

## Brad Nelms, Ph.D.

Assistant Professor

Department of Plant Biology, University of Georgia

nelms@uga.edu

### PROFESSIONAL QUALIFICATIONS

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**Stanford University** 2016 – 2020  
NSF Postdoctoral Fellow  
Advisor: Virginia Walbot, Ph.D.

**Harvard University** Nov. 2015  
Ph.D. in Biophysics, Dissertation: *Understanding cell specialization through functional genomics*  
Advisor: Wayne Lencer, M.D.

**University of Wisconsin, Madison** June 2008  
B.S. in Biochemistry, Chemistry, and Physics (triple major)  
Graduation with Distinction, Comprehensive Honors in Biochemistry

### ACADEMIC POSITIONS

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**University of Georgia** 2020 – present  
Assistant Professor, Department of Plant Biology and (by courtesy) Genetics

### FELLOWSHIPS

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NSF Postdoctoral Research Fellowship in Biology, 3 years 2016 – 2019  
NSF Graduate Research Fellowship, 3 years 2010 – 2013  
Herchel Smith Graduate Fellowship, 2 years 2008 – 2010

\*12 participating graduate programs at Harvard each nominated one candidate; 7 fellowships were awarded

### PUBLICATIONS

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1. Ming, X., Wan, M., Zhang, Z., Xue, H., Wu, Y., Xu, Z., Lian, H., Yuan, M., Mai, Y., Hu, Y., Liu, K., Gao, J., Shao, Q., Marchant, B.<sup>†</sup>, **Nelms, B.**<sup>†</sup>, Walbot, V.<sup>†</sup>, and J. Wang<sup>†</sup>. FX-Cell: A method for single-cell RNA sequencing of difficult-to-digest and cryopreserved plant samples. *Nature Methods* (2025). <sup>†</sup>Co-corresponding authors
2. Meyer, C.A., **Nelms, B.**<sup>†</sup>, and B. Schmitz<sup>†</sup>. Nanorate sequencing reveals the *Arabidopsis* somatic mutation landscape. *Proceedings of the National Academy of Sciences*, 122(48): e2514194122 (2025). <sup>†</sup>Co-corresponding authors

3. Scherer, J., Hinczewski, M., and **B. Nelms**<sup>†</sup>. Quantitative and sensitive sequencing of somatic mutations induced by a maize transposon. *Proceedings of the National Academy of Sciences*, 122(32): e2426650122 (2025). <sup>†</sup>Corresponding author
4. Sugi, N., Calhau, A. ..., **Nelms, B.**, ... and T. Widiez. The peri-germ cell membrane: Poorly characterized but key interface for plant reproduction. *Nature Plants*, 10(11): 1607-1609 (2024).
5. Zeng, Y.\*, Somers, J.\*, Bell, H.S., Dawe, R. K., Fowler, J. E., **Nelms, B.**<sup>†</sup>, and J. I. Gent<sup>†</sup>. Potent pollen gene regulation by DNA glycosylases in maize. *Nature Communications*, 15(1): 8352 (2024). \*Co-first authors; <sup>†</sup>Co-corresponding authors
6. Washburn, M., J. Alaniz-Fabián, T. Scroggs, and **B. Nelms**<sup>†</sup>. Single-cell RNA-seq of maize meiocytes and pollen grains. *Nature Protocols*, 18:3512-3533 (2023). <sup>†</sup>Corresponding author
7. Somers, J. and **B. Nelms**<sup>†</sup>. The Sporophyte-to-Gametophyte Transition: The haploid generation comes of age. *Current Opinion in Plant Biology*, Accepted (2023). <sup>†</sup>Corresponding author
8. **Nelms, B.**<sup>†</sup> and V. Walbot. Gametophyte genome activation occurs at pollen mitosis I in maize. *Science*, 375:424-429 (2022). <sup>†</sup>Corresponding author
9. **Nelms, B.**<sup>†</sup> and V. Walbot<sup>†</sup>. Defining the developmental program leading to meiosis in maize. *Science*, 364:52-56 (2019). <sup>†</sup>Co-corresponding authors
10. **Nelms, B.**, N. Dalomba, and W. Lencer. A targeted RNAi screen identifies factors affecting diverse stages of receptor-mediated transcytosis. *Journal of Cell Biology*, 216:511-525 (2017).
11. **Nelms, B.**, L. Waldron, L. Barrera, A. Weflen, J. Goettel, G. Guo, R. Montgomery, M. Neutra, D. Breault, S. Snapper, S. Orkin, M. Bulyk, C. Huttenhower, and W. Lencer. CellMapper: rapid and accurate inference of gene expression in difficult-to-isolate cell types. *Genome Biology*, 17:201 (2016).
12. Rao, M., **B. Nelms**, L. Dong, V. Salinas-Rios, M. Gershon, and G. Corfas. Enteric glia express Proteolipid Protein 1 and are a transcriptionally unique population of glia in the mammalian nervous system. *Glia*, 63:2040-2057 (2015).

## OTHER SIGNIFICANT PRODUCTS

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13. U.S. Patent No. 11,519,831, “Methods to isolate cells from fixed tissue,” December 6<sup>th</sup>, 2022. Inventor: **B. Nelms** (Stanford, CA)
14. **Nelms, B.** CellMapper: Predict genes expressed selectively in specific cell types. Software package for R, Bioconductor Release 3.12 (2015). doi: 10.18129/B9.bioc.CellMapper

## PRESENTATIONS

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### Invited Talks

Society for Developmental Biology – Southeast Regional Meeting  
Kennesaw, GA, May 2026 (*upcoming*)

University of California - Riverside, Bioengineering Colloquium  
Riverside, CA, May 2026 (*upcoming*)

Japanese Society of Plant Physiologists, 67<sup>th</sup> Annual Meeting  
Tokyo, Japan, March 2026 (*upcoming*)

University of Georgia – Plant Synthetic Biology Symposium  
Athens, GA, August 2025

Plant Genetic Engineering Network (PlantGENE) Protoplast Workshop  
May 2025 (*remote seminar*)

University of Georgia – Developmental Biology Spring Retreat  
Athens, GA, May 2025

Harvard Digestive Diseases Center (HDDC) Monthly Seminar Series  
Boston, MA, February 2025

27<sup>th</sup> International Conference on Sexual Plant Reproduction  
Providence, RI, July 2024

University of South Carolina – Aiken, Department of Biological Sciences  
Aiken, SC, January 2024

North Carolina Plant Molecular Biology Consortium  
Raleigh, NC, November 2023 (*remote seminar*)

University of Georgia – Genetics Department Annual Retreat  
Athens, GA, August 2023

University of Georgia Plant Center Retreat  
Johnstown, IA, December 2022

University of North Carolina - Charlotte, Department of Biological Sciences  
Charlotte, NC, September 2022 (*anceled because of Hurricane Ian*)

Saclay Plant Sciences Network  
Paris, France, June 2022 (*remote seminar*)

Corteva Agriscience  
Johnstown, IA, April 2022

Iowa State University, Department of Agronomy  
Ames, IA, April 2022

Max Planck Institute for Plant Breeding Research, Department of Chromosome Biology  
Cologne, Germany, April 2021 (*remote seminar*)

International Plant and Animal Genomes (PAG) Conference XXVII  
San Diego, CA, January 2019

University of Oklahoma, Department of Microbiology & Immunology Seminar  
Oklahoma City, September 2018

Institut National de la Recherche Agronomique, Meiotic Recombination and Synapsis Group  
Versailles, France, March 2018

### **Selected Talks**

American Society of Plant Biology, Annual Meeting  
Milwaukee, WI, August 2025

Annual Maize Genetics Conference, Developmental and Cell Biology Workshop  
St. Louis, MO, March 2025

64<sup>th</sup> Annual Maize Genetics Conference (*Lightning Talk*)  
St. Louis, MO, March 2022

Plant Genome Research Program, 21<sup>st</sup> Annual Awardee Meeting (*Lightning Talk*)  
National Sciences Foundation Headquarters, Arlington, VA, September 2018

60<sup>th</sup> Annual Maize Genetics Conference  
Saint Malo, France, March 2018

### **Other Talks / Poster Presentations**

64<sup>th</sup> Annual Maize Genetics Conference, St. Louis, MO, March 2022 (*Poster*)  
63<sup>rd</sup> Annual Maize Genetics Conference, St. Louis, MO, March 2021 (*Poster*)  
American Society of Plant Biology Annual Meeting, August 2019 (*Poster*)  
61<sup>th</sup> Annual Maize Genetics Conference, St. Louis, MO, March 2019 (*Poster*)  
National Plant Genome Initiative 5<sup>th</sup> Annual Postdoc Meeting, September 2018 (*Talk*)  
Gordon Research Conference on Meiosis, June 2018 (*Poster*)  
59<sup>th</sup> Annual Maize Genetics Conference, St. Louis, MO, March 2018 (*Poster*)  
GI Enders Research Lecture, Boston Children's Hospital, April 2015 (*Talk*)  
Harvard Biophysics Program Fall Retreat, September 2014 (*Poster*)  
GI Enders Research Lecture, Boston Children's Hospital, January 2014 (*Talk*)  
Harvard Biophysics Program Fall Retreat, October 2013 (*Talk*)  
GI Enders Research Lecture, Boston Children's Hospital, May 2013 (*Talk*)  
Harvard Biophysics Program Fall Retreat, September 2012 (*Poster*)  
Herchel Smith U.S. Conference, Harvard University, June 2012 (*Poster*)  
GI Enders Research Lecture, Boston Children's Hospital, December 2011 (*Talk*)  
Harvard Biophysics Program Fall Retreat, September 2011 (*Poster*)  
Harvard Biophysics Program Fall Retreat, September 2010 (*Poster*)  
Biophysical Society Annual Meeting, Long Beach, CA, February 2008 (*Poster*)

### **HONORS**

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Article recommended as of "special significance in its field" by <i>Faculty Opinions</i>	April 2022
Article selected by MaizeGDB editorial board for 2022 recommended reading list	April 2022
Best Poster Award, Gordon Research Conference on Meiosis	June 2018
Certificate of Distinction in Teaching, Harvard University	April 2010
Graduation with Distinction, UW-Madison	June 2008
Comprehensive Honors in Biochemistry, UW-Madison	June 2008
Departmental Honors in Biochemistry, UW-Madison	June 2008
Dean's List, UW-Madison (awarded all 8 semesters)	2004 – 2008
Wisconsin Scholars Scholarship	2004 – 2008
Kimberly-Clark Research Scholarship	2007 – 2008

### **TEACHING AND MENTORING**

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Dissertation Advisor, Ahema Gaisie	2025 – present
Dissertation Advisor, Taylor Scroggs	2023 – present
Dissertation Advisor, Julian Somers	2022 – present

Dissertation Advisor, Justin Scherer	2022 – present
Master’s Student Advisor, Mary Washburn	2021 – 2023
Instructor, Asking Questions with Genomics Seminar	2024 – present
Co-instructor, Plant Genetics	2021 – present
Co-instructor, Introduction to Biology Honors I	2021 – present
Team member, DeLTA Biology Instructional Action Team	2020 – 2022
Co-developed a restructured Intro Biology Honors I	2020 – 2021
Teaching Fellow for <i>Biochemistry of Membranes</i> , Harvard University	Fall 2009
*Awarded Certificate of Distinction in Teaching	
Tutor and Mentor, Hinton Scholars Program, Harvard Medical School	2009 – 2010
UW-Madison Peer Mentor Tutor Program	2006 – 2008
Biochemistry Peer Mentor Tutor (2007 – 2008)	
Physics Peer Mentor Tutor (2006 – 2007)	

## SERVICE

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Coordinator, UGA Plant Biology Travel and Outreach Fellowship Program	2021 – present
Team member, DeLTA Biology Instructional Action Team	2020 – 2022
Member, Plant Biology Department Committee for Diversity, Equity, and Inclusion	2020 – present
Organized and developed <i>Science of Taste</i> demonstration for LGBTQ PRIDE event at the California Academy of Sciences	June 2018
Member, Organizing Committee for Stanford / Carnegie Joint Plant Biology Retreat	2016 – 2017
Led small group to design T-shirt for Stanford / Carnegie Plant Biology Retreat	2017
*Design now used in other Carnegie Department of Plant Biology material	
Volunteer, Boston Museum of Science	2008 – 2009
Journal reviewer for <i>The Plant Cell</i> (6x), <i>Nature Plants</i> (3x), <i>Development</i> (3x), <i>Frontiers in Plant Science</i> (2x), <i>Nature Communications</i> , <i>The Plant Journal</i> , <i>Cells</i> , <i>Plant Science</i> , <i>G3</i> , <i>Science</i> , <i>Plant Physiology</i> , <i>Theoretical and Applied Genetics</i> , <i>In Vitro Cell and Developmental Biology</i> , <i>New Phytologist</i> , <i>BMC Genomics</i> , and <i>Nature Protocols</i>	
Grant reviewer for NIH (1 panel), NSF (1 panel, 3 ad-hoc reviews), and Saclay Plant Science Network (ad-hoc reviewer)	

## PROFESSIONAL ASSOCIATIONS

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Maize Genetics Cooperation  
 American Biophysical Society  
 American Society of Cell Biology  
 American Society of Plant Biology  
 Out in STEM  
 Phi Beta Kappa