

## SUPPORTING DOCUMENTS

Detailed Curriculum Vitae

SECTION X-D

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### Christopher Toomajian

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### EDUCATION

**Ph. D.** (2002) **University of Chicago** - Genetics

Advisor: Martin Kreitman

**B. A.** with distinction (1995) **Northwestern University** - Integrated Science (departmental honors) and Biological Sciences

### PROFESSIONAL POSITIONS

2015-present **Associate Professor, Kansas State University**, Department of Plant Pathology

2015-present **Associate Professor, Kansas State University**, Interdepartmental Genetics Program

2008-2015 **Assistant Professor, Kansas State University**, Department of Plant Pathology

2008-2015 **Assistant Professor, Kansas State University**, Interdepartmental Genetics Program

2003-2008 **Postdoctoral Researcher, U. of Southern California**, Molecular and Computational Biology (NRSA/NIH postdoctoral fellow from 2004-2006), supervisor: Magnus Nordborg

### PUBLICATIONS (PEER-REVIEWED)

1. **Toomajian, C.** On computing relative effective population size estimates and parameters from an equilibrium cycle of hermaphrodite frequency fluctuation due to mixed reproductive modes in filamentous fungi. *Fungal Genetics Reports* 65, Article 2 (2021) (doi:10.4148/1941-4765.2176) **KAES 22-073-J**
2. Geiser, DM, ..., **C Toomajian**, ... (166 total co-authors). Phylogenomic analysis of a 55.1 kb 19-gene dataset resolves a monophyletic *Fusarium* that includes the *Fusarium solani* species complex. *Phytopathology*. (doi:10.1094/PHYTO-08-20-0330-LE) **KAES 21-022-J**. Published Online Nov 17, 2020.
3. Fumero, MV, **W Yue**, ML Chiotta, SN Chulze, JF Leslie & **C Toomajian**. Divergence and gene flow between *Fusarium subglutinans* and *Fusarium temperatum* isolated from maize in Argentina. *Phytopathology* 111(1):170-183. (2021) Published Online Dec 14, 2020 (doi:10.1094/PHYTO-09-20-0434-FI) **KAES 20-070-J**.
4. Fumero, MV, A Villani, A Susca, M Haidukowski, MT Cimmarusti, **C Toomajian**, JF Leslie, SN Chulze & A Moretti. Fumonisin and beauvericin chemotypes and genotypes of the sister species *Fusarium subglutinans* and *Fusarium temperatum*. *Applied and Environmental Microbiology* 86(13):e00133-20 (2020) (doi:10.1128/AEM.00133-20). **KAES 20-167-J**
5. Lei, L, JG Steffen, EJ Osborne & **C Toomajian**. Plant organ evolution revealed by phylotranscriptomics in *Arabidopsis thaliana*. *Scientific Reports* 7:7567 (2017) (doi:10.1038/s41598-017-07866-6). **KAES 16-246-J**

6. Liu, S, J Zheng, P Migeon, J Ren, Y Hu, C He, H Liu, J Fu, FF White, **C Toomajian** & G Wang. Unbiased k-mer analysis reveals changes in copy number of highly repetitive sequences during maize domestication and improvement. *Scientific Reports* 7:42444 (2017) (doi:10.1038/srep42444). **KAES 17-072-J**
7. Fransz, P, G Linc, C-R Lee, S Alves, JR Lasky, **C Toomajian**, H Ali, J Peters, P van Dam, X Ji, M Kuzak, T Gerats, I Schubert, K Schneeberger, V Colot, R Martienssen, M Koornneef, M Nordborg, TE Juenger, H de Jong & ME Schranz. Molecular, genetic and evolutionary analysis of a paracentric inversion in *Arabidopsis thaliana*. *The Plant Journal* 88:159-178 (2016) (doi:10.1111/tpj.13262). **KAES 16-302-J**
8. Chiara, M, F Fanelli, G Mulè, A Logrieco, G Pesole, J Leslie, D Horner & **C Toomajian**. Genome sequencing of multiple isolates highlights subtelomeric genomic diversity within *Fusarium fujikuroi*. *Genome Biology and Evolution* 7(11):3062-3069 (2015) (doi:10.1093/gbe/evv198). **KAES 15-153-J**
9. Jordan, KW, S Wang, Y Lun, L-J Gardiner, R MacLachlan, P Hucl, K Wiebe, D Wong, KL Forrest, IWGSC, AG Sharpe, CHD Sidebottom, N Hall, **C Toomajian**, T Close, J Dubcovsky, A Akhunov, L Talbert, UK Bansal, HS Bariana, MJ Hayden, C Pozniak, JA Jeddelloh, A Hall & E Akhunov. A haplotype map of allohexaploid wheat reveals distinct patterns of selection on homoeologous genomes. *Genome Biology* 16:48 (2015) (doi: 10.1186/s13059-015-0606-4). **KAES 15-338-J**
10. Carlson, AL, H Gong, **C Toomajian**, RJ Swanson. Parental genetic distance and patterns in nonrandom mating and seed yield in predominantly selfing *Arabidopsis thaliana*. *Plant Reproduction* 26: 317-328 (2013) (doi:10.1007/s00497-013-0228-5). **KAES 12-276-J**
11. Garrett, KA, A Jumpponen, **C Toomajian**, L Gomez-Montano. Climate change and plant health: Designing research spillover from plant genomics for understanding the role of microbial communities. *Canadian Journal of Plant Pathology* 34:349-361 (2012) (doi:10.1080/07060661.2012.706832). **KAES 12-446-J**
12. Studt, L, C Troncoso, F Gong, P Hedden, **C Toomajian**, JF Leslie, H-U Humpf, MC Rojas, B Tudzynski. Segregation of secondary metabolite biosynthesis in hybrids of *Fusarium fujikuroi* and *Fusarium proliferatum*. *Fungal Genetics and Biology* 49: 567-577 (2012) (doi:10.1016/j.fgb.2012.05.005). **KAES 12-278-J**
13. Horton, MW, AM Hancock, YS Huang, **C Toomajian**, S Atwell, A Auton, NW Muliyati, A Platt, FG Sperone, BJ Vilhjálmsson, M Nordborg, JO Borevitz, J Bergelson. Genome-wide patterns of genetic variation in worldwide *Arabidopsis thaliana* accessions from the RegMap panel. *Nature Genetics* 44:212-216 (2012) (doi:10.1038/ng.1042). **KAES 11-363-J**
14. Hancock, AM, B Brachi, N Faure, MW Horton, LB Jarymowycz, FG Sperone, **C Toomajian**, F Roux & J Bergelson. Adaptation to climate across the *Arabidopsis thaliana* genome. *Science* 334: 83-86 (2011) (doi:10.1126/science.1209244). **KAES 11-389-J**
15. Gan, X, O Stegle, J Behr, JG Steffen, P Drewe, KL Hildebrand, R Lyngsoe, SJ Schultheiss, EJ Osborne, VT Sreedharan, A Kahles, R Bohnert, G Jean, P Derwent, P Kersey, EJ Belfield, NP Harberd, E Kemen, **C Toomajian**, PX Kover, RM Clark, G Rättsch & R Mott. Multiple reference genomes and transcriptomes for *Arabidopsis thaliana*. *Nature* 477: 419-423 (2011); published online 28 August 2011 (doi:10.1038/nature10414). **KAES 11-388-J**
16. Bakker, EG, MB Traw, **C Toomajian**, M Kreitman & J Bergelson. Low levels of polymorphism in genes that control the activation of defense response in *Arabidopsis thaliana*. *Genetics* 178: 2031-2043 (2008); published online 1 February 2008 (doi:10.1534/genetics.107.083279).
17. Kim\*, S, V Plagnol\*, TT Hu\*, **C Toomajian\***, RM Clark, S Ossowski, JR Ecker, D Weigel & M Nordborg. Recombination and linkage disequilibrium in *Arabidopsis thaliana*. *Nat Genet* 39: 1151-1155 (2007); published online 5 August 2007 (doi:10.1038/ng2115). (\*these authors contributed equally to this work)

18. Tang, C, **C Toomajian**, S Sherman-Broyles, V Plagnol, YL Guo, TT Hu, RM Clark, JB Nasrallah, D Weigel, & M Nordborg. The evolution of selfing in *Arabidopsis thaliana*. *Science* **317**: 1070-1072 (2007); published online 26 July 2007 (doi:10.1126/science.1143153).
19. Clark, RM, G Schweikert\*, **C Toomajian\***, S Ossowski\*, G Zeller\*, P Shinn, N Warthmann, TT Hu, G Fu, DA Hinds, H Chen, KA Frazer, DH Huson, B Schölkopf, M Nordborg, G Rätsch, JR Ecker & D Weigel. Common sequence polymorphisms shaping genetic diversity in *Arabidopsis thaliana*. *Science* **317**: 338-342 (2007)(doi:10.1126/science.1138632). (\*these authors contributed equally to this work)
20. Zhao, K, MJ Aranzana, S Kim, C Lister, C Shindo, C Tang, **C Toomajian**, H Zheng, C Dean, P Marjoram & M Nordborg. An *Arabidopsis* example of association mapping in structured samples. *PLoS Genet* **3**: e4 (2007); published online 22 November 2006 (doi:10.1371/journal.pgen.0030004).
21. Bakker, EG, **C Toomajian**, M Kreitman & J Bergelson. A genome-wide survey of *R* gene polymorphisms in *Arabidopsis*. *Plant Cell* **18**: 1803-1818 (2006); published online 23 June 2006 (doi:10.1105/tpc.106.042614).
22. **Toomajian C**, TT Hu, MJ Aranzana, C Lister, C Tang, H Zheng, K Zhao, P Calabrese, C Dean & M Nordborg. A nonparametric test reveals selection for rapid flowering in the *Arabidopsis* genome. *PLoS Biol* **4**: e137 (2006); published online 25 April 2006 (doi:10.1371/journal.pbio.0040137).
23. Bakker, EG, EA Stahl, **C Toomajian**, M Nordborg, M Kreitman & J Bergelson. Distribution of genetic variation within and among local populations of *Arabidopsis thaliana* over its species-range. *Mol Ecol* **15**: 1405-1418 (2006)(doi:10.1111/j.1365-294X.2006.02884.x).
24. Aranzana, MJ, S Kim, K Zhao, E Bakker, M Horton, K Jakob, C Lister, J Molitor, C Shindo, C Tang, **C Toomajian**, B Traw, H Zheng, J Bergelson, C Dean, P Marjoram & M Nordborg. Genome-wide association mapping in *Arabidopsis* identifies previously known flowering time and pathogen resistance genes. *PLoS Genet* **1**: e60 (2005); published online 10 October 2005 (doi:10.1371/journal.pgen.0010060).
25. Nordborg, M, TT Hu, Y Ishino, J Jhaveri, **C Toomajian et al.** The pattern of polymorphism in *Arabidopsis thaliana*. *PLoS Biol* **3**: e196 (2005); published online, 24 May 2005 (doi:10.1371/journal.pbio.0030196).
26. **Toomajian, C**, RS Ajioka, LB Jorde, JP Kushner & M Kreitman. A method for detecting recent selection in the human genome from allele age estimates. *Genetics* **165**: 287-297 (2003).
27. **Toomajian, C** & M Kreitman. Sequence variation and haplotype structure at the human *HFE* locus. *Genetics* **161**: 1609-1623 (2002).
28. Di Rienzo, A, P Donnelly, **C Toomajian**, B Sisk, A Hill, ML Petzl-Erler, GK Haines & DH Barch. Heterogeneity of microsatellite mutations within and between loci, and implications for human demographic histories. *Genetics* **148**: 1269-1284 (1998).

## ABSTRACTS AND CONTRIBUTED PRESENTATIONS

1. **31<sup>st</sup> Fungal Genetics Conference, Pacific Grove, CA, March 2022. Toomajian, C, U Dhakal, JF Leslie.** Genome-wide association studies for the genetic basis of saprophytic fitness traits in sample of isolates of *Fusarium graminearum* from the Americas. (poster by Toomajian)
2. **31<sup>st</sup> Fungal Genetics Conference, Pacific Grove, CA, March 2022. Dhakal, U, JF Leslie, C Toomajian.** Population genomics analysis of *Fusarium graminearum* isolates from the Americas. (poster by Dhakal)
3. **31<sup>st</sup> Fungal Genetics Conference – Satellite Fusarium Workshop, Pacific Grove, CA, March 2015. Dhakal, U, JF Leslie, C Toomajian.** Population genomics analysis of *Fusarium graminearum* isolates from Americas. (talk by Dhakal)

4. **31<sup>st</sup> Fungal Genetics Conference, Pacific Grove, CA, March 2022.** Ferrara, M, C Lasorella, M Haidukowski, **C Toomajian**, NMI Mohamed Nor, **W Yue**, AF Logrieco, JF Leslie, G Mulè. The role of COP9 signalosome complex in secondary metabolism in *Fusarium*. (poster by Ferrara)
5. **2021 National Fusarium Head Blight Forum (Online), December 2021.** Dhakal, U, JF Leslie, **C Toomajian**. A genome-wide association study for the genetic basis of saprophytic fitness traits in a sample of isolates of *Fusarium graminearum* from the Americas. (Online poster/presentation by Toomajian)
6. **Plant Health 2021 Online [APS Annual Meeting], August 2021.** Dhakal, U, JF Leslie, **C Toomajian**. Analysis of population structure and differentiation, linkage disequilibrium decay, and demographic history of *Fusarium graminearum* from the U.S. (Research on Demand poster/presentation by Dhakal)
7. **K-State Graduate Student Forum, Manhattan, KS, April 2021.** Dhakal, U, **C Toomajian**. Analysis of population structure of *Fusarium graminearum* isolates. (poster by Dhakal)
8. **30<sup>th</sup> Fungal Genetics Conference, Pacific Grove, CA, March 2019.** Fumero, M, W Yue, M Chiotta, S Chulze, J Leslie, **C Toomajian**. Population genomics reveals patterns of divergence and gene flow between populations of *Fusarium subglutinans* and *Fusarium temperatum* in Argentina. (poster by Toomajian)
9. **2017 National Fusarium Head Blight Forum, Milwaukee, WI, December 2017.** **C Toomajian**, W Yue, JF Leslie. Updating population structure and genetic differentiation of *Fusarium graminearum* populations from 3 major US regions using GBS. (poster by Toomajian)
10. **1<sup>st</sup> MYCOKEY International Conference: Global Mycotoxin Reduction in the Food and Feed Chain, Ghent, Belgium, September 2017.** Fumero, MV, A Villani, A Susca, M Haidukowski, MT Cimmarusti, JF Leslie, S Chulze, **C Toomajian**, A Moretti. Differences in the beauvericin gene cluster and toxin production in *Fusarium subglutinans* and *Fusarium temperatum*. (poster by Fumero)
11. **IX Congreso Latinoamericano de Micología, Lima, Peru, August 2017.** Fumero, MV, **C Toomajian**, M Sulyok, JF Leslie, SN Chulze. Fusaric acid gene cluster in *Fusarium temperatum* and *Fusarium subglutinans* and its production under different culture conditions. (poster by Fumero)
12. **29<sup>th</sup> Fungal Genetics Conference, Pacific Grove, CA, March 2017.** Yue, W, **C Toomajian**, NMI Mohamed Nor & JF Leslie. Quantitative mapping of pathogenicity factors in the *Fusarium fujikuroi* complex with an interspecific genetic cross. (poster by Toomajian)
13. **Plant and Animal Genomes Conference XXV, San Diego, CA, January 2017.** Yue, W, JF Leslie & **C Toomajian**. Investigating species differences in fungal plant pathogens with a high-density inter-species genetic map and a draft genome. (poster by Yue)
14. Reyes Gaige, A, W Yue, **C Toomajian** & J Stack. Introduction and seed transmission of *Fusarium proliferatum* in the field (Abstr.) *Phytopathology* 106:2016. S4.29. (poster by Reyes Gaige) [**2016 APS Annual Meeting, Tampa, FL, August 2016**].
15. **Toomajian, C**, W Yue, JF Leslie. A genome-wide view of population structure and genetic differentiation of *Fusarium graminearum* populations from the Americas. In: S Canty, A Clark, S Vukasovich and D Van Sanford (Eds), *Proceedings of the 2015 National Fusarium Head Blight Forum*. (2015) East Lansing, MI/Lexington KY: U.S. Wheat & Barley Scab Initiative. P. 59.
16. **Toomajian, C**, W Yue, P Spolti, GC Bergstrom, JF Leslie. A small pilot GWAS for the genetic basis of pathogenic and saprophytic fitness in a sample of New York *Fusarium graminearum* isolates from wheat. In: S Canty, A Clark, S Vukasovich and D Van Sanford (Eds), *Proceedings of the 2015 National Fusarium Head Blight Forum*. (2015) East Lansing, MI/Lexington KY: U.S. Wheat & Barley Scab Initiative. P. 60.

17. **13<sup>th</sup> Annual Ecological Genomics Symposium, Manhattan, KS, November 2015.** C Toomajian. Population differentiation in New York populations of the plant pathogen *Fusarium graminearum*.
18. **2015 APS Annual Meeting, Pasadena, CA, August 2015.** W Yue, NMI Mohamed Nor, JF Leslie, C Toomajian. A high-density genetic map in *Fusarium* constructed with Genotyping-by-Sequencing markers. (Abstr.) *Phytopathology* 105(Suppl. 4):S4.155 (2015)
19. **2015 APS Annual Meeting, Pasadena, CA, August 2015.** A Reyes Gaige, W Yue, C Toomajian, JP Stack. Using Genotyping-by-sequencing (GBS) to study the population genetics of the fungus *Fusarium proliferatum*. (Abstr.) *Phytopathology* 105(Suppl. 4):S4.118 (2015)
20. **13<sup>th</sup> European Fusarium Seminar, Martina Franca, Italy, May 2015.** F Fanelli, M Chiara, C Toomajian, G Pesole, AF Logrieco, JF Leslie, G Mulè & DS Horner. Genome sequencing of multiple isolates highlights sub-telomeric genomic diversity within *Fusarium fujikuroi*. *Proceedings of the 13<sup>th</sup> European Fusarium Seminar*: 119 (2015)
21. **13<sup>th</sup> European Fusarium Seminar, Martina Franca, Italy, May 2015.** NMI Mohamed Nor, W Yue, C Toomajian & JF Leslie. Pathogenicity of progeny from a cross between *Fusarium fujikuroi* and *Fusarium proliferatum* towards onions. *Proceedings of the 13<sup>th</sup> European Fusarium Seminar*: 60 (2015)
22. **28<sup>th</sup> Fungal Genetics Conference, Pacific Grove, CA, March 2015.** C Toomajian, W Yue, JF Leslie. Population genomics and scans for selection in the plant pathogen *Fusarium graminearum*.
23. **28<sup>th</sup> Fungal Genetics Conference – Satellite Fusarium Workshop, Pacific Grove, CA, March 2015.** C Toomajian, W Yue, JF Leslie. Population genomics and scans for selection in the plant pathogen *Fusarium graminearum*. (talk by Toomajian)
24. **Plant and Animal Genomes Conference XXIII, San Diego, CA, January 2015.** C Toomajian, W Yue, JF Leslie. Using genotyping-by-sequencing to study the population genomics of the plant pathogen *Fusarium graminearum*.
25. **Plant and Animal Genomes Conference XXIII, San Diego, CA, January 2015.** L Lei, JG Steffen, R Greenhalgh, EJ Osborne, P Drewe, A Kahles, G Rättsch, R Mott, RM Clark, C Toomajian. Genome-wide variation in polyadenylation site usage and association mapping in *Arabidopsis* MAGIC founders.
26. **Ecological Genomics Symposium, Kansas City, MO, October 2014.** L Lei, JG Steffen, R Greenhalgh, EJ Osborne, P Drewe, A Kahles, G Rättsch, R Mott, RM Clark, C Toomajian. Genome-wide variation in polyadenylation site usage and association mapping in *Arabidopsis*.
27. **2014 APS North Central Division Meeting, Madison, WI, June 2014.** NMI Mohamed Nor, C Toomajian, T Todd, J Leslie. The pathogenicity of the interspecific hybrids between *Fusarium fujikuroi* and *F. proliferatum* towards white pearl onions. (talk by Mohamed Nor)
28. **2013 APS Annual Meeting, Austin, TX, August 2013.** NMI Mohamed Nor, B Salleh, C Toomajian, JP Stack, JF Leslie. Interspecific hybrids between *Fusarium fujikuroi* and *Fusarium proliferatum*.
29. **Annual Meeting, Society for Molecular Biology and Evolution, Chicago, IL, July 2013.** L Lei, C Toomajian, JJ Steffen, R Greenhalgh, EJ Osborne, RM Clark, P Drewe, A Kahles, G Rättsch, R Mott. Genome-wide variation of alternative polyadenylation in sense and antisense transcription in the founding accessions of the *Arabidopsis* MAGIC resource.
30. **ISM-MycoRed International Conference, Martina Franca, Italy, May 2013.** M Chiara, F Fanelli, JF Leslie, JP Stack, G Mulè, G Pesole, DS Horner, C Toomajian. From Next Generation Sequencing (NGS) to mycotoxins: assembly and annotation of fungal genomes. (talk by Chiara)

31. **CSHL Biology of Genomes Meeting, Cold Spring Harbor, NY, May 2013.** O Stegle, P Drewe, A Kahles, Y Zhong, J Steffen, R Greenhalgh, **C Toomajian**, X Gan, R Mott, G Rättsch. Advanced intercross genetic design reveals extensive genetic control of the transcriptional landscape in *Arabidopsis thaliana*.
32. **European Fusarium Seminar, Bordeaux, France, May 2013.** NMI Mohamed Nor, H Salleh, C Toomajian, JP Stack, JF Leslie. Interspecific hybrids between *Fusarium proliferatum* and *F. fujikuroi*.
33. **10<sup>th</sup> Anniversary Ecological Genomics Symposium, Kansas City, MO, October 2012.** **C Toomajian**. Clues to the origins of individual lineages from the *Fusarium graminearum* species complex from genome-wide SNPs.
34. **10<sup>th</sup> Anniversary Ecological Genomics Symposium, Kansas City, MO, October 2012.** L Lei, J Steffen, EJ Osborne, RM Clark, **C Toomajian**. The phylogenetically based transcriptome age index and transcriptome divergence index indicate evolutionary patterns of gene expression in Brassicaceae organs.
35. **2012 APS Annual Meeting, Providence, RI, August 2012.** **C Toomajian**. Clues to the origins of individual lineages from the *Fusarium graminearum* species complex from genome-wide SNPs.
36. **2012 APS Annual Meeting, Providence, RI, August 2012.** **C Toomajian**, M Chiara, W Strouts, D Horner, A Logrieco, G Pesole, JF Leslie, J Stack. High-depth genome coverage of an unusual *Gibberella fujikuroi* species complex isolate that is cross-fertile with multiple species.
37. **2012 American Society of Plant Biologists Annual Meeting, Austin, TX, July 2012.** J Steffen, R Greenhalgh, O Stegle, P Drewe, X Gan, M Imprialou, J Behr, E Osborne, **C Toomajian**, P Kover, G Rättsch, R Mott, R Clark. Pervasive genomic and gene expression variation in the MAGIC population of recombinant inbred lines.
38. **23<sup>rd</sup> International Conference on Arabidopsis Research, Vienna, Austria, July 2012.** R Mott, X Gan, P Kover, R Clark, J Steffen, G Rättsch, **C Toomajian**, O Stegle, J Behr. The genomes and genetics of the MAGIC population of *Arabidopsis* recombinant inbred lines. (talk by Mott).
39. **Plant and Animal Genomes Meeting, San Diego, CA, January 2012.** SI Wright, A Platts, A Haudry, R Williamson, K Hazzouri, E Vello, E Forczek, S-C Chantha, S Joly, D Koenig, T Mitchell-Olds, RA Wing, D Weigel, K Schumaker, C Town, X Wang, ME Schranz, JC Pires, R Clark, J Steffen, **C Toomajian**, S Prochnik, J Jenkins, J Schmutz, D Rokhsar, E Harmsen, J Stinchcombe, P Harrison, T Bureau, D Schoen, A Moses, M Blanchette. Comparative and population genomics in the Brassicaceae (talk by Wright).
40. **2011 National Fusarium Head Blight Forum, St. Louis, MO, December 2011.** **C Toomajian**. Discovery of genome-wide variants in the *Fusarium graminearum* clade for mapping and evolutionary analysis.
41. **2011 National Fusarium Head Blight Forum, St. Louis, MO, December 2011.** J Leslie, **C Toomajian**. Vegetative compatibility – A native fungal mechanism for inducing death in *G. zeae*. (talk by Leslie)
42. **CSHL Plant Genomes & Biotechnology Meeting, Cold Spring Harbor, NY, November 2011.** JJ Steffen, EJ Osborne, O Stegle, J Behr, P Drewe, X Gao, KL Hildebrand, M-S Remigereau, P Zhang, Q Long, B Vilhjalmsson, R Greenhalgh, S Marxreiter, M Nordborg, **C Toomajian**, R Mott, G Rättsch, RM Clark. Genomewide variation in sense and antisense transcription across 19 *Arabidopsis thaliana* strains.
43. **Annual Meeting, Society of Molecular Biology and Evolution, Kyoto, Japan, July 2011.** S Bush, X Gan, O Stegle, P Drewe, JG Steffen, **C Toomajian**, G Rättsch, RM Clark, R Mott, P Kover & A Urrutia. Purifying selection in *Arabidopsis thaliana* is associated with increased expression breadth and gene structural features but not expression level.

44. **22<sup>nd</sup> International Conference on Arabidopsis Research, Madison, WS, June 2011.** X Gan, J Behr, J Steffen, K Hildebrand, L Allchin, L Goodstadt, O Stegle, P Drewe, R Lyngsoe, V Sreedharan, E Osborne, **C Toomajian**, P Kover, G Rättsch, R Clark & R Mott. Accurate sequencing of 18 genomes of *Arabidopsis thaliana* and its use in imputing the genome sequences of over 600 MAGIC recombinant inbred lines. **(selected for oral presentation)**
45. **22<sup>nd</sup> International Conference on Arabidopsis Research, Madison, WS, June 2011.** J Steffen, J Behr, P Drewe, K Hildebrand, P Kover, R Lyngsoe, R Mott, E Osborne, G Rättsch, S Schultheiss, V Sreedharan, O Stegle, **C Toomajian**, G Xiangchao & R Clark. Extensive genomic and transcriptomic variation in the 19 founders of the *Arabidopsis* MAGIC lines.
46. **Annual Meeting, Society for the Study of Evolution, Norman, OK, June 2011.** **C Toomajian**. Genome-wide assessment of population structure and linkage disequilibrium in the *Fusarium graminearum* species clade through next-gen sequencing.
47. **Annual Meeting, Society for the Study of Evolution, Norman, OK, June 2011.** K Hildebrand, J Behr, P Drewe, X Gan, A Kahles, R Lyngsoe, EJ Osborne, S Schultheiss, VT Sreedharan, J Steffen, O Stegle, RM Clark, P Kover, R Mott, G Rättsch & **C Toomajian**. Patterns of genome and transcriptome variation in *Arabidopsis thaliana*.
48. **The Biology of Genomes Meeting, Cold Spring Harbor, NY, May 2011.** J Behr, RM Clark, P Drewe, K Hildebrand, P Kover, R Lyngsoe, R Mott, EJ Osborne, G Rättsch, S Schultheiss, V Sreedharan, J Steffen, O Stegle, **C Toomajian**, G Xiangchao. Intraspecific genome and transcriptome variation of *Arabidopsis thaliana*.
49. **Annual Meeting, Society of Molecular Biology and Evolution, Iowa City, Iowa, June 2009.** **C Toomajian**, TT Hu, Y Huang, K Bomblies, R Laitinen, P Salome, L Yani, J Borevitz, J Bergelson, D Weigel & M Nordborg. Islands of high genetic diversity in *Arabidopsis thaliana* interrupt the correlation between genetic diversity and recombination. **(selected for oral presentation)**
50. **Annual Meeting, Society of Molecular Biology and Evolution, Iowa City, Iowa, June 2009.** TT Hu, **C Toomajian**, B Gaut, D Weigel & M Nordborg. Shrinkage of the *Arabidopsis thaliana* genome.
51. **Annual Meeting, Society of Molecular Biology and Evolution, Iowa City, Iowa, June 2009.** **C Toomajian**, Y Huang, B Vilhjalmsson, TT Hu, J Borevitz, J Bergelson & M Nordborg. A map of recent positive selection in *Arabidopsis thaliana*: can we find the genes involved in adaptation?
52. **Annual Meeting, Society for Molecular Biology and Evolution, Barcelona, Spain, June 2008.** **C Toomajian**, TT Hu, V Plagnol, RM Clark, JR Ecker, D Weigel & M Nordborg. Genome-wide patterns of recombination in *A. thaliana*.
53. **USC Molecular and Computational Biology Retreat, Laguna Beach, CA, November 2007.** **C Toomajian**, TT Hu, V Plagnol & M Nordborg. *Arabidopsis* natural genetic diversity and comparative genomics. **(oral presentation)**
54. **Annual Meeting, Society for Molecular Biology and Evolution, Halifax, Canada, June 2007.** **C Toomajian**, RM Clark, G Schweikert, S Ossowski, G Zeller, P Shinn, N Warthmann, TT Hu, G Fu, DA Hinds, H Chen, KA Frazer, DH Huson, B Scholkopf, G Rättsch, JR Ecker, D Weigel & M Nordborg. Selective sweeps and genomic variation in *Arabidopsis thaliana*.
55. **Gordon Research Conference on Quantitative Genetics and Genomics, Ventura, CA, February 2007.** **C Toomajian**, TT Hu, S Kim, V Plagnol, RM Clark, G Schweikert, S Ossowski, G Zeller, P Shinn, N Warthmann, G Fu, DA Hinds, H Chen, KA Frazer, DH Huson, B Scholkopf, G Rättsch, JR Ecker, D Weigel & M Nordborg. *Arabidopsis* genome diversity and natural selection.
56. **USC Molecular and Computational Biology Retreat, Laguna Beach, CA, November 2006.** **C Toomajian**, TT Hu, K Zhao, S Kim, V Plagnol, R Clark, C Lister, C Dean, JR Ecker, D Weigel & M Nordborg. *Arabidopsis thaliana* genome diversity and natural selection. **(oral presentation)**

57. **17<sup>th</sup> International Conference on Arabidopsis Research, Madison, WI, June 2006.** C Toomajian, TT Hu, MJ Aranzana, C Lister, C Tang, H Zheng, K Zhao, P Calabrese, C Dean & M Nordborg. Recent selection in the *Arabidopsis* genome: *FRIGIDA* and beyond. (selected for oral presentation)
58. **Annual Meeting, Society for Molecular Biology and Evolution, Tempe, AZ, May 2006.** C Toomajian, TT Hu, K Zhao, P Calabrese & M Nordborg. A nonparametric test reveals recent selection for rapid flowering in the *Arabidopsis thaliana* genome. (selected for oral presentation)
59. **10<sup>th</sup> Congress of European Society for Evolutionary Biology, Krakow, Poland, August 2005.** C Toomajian, TT Hu & M Nordborg. A genome-wide scan for local natural selection in *Arabidopsis thaliana*. (selected for oral presentation)
60. **15<sup>th</sup> International Conference on Arabidopsis Research, Berlin, Germany, July 2004.** C Toomajian, TT Hu, M Jakobsson, B Padhukasahasram, V Plagnol, K Zhao, J Bergelson, M Kreitman & M Nordborg. The genomic pattern of polymorphism in *Arabidopsis thaliana*. (selected for oral presentation)
61. **Annual Meeting, Society for the Study of Evolution, Knoxville, TN, July 2001.** C Toomajian & M Kreitman. Testing for recent positive selection on a human disease mutation using extent of haplotype sharing. (selected for oral presentation)
62. **Annual Meeting, Society for the Study of Evolution, Madison, WI, June 1999.** C Toomajian & M Kreitman. A population genetic analysis of nucleotide sequence variation from an 11.2 kb region of the HLA-linked human hemochromatosis locus. (selected for oral presentation)

**INVITED SEMINAR AND CONFERENCE PRESENTATIONS (authorship C Toomajian unless otherwise noted)**

1. Guest Lecture, Fusarium Laboratory Workshop, Kansas State University, Manhattan KS, June 2022.
2. Guest Lecture, Fusarium Laboratory Workshop, Kansas State University, Manhattan KS, June 2019.
3. Ecological Genomics Research Forum, Kansas State University, Manhattan KS, July 2018.
4. Guest Lecture, Fusarium Laboratory Workshop, Kansas State University, Manhattan KS, June 2017.
5. Guest Lectures (2), Fusarium Laboratory Workshop, Kansas State University, Manhattan, KS, June 2015.
6. 2014 National Fusarium Head Blight Forum, St. Louis, MO, December 2014. C Toomajian, W Yue & JF Leslie.
7. Departmental seminar, Plant Pathology, Kansas State University, Manhattan KS, October 2014.
8. Departmental seminar, Biological Sciences, Wichita State University, Wichita, KS, October 2013.
9. Guest Lectures (2), Fusarium Laboratory Workshop, Kansas State University, Manhattan, KS, June 2013.
10. Graduate School seminar, Evolutionary Biology Centre, Uppsala University, Sweden, March 2012.
11. Guest Lecture, Fusarium Laboratory Workshop, Kansas State University, Manhattan, KS, June 2011.
12. Departmental seminar, University of Kansas, Department of Ecology and Evolutionary Biology, Lawrence, KS, October 2010.
13. Kansas State Ecological Genomics Research Forum, Konza Prairie Biological Station, Manhattan, KS, June 2010.
14. 7<sup>th</sup> Ecological Genomics Symposium, Kansas City, MO, November 2009.



15. **Kansas State Ecological Genomics Research Forum, Manhattan, KS, May 2009.**
16. **Plant and Animal Genomes Conference XVII, San Diego, CA, January 2009. C Toomajian, TT Hu, K Bomblies, R Laitinen, P Salome, L Yant, F Yang, V Bansal, V Bafna, J Borevitz, J Bergelson, JR Ecker, D Weigel & M Nordborg.**
17. **Division of Biology, Kansas State University, Manhattan, KS, November 2008.** (Ecology & Evolutionary Biology seminar series)
18. **Department of Biological Sciences, Purdue University, West Lafayette, IN, March 2008.**
19. **Department of Biology, University of Pennsylvania, Philadelphia, PA, January 2008.**
20. **Department of Biology and Biotechnology, Worcester Polytechnic Institute, Worcester, MA, January 2008.**
21. **Departments of Genetics and Plant Biology, University of Georgia, Athens, GA, December 2007.**
22. **Department of Plant Pathology, Kansas State University, Manhattan, KS, November 2007.**
23. **Department of Plant Sciences, University of California, Davis, CA, October 2007.**
24. **Department of Plant Biology, Michigan State University, East Lansing, MI, October 2007.**
25. **Department of Ecology and Evolutionary Biology, Rice University, Houston, TX, March 2007.**
26. **Keystone Symposium- Human Genome Sequence Variation and the Inherited Basis of Common Disease, Breckenridge, Colorado, January 2004. M Nordborg & C Toomajian.** (in place of M Nordborg)
27. **Laboratory of Genomic Diversity, National Cancer Institute, Frederick, MD, November 2002.**
28. **Department of Biology, University of Rochester, Rochester, NY, Fall 2002.**

## GRANTS

1. **US Wheat and Barley Scab Initiative (05/22-04/24)** - Genetic mapping of genes underlying variation in *Fusarium* head blight traits, **\$57,144 Year 1 Budget**, estimated \$117,144 total budget for 2-year proposal term, **Lead PI Toomajian** with coPIs J. Rupp and J.F. Leslie.
2. **USDA-NIFA (2/22-1/26)** - An emerging threat to US wheat exports: a rapid, integrated response through advanced diagnostics and regional management of *Tilletia spp.*, **\$999,397, \$0 to Toomajian**, PI Anderson Onofre, coPIs DeWolf, Rupp, Bruce, Liu, Lollato, Bowden, **Key Personnel Toomajian.**
3. **US Wheat and Barley Scab Initiative (5/2016-4/2019)** – Finding *Fusarium graminearum* genes to target using population genomics, \$94,586, PI Toomajian, with coPI Leslie.
4. **BEC.AR program, Argentina (01/16-10/16)** - Population genomic analysis of *Fusarium subglutinans* and *F. temperatum* from maize in Argentina, \$25,000, Toomajian co-research mentor for PhD student Veronica Fumero.
5. **Kansas INBRE (NIH) Mentored Postdoctoral Award (5/2015-4/2016)** – Polyadenylation site usage variation and its genetic basis in Arabidopsis, \$32,500, \$32,500 to PI Toomajian, with coPI Lei.
6. **US Wheat and Barley Scab Initiative (5/2014-4/2016)** - Genotype by sequencing for footprints of selection in *Fusarium graminearum*, \$96,986, \$96,986 to PI Toomajian, with coPI John Leslie.
7. **US Wheat and Barley Scab Initiative (2011-2014)** – Fungal genes that limit or prevent the growth of *Gibberella zeae*, \$158,768, coPI with PI John Leslie.
8. **National Agricultural Biosecurity Center, Kansas State University (2010-2011)** - Genomic analysis of *Fusarium fujikuroi*: the basis for diagnostics and genetic mapping of inter-species hybrids, \$100,000, \$100,000 to coPI Toomajian, with PI Jim Stack.

9. **K-State Integrated Genomics Facility Competitive Seed Grant (2010-2011)** - The population genomics of *Fusarium graminearum* through next-generation sequencing technology, \$10,000 (PI Toomajian).
10. **NSF Undergraduate Research and Mentoring in the Biological Sciences (2011-2015)** – URM: Undergraduate research and mentoring in ecological genomics, \$781,566, (Toomajian participant, with PIs: Sam Wisely, Ari Jumpponen, coPI: Michael Herman).
11. **NSF Arabidopsis 2010 (2009-2013)** - Transcriptomes for Functional and Evolutionary Studies, \$737,804, \$136,523 to coPI Toomajian, with Richard Clark, U. Utah (PI).
12. **NSF Division of Graduate Education (Graduate Teaching Fellows in K-12 Education program) (2009-2015)** - Evidence-based inquiry into the distant, remote, or past (EIDRoP): linking evidence to inference in the Kansas science classroom, \$2,768,351, (Toomajian participant, with PI: CJ Ferguson, coPIs: T Bolton, E Maatta, S Rebello and S Tanona)
13. **USC Center for Excellence in Genome Science Genetic Variation Research Pilot Project Grant (2005-2006)** – The effect of intergenic gene conversion between duplicated loci on levels of genome variation. \$25,000 (PI Toomajian)
14. **NSF Doctoral Dissertation Improvement Grant (2000-2002)** - co-PI with M Kreitman, Population genetic processes underlying a common disease allele in humans. \$10,000

## HONORS AND AWARDS

- NIH NRSA postdoctoral fellowship (2004-2006)
- NIH Genetics Training Grant recipient (2000-2001)
- Howard Hughes Medical Institute Predoctoral Fellow (1995-2000)
- NSF Predoctoral Fellowship (1995, declined)
- Phi Beta Kappa (1995)
- Barry M. Goldwater Scholarship (1994-1995)

## TEACHING

**Teaching interests:** Genetics, Population Genetics, Evolutionary Genetics, Molecular Evolution.

**Courses taught, Kansas State University:**

PLPTH 768, Population Genetics, 3-credit

Spring 2009 (14 registered graduate students, 2 drops, 2 people audited)

Spring 2011 (16 registered students, 1 undergraduate, 1 incomplete, 7 auditors)

PLPTH 820, Population Genetics, 3-credit

Spring 2013 (19 registered students, 1 retaking to resolve 2011 incomplete, 3 auditors)

Spring 2015 (20 registered students, 1 auditor)

Spring 2017 (14 registered students)

Spring 2019 (16 registered students)

Spring 2021 (17 registered students)

**Workshop instructor, Kansas State University**

Summer 2011, Fusarium Laboratory Workshop

Summer 2013, Fusarium Laboratory Workshop, 2 Lectures

Summer 2015, Fusarium Laboratory Workshop, 2 Lectures

Summer 2017, Fusarium Laboratory Workshop, 1 Lecture

Summer 2019, Fusarium Laboratory Workshop, 1 Lecture

Summer 2022, Fusarium Laboratory Workshop, 1 Lecture

**Teaching assistant, University of Chicago:**

Graduate courses - Human Genetics (spring 1998), Cell Biology I (fall 1996)

Undergraduate courses - Human Genetics (winter 1998), Evolutionary Biology (spring 1996)

**Tutor, Northwestern University Integrated Science Program (1992-1994)** – science and mathematics

**Tutor**, The Blue Gargoyle Adult Learning Program (1997-2001) – mathematics, literacy.

### List of Graduate Students Supervised

<i>Name</i>	<i>Dates</i>	<i>Degree/student type</i>
Katie Hildebrand	6/2010 - 12/2011 (withdrew)	Ph.D.
Wei Yue	8/2012 - 8/2017	Ph.D.
Gabriella Periera	8/2013 - 11/2013	Visiting Ph.D. student (Brazil)
Hamida Mahmood	1/2014 – 8/2014	Non-degree student pursuing Graduate Certificate in Genetics, Genomics and Biotechnology
Megan Calvert	Fall 2014	Laboratory rotation Ph.D. student
M. Veronica Fumero	1/2016 – 10/2016	Visiting Ph.D. student (Argentina)
Tamara Krska	6/2017 – 9/2018	Co-advising international graduate student with J.F. Leslie
Upasana Dhakal	1/2019 – present	Ph.D.

### List of Research Assistants/Trainees

<i>Name</i>	<i>Title</i>	<i>Time Period</i>
Alyssa Humbarger	Research Assistant	July 2009 to August 2011
Emily Petersen	Undergrad RA	August 2010 to September 2010
Wesley Strouts	Undergrad RA	January 2011 to July 2012
Sasha Kapil	SUROP undergrad	June 2011 to July 2011
Shan Kothari	REU undergrad	June 2012 to August 2012
Li Lei	Research associate	July 2012 to September 2015
Brandi Worster	Undergrad RA	February 2013 to July 2014
Virginia Brown	Undergrad RA	January 2014 to May 2015
Paige Humphrey	Undergrad RA	June 2015 to December 2015
Jennie Tucker	DAS 195 ‘Exploring Sci Research’	Fall 2022

### Graduate Committee Service (OC – Outside Chair, D – defended, PoS – Approved Program of Study)

<i>Name</i>	<i>Degree</i>	<i>Dept</i>	<i>Date</i>
Miranda Gray	M.S.	Genetics	D 8/2012
Xin Zhu	Ph.D.	Biology	OC – D 11/2014
Nik Mohd Izham Mohamed Nor	Ph.D.	Plant Path.	D 11/2014
Meera Kumari	Ph.D.	Biochemistry	OC – D 11/2015
Ziyi Wang	M.S.	Biology	D 4/2016
Hamida Mahmood	M.S.	Genetics	D 4/2016
Vuyiswa Bushula	Ph.D.	Plant Path.	D 6/2016
Hannah Tetreault	Ph.D.	Biology	D 8/2016
Trevor Rife	Ph.D.	Genetics	D 8/2016
Meng Lin	Ph.D.	Agronomy	D 11/2016
Elizabeth Everman	Ph.D.	Biology	D 4/2017
Wei Yue	Ph.D.	Genetics	D 7/2017
Pierre Migeon	M.S.	Genetics	D 3/2017
Sugi Bala	M.S.	Genetics	left program 2018
Jacob Alsdurf	M.S.	Biology	left program 2018
Matthew Harder	Ph.D.	Biology	OC – D 7/2020
Elina Adhikari	Ph.D.	Genetics	D 10/2020
Guifang Lin	Ph.D.	Genetics	D 3/2021
Ha Le	Ph.D.	Genetics	left program 2021
Matthew Galliard	Ph.D.	Biology	PoS Spring 2016
Sam Sharpe	Ph.D.	Biology	PoS Spring 2016

Cameron Amos  
Upasana Dhakal

M.S.  
Ph.D

Genetics  
Plant Path.

PoS Fall 2020  
PoS Spring 2021

## **PROFESSIONAL ACTIVITIES**

**Member:** Genetics Society of America, Society for Molecular Biology and Evolution, Society for the Study of Evolution, American Phytopathological Society, Sigma Xi

## **SERVICE**

### **Journal editorship**

**PLOS ONE** – Academic Editor, 2018 – present. Handled 5 original submissions and 13 revisions.

**Journal peer review** –Applied and Environmental Microbiology (2), BMC Evolutionary Biology (1), BMC Genetics (1), BMC Genomics (5), BMC Research Notes (1), Current Opinion in Plant Biology (1), European Journal of Plant Pathology (1), Evolution (3), G3 (1), Genetics (19), Genome Biology (2), Genome Biology and Evolution (3), Genome Research (4), Journal of Molecular Evolution (5), Molecular Biology and Evolution (12), Molecular Ecology (5), Nature Communications (1), Plant Biology (1), Plant Disease (3), Plant Molecular Biology Reporter (1), Plant Physiology (2), PNAS (3), Public Library of Science Biology (1), Public Library of Science Genetics (3), PLOS ONE (16), Trends in Ecology and Evolution (1)

**Grant proposal review panel service** - NSF (2 panels, 2014 and 2016)

**Grant proposal ad hoc peer review** – NSF (2), Army Research Office (1)

**APS Evolutionary Genetics and Genomics Committee** – Member, 7/2021 - present

**External promotion and tenure reviewer**, 2009.

**Search committees**, USDA Research Plant Physiologist position, 2010-2011, K-State Research and Extension Proposal Services Grants Specialist positions (2), 2011, Akhunov lab Postdoc positions 2012 and 2013, K-State Plant Pathology Department Interim and Permanent Head (2015), Liu lab Postdoc position 2016.

**Symposium session chair**, K-State Ecological Genomics Symposium, Kansas City, MO, 2008 & 2010, Evolution Conference (2011).

**Poster Judge** - for Graduate Student posters, SMBE 2013 conference

**3-minute thesis judge** – K-State Plant Pathology, Spring 2018

**Course peer-evaluator**, PLPTH 755, F 2008, PLPTH 915, F 2009 & 2011, PLPTH 837, F 2010, PLPTH 585, F 2012, PLPTH 610, F 2013, PLPTH 845, F 2014, PLPTH 500, Spring 2015.

### **Kansas State University Committees**

Sarachek Awards Committee (2012)

Lead developer of 6 year, \$1.5 million Interdepartmental Genetics Program Graduate Fellowship Award, including leading role in recruitment and admission efforts (2012-2022)

Member, Interdepartmental Genetics Program Graduate Admissions Committee, 2010-present (chair 2012-2022)

Graduate Program Director, Interdepartmental Genetics Program (2015-present)

Webmaster, Interdepartmental Genetics Program website (2012-present)

Member, Ecological Genomics Institute Curriculum Committee (2014-present)

Member, Phi Beta Kappa Members-in-Course Committee (2021-present)

### **Kansas State College of Agriculture Committees**

Department Assessment Coordinator (Graduate), 2011-2018

### **Department of Plant Pathology Committees**

Member, Teaching Committee, 2018-present

Chair, 2011-2012 Seminar Committee, 2011-2012

Member, Website Committee, 2010-2019 (chair 2010-2016)

Member, Annual Evaluations Revision Committee (2013-2017)

Member, Seminar Class Revision Committee (2015-2016)

Member, Curriculum Review Committee (2015-2016)

**Graduate student representative** – Committee on Genetics, University of Chicago 1996-1999