

# Jonathan Isaiah Gent

## Curriculum Vitae

Department of Plant Biology  
University of Georgia  
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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

## Selected Publications

- Zeng Y, Dawe RK\*, and **Gent JI\***. Natural methylation epialleles correlate with gene expression in maize. *Genetics*. In press.
- Dawe RK, **Gent JI**, Zeng Y, Zhang H, Fu F-F, Wang N, Kim DW, Swentowsky KW, Liu J, Piri R. Synthetic maize centromeres transmit chromosomes across generations. *Nature Plants*. 2023 Mar 16.
- Gent JI\***, Higgins KM, Swentowsky KW, Fu F-F, Zeng Y, Kim DW, Dawe RK, Springer NM, Anderson SN. The maize gene maternal derepression of r1 (*mdr1*) encodes a DNA glycosylase that demethylates DNA and reduces siRNA expression in endosperm. *Plant Cell*. 2022 Oct
- Chenxin L<sup>†</sup>, **Gent JI<sup>†\*</sup>**, Xu H, Fu H, Russell SD\*, Sundaresan V\*. Resetting of 24-nt siRNA landscape in rice zygotes. *Genome Research*. 2022 Feb
- Hufford MB et al (46 total authors, including **Gent JI** as a senior author). De novo assembly, annotation, and comparative analysis of 26 diverse maize genomes. *Science*. 2021 Aug
- Wang N, **Gent JI**, Dawe RK\*. Haploid induction by a maize *cenH3* null mutant. *Science Advances*. 2021 Jan 20
- Swentowsky KW, **Gent JI**, Lowry EG, Schubert V, Ran X, Tseng KF, Harkess AE, Qiu W, Dawe RK\*. Distinct kinesin motors drive two types of maize neocentromeres. *Genes & Development*. 2020 Sep 1
- Li C, Xu H, Fu F-F, Russell SD\*, Sundaresan V\*, and **Gent JI\***. Redistribution of 24-nt siRNAs in rice gametes. *Genome Research*. 2020 Feb
- 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. 2018
- 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
- 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
- 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
- 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

14. **Gent JJ**, 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
15. **Gent JJ**<sup>†</sup>, Lamm A<sup>†</sup>, 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

\*corresponding author

<sup>†</sup>joint first author

## Seminars and Short Talks

Iowa State University, Department of Genetics, Development and Cell Biology, Oct 2023

Maize Genetics Conference (Development and Cell Biology Workshop), Mar 2023

PAG XXVIII - Plant & Animal Genome Conference, Jan 2020

Sound Agriculture, 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

57<sup>th</sup> 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

54<sup>th</sup> 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 and Grants

NSF MCB Genetic Mechanisms #2218712, 2022-2024 (\$300,000)

NSF MCB Genetic Mechanisms #2114797, 2021-2024 (\$936,153)

NSF Plant Genome Research Program #2139417, 2021-2022 (\$24,966)

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

NIH postdoctoral training grant F32GM095223, 2010-2013 (\$152,874)

## 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, Frontiers in Plant Science, Genetics, Genome Research, Molecular Plant, MBE, Nature*

*Communications, Nature plants, Nature Genetics, The Plant Cell, Plant Physiology, PNAS, PLOS Genetics*

#### Ad hoc reviewing (grant proposals)

NSF PGRP, NSF Genetic Mechanisms, US-Israel Binational Agricultural Research and Development Fund (BARD), and German Research Foundation (DFG)

#### 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 Kent, former undergraduate researcher working on small RNAs  
Nationwide Children's Hospital  
matthew.kent@nationwidechildrens.org
- Richard Gell, former undergraduate researcher working on centromeres  
North Carolina State University  
richardmgell@gmail.com

##### Collaborators

- Sarah Anderson, Co-PI on DNA demethylation in maize endosperm project  
Department of Genetics, Development, and Cell Biology, Iowa State University  
sna@iastate.edu, (515) 294-5194
- John Fowler, Co-PI on DNA demethylation in maize pollen project  
Department of Botany and Plant Pathology, Oregon State University  
fowlerjo@oregonstate.edu, (541) 737-5307
- Venkatesan Sundaresan, PI of chromatin in rice reproductive cells project  
Department of Plant Biology, University of California, Davis  
sundar@ucdavis.edu (530), 754-9677