

JOHN CHARLES BUTTS

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CAREER GOALS

In conducting my research at The University of Dayton and Wayne State University, I have cultivated a passion for scientific discovery. I have found research into the evolution and genetic regulation of *Drosophila melanogaster* to be rewarding, but I am interested in furthering my education so that I can one day run my own lab. My work with biology began in high school, where on the completion of my sophomore year I began assisting in running the Honors biology, Physiology and Microbiology labs. In my time at University of Dayton the work that became my Master's thesis was ultimately published in PLOS Genetics in 2015. At Wayne State University I have continued to work in a research capacity, designing a 3C protocol to detect long-range interactions between satellite repeats on the X Chromosome. Furthermore, I have begun analyzing ChIP-seq data generated by a previous lab member to determine enrichment of chromatin modifiers at these repeats. With these previous experiences I believe I am a strong candidate to continue as a PhD student and I hope to expand on my existing knowledge with the intent of one day becoming an independent investigator.

EDUCATION

M.S. in Biology - University of Dayton

2010-2012

Cumulative GPA: 3.52

Graduated: December 2012

B.S. in Biology - University of Dayton

2007-2011

Cumulative GPA: 3.21

Graduated: May 2011

RELATED EXPERIENCE

Research Assistant: Victoria Meller's Lab: Wayne State University Biology Department 2012-Current

Responsible for day to day lab maintenance including: solution prep, care of lab fly stocks, Polymerase Chain Reaction (PCR), genotyping, reagent ordering, etc. Additionally, I worked to standardize a Chromatin Conformation Capture (3C) protocol for the lab and have begun using this protocol to search for genetic interactions involving non-coding Ribonucleic Acids (RNAs) responsible for *Drosophila melanogaster* dosage compensation.

Researcher: Tom William's Lab: University of Dayton Biology Department

2009-2012

Researching the evolution of gene regulatory networks with a *Drosophila* model using molecular biology techniques including: DNA cloning, GFP reporter transgenes, Confocal Microscopy and using computer software for sequence analysis

Lab Prep: University of Dayton Biology Department

2008-2011

Responsible for the preparation of introductory Biology labs 151, 152, 230 and 240 including sample preparation, culture preparation and assisting TAs

Lab Assistant: Grosse Pointe Public Schools

2005-2007

Responsible for setup and running the Honors Biology, Physiology and Microbiology Labs

SKILLS

Solutions: Buffers, Bacterial Growth Media

Fly Culturing: Homozygosing Fly Lines, Maintaining Fly Stocks, Sexing Flies, Preparing pupae for confocal microscopy, Staging pupae

Genetic Techniques: Primer Design, PCR, Vector Prep (Ligations, Transformations, Restriction Enzyme Site Modification), Chromosome Conformation Capture

Microscopy: Confocal Microscopy, Dissecting Microscopy, Light Microscopy, Scanning Electron Microscopy

Software: Staden Package, Gene Palette, mVista, Insect Genome Blast, Adobe Illustrator, Adobe Photoshop, PubMed, Galaxy

Programming: Experience with scripting in Python and R, primarily using Python scripting for automation in analysis of ChIP-seq data

EXPERIMENTAL DESIGN

On entering the Tom Williams Lab I was presented with the option of continuing an existing project or to begin my own work on an undeveloped project and chose the latter. This allowed me to design a great deal of my own experiments and this led to the development of a technique we call scanning mutagenesis that is now being used by other lab members. Also, it was this project that ultimately won a three year, \$450,000 NSF grant for the lab, indicating this research was of significant interest to the scientific community.

Currently, in Dr. Victoria Meller's Lab I have worked to standardize a *Drosophila melanogaster* 3C protocol that has been adapted from existing yeast and *Drosophila* protocols. I am also the first lab member to begin working on ChIP-seq analysis with the hope of expanding our lab's abilities to do genome-wide analysis.

PUBLICATIONS, PRESENTATIONS AND PAPERS

Master's Thesis: **August 2012**

Tracking the Sequences of Regulatory Linkages and Their Evolution within a Fruit Fly Gene Regulatory Network

Journal Articles: **April 2015**

The Evolutionary Origination and Diversification of a Dimorphic Gene Regulatory Network through Parallel Innovations of *cis* and *trans*

-Eric Camino, John Butts, Allison Ordway, Jordan E. Vellky, Mark Rebeiz and Thomas Williams
-Published in PLOS Genetics

Poster Presentation, Society of Developmental Biology 70th Annual Meeting: **July 2011**

The evolution of a regulatory linkage mediating sexually dimorphic trait development

Poster Presentation, Society of Developmental Biology 71st Annual Meeting: **July 2012**

A characterization of regulatory linkages in a genetic network for a derived fruit fly trait

VOLUNTEER WORK

University of Dayton Discovery Lab Day **2011-2012**

In 2011 and 2012, I volunteered by helping visiting high school students to experience lab and University culture. This afforded me the opportunity to communicate to prospective biology students how academic research is conducted as well fundamentals of evolutionary and developmental biology.

Assistant Coach Grosse Pointe North Varsity Tennis **2012-2013**

I coached the Grosse Pointe North boys' varsity tennis team for the Fall 2012 season; I worked as a tennis instructor in high school as well as in college and hoped to give back to the team I played on as high school student. This has proven a rewarding experience and I hope to coach the team to another State Finals.

LANGUAGES

English – Native Language

Spanish – Proficient in reading and writing.

MEMBERSHIPS

Society of Developmental Biology **2011 - 2014**

Sigma Phi Epsilon Fraternity **2008 – Current**

REFERENCES

Dr. Thomas Williams (Graduate Academic Advisor)

Assistant Professor

University of Dayton

300 College Park, Dayton OH 45469

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Dr. Victoria Meller (Employer at Wayne State University)

Professor

Wayne State University

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Dr. Athar Ansari (Lab Meeting Member)

Associate Professor

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