Kyle Benzle

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I am a plant biologist and data scientist with an MS in Plant Genetics from The Ohio State University. My computer science background equips me to develop everything from stand-alone analyses to custom web applications for data exploration. My core skills include data science, statistics, genetics, and plant breeding. My recent work involves designing CRISPR DNA constructs for plant transformation and investigating innovative gene introduction techniques. Proficient in an array of bioinformatic tools and statistical models, I thrive on solving complex problems in crop improvement, underpinned by a passion for technology in agriculture.

LABORATORY SKILLS

- Advanced molecular techniques and fundamental lab procedures
- Transgenic plant creation via *Agrobacterium* and bombardment transformation, coupled with screening, genotyping, and phenotypic profiling
- Bioinformatics expertise: gene expression analysis, sequence motif identification, and protein modeling
- Microscopy skills: dissecting, confocal, and fluorescence techniques
- Experimental design, statistical testing, and genetic diversity analysis
- Cloning and plasmid design using classical restriction site methods
- DNA management software like SnapGene, Geneious, and Vector NTI

PROGRAMMING AND DATA

- *Programming languages*: R, Python, CLI (Shell Script, JavaScript)
- *Libraries/Frameworks*: NumPy, Pandas, Shiny
- *Data Management*: SQL
- *Web Technologies*: HTML5, CSS3, XML, PHP, NodeJS
- *Domain Knowledge*: Data collection and analysis, education

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EDUCATION

The Ohio State University, Wooster, OH   2015-2018
    Ph.D. Candidate Plant Breeding and Genetics - Incomplete

The Ohio State University, Columbus, OH   2013-2015
    MS Plant Breeding and Genetics
    Thesis: *Isolation of Novel Agrobacterium and Transient Expression Assays in Soybean and Sunflower*

The Ohio State University, Columbus, OH   2008-2012
      BS Crop Science major, Computer Science minor, cum laude

Excelsior College, Albany, NY   2006-2008
      BS Liberal Studies

US Navy - Sonar Technician First Class, San Diego, CA   2004

WORK EXPERIENCE / PROJECTS

Research Assistant - Dr. Guo-Liang Wang Lab   May 2023-
Present
The Ohio State University - Columbus, Ohio
      Team member in a short-term specialized project aimed at the application of transgenic antifungal agents to hemp and tomato plants. Managed large-scale hemp cultivation within University facilities, conducted a diverse array of treatment protocols, and collected data. Completed initial data analysis to help refine methodologies and contribute to ongoing research.

Lecturer - BIO 1114   2016-Present
(Periodic)
The Ohio State University - Columbus, Ohio
      Lecturer for BIO 1114 and ATI 2150 Horticultural Root Media starting 2016. Taught under, Dr. Robert McMahon then continued as a lecturer. Course preparation included designing and setting up labs and producing revised lecture material and exams for undergraduate level courses.

Research Associate - Dr. Katrina Cornish Lab   2015 - 2018

The Ohio State University - Wooster, Ohio
Natural Rubber Laboratory
      As a PhD candidate responsibilities included managing a plant transformation laboratory and greenhouse growing multiple transgenic and conventional crop species. Experienced in advanced plant breeding, wet laboratory techniques involved in producing and testing transgenic species. Created and optimized multiple technical protocols such as gene bombardment and rapid tissues regeneration for transformation. Completed multiple projects utilizing bioinformatics and statistics programming languages R and Python as well as database management.

Research Associate - Dr. Dr. John Finer Lab   2012 - 2015

The Ohio State University - Wooster, Ohio
Plant Transformation

Isolated novel *Agrobacterium* spp. and conducted morphological, biochemical and molecular evaluation for use in improved gene introductions in soybean. Optimized plant transformation and tissue culture techniques and worked with phenotyping, phylogenetic and data analyses, sequence assembly, SNP calling and differentially expressed genes in disease resistant tomato accessions using rtPCR data.

Research Associate - Dr. Leah McHale Laboratory Lab   2011
The Ohio State University - Columbus, Ohio

Research assistant, soybean breeding focused on QTL analysis and optimization of transformation systems for rapid gene evaluation.

Undergraduate Assistant - Dr. Terry Graham Laboratory Lab   2008-2010
The Ohio State University - Columbus, Ohio
Plant Pathology

Disease resistance research utilizing bioinformatics and mass spectrometry based metabolic profiling. Gene silencing using plant transformation and an RNAi approach was also used.

Sonar Technician - United States Navy   2004-2008
Yokosuka Japan

Enlisted, sonar specific computer systems both at sea and ashore as part of a nuclear submarine surveillance team focused on non-US vessels. Collaborated with Japanese Maritime Self Defense Force stationed outside of Tokyo, Japan on a US naval base.

PUBLICATIONS

Benzle K, Finer K, Marty D, McHale L, Goodner B, Taylor C, Finer J (2014). Isolation and characterization of novel Agrobacterium strains for soybean and sunflower transformation. Plant Cell Tissue and Organ Culture

Benzle K, Cornish K (2017). Improved axenic hydroponics supports rapid production of roots for use as transformation target tissue. BioMed Central, BMC Plant Methods

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PATENT

Agrobacterium Strains for Plant Transformation and Related Materials and Methods
 *Pending 2019

ORGANIZATIONS

The Society for In Vitro Biology
  Since 2014

The Ohio State University Senate
  Departmental Delegate, 2012 - 2016

Ohio Branch American Society for Microbiology