Coombs, C.R. Buell, D. Douches, S. Jansky. 2013. Genome-wide Detection of Residual Heterozygosity in *Solanum chacoense*. Plant and Animal Genome XXI Conference. San Diego, California. January 12-16.
- Muttoni, G., J. Foerster, J. Johnson, N. Haase, T. Beissinger, S. Stelpflug, C. Hirsch, R. Sekhon, C.R. Buell, S. Kaeppler, N. de Leon. 2013. Phenotypic and Genetic Dissection of Maize Internode Length. Plant and Animal Genome XXI Conference. San Diego, California. January 12-16.
- Hansey, C.**, J. Coombs, K. Felcher, C.R. Buell, D. Douches. 2012. Genome Wide SNP Markers for Trait Mapping and Germplasm Assessment in Potato. ASA, CSSA, SSSA Annual Meetings. Cincinnati, OH. October 21-24.
- Johnson, J., **C. Hansey**, C.R. Buell, N. de Leon, S. Kaeppler. 2012. Genetic Map Construction with Incomplete Marker Information in Maize. ASA, CSSA, SSSA Annual Meetings. Cincinnati, OH. October 21-24.
- Douches, D., D. Fancis, S. Sim, **C. Hansey**, K. Felcher, J. Coombs, C.R. Buell. 2012. SolCAP Potato and Tomato Diversity Panels: Insights from genome-wide set of markers. SOL2012 The 9th Solanaceae Conference. Neuchatel, Switzerland. August 26-30.
- Massa, A., **C. Hansey**, S. Jansky, J. Coombs, D. Douches, C.R. Buell. 2012. Residual Heterozygosity in *Solanum chacoense* Inbred Lines. 96th Annual Meeting of the Potato Association of America. Denver, CO. August 12-16.
- Beissinger, T., **C. Hansey**, J. Foerster, B. Vaillancourt, C.R. Buell, S. Kaeppler, N. de Leon. 2012. Empirical observations of genotyping by sequencing in maize diverse inbreds and recombinant inbred populations. 54th Maize Genetics Conference. Portland, OR. March 15-18.

- Foerster, J., **C. Hansey**, E. Riedeman, T. Beissinger, R. Sekhon, W. Tracy, H. Kaeppler, N. de Leon, S. Kaeppler. 2012. Large Effect QTL Explain Natural Phenotypic Variation for the Developmental Timing of Vegetative Phase Change in Maize. 54th Maize Genetics Conference. Portland, OR. March 15-18.
- Sekhon, R., **C. Hansey**, K. Childs, R. Briskine, R. Schaefer, C. Myers, N. Springer, C.R. Buell, N. de Leon, S. Kaeppler. 2012. An RNA sequencing and microarray-based gene atlas for the maize community. 54th Maize Genetics Conference. Portland, OR. March 15-18.
- Beissinger, T., **C. Hansey**, R. Sekhon, B. Vaillancourt, C.R. Buell, S. Kaeppler, N. de Leon. Dissecting the genetic control of seed size by analysis of the Krug divergently selected maize populations. 2012 North Central Region Corn Breeding Annual Meeting (NCC167). Portland, OR. March 14-15.
- Douches, D., K. Felcher, J. Coombs, A. Massa, **C. Hansey**, C.R. Buell, J. Hamilton, R. Veilleux. 2012. Integration of Two Diploid Potato Linkage Maps with the Potato Physical Map. Plant and Animal Genome XX Conference. San Diego, CA. January 14-18.
- Kaeppler, S., N. de Leon, R. Sekhon, **C. Hansey**, C.R. Buell, H. Lin, K. Childs. 2011. Expression Analysis Supporting Functional Genomics Research in Maize. ASA, CSSA, SSSA Annual Meetings. San Antonio, TX. October 16-19.
- Douches, D., K. Felcher, J. Coombs, D. Zarka, A. Van Deynze, J. Hamilton, **C. Hansey**, C.R. Buell. 2011. Development of a SNP-based genetic map for potato. 95th Annual Meeting of the Potato Association of America. Wilmington, NC. August 14-18.
- Hansey, C.**, R. Sekhon, J. Johnson, C.R. Buell, S. Kaeppler, N. de Leon. 2011. Genetic Diversity of a Maize Association Mapping Population with Restricted Phenology. Gordon Research Conference – Quantitative Genetics and Genomics. Galveston, TX. February 20-25.
- Buell, C.R., J. Hamilton, **C. Hansey**, B. Whitty, A. Van Deynze, D. Francis, W. De Jong, D. Douches. 2011. SNP Development In Elite North American Potato Germplasm. Plant and Animal Genome XIX Conference. San Diego, California. January 15-19.
- Foerster, J., N. de Leon, **C. Hansey**, E. Riedeman, R. Sekhon, W. Tracy, H. Kaeppler, and S. Kaeppler. 2010. Genetic Architecture of Vegetative Phase Transition in Maize. ASA, CSSA, and SSSA 2010 International Annual Meetings. Long Beach, CA. October 31-November 4.
- Hansey, C.** and N. de Leon. 2010. Effect of Plant Morphology and Planting Methodology on Biomass Production and Compositional Characteristics in Maize. ASA, CSSA, and SSSA 2010 International Annual Meetings. Long Beach, CA. October 31-November 4.
- Sekhon, R., H. Lin, K. Childs, C.R. Buell, **C. Hansey**, N. de Leon, S. Kaeppler. 2010. Dynamics of Lignin Pathway Gene Expression During Maize Development. ASA, CSSA, and SSSA 2010 International Annual Meetings. Long Beach, CA. October 31-November 4.
- de Leon, N., **C. Hansey**, R. Sekhon, J. Johnson, H. Lin, C.R. Buell, K. Childs, S. Kaeppler. 2010. Genetic Diversity of a Maize Association Population with Restricted Phenology. GLBRC Science Retreat. South Bend, IN. May 17-19.
- Foerster, J., **C. Hansey**, E. Riedeman, R. Sekhon, W. Tracy, H. Kaeppler, N. de Leon, S. Kaeppler. 2010. Genetic Architecture of Vegetative Phase Change in Maize. GLBRC Science Retreat. South Bend, IN. May 17-19.
- Sekhon, R., H. Lin, K. Childs, C.R. Buell, **C. Hansey**, N. de Leon, S. Kaeppler. 2010. Insights from Transcriptional Analysis of Maize. GLBRC Science Retreat. South Bend, IN. May 17-19.
- Kaeppler, S., **C. Hansey**, J. Johnson, R. Sekhon, N. de Leon. 2010. Resources for maize association analysis. 2010 North Central Region Corn Breeding Annual Meeting (NCCC167). Chicago, IL. April 6-7.
- Foerster, J., **C. Hansey**, E. Riedeman, R. Sekhon, W. Tracy, H. Kaeppler, N. de Leon, and S. Kaeppler. 2010. Genetic Architecture of Vegetative Phase Transition in Maize. 52nd Maize Genetics Conference. Riva del Garda, Italy. March 18-21.
- Hansey, C.**, R. Sekhon, J. Johnson, H. Lin, C.R. Buell, K. Childs, S. Kaeppler, N. de Leon. 2010. Genetic Diversity of a Maize Association Population with Restricted Phenology. 52nd Maize Genetics Conference. Riva del Garda, Italy. March 18-21.

- Sekhon, R., H. Lin, K. Childs, C.R. Buell, **C. Hansey**, N. de Leon, S. Kaeppler. 2010. Genome-wide atlas of gene transcription through maize development from germinating seed to maturing seed. 52nd Maize Genetics Conference. Riva del Garda, Italy. March 18-21.
- Viesselmann, L., M. Chandler, **C. Hansey**, A. Bodnar, N. de Leon, S. Kaeppler, P. Scott, W. Tracy. 2010. Differential zein protein levels in a *su1* population divergently selected for visual endosperm starchiness. 52nd Maize Genetics Conference. Riva del Garda, Italy. March 18-21.
- Kaeppler, S., **C. Hansey**, E. Riedeman, R. Sekhon, H. Kaeppler, W. Tracy, N. de Leon 2009. The genetic architecture of vegetative phase change in maize. Plant Biology 2009 Meeting. Honolulu, HI. July 18-22.
- Kaeppler, S., N. de Leon, H. Kaeppler, R. Sekhon, J. Johnson, **C. Hansey**, C.R. Buell, K. Childs, H. Lin, J. Mahoy, D. Eilert, and J. Smith 2009. Endogenous variation for biofuel quantity and quality traits in maize. GLBRC Science Retreat. South Bend, IN. June 2-4.
- Hansey, C.**, and N. de Leon 2009. Effect of Plant Morphology and Planting Methodology on Biomass Production and Compositional Characteristics in Maize. 51st Maize Genetics Conference. St. Charles, IL. March 12-15.
- Hansey, C.**, E. Riedeman, R. Sekhon, W. Tracy, N. de Leon and S. Kaeppler 2009. The Genetic Architecture of Vegetative Phase Change. 2009 North Central Region Corn Breeding Annual Meeting (NCCC167). Allerton Conference Center. Monticello, IL. March 10-12.
- Kaeppler, S., N. de Leon, M. Casler, H. Kaeppler, R. Sekhon, J. Johnson, **C. Hansey** 2009. Endogenous variation for biofuel quantity and quality traits in maize and switch grass. DOE-GTL Awardee Meeting. Baltimore, MD, March 9-11.
- Lorenz, A., **C. Hansey** and N. de Leon 2008. Variation for compositional attributes of maize plant parts across hybrids and associated changes due to plant development. The Pan American Congress on Plants & BioEnergy. Merida, Mexico, June 22 - 25.
- Hansey, C.**, and N. de Leon 2008. Axillary meristem development of a variable penetrance maize mutant, *grassy tillers1*. 50th Maize Genetics Conference. Washington, DC. February 27-March 2.
- Hansey, C** and N. de Leon 2007. Axillary meristem development in maize *grassy tillers1* mutants. 49th Maize Genetics Conference. St. Charles, IL. March 22-25.
- Hansey, C.**, W. Tracy, A. Iniguez, and S. Kaeppler 2006. Genetic and transcriptional analysis of a sugary enhancer allele. 48th Maize Genetics Conference. Pacific Grove, CA. March 9-12.