TREVOR M. NOLAN

Duke University ◇ FFSC Rm 4128 ◇ 124 Science Drive ◇ Durham, NC 27708
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EDUCATION

Iowa State University *2013 - 2018*
Ph.D. in Genetics and Genomics
Plant Sciences Institute and Brown Graduate Fellow

Iowa State University *2009 - 2013*
B.S. in Genetics
summa cum laude and Honors Program

RESEARCH EXPERIENCE

Postdoctoral Researcher July 2019-Ongoing
Laboratory of Philip Benfey, Duke University

Postdoctoral Researcher December 2018 - July 2019
Laboratory of Yanhai Yin, Iowa State University

Network Based Discovery of Brassinosteroid Regulation of Plant Growth and Stress Responses in Arabidopsis.

Graduate Research Assistant 2014 - 2018
Laboratory of Yanhai Yin, Iowa State University

To Grow or Survive: Plants Modulate Brassinosteroid-Regulated Transcription Factor BES1 During Drought to Mediate Growth-Stress Tradeoffs.

Undergraduate Research Assistant 2011-2013
Laboratory of Steven Rodermel, Iowa State University

Alternate Pathways of Electron Transport in the Plastid: Modulation of VTE1 in *immutans*.

PUBLICATIONS

20. **Nolan, T.**, S. Chockalingam, L. Xiang, Z. Jubery, M. Lewsey, N. Huser, S. McLaughlin, A. Hurd, Z. Xie, H. Guo, H. Jiang, Y. Bao, T. Tuel, H. Lin, D. Kelley, P. Wang, A. Akintayo, S. Shivakumar, H. Jeon, M. Aluru, M. Zander, D. Nettleton, B. Ganapathysubramanian, S. Sarkar, D. Bassham, P. Schnable, J. Walley, S. Aluru J. Ecker, L. Tang and Y. Yin. Network-Based Discovery of Brassinosteroid Regulation of Plant Growth and Stress Responses in Arabidopsis. *In Preparation.*

19. Xiang, L*, **T. Nolan***, Y. Bao, T. Tuel, D. Shah, S. McLaughlin, A. Hurd, N. Huser, Y. Yin and L. Tang. Robotic Assay for Drought (RoAD) - A fully automated phenotyping system for Brassinosteroid and Drought response. *In Preparation.* * co-first authors.

18. **Nolan, T.**, N. Vukasinovic, D. Liu, J. Russinova and Y. Yin. Brassinosteroids: Multidimensional Regulators of Plant Growth, Development and Stress Responses. *Invited review at Plant Cell - Under Revision.*

17. Pu, Y.*, **T. Nolan***, G. Song, J. Walley, Y. Yin and D.C. Bassham. Brassinosteroids control growth and autophagy through BIN2 modulation of TOR signaling. *Under Revision.* * co-first authors.

16. Jiang, H., B. Tang, Z. Xie, **T. Nolan**, H. Ye, G. Song, J. Walley and Y. Yin. 2019. GSK3-Like Kinase BIN2 Phosphorylates RD26 to Potentiate Drought Signaling in Arabidopsis. *The Plant Journal*.

15. Xie, Z., **T. Nolan**, H. Jiang, B. Tang, M, Zhang, Z. Li and Y. Yin. 2019. The AP2/ERF Transcription Factor TINY Modulates Brassinosteroid-Regulated Plant Growth and Drought Response in Arabidopsis. *Plant Cell*. 31 (8), 1788-1806.

14. Wang, P., **T. Nolan**, Y. Yin and D. Bassham. 2019. Identification of a transcription factor-centered regulatory network of autophagy genes in Arabidopsis. *Autophagy*. 1-17.

13. Xie, Z., **T. Nolan**, H. Jiang and Y. Yin. 2019. AP2/ERF Transcription Factor Regulatory Networks in Hormone and Abiotic Stress Responses in Arabidopsis. *Frontiers in Plant Science*. 10, 228.

12. Guo, H., **T. Nolan**, Z. Xie, G. Song, J. Walley and Y. Yin. 2018. FERONIA Receptor Kinase Contributes to Plant Immunity by Suppressing Jasmonic Acid Signaling in Arabidopsis thaliana. *Current Biology*. 28 (20), 3316-3324.

11. **Nolan, T.**, J. Chen, and Y. Yin. 2017. Cross-talk of Brassinosteroid signaling in controlling growth and stress responses. *Biochemical Journal*. 474 (16), 2641-2661.

10. Chen, J., **T. Nolan**, H. Ye, M. Zhang, H. Tong, P. Xin, J. Chu, C. Chu, Z. Li, and Y. Yin. 2017. Arabidopsis WRKY46, WRKY54 and WRKY70 Transcription Factors Are Involved in Brassinosteroid-Regulated Plant Growth and Drought Response. *Plant Cell*. 29 (6), 1425- 1439.

9. **Nolan, T.**, B. Brennan, M. Zhang, M. Yang, J. Chen, M. Zhang, Z. Li, X. Wang, D. Bassham, J. Walley, and Yin, Y. 2017. Selective Autophagy of BES1 Mediated by DSK2 Balances Plant Growth and Survival. *Developmental Cell*. 41 (1), 33-46.

    - Featured in *Science Signaling, BioTechniques, ScieneDaily* and *Iowa Farmer Today*.

8. Yang, M., C. Li, Z. Cia, Y. Hu, **T. Nolan**, F. Yu, Y. Yin, Q. Xie, G. Tang and X. Wang. 2017. SINAT E3 ligases control the light-mediated stability of the brassinosteroid-activated transcription factor BES1 in Arabidopsis. *Developmental Cell*. 41 (1), 47-58.

7. Ye, H., S. Liu, B. Tang, J. Chen, Z. Xie, **T. Nolan**, H. Jiang, H. Guo, H. Lin, L. Li, Y. Wang, H. Tong, M. Zhang, C. Chu, Z. Li, M. Aluru, S. Aluru, P. Schnable and Y. Yin. 2017. RD26 mediates crosstalk between drought and Brassinosteroid signaling pathways. *Nature Communications*. 8, 14573.

6. Jiang, H., X. Want, **T. Nolan**, Y. Yin, M. Aluru and L. Dong. 2017. Automated microfluidic plant chips-based plant phenotyping system. *IEEE 12th International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*. 756-760.

5. **Nolan, T.**, H. Guo, S. Liu, L. Li, P. Schnable, and Y. Yin. 2016. Identification of Brassinosteroid Target Genes by Chromatin Immunoprecipitation Followed by High-throughput Sequencing (ChIP-seq) and RNA-seq. *Brassinosteroid Analysis Book*.

4. Pogorelko, G., S. Kambakam, **T. Nolan**, A. Foudree, O. Zabotina and S. Rodermel. 2016. Impaired Chloroplast Biogenesis in Immutans, an Arabidopsis Variegation Mutant, Modifies Developmental Programming, Cell Wall Composition and Resistance to Pseudomonas syringae. *Plos one*. 11, 4.

3. Wang, X., J. Chen, Z Xie, S Liu, **T. Nolan**, H. Ye, M. Zhang, H. Guo, P. Schnable, Z. Li, and Y. Yin. 2014. Histone Lysine Methyltransferase SDG8 Is Involved in Brassinosteroid-Regulated Gene Expression in Arabidopsis thaliana. *Molecular Plant* 7, 1303- 1315.

2. Putarjunan, A., X. Liu , **T. Nolan**, F. Yu , and S. Rodermel. 2013. Understanding chloroplast biogenesis using second-site suppressors of *immutans* and *var2*. *Photosynthesis Research* 116, 437-453.

1. Foudree, A., A. Putarjunan, S. Kambakam, **T. Nolan**, J. Fussell, G. Pogorelko, and S. Rodermel. 2012. The Mechanism of Variegation in *immutans* Provides Insight into Chloroplast Biogenesis. *Frontiers in Plant Science* 3, 260

SELECTED TALKS

15. Climate Change-Linked Stress Tolerance in Plants. Hannover, Germany. May 13-16, 2019.
14. Centre for Research in Agricultural Genomics. Barcelona, Spain. May 9th, 2019.
13. Plant Sciences Institute Board Meeting. Ames, IA. April 5, 2019.
12. 3rd International Conference on Brassinosteroid Research. San Diego, CA. August 1-4, 2018.
11. Salk Institute for Biological Studies. San Diego, CA. July 31st, 2018.
10. Duke University. Durham, NC. July 26th, 2018.
9. Plant Biology 2018. Montreal, Quebec, Canada. July 14-18, 2018.
8. University of California San Diego. San Diego, CA. March 13th, 2018.
7. Workshop on Plant Development and Drought Stress. Pacific Grove, CA. November 5-8, 2017.
6. International Conference on Arabidopsis Research. St. Louis, MO. June 19-23, 2017.
5. Post-transcriptional Gene Regulation in Plants Meeting. Austin, TX. July 14-15, 2016.
4. Plant Biology 2016. Austin, TX. July 9-13, 2016.
3. GDCB Brown Bag Seminar Series. Ames, IA. November 11th, 2015.
2. International Conference on Arabidopsis Research. Paris, France. July 5-9, 2015.
1. Crop Bioengineering Consortium Summer 2015 Meeting. Ames, IA. June 17-18, 2015.

POSTER PRESENTATIONS

9. Climate Change-Linked Stress Tolerance in Plants. Hannover, Germany. May 13-16, 2019.
8. Walter E and Helen Parke Loomis Lecture and Mini-Symposium. Ames, IA. May 6th, 2019.
7. Novel candidate gene discovery by computing on phenotypes. Ames, IA. April 3rd, 2019.
6. 1st International Plant Systems Biology Meeting. Roscoff, France. September 10-14, 2018.
5. Loomis and Crop Bioengineering Consortium 2018 Meeting. Ames, IA. May 8-10, 2018.
4. Predictive Crop Design: Genome-to-phenome. Lincoln, NE. April 6-7, 2017.
3. ASPB Midwest Section Meeting. Chicago State University, Chicago, IL. March 23-24th, 2013.
2. Plant Biology 2012. Austin, TX. July 20-24, 2012.
1. ASPB Midwest Section Meeting. University of Nebraska, Lincoln, NE March 24-25, 2012.

TEACHING

Teaching Assistant Spring 2018
Genetics Laboratory (Genetics 313L) *Iowa State University*

Guest Lecturer Fall 2016
Molecular Genetics (Genetics 409) *Iowa State University*

Guest Lecturer Spring 2016
Transmission Genetics (Genetics 510) *Iowa State University*

Tutor Fall 2012
Principles of Genetics (Genetics 313) *Iowa State University*

Undergraduate Teaching Assistant Fall 2011
Principles of Genetics (Genetics 313 and 313L) *Iowa State University*

MENTORING

Mentor in Research Experience for Teachers Program

Nick Smith, Eagle Grove High School 2017-2018
Brent Chambers, Bellevue High School 2014

Mentor for First Year Graduate Students

Tanner Cook 2018
Ashley Paulsen 2017
Basanta Bista 2017
Max McReynolds 2016
Jie Tang 2016

Mentor for Undergraduate Lab Assistants

Ashley Hurd 2018-Present
Nicole Huser 2016-Present
Sean McLaughlin 2016-Present
Jessica Parrott 2016
Paige Rassel 2016
Kyle Small 2016
Ben Brennan 2014-2015

AWARDS AND FELLOWSHIPS

Zaffarano Prize for Graduate Student Research 2019
Iowa State University

Karas Award for an Outstanding Dissertation 2019
Iowa State University

Genetics, Development and Cell Biology Award 2019
Iowa State University

Genetics and Genomics Research Excellence Award 2018
Iowa State University

Biochemical Journal Poster Award - 1st Place 2018
3rd International Conference on Brassinosteroid Research, San Diego, CA

Best Poster Presentation by a Graduate Student 2018
Loomis and Crop Bioengineering Consortium Meeting, Ames, IA

Brown Graduate Fellow 2016-2017
Iowa State University

Plant Sciences Institute Fellow 2013-2017
Iowa State University

Travel Awards

Crop Bioengineering Center Travel Grant 2019
Iowa State University W.E. Loomis award for travel to Plant Biology 2018
Workshop on Plant Development and Drought Resistance 2017
Iowa State University W.E. Loomis award for travel to Plant Biology 2017
Iowa State University W.E. Loomis award for travel to Plant Biology 2016
Iowa State University GDCB travel award to the ICAR 2015

Best Oral Presentation by a Graduate Student 2016
Post-transcriptional Gene Regulation in Plants Meeting, Austin, TX

Best Poster Presentation by an Undergraduate Student 2013
ASPB Midwest Meeting, Chicago, IL

Research in Genetics Summer Undergraduate Internship 2012
Sui Tong Chan Fung Fund for the Promotion of Study, Iowa State University

GRANTS

Network-Based Discovery of Brassinosteroid Regulation of Plant Growth and Stress Responses in Arabidopsis 2018-2021
PI: Yanhai Yin Co-PI: Justin Walley

Role: Led the development and writing of this funded proposal from the NSF Division of Molecular and Cellular Biosciences Cellular Dynamics and Function cluster.

Crosstalk between Brassinosteroid and autophagy pathways in the regulation of plant growth and stress responses 2017-2020
PI: Yanhai Yin Co-PIs: Diane Bassham and Justin Walley

Role: Generated preliminary data, participated in writing and designed experimental approach for this funded NIH R01 proposal.

PROFESSIONAL ACTIVITIES

Sigma Xi Scientific Research Society 2019

Graduate Student Representative 2017
Genetics, Development and Cell Biology Faculty Search Committee

Iowa State University Crop Bioengineering Center Member 2014-2019

American Society of Plant Biologists Member 2012-Present

Ad Hoc Reviewer

Independent manuscript reviews
Planta 2019
Plant Cell 2018
Mentored reviews under Dr. Yanhai Yin
New Phytologist, *PNAS*, *Developmental Cell*, *Plant Biotechnology Journal* 2016-2018

REFERENCES

Dr. Philip Benfey, Professor
Duke University

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Dr. Yanhai Yin, Professor
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Dr. Diane Bassham, Professor
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Dr. Stephen Howell, Professor
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Dr. Justin Walley, Assistant Professor
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