Michelle Marie Jonika
Genetics Interdisciplinary Program
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EDUCATION

Ph.D., Genetics (Graduate Certificate in Business) **2018-present**
Texas A&M University College Station, TX
Research Adviser: Heath Blackmon

B.S., Forensic and Investigative Science (Genetics Minor) **2014-2018**
Texas A&M University Deans list 2016-2018 College Station, TX
Thesis: *Genes as Markers of Sex for Forensic Entomology*
Research Adviser: Aaron M. Tarone

KEYWORDS: Evolutionary Biology, Genetics, Genomics, Data Science, Machine Learning, Bioinformatics

SKILLS: R, Unix, Statistics, Genetics, Genomics, Molecular Genetics, Machine Learning

RESEARCH GRANTS AND MAJOR FELLOWSHIPS

2019 – The evolution of sex chromosomes in charismatic tiger beetle species of the southern United States Texas Ecolab Fund – $18,521

2018 – 2022 – STEM Fellowship, Texas A&M University. Interdisciplinary Genetics Program – $215,000

PEER-REVIEWED PUBLICATIONS

7. M.L. Pimsler, C.E. Hjelmen, **M.M. Jonika,** A. Sharma, S. Fu, M. Bala, S.H. Sze, J.K. Tomberlin, A.M. Tarone. 2021. Sexual Dimorphism in Growth Rate and Gene Expression Throughout Immature Development in Wild Type Chrysomya rufifacies (Diptera: Calliphoridae) Macquart. Frontiers in Ecology and Evolution. 9: 368.

6. S. Ruckman*(Co-first author), **M.M. Jonika*(Co-first author)**, C. Casola, H. Blackmon. 2020. Chromosome Number Evolves at Equal Rates in Holocentric and Monocentric Clades. PLOS Genetics 16(10):e1009076.

5. M.M. Jonika, J. Lo, H. Blackmon. 2020. Mode and Tempo of Microsatellite Evolution across 300 Million Years of Insect Evolution. Genes 11:945.

4. M.M. Jonika, C.E. Hjelmen, A.M. Faris, A.S. McGuane A.M. Tarone. 2020. An Evaluation of Differentially Spliced Genes as Markers of Sex for Forensic Entomology. Journal of Forensic Science 65(5): 1579-1587

3. Johnathan Lo, **M.M. Jonika**, H. Blackmon. 2019. micRocounter: Microsatellite Characterization in Genome Assemblies. G3: Genes | Genomes | Genetics 9(10): 3101-3104

2. Riddhi D Perkins, J.R. Gamboa, **M.M. Jonika**, J. Lo, A. Shum, R.H. Adams, H. Blackmon. 2019. A Database of Amphibian Karyotypes. Chromosome Research 27: 313-319.

1. Blake Guard, J Honneffer, A Jergens, **M.M. Jonika**, L. Toresson, Y. Lawrence, C. Webb, S. Hill, J. Lidbury, J. Steiner, J. Suchodolski. 2018. Longitudinal Assessment of Microbial Dysbiosis and Fecal Bile Acids Concentrations in Dogs with Chronic Inflammatory Enteropathy. Journal of Veterinary Internal Medicine. 33:1295-1305.

OTHER PUBLICATIONS

9. Michelle Jonika. 2021. Terry McGlynn: Navigating a Career and Family. Genes to Genomes: a blog from the Genetics Society of America.

8. Michelle Jonika. 2021. Early Career Scientist Leadership Spotlight: Michelle Jonika. Genes to Genomes: a blog from the Genetics Society of America.

7. Jacob L. Steenwyk, **Michelle Jonika**. 2020. How to Get Started in Science Communication. ecrLife.

6. M.M. Jonika, A.M. Faris, C.E. Hjelmen, A.M. Tarone. 2019. Transcriptional Markers of Sex Determination for Forensic Entomology. Proceedings of the American Academy of Forensic Sciences. 25:813.

5. Amanda B. Blake, B.C. Guard, J.B. Honneffer, **M.M. Jonika**, J.A. Chaitman, J.A. Lidbury, J.M. Steiner and J.S. Suchodolski. 2018. Altered Fecal Fatty Acid, Sterol and Bile Acid Metabolism in Dogs with Acute Diarrhea. J Vet Intern Med. 2018 32:2248.

4. Michelle M. Jonika, A.M. Tarone. 2018. Genes as Markers of Sex for Forensic Entomology. Undergraduate Thesis, Texas A&M University, College Station, Texas.

3. Blake C. Guard, **M.M. Jonika**, J.B. Honneffer, J.A. Lidbury, J.M. Steiner, A.E. Jergens, and J.S. Suchodolski. 2017. Longitudinal Characterization of the Fecal Metabolome in Dogs with Inflammatory Bowel Disease. J Vet Intern Med. 2017 31:1289.

2. Blake C. Guard, **M.M. Jonika**, J.B. Honneffer, J.A. Lidbury, J.M. Steiner, and J.S. Suchodolski. 2017. Development and Analytical Validation of an Assay for the Quantification of Fecal Bile Acids. J Vet Intern Med. 2017 31:1289.

1. Blake C. Guard, J.B. Honneffer, **M.M. Jonika**, J.A. Lidbury, J.M. Steiner, A.E. Jergens, and J.S. Suchodolski. 2017. Longitudinal Characterization of Dysbiosis and Unconjugated Bile Acid Profiles in the Feces of Dogs with Inflammatory Bowel Disease. Gastroenterology 152.5 (2017): S992.

WORK EXPERIENCE

Genomics Discovery & Application Intern, Bayer, St. Louis, Missouri May-August 2021
Worked in the Crop Science Division of Bayer to identify historic data that can be used to test for epistasis, developed a statistical testing framework to identify interactions between introgressed loci, designed follow-up experimentation to test for epistasis, and established connections with teams with expertise in data science, genomics, and precision breeding.

Research Assistant, Department of Biology, Texas A&M May 2019-present
Lead researcher on three projects focused on comparative genomic analyses of mammalian and invertebrate genomes. Responsibilities include maintaining public code base, molecular wet lab work and mentoring of undergraduate and graduate students.

Research Technician, Department of Entomology, Texas A&M May–August 2018
Completed research from undergraduate thesis and follow-up studies for sex determination in forensic entomology.

Supplemental Instructor-Organic Chemistry II, Texas A&M January–May 2018
Helped facilitate understanding and teach concepts for organic chemistry II.

Research Intern, U.S. Department of Homeland Security, Newark, New Jersey June–August 2017
Created a direct analysis in real-time mass spectral database of drug standards for use in a forensic chemistry laboratory at U.S. Customs and Border Protection.

Student Researcher, Gastrointestinal Laboratory, Texas A&M January 2016–August 2018
Investigated the effects of antibiotics on the gut health and microbiota of companion animals.

AWARDS

Outstanding PhD Student Poster Presentation, Texas Genetics Society
Outstanding PhD Student Oral Presentation, North American Forensic Entomology Association
Genetics Graduate Student Association Oral Presentation Award, Texas A&M University

1st Place Genetics Graduate Student Science Art Competition, Texas A&M University
Genetics Graduate Student Association Travel Award, Texas A&M University
Undergraduate Research Scholar, Texas A&M University
Texas A&M Senior Merit Award, Texas A&M University
1st Place Poster Presentation Student Research Week, Texas A&M University
Sigma Xi STEM Award Student Research Week, Texas A&M University
1st Place Department of Entomology Mentorship Symposium, Texas A&M University
George Bush Presidential Library Foundation Undergraduate Travel Grant, Texas A&M University

LEADERSHIP AND OUTREACH

Genetics Graduate Student Association- President
Genetics Society of America Early Career Leadership – Career Development Subcommittee
Texas Genetics Society Board Member- Student Representative
Genetics Graduate Student Association- Vice President
Genetics Interdisciplinary Program- Outreach and Recruitment Committee
Graduate and Professional Student Government- Genetics Program Representative
Women in Science and Engineering- Outreach Committee
Genetics Interdisciplinary Program- Seminar Committee Chair
Texas A&M College of Science- Outreach Committee

WORKSHOPS (F: Facilitated, T: Taught, † Co-taught)

Texas Genetics Society (TGS) R Workshop, TGS– F [~150 Attendees]
Computational and Artificial Intelligence, TAMU Institute of Data Science (TAMIDS)–T†(Gave presentations below) [12 Attendees]

1. *Use of Convolutional Neural Networks for Determination of Pseudoautosomal Region in Mammals*
2. *Simulations and Factorial Design*

R Hackday, Department of Biology—T† (co-taught with Dr. Heath Blackmon)[~50 Attendees]
R Workshop, Aggies Veterans Who Code—F [15 Attendees]

ADDITIONAL TRAINING

HPRC Short Courses
Introduction to Linux
Introduction to Python
Introduction to Scientific Python
Introduction to Next Generation Sequencing
Introduction to Julia
Introduction to Deep Learning with TF
Introduction to CUDA

TAMU Institute of Data Science
Introduction to Data Science
Exploratory Data Analysis with pandas
Machine Learning with Scikit-learn
Deep Learning with Keras
NVIDIA Deep Learning Computer Vision
Computational and Artificial Intelligence

HACKING COMPETITIONS

2019 TAMU Datathon

1. On the Origins of Tacos- https://devpost.com/software/on-the-origins-of-tacos
2. Random Forest Models for Predicting Oil Drill Failures- https://devpost.com/software/random-forest-models-for-predicting-oil-drill-failures

PRESENTATIONS (T: talk, P: poster, † coauthored with a student/postdoc)

2021
Not All Centromeres Are Equal, or Are They?, Evolution; Virtual-T
Not All Centromeres Are Equal, or Are They?, Texas Genetics Society; Virtual-P

2020
An Evaluation of Differentially Spliced Genes as Markers of Sex for Forensic Entomology, North American Forensic Entomology Association; Virtual-T

Rise of the Machines: Using a Convolutional Neural Networks to Elucidate Genomic Architecture; TAMU Life Sciences Recruiting Symposium; College Station, Texas-T

2019

Rise of the Machines: Using a Convolutional Neural Networks to Elucidate Genomic Architecture; Genetics Department G2 Seminar Series; College Station, Texas-T

Opportunities for Genetics Research and How to Apply to Graduate Schools; Genetics and Biochemistry Club; Clemson, South Carolina-T

Effects of Host/Graft Sex Mismatch on Survival and Integration of Neural Progenitor Call Transplants for Spinal Cord Injury; Department of Biology Student and Postdoc Research Conference; College Station, TX–P† (co-author Michael Pitonak)

Mode and Temp of Microsatellite Evolution in Insects; Department of Biology Student and Postdoc Research Conference; College Station, Texas–P

Microsatellite Evolution in Hexapods; Southeast Texas Evolutionary Genetics and Genomics; College Station, Texas–P

Sixty percent of the time, it works every time: sex identification in immature Calliphoridae; Southeast Texas Evolutionary Genetics and Genomics; College Station, Texas– P† (co-author Alexander McGuane)

Mode and Tempo of Microsatellite Evolution Across 300 Million Years of Insect Divergence; Evolution; Providence, Rhode Island–T

micRocounter: Identification of Microsatellite Inference; Biology Undergraduate Research Symposium; College Station, Texas– P† (co-author Johnathan Lo)

Characterization of Microsatellite Evolution in Insects; Houston Regional Ecology and Evolution Student Symposium; Houston, Texas–T

micRocounter: Identification of Microsatellite Inference; Texas Genetics Society; College Station, Texas– P† (co-author Johnathan Lo)

Mode and Tempo of Microsatellite Evolution in Insects; Texas Genetics Society; College Station, Texas–T

Rapid Identification of Microsatellite Content; Student Research Week; College Station, Texas– P† (co-author Johnathan Lo)

Microsatellite Evolution in Hexapods; Student Research Week; College Station, Texas–P

Characterization of Microsatellite Evolution in Insects; Genetics Recruiting Symposium; College Station, Texas–P

Transcriptional Markers of Sex Determination for Forensic Entomology; American Academy of Forensic Science; Baltimore, Maryland–T

2018

Transcript-based Sex Determination for Forensic Entomology; Entomological Society of America; Vancouver, Canada–T

Markers of Sex Determination in Blow Flies; LAUNCH Research Conference; College Station, Texas–P

Transcript-Based Sex Determination for Forensic Entomology; International Association for Identification; San Antonio, Texas–P

Transcript-Based Sex Determination for Forensic Entomology; Southeast Texas Evolutionary Genetics & Genomics Symposium; Houston, Texas–P

Let's Talk About Sex: Identifying Female and Male Markers in Blow Flies; Ecological Integration Symposium; College Station, Texas–T

Let's Talk About Sex: Identifying Female and Male Markers in Blow Flies; Undergraduate Student Research Conference; College Station, Texas–T

Development of Mass Spectral Database Using Direct Analysis in Real Time (DART); American Academy of Forensic Science; Seattle, Washington–P

Let's Talk About Sex: Identifying Female and Male Markers in Blow Flies; Entomology Department Seminar; College Station, Texas–T

2017

Development of Mass Spectral Database Using Direct Analysis in Real Time (DART); USR Conference; College Station, Texas–T

Development of Mass Spectral Database Using Direct Analysis in Real Time (DART); U.S. Customs and Border Protection–T

Development and Analytical Validation of an Assay for the Quantification of Fecal Bile Acids; USR Conference; College Station, Texas–P