

Nathan R. Johnson

Huck Institutes for the Life Sciences
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EDUCATION

Ph.D. Plant Biology 2014-present

Penn State University, University Park

Tool development for sRNA-seq analysis and investigation of sRNAs in parasitic plant virulence.

Thesis advisor: Mike Axtell

B.S. Plant Biology 2006-2011

Michigan State University, East Lansing

Structure-function analysis of JAZ9 protein-protein interactions in Arabidopsis

Research advisor: Sheng-Yang He

EMPLOYMENT EXPERIENCE

Laboratory Technologist / Manager 2011-2014

Great Lakes Bioenergy Research Center

Studied transcriptional regulation and enzymes involved in hemicellulose biosynthesis in plants

PI: Curtis Wilkerson

Undergraduate Laboratory Assistant 2009-2011

Plant Research Laboratory

PI: Sheng-Yang He

PEER-REVIEWED JOURNAL PAPERS

5. S Shahid, G Kim, [NR Johnson](#), E Wafula, F Wang, C Coruh, V Bernal-Galeano, T Phifer, CW dePamphilis, JH Westwood, MJ Axtell, "[MicroRNAs from the parasitic plant Cuscuta campestris target host messenger RNAs](#)", *Nature* (2018)
4. F Wang, [NR Johnson](#), C Coruh and MJ Axtell, "[Genome-wide analysis of single non-templated nucleotides in plant endogenous siRNAs and miRNAs](#)", *Nucleic Acids Res.* (2016)
3. [NR Johnson](#), C Coruh and MJ Axtell, "[Improved Placement of Multi-Mapping Small RNAs](#)", *G3* (2016)

2. JK Jensen, [NR Johnson](#) and CG Wilkerson, “[Arabidopsis thaliana IRX10 and two related proteins from psyllium and Physcomitrella patens are xylan xylosyltransferases](#)”, *The Plant Journal* (2014)
1. JK Jensen, [NR Johnson](#) and CG Wilkerson, “[Discovery of diversity in xylan biosynthetic genes by transcriptional profiling of a heteroxylan containing mucilaginous tissue](#)”, *Front. Plant Sci.* (2013)

PRESENTATIONS

4. ASPB 2018 - Montreal, QC, Canada, *Jul-2018*
Rapid evolution of trans-species sRNAs in the genus *Cuscuta*
3. Life Science Symposium - PSU, *May-2018*
Rapid evolution of trans-species sRNAs in the genus *Cuscuta*
2. Plant Anatomy Course - PSU, *Apr-2018*
Anatomy of *Cuscuta campestris* and the role of sRNAs in parasitism
1. Plant Biology Colloquium - PSU, *Feb-2016*
Insights into Small RNA Sequencing Alignment

POSTERS

10. ASPB 2018 - Montreal, QC, Canada, *Apr-2018*
Small RNA warfare in parasitic plants
9. ICAR 2017 - St.Louis, MO, *Apr-2017*
MicroRNAs from the parasitic plant *Cuscuta campestris* target host messenger RNAs
8. ASPB 2016 – Austin, TX, *Jul-2016*
ShortStack3: Improving Alignment of Small RNAs Through Superior Multi-Mapper Placement
7. ASPB (Mid-Atlantic Section) – Swarthmore College, *Apr-2016*
ShortStack3: Improving Alignment of Small RNAs Through Superior Multi-Mapper Placement
Marsho Award Recipient
6. ASPB 2015 – Minneapolis, MN, *Jul-2015*
Advancements in small RNA-seq alignment methods for ambiguously mapped reads
5. 20th Plant Biology Symposium - PSU, *May-2015*
Strategies for aligning small RNA sequencing data
4. ASPB (Mid-Atlantic Section) - Swarthmore College, *Apr-2015*
Strategies for aligning small RNA sequencing data
3. Annual Retreat Poster Forum – GLBRC, *May-2013*
Efforts to Identify Transcription Factors Regulating Mixed-Linkage Glucan Biosynthesis
2. Annual Retreat Poster Forum – GLBRC, *May-2012*
Investigating the Role of Transcription Factor KNAT7 in the Regulation of Xylan Biosynthesis

1. University Undergraduate Research and Arts Forum - MSU, *Apr-2011*
Positively Charged Amino Acid Motifs Crucial to A. thaliana JAZ3 Function and Jasmonic Acid Signaling

AWARDS

- 2017 Huck Graduate Research Innovation Grant, Huck Institutes
Awarded for original research proposals entirely independent of advisor involvement (\$5,000).
- 2017 J. Ben and Helen D. Hill Memorial Fund Award
Award covers expenses for the presentation of work at a scientific conference (\$1,500).
- 2016 Marsho Award, ASPB Mid-Atlantic section
Awarded to best graduate student or post-doctoral poster presentation (\$150).

TEACHING

- Fall 2016 and 2017: **Bio 110 – Basic concepts and Biodiversity**
Lectured to two laboratory sections, one comprised of students from the honors college. Prepared weekly presentations, led the class in laboratory exercises and provided thorough critique of writing work. Course work covered introductory laboratory techniques with a focus on biodiversity, cellular replication and basic genetics.
- Spring 2016: **Bio 240 – Function and Development of Organisms**
Lectured to two laboratory sections. Prepared weekly presentations, led the class in laboratory exercises and provided thorough critique of writing work. Course work covered introductory laboratory techniques with a focus on animal and plant physiology and development.

OUTREACH, SERVICE AND MENTORSHIP

- Exploration-U, *Feb-2017*
Participated in a local school district's science outreach event. Engaged young students in plant biology.
- Hosted Charter School for Laboratory Field Trip, *Nov-2015*
Organized and coordinated demonstrations for local elementary and middle school students. Demonstrations included laboratory presentations in microscopy, evolution and general science interest.
- Judge for Undergraduate Poster Fair - PSU, *Oct-2015*
Provided feedback and critiqued undergraduate posters, advancing the student's science education.
- Judge for Pennsylvania Junior Academy of Sciences - PSU, *May-2015/16/17*
Participated as a judge for groups of middle and high school students in their championship-level competition. Critiqued and encouraged young scientists as they presented research projects and results. Participated for 3 years, 2015-2017

- Summer REU Program, *Summer-2014/15/16*
Oversaw 1-2 undergraduate students from Knox College who had been selected for the REU program. This program was intended to provide hands-on experience in a laboratory for students at a primarily-undergrad institution with less research opportunities. This resulted in 2 authorship credits for students on separate publications.