**Michelle Marie Jonika**

Genetics Interdisciplinary Program

Texas A&M University

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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 2016-2018College 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, Python, 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**

**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. micRocounter: Microsatellite Characterization in Genome Assemblies. G3: Genes | Genomes | Genetics 9(10): 3101-3104

**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**

**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

**Research Assistant, Department of Biology,** Texas A&MMay 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&MMay–August 2018

Completed research from undergraduate thesis and follow-up studies for sex determination in forensic entomology.

**Supplemental Instructor-Organic Chemistry II,** Texas A&MJanuary–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 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 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)

**2020**

*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