Andrew C. Read

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Education and Training

2021 Inclusive Science Education Fellow. University of Minnesota. Coordinator: Meaghan Stein.

2013-2020 Cornell University Section of Plant Pathology and Plant-Microbe Biology. PhD Thesis: Defense and Counter-Defense in the Rice-*Xanthomonas* Pathosystem. Supervisor: Dr. Adam Bogdanove.

2016 QTL Editing Workshop. University of Minnesota. Workshop coordinator: Dr. Dan Voytas

2015 Rice Research to Production Course. International Rice Research Institute, Los Baños, Philippines. Course coordinator: Dr. Jan Leach

2006 University of Hawaii at Hilo. B.A.: Ecology, Evolution, and Conservation Biology. Research advisor: Dr. Michael Shintaku

Research Experience

2021-Present **Postdoctoral Associate** – Springer Lab – UMN
Studying the relationships between dynamic DNA methylation, transposon regulation, and defense gene expression and how these relationships may guide the evolution and diversity of plant immunity genes.

2013-2020 **Graduate Student** – Bogdanove Lab – Cornell University
Characterization of rice bacterial leaf streak susceptibility gene OsSULTR3;6– including sub-cellular co-localization, designer TAL effector activation of paralogs, and genome editing of the native locus. Generation of modified TAL effectors in order to further understand requirements for nuclear localization and recruitment of transcriptional machinery. Additionally, rotated in the labs of Dr. Alan Collmer and Dr. Greg Martin.

2009-2013 **Research Associate** – Monsanto Co., Cambridge, MA
Received Above and Beyond Award for contributions to optimization of fourth generation herbicide tolerance trait – contribution included synthesis and *in vitro* assay of hundreds of protein variants. Project team leader responsible for coordination within and among Monsanto sites for the optimization of a novel insecticidal protein.

2008 **Research Technician** (contract) – Radius Pharmaceuticals, Cambridge, MA
Performed and analyzed molecular techniques as a part of the *in vitro* research and development team at pharmaceutical start-up, including radioimmunoassay, fluorescence- polarization ligand binding, and mammalian tissue culture.

2006-2008 **Research Lab Specialist** – Research Corp. of the University of Hawaii, Hilo, HI
Surveyed East Hawaii commercial orchid operations for presence of major orchid viruses using a variety of nucleic acid and immunological techniques. Analyzed soil samples for relative abundance of bacterial

pathogens. Established and maintained tissue culture and greenhouse collection of over 20 Hawaiian taro varieties.

Teaching and Mentorship

2021 **Guest Instructor.** UMN Applied Plant Genomics and Bioinformatics
Designed interactive 50 minute lecture on plant NLR immunity genes – including background material, comparison of methods to detect NLR genes from genomic sequences, and the importance of pangenomes in NLR studies.
https://github.com/acread/Presentations_And_Resources/blob/main/FINAL_NLR-Pangenomes.pdf

2018 **Guest Instructor**. Cornell Laboratory in Plant Molecular Biology
Created lecture and lab materials for a graduate level module on genome editing including background on CRISPR/Cas reagents and PCR-based screening methods.

2017 **Teaching Assistant**. PLBIO2300 "Global Plant Biodiversity and Vegetation" Facilitate class discussions based on readings, grade course-work and exams for 25 students.

2017 **Co-mentor** – Research Experience for Undergraduates (REU)
Summer project exploring TAL effector applications in synthetic biology as repressors of bacterial gene expression. Student has been accepted a virology graduate program.

2016 **Mentor** – REU
Student designed and tested modified TAL effectors that could be used in synthetic biology applications in order to modulate bacterial gene expression. Student currently in medical school.

2015 **Mentor** - CienciAmerica Program
Student employed molecular cloning techniques to construct bacterial expression vectors and carried out *in planta* assays. Student currently pursuing PhD in plant-pathology at Cornell.

2014 **Teaching Assistant**. PLPA3010 "Biology and Management of Plant Diseases" Prepared and delivered lectures, taught basic lab safety and technique, and graded course- work for weekly lab section made up of 21 undergraduate and graduate students. Additionally, with fellow TA, prepared and delivered two 50-minute lectures on molecular plant-pathogen warfare to the 40 student class.

2014 **Co-mentor** - REU
Student utilized a variety of computational and molecular techniques to design and synthesize designer TAL effectors targeting specific rice promoters. Student is currently pursuing PhD in biomedical research at Vanderbilt University.

2008 **Mentor** – Local, State, and International Science Fair
Mentor for Hawaii Island high school student exploring virus incidence and tissue culture of Hawaiian varieties of taro (*Colocasia esculenta var. esculenta*). Student is currently pursuing organic chemistry PhD at UC Santa Cruz.

Publications

2021 Wang, L, H Betul Kaya, N Zhang, R Rai, MR Willmann, SCD Carpenter, **AC Read,** F Martin, Z Fei, JE Leach, GB Martin, AJ Bogdanove. Spelling changes and fluorescent tagging with prime editing vectors for plants. *Frontiers in Genome Editing*.

2020 **Read, AC**, M Hutin, MJ. Moscou, FC. Rinaldi, and AJ Bogdanove. Cloning of the rice Xo1 resistance gene and interaction of the Xo1 protein with the defense-suppressing Xanthomonas effector Tal2h. *Molecular Plant-Microbe Interactions*.

2020 Scott, AD, A Zimin, D Puiu, R Workman, M Britton, S Zaman, M Caballero, **AC Read**, AJ Bogdanove, E Burns, JL Wegrzyn, W Timp, SL Salzberg, DB Neale. The giant sequoia genome and proliferation of disease resistance genes. *G3: Genes, Genomes, Genetics*.

2020 **Read, AC**, MJ Moscou, AV Zimin, G Pertea, RS Meyer, MD Purugganan, JE Leach, LR Triplett, SL Salzberg, AJ Bogdanove. Genome assembly and characterization of a complex zfBED-NLR gene-containing disease resistance locus in Carolina Gold Select rice with Nanopore sequencing. *Plos Genetics*.

2017 Helmkampf, M, T Wolfgruber, M Bellinger, R Paudel, M Kantar, S Miyasaki, H Kimball, A Brown, A Veillet, **AC Read**, and M Shintaku. Phylogenetic relationships, breeding implications, and cultivation history of Hawaiian taro (*Colocasia esculenta*) through genome-wide SNP genotyping. *Journal of Heredity*.

2016 **Read, AC**, FC Rinaldi, M Hutin, YQ He, LR Triplett, and AJ Bogdanove. Suppression of *Xo1*-Mediated Disease Resistance in Rice by a Truncated, Non-DNA-Binding TAL Effector of *Xanthomonas oryzae*. *Frontiers in Plant Science*.

2016 Rydel, TJ, AM Wollacott, R. Brown, W. Akbar, TL Clark, S. Flasinski, JR Nageotte, **AC Read**, X. Shi, BJ Werner, MJ Pleau, JA Baum, and A Gowda. A transgenic approach for controlling *Lygus* spp (Hemiptera: Miridae) in cotton. *Nature Communications*.

2014 Ellis, C, A Evdokimov, P Feng, X Fu, C Larue, JR Nageotte, **AC Read**, and AM Wollacott. Herbicide tolerance genes and methods of use thereof. US patent application no. 62/064,343.

Awards and Grants

2020 NSF-PRFB Postdoctoral Fellowship "The role of transposable elements and DNA methylation on immunity gene regulation and diversification in maize and the model monocot *Setaria viridis"*

2018 USDA-NIFA Predoctoral Fellowship "Defining the resistance profile of a broad- spectrum defense ene family"

2018 APS foundation student travel award to attend ICPP in Boston, MA

2017 Cornell University Barbara McClintock Graduate Student Award

Selected Posters and Presentations

2020 **Read, AC** "A *Xanthomonas oryzae* effector suppresses *Xo1*-mediated rice defense" 12th Japan-US Seminar in Plant Pathology.

2018 **Read, AC** "Snap! Crackle! Pop! Rice CRISPRs for tolerance to disease and environmental stress" CRISPRcon 2018.
Presentation: www.youtube.com/watch?v=JTCNK-PqGas&feature=youtu.be

2017 **Read, AC**, FC Rinaldi, M Hutin, YQ He, L Triplett and AJ Bogdanove. "A truncated Xanthomonas oryzae TAL effector required for effector triggered immunity suppression in an American heirloom rice cultivar" American Phytopathological Society Meeting. **Presentation: www.apsnet.org/publications/Webinars/pages/2017.aspx**

2016 **Read, AC**, FC Rinaldi, M Hutin, YQ He, L Triplett, and AJ Bogdanove. "Truncated TAL effectors of *Xanthomonas oryzae*: from pseudogenes to virulence factors" IS- MPMI Congress.

2015 **Read, AC**, RA Cernadas, ML Harvey, and AJ Bogdanove. "Can paralogs substitute for the rice bacterial leaf streak susceptibility gene OsSULTR3;6?" *Xanthomonas* Genomics Conference.

2012 **Read, AC**, JM Palombo, AM Paquette, and H Vu. "Optimization of insecticidal proteins" Technical Community of Monsanto.

2007 **Read, AC**, B Bushe, and M Shintaku. "Characterization of a Cymbidium mosaic virus isolate that is undetectable by a commercial ELISA virus detection kit" American Phytopathological Society Meeting.

Elected and Appointed Offices

2015-2017 Field representative - Cornell Graduate and Professional Student Association Executive

2015-2017 Committee member – Plant Pathology and Plant-Microbe Biology Graduate Student Association (PPPMB-GSA)

2017 Colloquium Committee chair – PPPMB-GSA

2013-2020 Colloquium Committee member – PPPMB-GSA

Professional Memberships

American Phytopathological Society
Bacteriology sub-committee
Graduate student sub-committee

International Society for Molecular Plant-Microbe Interactions

Referee

New Phytologist
Plant Biotechnology Journal
Journal of Integrative Agriculture
Frontiers in Plant Science
Rice