ANDREW JAMES MASON

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EDUCATION

2020 May PhD in Biological Science, Clemson University

Aug '14-July '17 PhD in Conservation Biology, University of Central Florida
Transferred to Clemson University with Advisor – July 2017

2014 May MS in Biology, Texas A&M University Kingsville

2012 May BS in Zoology, Miami University of Ohio

PUBLICATIONS

2022 **Mason, A. J.**, Holding, M. H., Rautsaw, R. M., Rokyta, D. R., Parkinson, C. L., Gibbs, H. L. Venom gene sequence diversity and expression jointly shape diet adaptation in pitvipers. *Molecular Biology & Evolution.*

Nachtigall, P. G., Freitas-de-Sousa, L. A., **Mason, A. J.**, Moura-da-Silva, A. M., Grazziotin, F. G., & Junqueira-de-Azevedo, I. L. Differences in PLA2 constitution distinguish the venom of two endemic Brazilian mountain lanceheads, *Bothrops cotiara* and *Bothrops fonsecai*. *Toxins*, 14(4), 237.

2021 Nachtigall, P. G., Rautsaw, R. M. Ellsworth, S., **Mason, A. J.,** Rokyta, D. R., Parkinson, C. L., Junqueira-de-Azevedo, I. L. M. ToxCodAn: A new toxin annotator and guide to venom gland transcriptomics. *Briefings in Bioinformatics*.

Holding, M. L., Stickland, J. L., Rautsaw, R. M.. Hofmann, E. P., **Mason, A. J.**, Hogan, M., Nystrom, G., Ellsworth, S. A., Colston, T. J., Borja, M., Castañeda-Gaytán, G., Grunwald, C. I., Jones, J. M., Freitas-de-Sousa, L., Viala, V. L., Margres, M. J., Zaher, E. H., Junqueira-de-Azevedo, I. L. M., Moura-de-Silva, A. M., Grazziotin, F. G., Gibbs, H. L., Rokyta, D. R., Parkinson, C. L. Phylogenetically diverse diets favor more complex venoms in North American pitvipers. *Proceedings of the National Academy of Sciences*. 118(17).

Hofmann, E. P., Rautsaw, R. M., **Mason, A. J**., Strickland, J. L., Parkinson, C.L Duvernoy's Gland Transcriptomics of the Plains Black-HeadedSnake, *Tantilla nigriceps* (Squamata, Colubridae): Unearthing the Venom of Small Rear-Fanged Snakes. *Toxins.* 13(5), 336.

Margres, M. J., Rautsaw, R. M., Strickland, J. L., **Mason, A. J.**, Schramer, T., Hofmann, Stiers, E., Bartlett, D., Colston, T.J., Rokyta, D. R., Parkinson, C. L. The Tiger

Rattlesnake genome reveals how a complex genotype produces the simplest venom phenotype. *Proceedings of the National Academy of Sciences*. 118(4).

2020 Rautsaw, R. M., Schramer, T. D., Acuña, R., Arick, L. N., DiMeo, M., Mercier, K. P., Schrum, M., **Mason, A. J.**, Margres, M. J., Strickland, J. L., Parkinson, C. L. Genomic adaptations to salinity resist gene flow in the evolution of Floridian Watersnakes. *Molecular Biology & Evolution.* 38(3),745-760.

Mason, A. J., Margres, M. J., Strickland, J. L., Sasa, M., Rokyta, D. R., Parkinson, C. L. Trait differentiation and modular toxin expression in Palm-Pitvipers. *BMC Genomics*, 21(1), 1-20.

2019 Rautsaw, R. M., Hofmann, E. P., Margres, M. J., Holding, M. L., Strickland, J. L., **Mason, A. J.**, Rokyta, D. R., Parkinson, C. L. Intraspecific sequence variation and gene expression contribute little to venom diversity in the Sidewinder Rattlesnake (*Crotalus cerastes*). *Proceedings of the Royal Society B: Biological Sciences*, **286**(1906), 20190810.

Mason, A. J., Grazziotin, R. A., Zaher, H., Lemmon, A. R., Lemmon, E. M., and Parkinson, C. L. Reticulate evolution in Nuclear Middle America causes discordance in the phylogeny of palm-pitvipers. *Journal of Biogeography,* 46(5), 833-844.

2018 Strickland, J. L., Smith, C. F., **Mason, A. J.**, Borja, M., Castañeda-Gaytán, G., Schield, D.R., Castoe, T. A., Spencer, C. L., Smith, L. L., Trápaga, A., Bouzid, N. M., Campillo-García, G., Flores-Villela, O. A., Antonio-Rangel, D., Rokyta, D. R., Mackessy, S. P., and Parkinson, C. L. Evidence for divergent patterns of local selection driving venom variation in Mojave Rattlesnakes (*Crotalus scutulatus*). *Scientific Reports,* 8(1), 17622.

Hofmann, E. P., Rautsaw, R. M., Strickland, J. L., Holding, M. L., Hogan, M. P., **Mason, A. J.**, Rokyta, D. R., and Parkinson, C. L. Comparative venom-gland transcriptomics and venom proteomics of four Sidewinder Rattlesnake (*Crotalus cerastes*) lineages reveal little differential expression despite individual variation. *Scientific Reports,* 8(1), 15534.

Holding, M., Margres, M. J., **Mason, A. J.**, Parkinson, C. L., and Rokyta, D.R. Evaluating the performance of *de novo* assembly methods for venom-gland transcriptomics. *Toxins,* 10(6), 249.

Strickland, J. L., **Mason, A. J.**, Rokyta, D. R., and Parkinson, C. L. Phenotypic Variation in Mojave Rattlesnake (*Crotalus scutulatus*) venom is driven by four toxin families. *Toxins*, 10(4), 135.

Whittington, C. A, **Mason, A. J.**, and Rokyta, D.R. A single mutation unlocks cascading exaptations in the origin of a potent pitviper neurotoxin. *Molecular Biology & Evolution* **35**(4), 887-898.

2016 Doan, T. M., **Mason, A. J.**, Castoe, T. A., Sasa, M. M., and Parkinson, C. L. A cryptic palm-pitviper species (Squamata: Viperidae: *Bothriechis*) from the Costa Rican highlands, with notes on the variation within *B. nigroviridis*. *Zootaxa*, **4138**(2), 271-290.

IN REVISION

1. **Mason, A. J.**, Vasquez, C. R., Townsend, J. H., Herrera-B., L. A., Borja, M., Sasa, M., Parkinson, C. L. Family Matters: Comparative Phylogenetic Approaches Reveal Rapid Evolution and Adaptive Shifts in Expression in Diverse Venom Gene Families. Submitted to *Systematic Biology*. Decision: Reject; Resubmission encouraged.

2. Holding, M. L., V. C. Trevine, O. Zinenko, J. L. Strickland, R. M. Rautsaw, **A. J. Mason**, E. P. Hofmann, M. P. Hogan, C. L. Parkinson, F. G. Grazziotin, S. E. Santanta, M. A. Davis. and D. R. Rokyta. The beak of the snake: trait matching of fang length and diet in vipers. Submitted to *Proceedings B*.

IN PREP

1. Strickland, J. L., Borja, M., Rautsaw, R. M., **Mason, A. J.**, Castañeda-Gaytán, G., Rokyta, D. R., Parkinson, C. L. The genetic basis for natural variation in rattlesnake venoms.

3. Carrera, Y., Lomonte, B., Gutiérrez, J. M., Calvete, J. J., Sanz, L., **Mason, A. J.**, Parkinson, C. L., and Fernández, J. Crystal structure, biochemical and toxicological characterization of a myotoxic PLA_2 ($BschPLA_2$) from the venom of the snake *Bothriechis schlegelii*.

GRANTS/AWARDS. (Total: $14,601, Research: $5,750, Travel: $6,300, Awards: $2,551)

2020 April	Clemson University Department of Biological Sciences Outstanding Graduate Student in Discovery
2019 Nov.	Clemson University Graduate Travel Grant to Attend the 2020 Southwestern Association of Naturalists Meeting, $750
2019 August	Dr. Harry Findley and Catherine T. Findley Student Assistance Endowment, Clemson University, $1551
2019 March	Clemson University Graduate Travel Grant to Attend the 2no Congreso Nacional de Viperidos Mexicanos y Ofidismos, $1000
2019 March	Clemson University Graduate Travel Grant to Attend the 2019 Evolution Meeting, $750
2018 July	Student Travel Award, 1st Annual Venomous Herpetology Symposium: Bridging the gap in the venomous herpetology community, $700
2017 April	Special Department Travel Award, Biology Department, University of Central Florida: International fieldwork and collaborative training in Honduras, $800

2016 July Department Travel Award, Biology Department, University of Central Florida: Expanding skills in molecular evolutionary analyses by attending Marine Biological Laboratory's 2016 Workshop on Molecular Evolution, $800

2016 April The Explorers Club Exploration Fund-Mamont Scholars Program Grant: Investigating the venom of an undescribed palm-pitviper in the montane cloud forests of Costa Rica, $1,250

2016 April Graduate Presentation Fellowship, College of Graduate Studies, University of Central Florida: Expanding skills in molecular evolutionary analyses by attending Marine Biological Laboratory's 2016 Workshop on Molecular Evolution, $500

2016 April Theodore Roosevelt Memorial Grant: Elucidating selective forces and molecular mechanisms driving venom evolution in palm-pitvipers, $3,500

2016 Feb. Southwestern Association of Naturalists McCarley Student Research Award: Selective forces and genetics of venom evolution in palm-pitvipers, $1,000

2015 March Department Travel Award, Biology Department, University of Central Florida: Venom evolution in Middle American pitvipers and coral snakes, $1,000

2014 March University Research Award, Grant Proposal: Effects of predator cues on interspecific competition of the Gulf Coast Kangaroo Rat and Merriam's Pocket Mouse in southern Texas, $1,000

Unsuccessful Applications

2017 January **Mason, A. J.**, J. H. Townsend, L. Herrera, and C. L. Parkinson. The National Geographic Society Waitt Foundation Grant: Exploring snake venom evolution and biodiversity in the highland forests of Honduras, $14,411-Not Funded

INVITED PRESENTATIONS

2020 **Mason, A. J.** Toxins and trees: Complex evolution in Middle America's arboreal vipers. University of South Alabama, Mobile, Alabama.

Mason, A. J. From genomes to phenomes to species: Dissecting the processes that influence diversification of venomous snakes. IV Congreso de Diversidad Biológica. Universidad Juárez del Estado de Durango Facultad de Ciencias Biológias, Torreon, Mexico. Presented virtually and in Spanish.

2019 **Mason, A. J.** Toxins and trees: Examining diversification at two scales in palm-pitvipers. University of Virginia, Charlottesville, Virginia.

2018 **Mason, A. J.** Exploring processes of diversification and adaptation at multiple levels in the viper genus *Bothriechis* in Central America. Universidad de San Carlos, Guatemala City, Guatemala.

2015 **Mason, A. J.**, and J. L. Strickland. Evolutionary and ecological perspectives on venom composition and function in pitvipers. Universidad Juárez del Estado de Durango Facultad de Ciencias Biológias, Torreon, Mexico.

PRESENTATIONS (*Undergraduate mentee)

2019 **Mason, A. J.**, M. J. Margres, M. Sasa, D. R. Rokyta, and C. L. Parkinson. Trait differentiation and modular toxin expression in the Black-Speckled and Talamancan Palm-Pitvipers. Southeastern population ecology and evolutionary genetics group meeting, Clemson University, Clemson, SC.

Hewitt, A.*., **A. J. Mason**, and C. L. Parkinson. The venom gland transcriptome of a monotypic snake: Hallberg's Cloud Forest Snake. Southeastern population ecology and evolutionary genetics group meeting, Clemson University, Clemson, SC.

Rumfelt, W. T.*, **A. J. Mason**, and C. L. Parkinson. The venom gland transcriptome of a monotypic snake: The Striped Lowland Snake. Southeastern population ecology and evolutionary genetics group meeting, Clemson University, Clemson, SC.

Mason, A. J., M. Sasa, D. R. Rokyta, and C. L. Parkinson. Examining venom diversification through comparative venom gland transcriptomics of palm-pitvipers. Biology of the Pitvipers, Rodeo, New Mexico.

Mason, A. J., M. J. Margres, M. Sasa, D. R. Rokyta, and C. L. Parkinson. Trait differentiation through modular toxin expression in the Black-Speckled and Talamancan Palm-Pitvipers. Evolution, Providence, Rhode Island.

Mason, A. J., C. I. Grünwald, J. Jones, M. Borja, H. Franz-Chávez, I. T. Ahuada-Carrillo, G. Castañeda-Gaytán, and C. L. Parkinson. Variación en el veneno de un clado de víboras arbóreas de rápida radiación. 2o Congreso Nacional de Viperidos Mexicanos y Ofidismo, Aguascalientes, Aguascalientes, MX.

2018 **Mason, A. J.**, M. Sasa, D.R. Rokyta, and C. L. Parkinson. Interspecific variation in palm-pitviper venoms occurs through expression regulation of species-specific and conserved toxins. Clemson Department of Biological Sciences Retreat, Ashville, North Carolina. - **1st Place Best Student Presentation**

Mason, A. J., M. Sasa, D.R. Rokyta, and C. L. Parkinson. A tale of two species: Contrasting venom compositions in the Black-Speckled and Talamancan Palm-Pitvipers. 1st Annual Venomous Herpetology Symposium, Zoo Miami, Miami, Florida. -**1st Place Best Student Talk**

Mason, A. J., M. Sasa, D.R. Rokyta, and C. L. Parkinson. Interspecific variation in palm-pitviper venoms occurs through expression regulation of species-specific and conserved toxins. Gordon Research Conference, Mt. Snow, Vermont

Mellor, N. J.*, **A. J. Mason**, and C. L. Parkinson. Comparative venom gland transcriptomics of montane rattlesnakes in the American Southwest. 6th Annual Summer Undergraduate Research Symposium, Clemson University, Clemson, South Carolina.

Mason, A. J., M. Sasa, D.R. Rokyta, and C. L. Parkinson. Venom gland transcriptomics highlight the role of regulatory evolution in shaping the venoms of palm-pitvipers.

Society of Systematic Biology Conference 2018, The Ohio State University, Columbus, Ohio.

Strickland, J. L., M. Borja, **A. J. Mason**, D. R. Rokyta, and C. L. Parkinson. The distribution and evolution of phenotypic diversity in Mojave Rattlesnake (*Crotalus scutulatus*) venom. Southwestern Association of Naturalists, St. Edward's University, San Marcos, Texas.

Mason, A. J., M. Sasa, D.R. Rokyta, and C. L. Parkinson. Interspecific variation in palm-pitviper venoms occurs through expression regulation of species-specific and conserved toxins. Clemson Biological Sciences Annual Student Symposium, Clemson University, Clemson, South Carolina. –**2nd Place Award for Best Poster**

Mason, A. J. Brown Bag Lunch-What snake venoms can teach us about evolution, adaptation, and biodiversity. Clemson University, Clemson, South Carolina.

2017 Hogan, M. P., C. Whittington, **A. J. Mason**, and D.R. Rokyta. Pitviper venom toxin diversity: A focus on the PLA2 toxin family. Evolution, Portland, Oregon.

Mason, A. J., M. Sasa, and C. L. Parkinson. Examining the utility of palm-pitvipers as a model group for studying interspecific venom evolution in snakes. Southwestern Association of Naturalists, Cameron University, Lawton, Oklahoma. –**Clark Hubbs Award for Best Poster**

DiMeo, M.A., L.N. Arick., J. B. Hickson, **A. J. Mason,** K.P. Mercier, R.M. Rautsaw, J. L. Strickland, G. P. Territo, C.L. Parkinson. Turbulent Waters: Resolving the evolutionary history of the Atlantic Salt Marsh Snake *Nerodia clarkii taeniata*. Florida Chapter of the Wildlife Society Annual Meeting, Orlando, Florida.

2016 **Mason, A. J.** Lightning Talk: Evaluating venom evolution in advanced snakes. MBL Workshop in Molecular Evolution, Woods Hole. Massachusetts.

Strickland, J.L., M. Borja, **A. J. Mason**, G. Castañeda-Gaytán and C.L. Parkinson. Convergence within a species? Venom evolution in Mojave Rattlesnakes. Southwestern Association of Naturalists, Universidad Nacional Autónoma de México, Mexico City, Mexico.

2015 Doan, T. M., **A. J. Mason**, and C. L. Parkinson. Cryptic Reptile Species? A Case Study of Bothriechis (Squamata: Viperidae). Annual Meeting of the Society for the Study of Amphibians and Reptiles, University of Kansas, Lawrence, Kansas.
Strickland, J.L., **A. J. Mason**, and C.L. Parkinson. Maintenance of venom phenotypes in Mojave Rattlesnakes in spite of gene flow and environmental similarity. Southwestern Association of Naturalists, San Diego State University, San Diego, California. **Clark Hubbs Award for Best Poster**

2014 **Mason, A. J.**, J.A. Baskin, K. E. Stoner, and D. B. Wester. The simultaneous effects of competition and predation on the seed hoarding behavior of the Gulf Coast kangaroo rat (*Dipodomy compactus*) and Merriam's pocket mouse (*Perognathus merriami*) in South Texas. Southwestern Association of Naturalists, Oklahoma State University, Stillwater, Oklahoma.

DEVELOPED WORKSHOPS

2019 Oct-Current	Clemson University Genomics and Bioinformatics Facility Hands-on RNAseq Workshop – developed by **A. J. Mason** & R. E. Noorai
2018 June	Clemson CITI Genomics Workshop – developed by **A. J. Mason** & A. Srinath. Hosted at Clemson University
2016 November	Phylogenetics: From Sequencing to Submission – developed by **A. J. Mason** & J. L. Strickland. Hosted at Florida Atlantic University.

PROFESSIONAL WORKSHOPS ATTENDED

2016 July	Marine Biological Laboratories Workshop in Molecular Evolution, Woods Hole, Massachusetts

RESEARCH MENTORSHIP & ASSISTANTS

Anna Hewitt, Freshmen/Sophmore, Clemson University, Clemson, SC
William Rumfelt, Freshmen/Sophmore, Clemson University, Clemson, SC
N. Jade Mellor (NSF REU), Sophmore, College of William & Mary, Williamsburg, VA
Rachel Raddick, Sophmore, Clemson University, Clemson, SC
Bridget Vincent, Sophmore, University of Central Florida, Orlando, FL
Carly Grimson, Sophmore, University of Central Florida, Orlando, FL
Katelyn Lanctot, Sophmore, University of Central Florida, Orlando, FL
Alex Robertson, Junior/Senior, University of Central Florida, Orlando, FL
Michelle Gaynor, Sophmore/Junior, University of Central Florida, Orlando, FL
Alex Maldonado, Senior, Texas A&M University Kingsville, Kingsville, TX
Fayth Kumro, Senior, H M King High School, Kingsville, TX

UNIVERSITY TEACHING EXPERIENCE-SPECIFIC CLASSES

Clemson Genomics and Bioinformatics Facility Graduate Student Mentor, Clemson University

Teaching Assistant, Clemson University
Evolutionary Biology
Principles of Biology Lab I

Undergraduate Research Experience Coordinator for NSF funded EXCEL and COMPASS Programs, University of Central Florida

Graduate Assistant/Tutor for NSF funded EXCEL and COMPASS Programs, University of Central Florida

Instructor of Record, Biology I Laboratory, Texas A&M Kingsville University

Teaching Assistant, Texas A&M Kingsville University
Mammalogy Lab
General Biology I Recitation
General Biology II Recitation
General Biology II Laboratory

Guest Lecturer

Herpetology, Department of Biology, University of Central Florida Spring 2015, 2016

CONTINUING EDUCATION

2012 Oct. Advancement Via Individual Determination (AVID) Seminar, Texas A&M University Kingsville

PROFESSIONAL EXPERIENCE AND UNIVERSITY SERVICES

Southeastern Population Ecology and Evolutionary Genetics group 2019 Clemson Organizing Committee Member

Texas A&M Kingsville University Biology Department Vivarium, Graduate Assistant Curator, 2012-2014

Texas A&M Kingsville University Biology Department Hiring Committee: Biomedical Position, Graduate student representative, 2013

EDUCATION OUTREACH, COMMUNITY SERVICE AND VOLUNTEER WORK

2019 July	Poster Competition Judge, 7th Annual Summer Undergraduate Research Symposium, Clemson University
2019 April	Presenter at BIOSCIence Expo
2019 April	Presenter for the College of Science at Clemson University's Be A T.I.G.E.R Field Day
2019 November	Herpetology/Science Outreach at R. C. Edwards Junior High School
2018 July	Poster Competition Judge, 6th Annual Summer Undergraduate Research Symposium, Clemson University
2018 April	Presenter for the College of Science at Clemson University's Be A T.I.G.E.R Field Day
2017 March	Science Night presenter at Cypress Springs Elementary School
2015 April	STEM Days Parkinson Lab Presenter
2013 July	College for Kids Biology Department Presenter
2013 April	Biology Department Elementary Outreach Planner/Presenter
2013 March	GBSA Spring Fling Fundraising Volunteer
2012 October	GBSA Fall Carnival Fundraising Volunteer

MANUSCRIPT REVIEW

Conservation Genetics
Giga Science
Journal of Molecular Evolution
Molecular Biology and Evolution
Toxins
Zoologica Scripta

LANGUAGES

English-*First Language*

Spanish-*Intermediate-Advanced*

SCRIPTING LANGUAGES

Unix bash/shell, Python, R

FIELD EXPERIENCE

Field Excursions:

2019 May	Pitviper collection, processing, various states, Mexico
2018 July	Palm-pitviper collection, processing, Guatemala
2018 May	Pitviper collection, processing, Costa Rica
2018 April	Pitviper collection, processing, San Pedro Sula, Cortes, Honduras
2018 January	Pitviper collection, processing, Colima, Colima, Mexico
2017 June	Palm-pitviper collection and herptofaunal survey, Honduras.
2016 August	Mexican pitviper collection, processing, Guadalajara, Jalisco, Mexico.
2016 May	Palm-pitviper collection, Costa Rica.
2016 January	Biodiversity survey/collection, Paraúna, Goiás, Brazil.
2015 June	Mojave Rattlesnake collecting, processing. Arizona, USA.
2015 May	Mojave Rattlesnake collection, processing. Torreón, MX.
2013 June	Rodent trapping, collection, processing. Kingsville, Texas, USA. June-August
2013 May	Herptofaunal collection. Kingsville, Texas, USA.

Acquired Field Techniques:

Venomous snake collection, handling, restraint (i.e. "tubing"). *Licensed in the state of Florida*

Tissue collection and preservation including blood draws, tail tips, toe clips, scale clips

Herpetological data collection: attaining body measures, scale counts, sexing, etc.

Extraction and collection of venom from snakes

Specimen dissection and preservation

Small mammal trapping, marking, collection

UNIVERSITY AFFILIATIONS

University of Central Florida Graduate Biology Student Association

Texas A&M University Kingsville Graduate Biology Student Association

RELATED COURSE WORK

Modern Macroevolutionary Methods
Genetics
Evolution
Animal Physiological Ecology
Patterns in Development
Biological Field Techniques
Wildlife Population Ecology
Fundamentals of Ecology
Herpetology
Mammalogy

Plant Taxonomy
Primate Biology and Behavior
Conservation Biology Theory

Chemistry
General Chemistry
Organic Chemistry I
Fundamentals of Biochemistry

Statistics
Intro to Statistics
Biostatistics in Animal Science
Experimental Design
Methods in Ecology I & II

Computer Science/Informatics
Intro to Bioinformatics
Bioinformatics: Sequence Analysis
Computational Genomics