

Jonathan D. Turkus

High-Throughput Plant Molecular Biologist jodturkus@gmail.com

EDUCATION

Master's Program

Michigan State University – East Lansing, MI
Major: Plant Breeding, Genetics, and Biotechnology

Enrollment: June 2017 – Dec. 2021
GPA: 3.71/4.00

Bachelor's Program

Hope College - Holland, MI
Major/Minor: Biology/Biochemistry

Enrollment: Sept. 2010 - May 2014
GPA: 3.74/4.00

HONORS

Nebraska Innovation Studio Fellowship 2026
Magna Cum Laude (Graduate)
DeKruif Scientific Writing Award 2023

IANR Outstanding Employee Award 2025
Magna Cum Laude (Undergraduate)

HIGH-THROUGHPUT MOLECULAR BIOLOGY EXPERIENCE

HTP Molecular Biology Lab. Technician., Uni. of Nebraska-Lincoln – Lincoln, NE May 2020 – Present

- Laboratory Manager of the laboratory of Dr. James Schnable
 - Designed tools and strategies for collection of thousands of field maize tissue samples in a single day
 - Adapted low-throughput RNA extraction and evaluation methods to high-throughput (HTP) formats
 - Leveraged HTP liquid handling robotics and 3D printing to increase efficiency and reduce costs

Wheat Genetics Grad. Research Assist., Mich. State Uni. – E. Lansing, MI

June 2017–Dec. 2021

- Wheat Breeding and Genetics Laboratory – Lead by Dr. Eric Olson
 - Thesis: Fine-mapping of yield-associated QTL in bread wheat (*Triticum aestivum*)
 - Using HTP machinery, performed DNA extractions and DNA characterization on thousands of plants

Toxicology Technician/Lab. Manager, Mich. State Uni. – E. Lansing, MI

Sept. 2016 – June 2017

- Liver Toxicology Laboratory – Lead by Drs. Robert Roth and Patricia Ganey *June 2014 – Oct. 2015*
 - Worked on adapting toxicology assay to an HTP format via imaging and liquid handling robotics

PROTOTYPING AND DESIGN EXPERIENCE

In Field Corn/Sorghum Leaf Sample Collection Apparatus:

May 2020-June 2023

- Leaf kit designed for rapid collection and preservation of leaf samples (X samples/person per hour)
 - Consisted of customize triple leaf punch, liquid nitrogen holder, and carrying box
 - Deployed ~20 copies in experiments from 2020-2023 across six states
 - Utilized welding, 3D printing, and various hand tools in its design

In Field Leaf Imager

Aug.-Sept 2025

- Photo box designed to take consistent images of plant leaves
 - Designed for use with low-cost camera phones
 - Images used in the development of model for automatically extracting measurements from leaves
 - Used in two states

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LABORATORY SKILLS

HTP Equipment: Liquid handlers (Opentron OT2, Andrew Legacy Robot, Eppendorf epMotion 96), DNA processors (Kingfisher Flex), Tissue grinders (TissueLyser II)

Molecular Biology: PCR, KASP genotyping, gel electrophoresis, DNA/RNA isolation/purification and quantification, primer design, basic microscopy

RELEVANT INNOVATION STUDIO EQUIPMENT TRAINING

3D printers (Bambu X1-E/H2D, FormLabs Form 3) CNC Routers (Shopbot PRSalpha, X-Carve)
Laser Cutters (Fablight Fiber Laser Epilog Fusion Pro 32)

RELEVANT COMPUTER SKILLS

Solidworks, Fusion 360

Bambu Studio

Easel

Microsoft Word, PowerPoint, Excel, OneNote, Outlook, OneDrive

OTHER RELEVANT COURSEWORK

Plant Genomics (PLB 812) – Used NGS sequencing answer scientific questions in plant genetics

Advanced Plant Breeding (CSS 890) – Learned how to use genetics to improve crop cultivars

Plant Reproductive Biology & Polyploidy (HRT 820) – Learned modes of reproduction in crops

Quantitative Genetics Plant Breeding (CSS 941) – Taught how to identify QTL, create linkage maps

Molecular Biology (BIOL 366) – Learned of gene structure, function, and regulation

Biochemistry (CHEM 314) - Protein purification, enzyme kinetics, chromatography, and electrophoresis

General Microbiology (BIOL 301) – Schooled in fundamentals of bacterial evolution, bacterial cell culture

Genetics (BIOL 356) – Taught nuances of the Central Dogma, inheritance, and application of genetics