

University of Wyoming (Dr. Dan Wall Lab)

UNDERGRADUATE RESEARCH ASSISTANT

- Characterized NTRC-like activator mutants in *Myxococcus xanthus*

Laramie, WY

Jan. 2010 - May 2011

University of Wyoming (Dr. Peter Thorsness Lab)

UNDERGRADUATE RESEARCH ASSISTANT

- Generated and characterized BAX mutants in *Saccharomyces cerevisiae*

Laramie, WY

Jan. 2009 - May 2009

Grants

Feed the Future Innovation Lab for Crop Improvement

co-PI, \$806,112 (\$25,000,000)

USAID

2019 - 2024

FACT: Geospatial Plant Breeding Tools and Technologies

PI, \$249,971 (\$500,000)

USDA NIFA

2019 - 2022

BREAD PHENO: High-Throughput Phenotyping with Smart Phones. #phenoApps

co-PI, \$714,804 (\$1,632,824)

NSF BREAD

2016 - 2020

Developing Smartphone Applications for Estimating the Grain Yield of Winter Wheat

co-PI, \$5,500

KS Wheat Alliance

2013 - 2014

Publications

PREPRINTS & UPCOMING

OneKK: An Android application for rapid assessment of seed size, shape, and thousand kernel weight

TW Rife, C Courtney, M Calvert, C Amos, S Amaravadi, M Neilsen, JA Poland

(IN PREPARATION)

Breedbase: a digital ecosystem for modern plant breeding

Morales N, A Ogbonna, B Ellerbrock, G Bauchet, T Tantikanjana, I Tecle, A Powell, D Lyon, N Menda, C Simoes, S Saha, P Hosmani, M Flores, N Panitz, R Preble, A Agbona, I Rabbi, P Kulakow, P Peteti, R Kawuki, W Esuma, M Kanaabi, D Chelagant, E Uba, A Olojede, J Onyeka, T Shah, M Karanja, C Egesi, H Tufan, P Agre, A Asfaw, JL Jannink, M Wolfe, C Birkett, D Waring, J Hershberger, M Gore, K Robbins, T Rife, C Courtney, J Poland, E Arnaud, MA Laporte, H Kulembeka, K Salum, E Mrema, A Brown, S Bayo, B Uwimana, V Akech, GC Yencho, BD Boeck, H Campos, R Swennen, J Edwards, L Mueller

G3 (ACCEPTED)

JOURNAL ARTICLES

Intercross: An Android app for plant breeding and genetics cross management

TW Rife, C Courtney, G Bauchet, M Neilsen, JA Poland

Crop Science (JAN. 2022). DOI: 10.1002/csc2.20702

The *Aegilops ventricosa* 2NvS segment in bread wheat: cytology, genomics and breeding

L Gao, DH Koo, P Juliana, T Rife, D Singh, C Lemes da Silva, T Lux, KM Dorn, M Clinesmith, P Silva, X Wang, M Spannagl, C Monat, B Friebe, B Steuernagel, GJ Muehlbauer, S Walkowiak, C Pozniak, R Singh, N Stein, M Mascher, A Fritz, J Poland

Theoretical and Applied Genetics 134 (FEB. 2021) PP. 529–542. DOI: 10.1007/s00122-020-03712-y

Prospector: a mobile app for portable, high-throughput NIRS phenotyping

TW Rife, C Courtney, J Hershberger, MA Gore, M Neilsen, JA Poland

The Plant Phenome Journal 4 (SEPT. 2021). DOI: 10.1002/ppj2.20024

BrAPI—an application programming interface for plant breeding applications

The BrAPI Consortium

Bioinformatics 35.20 (OCT. 2019) PP. 4147–4155. DOI: 10.1093/BIOINFORMATICS/BTZ190

A Field-Based Analysis of Genetic Improvement for Grain Yield in Winter Wheat Cultivars Developed in the US Central Plains from 1992 to 2014

TW Rife, RA Graybosch, JA Poland

Crop Science 59.3 (2019) P. 905. DOI: 10.2135/CROPSCI2018.01.0073

Genomic Analysis and Prediction within a US Public Collaborative Winter Wheat Regional Testing Nursery

TW Rife, RA Graybosch, JA Poland

The Plant Genome 11.3 (2018) PP. 1–7. DOI: 10.3835/PLANTGENOME2018.01.0004

QTL mapping of pre-harvest sprouting resistance in a white wheat cultivar Danby

M Shao, G Bai, TW Rife, J Poland, M Lin, S Liu, H Chen, T Kumssa, A Fritz, H Trick, Y Li, G Zhang

Theoretical and Applied Genetics 131.8 (AUG. 2018) PP. 1683–1697. DOI: 10.1007/s00122-018-3107-5

Mobile Applications for High-throughput Phenotyping

C Courtney, ML Neilsen, TW Rife

30th International Conference on Computer Applications in Industry and Engineering (2017)

A dynamic, real-time algorithm for seed counting

ML Neilsen, C Courtney, S Amaravadi, Z Xiong, J Poland, T Rife

Proc. Of the 26th International Conference on Software Engineering and Data Engineering (2017)

Extending watershed segmentation algorithms for high throughput phenotyping

ML Neilsen, SD Gangadhara, TW Rife

Proceedings of the 29th International Conference on Computer Applications in Industry and Engineering (2016)

Quantifying variety-specific heat resistance and the potential for adaptation to climate change

J Tack, A Barkley, TW Rife, JA Poland, LL Nalley

Global change biology 22.8 (AUG. 2016) PP. 2904–2912. DOI: 10.1111/gcb.13163

Spiked GBS: a unified, open platform for single marker genotyping and whole-genome profiling

TW Rife, S Wu, RL Bowden, JA Poland

BMC Genomics 16.1 (DEC. 2015) P. 248. DOI: 10.1186/s12864-015-1404-9

Field book: An open-source application for field data collection on android

TW Rife, JA Poland

Crop Science 54.4 (2014) PP. 1624–1627. DOI: 10.2135/cropsci2013.08.0579

Genotyping-by-Sequencing for Plant Breeding and Genetics

JA Poland, TW Rife

The Plant Genome Journal 5.3 (2012) P. 92. DOI: 10.3835/PLANTGENOME2012.05.0005

SOFTWARE

Field Book

Replaces paper field books in research programs

VERSION 4.5; 10,000+ INSTALLS, URL: [HTTPS://GITHUB.COM/PHENOAPPS/FIELD-BOOK](https://github.com/PhenoApps/Field-Book)

Coordinate

Used to organize samples into a grid for tissue sampling

VERSION 3.0; 1000+ INSTALLS, URL: [HTTPS://GITHUB.COM/PHENOAPPS/COORDINATE](https://github.com/PhenoApps/Coordinate)

Inventory

Connects to a scale to quickly organize and weight samples

VERSION 2.0; 1000+ INSTALLS, URL: [HTTPS://GITHUB.COM/PHENOAPPS/INVENTORY](https://github.com/PhenoApps/Inventory)

Intercross

Manages and tracks crosses made in breeding programs.

VERSION 1.0, URL: [HTTPS://GITHUB.COM/PHENOAPPS/INTERCROSS](https://github.com/PhenoApps/Intercross)

Verify

Manages and tracks individuals in list form

VERSION 1.1; 10,000+ INSTALLS, URL: [HTTPS://GITHUB.COM/PHENOAPPS/VERIFY](https://github.com/PhenoApps/Verify)

Prospector

Collect and organize near-infrared spectroscopy data from handheld NIRS

VERSION 1.0, URL: [HTTPS://GITHUB.COM/PHENOAPPS/PROSPECTOR](https://github.com/PhenoApps/Prospector)

OneKK

Simultaneously measure and weight seeds from an image

VERSION 0.9 BETA, URL: [HTTPS://GITHUB.COM/PHENOAPPS/ONEKK](https://github.com/PhenoApps/OneKK)

Presentations

INVITED TALKS

PhenoApps- Developing the tools and technologies necessary to complete and extend the digital ecosystem for crop improvement
Cornell University, 2021

Android Apps for Phenotyping

TW Rife, JA Poland
Plant and Animal Genome Conference XXVII, 2019, San Diego, CA

PhenoApps: Integrating Free Mobile Apps into Specialty Crop Breeding and Horticultural Programs

TW Rife, JA Poland
American Society for Horticultural Sciences, 2018, Washington, D.C.

Utilizing mobile devices for plant breeding and genetics

TW Rife, JA Poland
Wheat Breeding Technology Workshop, 2018, Marrakesh, Morocco

PhenoApps: open source Android apps for crop field and lab data collection

TW Rife, JA Poland
American Society for Horticultural Sciences, 2017, Waikoloa, HI

Android Apps for Plant Breeding and Genetics #phenoApps

TW Rife, JA Poland
Plant and Animal Genome Conference XXIV, 2016, San Diego, CA

Genomic Selection in Midwest Wheat Breeding Programs

TW Rife, R Graybosch, JA Poland
K-State Research and Extension Annual Conference, 2014, Manhattan, KS

Field Book: An Open-Source Application for Phenotypic Data Collection on Android

TW Rife, JA Poland
Plant and Animal Genome Conference XXII, 2014, San Diego, CA

CONFERENCE POSTERS

Android Apps for Plant Breeding

TW Rife, J Poland
Plant and Animal Genome Conference XXVII, 2019, San Diego, CA

Open-source Android Apps for Phenotyping

TW Rife, J Poland
National Association of Plant Breeders Annual Meeting, 2018, Guelph, ON

Genomic analysis and prediction within a US public collaborative winter wheat regional testing nursery

TW Rife, R Graybosch, J Poland
Plant and Animal Genome Conference XXIV, 2016, San Diego, CA

Field Book: An open-source Android app for collecting phenotypic data

TW Rife, J Poland
Plant and Animal Genome Conference XXIV, 2016, San Diego, CA

PhenoApps: Open-Source Android Apps for Phenotyping

TW Rife, J Poland
National Association of Plant Breeders Annual Meeting, 2016, Raleigh, NC

Field Book: An open-source Android app for collecting phenotypic data

TW Rife, J Poland
9th International Wheat Conference, 2015, Sydney, Australia

Genomic analysis and prediction within a US public collaborative winter wheat regional testing nursery

TW Rife, S Wu, R Graybosch, J Poland
9th International Wheat Conference, 2015, Sydney, Australia

Utilizing Historical Wheat Genotypes and Phenotypes for Modern Plant Breeding

TW Rife, R Graybosch, J Poland
Plant and Animal Genome Conference XXII, 2014, San Diego, CA

Field Book: An open-source application for phenotypic data collection on Android

TW Rife, J Poland
Borlaug Summit on Wheat for Food Security, 2014, Ciudad Obregón, Sonora, Mexico

Utilization of Genotyping-by-Sequencing for Genomic Selection in the Kansas State University Wheat (*Triticum aestivum*) Breeding Program

TW Rife, C Seaman, G Zhang, TJ Martin, J Poland
Plant and Animal Genome Conference XXI, 2013, San Diego, CA

Workshops

Mar. 2020	<i>Utilizing PhenoApps for plant breeding</i>	Bhairahawa, Nepal
Mar. 2020	<i>Utilizing PhenoApps for plant breeding</i>	Kathmandu, Nepal
Feb. 2019	<i>Utilizing PhenoApps for cassava breeding</i>	Kampala, Uganda
Feb. 2019	<i>PhenoApps: Open-source apps for plant breeding and genetics</i>	Dinajpur, Bangladesh
Jul. 2018	<i>PhenoApps Hackathon</i>	Ithaca, NY
Feb. 2018	<i>Utilizing PhenoApps for cassava breeding</i>	Dar es Salaam, Tanzania
Dec. 2017	<i>PhenoApps for genotypic sample collection and tracking</i>	Hyderabad, India
Nov. 2017	<i>PhenoApps: Open-source apps for plant breeding and genetics</i>	Kampala, Uganda
Oct. 2017	<i>PhenoApps: Open-source apps for plant breeding and genetics</i>	Ludhiana, India
Mar. 2016	<i>Field Book: An open-source Android app for collecting phenotypic data</i>	Manhattan, KS
Mar. 2015	<i>Using Field Book for data collection in agriculture</i>	Bishoftu, Ethiopia
Mar. 2015	<i>Using Field Book for data collection in agriculture</i>	Rongo, Kenya
Mar. 2015	<i>Using Field Book for data collection in agriculture</i>	Kakamega, Kenya
May 2013	<i>Using Android Field Book for data collection</i>	Addis Ababa, Ethiopia
Nov. 2012	<i>One Handheld Per Breeder Introduction</i>	Nairobi, Kenya

Service & Membership

Crop Science Society of America

MEMBER

United States

2011 - Present

American Academy of Arts and Sciences

MEMBER

United States

2014 - Present

KSU Plant Breeding & Genetics Club

Co-FOUNDER (2012), PRESIDENT (2013-2014), TREASURER (2014-2016)

- 2015: Symposium Organizing Committee – *Heterosis: Foundation of Food, Fuel, and Fiber*
- 2013: Symposium Organizing Committee – *Next Generation Plant Breeding*

Manhattan, KS

2012 - 2016

Plant Pathology Graduate Student Club

TREASURER

Manhattan, KS

2012 - 2013

Editorial

Ad Hoc Reviewer	The Plant Genome, Crop Science, Theoretical and Applied Genetics, Plant Disease, G3
Grant Reviewer	USDA NIFA AFRI

Volunteer

Social Services Advisory Board

BOARD MEMBER

Manhattan, KS

2017 - 2022

Riley County Humane Society

FOSTER HOME

Manhattan, KS

2018 - 2022

Scholarships & Awards

2017	Crop Science Society of America Poster Contest, Third Place
2016	Don C. Warren Genetics Scholarship
2016	KSU Graduate Student Council Travel Grant
2015	Don C. Warren Genetics Scholarship
2015	ASA-CSSA-SSSA Future Leaders in Science Award
2014	Triticeae Coordinated Agriculture Project Travel Scholarship
2014	KSU Graduate Student Council Travel Grant
2012	8th International Purdue Symposium on Statistics Travel Scholarship
2012	KSU Graduate Student Council Travel Grant
2008	Trustees' Pride Scholars Award
2008	Honors Hathaway Scholarship
2008	Likins Memorial Scholarship

References

Jesse Poland

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

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Michael Gore

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