

Jonathan Isaiah Gent

Curriculum Vitae

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Education

- PhD Genetics (with Andrew Fire), Stanford University, 2009
- BS Biology, Chemistry minor, *summa cum laude*, Humboldt State University, 2004
- AA Natural Science/Mathematics, College of the Redwoods, 2002

Academic Employment

- Senior research associate (with R. Kelly Dawe), University of Georgia, 2016 – present
- Postdoc (with R. Kelly Dawe), University of Georgia, 2009 - 2016
- Summer research assistant (with Virginia Walbot), Stanford University, 2003 and 2004

Publications (*joint first authors or joint corresponding authors)

- Li C, Xu H, Fu F-F, Russell SD*, Sundaresan V*, and **Gent JI***. Reprogramming of 24nt siRNAs in rice gametes. [biorxiv.org/content/10.1101/670463v1](https://doi.org/10.1101/670463v1)
- Gent JI**, Nannas NJ, Liu Y, Su H, Zhao H, Gao Z, Dawe RK, Jiang J, Han F, Birchler JA. Genomics of Maize Centromeres. In Bennetzen J., Flint-Garcia S., Hirsch C., Tuberosa R. (eds) *The Maize Genome. Compendium of Plant Genomes*. Springer, Cham
- Fu F-F, Dawe RK*, **Gent JI***. Loss of RNA-directed DNA methylation in maize chromomethylase and DDM1-type nucleosome remodeler mutants. *Plant Cell*. 2018 Jul;30(7):1617-1627
- Dawe RK, Lowry EG, **Gent JI**, Stitzer MC, Swentowsky KW, Higgins DM, Ross-Ibarra J, Wallace JG, Kanizay LB, Alabady M, Qui W, Tseng K-F, Wang N, Gao Z, Birchler JA, Harkess AE, Hodges AL, Hiatt EN. A novel kinesin promotes neocentromere activity and meiotic drive in maize. *Cell*. 2018 May 3;173:839-850
- Oka R, Zicola J, Weber B, Anderson SN, Hodgman C, **Gent JI**, Wesselink J-J, Springer NM, Hoefsloot HCJ, Turck F, Stam M. Genome-wide mapping of transcriptional enhancer candidates using DNA and chromatin features in maize. *Genome Biology*. 2017 Jul 21;18(1):137
- Gent JI**, Wang N, and Dawe RK. Stable centromere positioning in diverse sequence contexts of complex and satellite centromeres of maize and wild relatives. *Genome Biology*. 2017 Jun 21;18(1) 121
- Jiao Y, Peluso P, Shi J, Liang T, Stitzer MC, Wang B, Campbell MC, Stein JC, Wei X, Chin CS, Guill K, Regulski M, Kumari S, Olson A, **Gent JI**, Schneider KL, Wolfgruber TK, May MR, Springer NM, Antoniou E, McCombie WR, Presting GG, McMullen M, Ross-Ibarra J, Dawe RK, Hastie A, Rank DR, Ware D. The complex sequence landscape of maize revealed by single molecule technologies. *Nature*. 2017 Jun 22;546(7659):524-527
- Zhao H, Zhu X, Wang K, **Gent JI**, Zhang W, Dawe RK, Jiang J. Gene expression and chromatin modifications associated with maize centromeres. *G3*. 2015 Nov 12;6(1):183-92
- Qing L, **Gent JI**, Zynda G, Song J, Makarevitch I, Hirsch CD, Hirsch CH, Dawe RK, Madzima TF, McGinnis K, Lisch D, Schmitz RJ, Vaughn MW, Springer NM. RNA-directed DNA methylation enforces boundaries between heterochromatin and euchromatin in the maize genome. *PNAS*. 2015 Nov 24;112(47):14728-33

10. **Gent JI***, Wang K*, Jiang J, and Dawe RK. Stable patterns of CENH3 occupancy through maize lineages containing genetically identical centromeres. *Genetics*. 2015 Aug;200(4):1105-16
11. **Gent JI**, Madzima TF, Bader R, Kent MR, Zhang X, Stam M, McGinnis KM, and Dawe RK. Accessible DNA and relative depletion of H3K9me2 at maize loci undergoing RNA-directed DNA methylation. *Plant Cell*. 2014 Dec;26(12):4903-17
12. **Gent JI**, Ellis NA, Guo L, Harkess A, Yao Y, Zhang X, and Dawe RK. CHH Islands: de novo DNA methylation in near-gene chromatin regulation in maize. *Genome Research*. 2013 Apr;23(4):628-37
13. Eichten SR, Ellis NA, Makarevitch I, Yeh C-T, **Gent JI**, Guo L, McGinnis KM, Zhang X, Schnable PS, Vaughn MW, Dawe RK, and Springer NM. Spreading of heterochromatin is limited to specific families of maize retrotransposons. *PLoS Genetics*. 2012 Dec;8(12):e1003127
14. **Gent JI** and Dawe RK. RNA as a structural and regulatory component of the centromere. *Annual Review of Genetics*. 2012 Dec 15;46:443-53
15. **Gent JI**, Dong Y, Jiang J, and Dawe RK. Strong epigenetic similarity between maize centromeric and pericentromeric regions at the level of small RNAs, DNA methylation and H3 chromatin modifications. *Nucleic Acids Research*. 2012. Feb;40(4):1550-6
16. Blanchard D, Parameswaran P, Lopez-Molina J, **Gent J**, Saynuk JF, Fire A. On the nature of in vivo requirements for rde-4 in RNAi and developmental pathways in *C. elegans*. *RNA Biology*. 2011 May-Jun;8(3):458-67
17. **Gent JI**, Schneider KL, Topp CN, Rodriguez C, Presting GG, Dawe RK. Distinct influences of tandem repeats and retrotransposons on CENH3 nucleosome positioning. *Epigenetics & Chromatin*. 2011 Feb 25;4:3
18. Lamm AT, Stadler MR, Zhang H, **Gent JI**, Fire AZ. Multimodal RNA-seq using single-strand, double-strand, and CirLigase-based capture yields a refined and extended description of the *C. elegans* transcriptome. *Genome Research*. 2011 Feb;21(2):265-75
19. **Gent JI***, Lamm A*, Pavelec DM, Maniar JM, Parameswaran P, Tao L, Kennedy S, and Fire AZ. Distinct stages of siRNA synthesis in an endogenous RNAi pathway in *C. elegans* soma. *Molecular Cell*. 2010 Mar 12;37(5):679-89
20. **Gent JI**, Schvarzstein M, Villeneuve AM, Gu SG, Jantsch V, Fire AZ, and Baudrimont A. A *C. elegans* RNA-directed RNA polymerase in sperm development and endogenous RNAi. *Genetics*. 2009 Dec;183(4):1297-314

Seminars and Short Talks

PAG XXVIII - Plant & Animal Genome Conference, Jan 2020

PAG XXVII - Plant & Animal Genome Conference, Jan 2019

University of California, Davis, Plant Biology Department, Aug 2016

Epigenetics (Gordon Research Conference), Aug 2015

DNA methylation (Keystone Symposia), Mar 2015

57th Annual Maize Genetics Conference, Mar 2015

University of California, Davis, Plant Biology Postdoc Seminar Series, Aug 2014

Centromere Biology (Gordon Research Conference), Jul 2014

Emory University Chromatin Club, Jul 2013

Regulatory & Non-Coding RNAs (Cold Spring Harbor Laboratory Meeting), Aug 2012

54th Annual Maize Genetics Conference, Mar 2012

Epigenetics, Development and Human Disease (Keystone Symposia), Jan 2009

University of California, Santa Cruz, RNA Club, Apr 2008

Next Generation Sequencing Symposium (New Mexico Bioinformatics Symposia), Mar 2008

Fellowships, Awards, and Grants

NSF Plant Genome Research Program #1547760, 2016-2019 (\$290,424 in my budget)

University of Georgia Plant Center Travel Award, 2015 (\$500)

Keystone Symposia Scholarship, 2015 (\$1200)

University of Georgia Postdoctoral Research Award, 2012 (\$2000)

Keystone Symposia Scholarship, 2012 (\$1200)

Ruth L. Kirschstein NRSA (NIH postdoctoral training grant), 2010-2013 (\$152,874)

Keystone Symposia Scholarship, 2009 (\$1000)

Teaching and Advising

Undergraduate and graduate student research mentor/supervisor, 2011-present

Guest lecturer for Plant Genetics (PBIO 8100) and Nucleic Acids (GENE 8920), University of Georgia, multiple occasions

Completed a semester-long seminar course on teaching biology (PBIO 8010), University of Georgia, 2013

Junior high school after-school tutor, Bayshore Christian Ministries, 2007-2009

Chemistry workshop leader, Louis Stokes Alliance for Minority Participation, College of the Redwoods, 2001

Calculus workshop leader, Louis Stokes Alliance for Minority Participation, College of the Redwoods, 2000 and 2001

Ad hoc reviewing (manuscripts)

Chromosoma, Genetics, Genome Research, Molecular Plant, Nature Communications, Plant Physiology, Plant Cell, PNAS, PLOS Genetics

Ad hoc reviewing (grant proposals)

NSF PGRP, NSF Genetic Mechanisms, and BARD

Academic references

Advisors

- R. Kelly Dawe, postdoctoral advisor
Departments of Plant Biology and Genetics, University of Georgia
kdawe@uga.edu (706-542-1658)
- Andrew Fire, PhD advisor
Departments of Pathology and Genetics, Stanford University School of Medicine
afire@stanford.edu (650-723-2885)
- Virginia Walbot, employer and PhD dissertation committee member
Department of Biology, Stanford University
walbot@stanford.edu (650-723-2007)

Advisees

- Fang-Fang Fu, former research staff working on DNA methylation
Nanjing Forestry University
fffu2019@njfu.edu.cn
- Matthew Hufford, former undergraduate researcher working on small RNAs
Vanderbilt University
matthew.r.kent@vanderbilt.edu
- Richard Gell, former undergraduate researcher working on centromeres
North Carolina State University
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Research collaborators

- Venkatesan Sundaresan, collaborator on rice gametes transcriptomes and methylomes
Department of Plant Biology, University of California, Davis
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- Jiming Jiang, collaborator on maize centromeres
Department of Plant Biology, Michigan State University
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- Jeffrey Ross-Ibarra, collaborator on maize genomics
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