

Contact Information

5228 S. 37th Street
Saint Louis, MO 63116
573-450-8999
dustinmayfield@gmail.com

Dustin Mayfield-Jones

Education

University of Missouri-Columbia
Masters in Biology
Graduation Date: May 2014 (GPA: 4.0)

Truman State University
Bachelor of Science in Biology *summa cum laude*
Graduation Date: December 2009 (GPA: 3.91)

Research Experience

Summer 2014-Present

Dr. Thomas Brutnell

Senior Laboratory Technician

Donald Danforth Plant Science Center; Saint Louis, MO

Current Main Projects:

A Systems Approach to the Development and Function of C4 Photosynthesis

National Science Foundation, Award #IOS-1127017

C4-Rice Phase 2: Supercharging Photosynthesis

The Bill & Melinda Gates Foundation, Award #drpc2001-128

A Systems-Level Analysis of Drought and Density Response in the Model C4 Grass Setaria viridis

U. S. Department of Energy, Award #DE-SC0008769

Translational Dynamics of Leaf and Chloroplast Development in Maize

National Science Foundation, Award #IOS-1339130

- Build next generation RNA-sequencing libraries along the leaf developmental gradient in grasses (maize, *Setaria*, rice, and non-model grasses) with ability to troubleshoot and optimize Brutnell Lab RNA-seq protocol
- Calibrate, maintain, and program Hamilton robotics for automation of RNA-seq library construction with a technical team
- Manage and organize reagents, samples, and datasets for multiple projects
- Coordinate sequencing efforts among multiple projects
- Execute both formal and informal training sessions
- Perform RNA and DNA extractions

Summer 2010-Spring 2014

Dr. J. Chris Pires

Division of Biological Sciences; University of Missouri-Columbia

Thesis: "Occurrence and Implications of Biological Network Evolution Following Polyploidy"

- First-authored two published papers reviewing implications of polyploidy in regard to stages following whole genome duplication, adaptive traits like flowering time, and cancer
- Co-authored paper in which I isolated DNA, made Illumina sequencing libraries, assembled plastid genomes, and tested assembly software
- Collaborated on sequencing projects of various scales, from plastid to nuclear genomes by organizing and inventorying RNA, DNA, and plant/animal tissues, making sequencing libraries, teaching others to construct libraries, and managing and transferring sequencing data
- Developed and tested protocols for next generation sequencing, RNA extraction, and seed storage
- Ordered and maintained laboratory and greenhouse materials and seed from vendors and USDA
- Performed bioinformatic and scientific computing such as plastid genome assembly with NextGENe and CAP3 software, genome annotation with Geneious, programming with Linux command line and Python, sharing of large sequence data sets via SFTP, and website development and maintenance with WordPress and Google business accounts

- Hired, trained, scheduled and managed student workers and earned certificate in the MU Entering Mentoring program
- Co-organized Interdisciplinary Plant Group Seminar Series by inviting, scheduling, and hosting international investigators while representing the organization
- Co-developed and taught workshop on Next Generation Sequencing at the Botany 2012 conference with Drs. Aaron Liston and Chris Pires' Labs

Spring 2009-Fall 2009

Drs. Brent Buckner & Diane Janick-Buckner

Department of Biology; Truman State University

- Morphologically characterized two maize developmental mutants using light and scanning electron microscopy, macroscopic photo-documentation, RT-PCR, qPCR, and paraffin sectioning of shoot apical meristems and leaf tissue with Toluidine Blue O and FastGreen staining
- Curated value-added annotation of differentially regulated maize genes using bioinformatics tools including BLASTX, InterProScan, gene prediction with MaizeSequence.org, SDSC Biology Workbench, and literature searches

Summer 2008-Fall 2008

Dr. Karen Cone

Division of Biological Sciences; University of Missouri-Columbia

- “Characterization of a Recombinant Inbred Population for Quantitative Trait Locus mapping”
- Created genetic map with PCR-based markers and MapMaker/QTL software package
- Poured and analyzed >100 agarose gels and collected >20,000 genotype data points
- “Effect of *rmr1* on *P11-Blotched*”
- Examined the effect of the epigenetic modifier *rmr1* on *P11-Blotched*, an epigenetically regulated maize gene that activates production of purple anthocyanin pigments

Spring 2007-Fall 2008

Dr. John Ma

Department of Biology; Truman State University

- “The Role of Dark Septate Endophytes in Water Stress Responses of the Forage Grass *Bouteloua gracilis*”
- Optimized growth conditions for *Bouteloua gracilis* and harvested caryopsis for experimentation
- Mentored student lab workers

Publications

- Burke SV, Wysocki WP, Zuloaga FO, Craine JM, Pires JC, Edger PP, **Mayfield-Jones D**, Clark LG, Kelchner SA, and Duvall MR. (2016) Evolutionary relationships in Panicoid grasses based on plastome phylogenomics (Panicoideae; Poaceae). BMC Plant Biology
- Barrett CF, Baker WJ, Comer JR, Conran JG, Lahmeyer SC, Leebens-Mack JH, Li J, Lim GS, **Mayfield-Jones DR**, Perez LG, Medina J, Pires JC, Santos C, Stevenson DW, Zomlefer WB, Davis JI (2015). Plastid genomes exhibit extensive evolutionary rate variation, and provide support for deep phylogenetic relationships in palms and other commelinid monocots. New Phytologist.
- Cotton JL, Wysocki WP, Clark LG, Kelchner SA, Pires JC, Edger PP, **Mayfield-Jones D**, and Duvall MR (submitted). Resolving deep relationships of PACMAD grasses; a phylogenomic approach. BMC Plant Biology.
- Saarela JM, Wysocki WP, Barrett C, Soreng RJ, Davis JI, Clark LG, Kelchner SA, Pires JC, Edger PP, **Mayfield DR**, and Duvall, MR (submitted). Plastid phylogenomics of the cool-season grass subfamily Pooideae (Poaceae). AoB PLANTS.
- Barrett CF, Freudenstein JV, Li J, **Mayfield-Jones D**, Perez L, Pires JC, Santos C. (2014). “Investigating the path of plastic genome degradation in an early-transitional clade of fungus-eating orchids, and implications for parasitic angiosperms.” MBE
- Wysocki WP, Clark LG, Kelchner SA, Burke SV, Pires JC, Edger PP, **Mayfield-Jones D**, Triplett JK, Columbus JT, Ingram AL, Duvall MR (2014). “A Multi-Step Comparison of Short-Read Full Plastome Sequence Assembly Methods in Grasses.” Taxon
- Edger PP, Tang M, Bird KA, **Mayfield-Jones D**, Conant GC, Mummenhoff K, Koch MA, Pires JC (2014). “Secondary Structure Analyses of the nuclear rRNA Internal Transcribed Spacers and Assessment of its Phylogenetic Utility across the Brassicaceae (Mustards).” PLOS ONE

- **Mayfield-Jones D**, Washburn JD, Arias T, Edger PP, Pires JC, Conant GC (2013). "Watching the grin fade: Tracing the effects of polyploidy on different evolutionary time scales." *Sem Cell & Dev Bio*.
- Steele PR, Hertweck KL, **Mayfield D**, McKain MR, Leebens-Mack J, Pires JC (2012). "Quality and quantity of data recovered from massively parallel sequencing: Examples in Asparagales and Poaceae." *Am J Bot*.
- **Mayfield D**, Chen ZJ, Pires JC (2011). "Epigenetic regulation of flowering time in polyploids." *Curr Opin Plant Biol* 14(2): 174-178.

Curriculum Development and Teaching Experience

Spring 2008-Fall 2009

Ms. Maureen

McHale

Instructor of "Ethics of Food" 320

Departments of Biology & Agronomy; Truman State University

- Designed and taught course that surveyed moral principles in relation to food via an interdisciplinary approach
- Areas taught included ecology, economics, agriculture/food technology, theology, and philosophy

Leadership Experience

2011- 2014

University of Missouri-Columbia

Biology Graduate Student Organization

- Vice President • Technology and Website Chair

Interdisciplinary Plant Group

- Seminar Series Co-Organizer • Technology and Website Chair

References

- Dr. Thomas Brutnell, Director, Enterprise Institute for Renewable Fuels,
Member and Principal Investigator, Donald Danforth Plant Science Center
Current employer

Email: tbrutnell@danforthcenter.org

- Dr. Andrea Eveland, Assistant Member, Donald Danforth Plant Science Center
Research advisor and mentor

E-mail: aeveland@danforthcenter.org

- Dr. Christine Shyu, Brutnell Lab post-doctoral student, Donald Danforth Plant Science Center
Research advisor

Email: cshyu@danforthcenter.org