

## Timothy M. Beissinger

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CONTACT INFORMATION	203 Curtis Hall University of Missouri Columbia, MO 65211	(608) 320-1913 beissingert@missouri.edu <a href="http://beissingerlab.org">http://beissingerlab.org</a>
EDUCATION	<b>The University of Wisconsin at Madison</b> , Madison, Wisconsin USA Ph.D., <b>Statistical and Quantitative Genetics</b> Advisors: Natalia de Leon and Daniel Gianola M.S., <b>Statistics</b> B.S., <b>Mathematics and Geography</b>	2014 2011 2009
CURRENT APPOINTMENTS	<b>Research Geneticist</b> USDA-ARS, Plant Genetics Research Unit University of Missouri, Columbia <b>Adjunct Assistant Professor</b> University of Missouri, Columbia Division of Plant Sciences Division of Biological Sciences	2015 - Present 2015 - Present 2016 - Present
PREVIOUS APPOINTMENTS	<b>Postdoctoral Research Associate</b> Mentored by Professor Jeff Ross-Ibarra Department of Plant Sciences University of California, Davis <b>Visiting Scientist</b> Mentored by Professor Henner Simianer Department of Animal Breeding and Genetics Georg-August Universität, Göttingen, Germany <b>Research Assistant</b> Department of Agronomy University of Wisconsin, Madison	2014 - 2015 2014 2009 - 2014
ADVISING	<b>Direct advisees</b> PostDocs NSF Postdoc starting Aug 1, 2017 (NSF PGRP Fellowship) (1) PhD Students Division of Biological Sciences (1) MU Informatics Institute (1) Undergraduate students (2) <b>PhD Committees</b> Division of Animal Sciences (1) Division of Biological Sciences (1) Division of Plant Sciences (1) <b>MSc Committees</b> Division of Animal Sciences (1)	
PREPRINTS	Wang, L., <b>Beissinger, T.M.</b> , Lorant, A., Ross-Ibarra, C., Ross-Ibarra, J., Hufford, M. 2017. The interplay of demography and selection during maize domestication and expansion. Bioarxiv. <a href="http://biorxiv.org/content/early/2017/03/07/114579">http://biorxiv.org/content/early/2017/03/07/114579</a>	

**Beissinger, T.M.**, Morota, G. 2017. Medical subject heading (MeSH) annotations illuminate maize genetics and evolution. *Plant Methods*. 13(8). DOI: 10.1186/s13007-017-0159-5.

Morota, G., **Beissinger, T.M.**, Peñagaricano, F. 2016. MeSH annotation of the chicken genome: MeSH-informed enrichment analysis and MeSH-guided semantic similarity among functional terms and gene products. *Genes Genomes Genetics*. DOI: 10.1534/g3.116.031096.

**Beissinger, T.M.**, Wang, L., Crosby, C., Durvasula, A., Hufford, M.B., Ross-Ibarra, J. 2017. Recent demography drives changes in linked selection across the maize genome. *Nature Plants*. 2(16084). DOI:10.1038/nplants.2016.84.

**Beissinger, T.M.**, Gholami, M., Erbe, M., Weigend, S., Weigend, A., de Leon, N., Gianola, D., Simianer, H. 2015. Using the variability of linkage disequilibrium between subpopulations to scan for selection in a diverse panel of chickens. *Heredity*. DOI: 10.1038/hdy.2015.81.

Haase, N.J., **Beissinger, T.M.**, Hirsch, C.N., Vaillancourt, B., Deshpande, S., Barry, K., Buell, C.R., Kaeppler, S., de Leon, N. 2015. Genetic Dissection of quantitative traits using a bulked segregant analysis (BSA)-sequencing method on a large segregating population of maize. *Genes Genomes Genetics*. DOI: 10.1534/g3.115.017665.

**Beissinger, T.M.**, Rosa, J.G.M., Kaeppler, S.M., de Leon, N., Gianola, D. 2015. Defining window-boundaries for genomic analyses using smoothing spline techniques. *Genetics Selection Evolution*. 47(30). DOI: 10.1186/s12711-015-0105-9.

Lorenz, A. J., **Beissinger, T.M.**, Rodrigues, R., de Leon, N. 2015. Selection for silage yield and composition did not affect genomic diversity within the Wisconsin Quality Synthetic maize population. *Genes Genomes Genetics*. DOI: 10.1534/g3.114.015263.

Foerster, J.M., **Beissinger, T.M.**, de Leon, N., Kaeppler, S.M. 2015. Large effect QTL explain natural phenotypic variation for the developmental timing of vegetative phase change in maize (*Zea mays* L.). *Theoretical and Applied Genetics*. DOI: 10.1007/s00122-014-2451-3.

Hirsch, C.N., Flint-Garcia, S.A., **Beissinger, T.M.**, Eichten, S.R., Deshpande, S., Barry, K., McMullen, M.D., Holland, J.B., Buckler, E.S., Springer, N.M., Buell, C.R., de Leon, N., Kaeppler, S.M. 2014. Insights into the effects of long-term artificial selection on seed size in maize. *Genetics*. 198(1): 409-421.

**Beissinger, T.M.**, Hirsch, C.N., Vaillancourt, B., Deshpande, S., Barry, K., Buell, C. R., Kaeppler, S. M., Gianola, D., de Leon, N. 2014. A genome-wide scan for evidence of selection in a maize population under long-term artificial selection for ear number. *Genetics*. 196(3): 829-840.

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

\* Selected as a highlighted article by the editorial board.

Wu, X., Chuanyu, S., **Beissinger, T.M.**, Rosa, G., Weigel, K., de Leon, N., Gi-

anola, D. 2012. Parallel Markov chain Monte Carlo - bridging the gap to high performance Bayesian computation in animal breeding and genetics. *Genet Sel Evol.* 44:29.

Wu, X., **Beissinger, T.M.**, Bauck, S., Woodward, B., Rosa, G., Weigel, K., de Leon, N., Gianola, D. 2011. A primer on high-throughput computing for genomic selection. *Frontiers in Genetics.* 2, 4.

SOFTWARE

**GenWin: Spline Based Window Boundaries for Genomic Analyses**

An R package for analyzing genetic data across distinct bins.  
<http://cran.r-project.org/web/packages/GenWin/index.html>

GRANTS AND  
FUNDING

**2015-Present, USDA-ARS** Project Number 3622-21000-034-00D. Revolving funds. Budget supports a technician, student employees, supplies, equipment, and space.

**2012, University of Wisconsin Graduate School.** Awarded one year of funding and supplies to support dissertation research.

**2012, DuPont-Pioneer and UW Associated Students of Madison.** Funding supported the first University of Wisconsin Pioneer Plant Sciences Symposium.

**2011, DuPont-Pioneer.** Awarded funding to genotyping 240 samples with the Pioneer Public SNP array.

TEACHING

**Co-instructor**

Genetics of Populations	Fall 2016
University of Missouri, Division of Animal Sciences	
Systems Biology Reading Group	Spring 2016
University of Missouri, Division of Biological Sciences	
Intoduction to Linux and High Throughput Computing	Fall 2010
University of Wisconsin, Madison Department of Animal Sciences	

**Guest Lectures**

Advanced Plant Genetics	December 2016
Lecture on Plant Population Genetics, MU Division of Biological Sciences	
Applied Quantitative and Statistical Genetics	December 2015
Two lectures on Genomic Prediction, MU Division of Plant Sciences	

**Teaching assistant**

Biometrical Procedures in Plant Breeding	Fall 2011, 2013
University of Wisconsin, Madison Department of Agronomy	
Experimental Design	Spring 2013
University of Wisconsin, Madison Department of Agronomy	
Advanced Plant Breeding	Spring 2012
University of Wisconsin, Madison Department of Agronomy	

**Tutoring**

Statistics	Fall 2010 - Spring 2011
Advanced Placement Statistics	
Calculus	Fall 2006- Spring 2007
Advanced Placement Calculus AB	

INVITED  
PRESENTATIONS  
(LAST 3 YEARS)

Asian Crop Science Association Conference  
Jeju, South Korea  
June, 2017

Department of Ecology and Evolutionary Biology  
University of Oregon  
May, 2017

Department of Ecology and Evolutionary Biology  
University of Kansas  
March, 2017

Department of Plant Breeding and Genetics  
Cornell University  
February, 2017

Pioneer Hi-Bred  
Ankeny, Iowa  
February, 2017

Advances in Plant Breeding Workshop  
CiBreed, Georg-August-Universität, Göttingen, Germany  
January, 2017

Seminar for Evolution, Ecology, and Population Biology Program  
Washington University in St. Louis, Missouri  
November, 2016

Department of Crop Sciences  
University of Illinois  
October, 2016

Division of Biological Sciences  
University of Missouri, Columbia  
October, 2016

Department of Crop Sciences, Chungnam National University  
Deajeon, South Korea.  
July, 2016

KWS Seed Company  
Einbeck, Germany  
April, 2016

Advanced Seminar for Statistical Genetics  
Department of Animal Breeding and Genetics, Georg-August Universität,  
Göttingen, Germany  
April 2016

Corn Breeding Research Meeting  
Jacksonville, FL  
March 2016

Maize workshop  
Plant and Animal Genome Conference 24, San Diego, CA  
January, 2016

Division of Plant Sciences, University of Missouri  
Columbia, Missouri  
November, 2015

Department of Botany and Plant Sciences  
University of California, Riverside  
April, 2015

USDA-ARS Plant Genetics Research Unit  
University of Missouri  
March, 2015

Beissinger, T., Wang, L., Durvasula, A., Crosby, K., Hufford, M., and Ross-Ibarra, J. 57th annual Maize Genetics Conference, St. Charles, IL  
March, 2015

Genomic selection and genome-wide association studies workshop  
Plant and Animal Genome Conference 23, San Diego, CA  
January 2015

Bay Area Population Genomics Meeting XI  
University of California, Davis  
December, 2014.

Department of Animal Science  
University of California, Davis  
August, 2014

Department of Animal Breeding and Genetics,  
Georg-August Universitat, Göttingen, Germany  
February 2014

Center of Life and Food Sciences  
Technische Universitat Munchen  
April 2014

POSTER  
ABSTRACTS

Beissinger, T., Kruppa, J., Simianer, H. Gordon Conference in Quantitative Genetics. Galveston, TX, Feb 2017.

Beissinger, T., Kruppa, J., Lorenz, L., Simianer, H. 5th International Conference on Quantitative Genetics. Madison, WI, June 12-17, 2016.

Beissinger, T. and Ross Ibarra, J. Plant and Animal Genome Conference 23. San Diego, CA, January 10-14, 2015.

Beissinger, T., Gianola, D., de Leon, N. Impact of Large-Scale Genomic Data on Statistical and Quantitative Genetics Conference. Seattle, WA, November 23-26, 2013.

Beissinger, T., Hirsch, C., Vaillancourt, B., Buell, R.C., Kaeppler, S., Gianola, D., de Leon, N. Maize Genetics Conference. St. Charles, IL, March 14-17, 2013.

Beissinger, T., Hirsch, C., Buell, R.C., Kaeppler, S., Gianola, D., de Leon, N. Gordon Research Seminar in Quantitative Genetics and Genomics. Galveston, TX, February 16-17, 2013.

Beissinger, T., Hansey, C., Foerster, J., Sekhon, R., Johnson, J., Muttoni, G., Vaillancourt, B., Buell, C.R., Kaeppler, S., de Leon, N. Maize Genetics Conference. Portland, OR, March 15-18, 2012.

Beissinger, T., de Leon, N., Kaeppler, S. Maize Genetics Conference. St Charles, IL, March 17-20, 2011.

ACADEMIC AND  
PROFESSIONAL  
SERVICE

**MU Informatics Institute**

Core faculty member 2016 - Present

**Faculty advisor for student-organized MU Plant Sciences Symposium**

Building the Bridge from Fundamental Research to Improving  
Tomorrows Crops  
Funded by Pioneer Hi-Bred 2016 - Present

**“Detox” Evolutionary Genetics Discussion Group**

Faculty organizer and host of extracurricular journal club Fall 2015 - Present

**Journals reviews**

Nature	Genes Genomes Genetics (G3)
Nature Genetics	Heredity
Genetics	PeerJ
BMC Evolutionary Biology	The Plant Genome
PLoS Computational Biology	Theoretical and Applied Genetics
BMC Genomics	Crop Science

**Ad-hoc grant reviews**

USDA-NIFA, Plant Breeding for Agricultural Production  
University of Missouri Research Board

AWARDS AND  
SCHOLARSHIPS

USDA Group Platinum Hall of Fame For contributions to Feds Feed Families Campaign	2016
Monsanto fellowship recipient	2009-2014
Scholarship to attend Summer Institute in Statistical Genetics University of Washington, Seattle	2012
Scholarship to attend TeraGrid Conference Pittsburgh, PA	2010
Scholarship to attend Open Science Grid Summer School Madison, WI	2010
Undergraduate deans list	All semesters 2007-2009
Susan B. Hotchkiss memorial scholarship	2005

ACADEMIC AND PROFESSIONAL DEVELOPMENT	Monsanto Fellows Professional Development Program	September 2012
	17th Summer Institute in Statistical Genetics	July 2012
	Monsanto Fellows Professional Development Program	September 2011
	Monsanto Fellows Professional Development Program	September 2010
	Monsanto Fellows Professional Development Program	September 2009
	University of Wisconsin Plant Breeding Internship	Summer 2008
COMPUTING EXPERTISE	R, Linux/Unix, SAS, Latex, Condor, Java, Perl, Python	
	Linux workstation system administrator	2010 - 2014
	Participated in Open Science Grid Summer School	July 2010
STATISTICAL EXPERTISE	Bayesian analysis, estimation of functions from data, mixed models, mathematical statistics, statistical inference, linear regression and analysis of variance	
MATHEMATICAL EXPERTISE	Real and complex analysis, combinatorics, topology, number theory, modern algebra, cellular automata	