KEVIN C. DEITZ, M.S., Ph.D.

Gerstner Scholar in Bioinformatics & Computational Biology
Sackler Institute for Comparative Genomics
American Museum of Natural History
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Research
Evolutionary & Population Genomics, Vector Biology, Speciation

Education

2017 Ph.D., Entomology, Texas A&M University
Population genomics, hybrid sterility, and gene expression in the *Anopheles gambiae* species complex

2011 M.S., Entomology, Texas A&M University
The population genetic structure of the malaria mosquito *Anopheles melas* throughout its West-African Range

2008 B.S., *cum laude*, Conservation Biology, SUNY College of Environmental Science and Forestry

Academic Positions

Sept 2020 – Present **Gerstner Scholar in Bioinformatics & Computational Biology**
Sackler Institute for Comparative Genomics, American Museum of Natural History
Research:
-Population genomics of endogenous viral elements in *Aedes aegypti*
-Evolution of gene expression in the *Anopheles gambiae* species complex
-Understanding the impact of changes in effective population size on evolutionary constraint and the rate of adaptive evolution.

May 2020 – Aug 2020 **Postdoctoral Research Scientist**
Department of Entomology, Texas A&M University
Laboratory of Michel Slotman
Research:
-Quantitative genetic analysis of male and female hybrid sterility in the *Anopheles gambiae* species complex.

July 2018 – April 2020 **Postdoctoral Research Scientist**
Department of Biological Sciences, Columbia University
Laboratory of Peter Andolfatto
Research:
-Analysis of evolutionary constraint and codon usage bias in *Drosophila.*
-Non-synonymous amino acid mutation clustering and genomic signatures of positive selection in *Drosophila.*
-Population genomics of the *Drosophila yakuba* species group.
Visiting Postdoctoral Research Associate
Lewis-Sigler Institute for Integrative Genomics, Princeton University

June 2017 – June 2018 **Postdoctoral Research Associate**
Lewis-Sigler Institute for Integrative Genomics
& Department of Ecology and Evolutionary Biology, Princeton University
Laboratory of Peter Andolfatto
Research:
-Quantitative genetics of pigment variation between *Drosophila yakuba* and *Drosphila santomea.*
-Population genomics of the *Drosophila yakuba* species group.
-Analysis of genome-wide evolutionary constraint in *Drosophila.*
-Development of molecular tools for haploid genome sequencing of the *Drosophila yakuba*.

Aug 2009 – May 2017 **Graduate Research Assistant**
Department of Entomology, Texas A&M University
Laboratory of Michel A. Slotman
Research:
-Population and evolutionary genomic analyses of *Anopheles* mosquitoes.
-Quantitative genetic analysis of speciation genes in *Anopheles.*
-Analysis of dosage compensation in *Anopheles* mosquitoes.
-Analysis of differential and allele-specific gene expression in *An. gambiae, An. arabiensis, An. quadriannulatus,* and their hybrids.

July 2008 – Aug 2009 **Biological Research Technician**
Department of Biological Sciences, University of South Carolina
Laboratories of Jeff Dudycha and Richard Long
Research: Analysis of differential gene expression in *Daphnia pulex and pulicaria* in response to differing resource environments.

May 2007 – Aug 2007 **Genetics and Ecology Research Intern**
Department of Biology, Old Dominion University
Laboratory of Lisa Horth
Research: Evolutionary genetics of balancing selection on the melanocortin 1 receptor (MC1R) locus of *Gambusia holbrooki*.

June 2006 – July 2006 **Biological Technician**
Department of Environmental and Forest Biology, SUNY College of Environmental Science and Forestry
Laboratory of Gregory McGee
Research: Ecological impacts of beach bark disease and forestry practices on the understory herbaceous vegetation community of northern hardwood forests.

Publications

Peer reviewed research publications

Deitz KC, Takken W, Slotman MA (2020) The genetic architecture of post-zygotic reproductive isolation between *Anopheles coluzzii* and *An. quadriannulatus*. *Frontiers in Genetics*, **11**, 925.

Deitz KC, Takken W, Slotman MA (2018) The effect of hybridization on dosage compensation in member species of the *Anopheles gambiae* species complex. *Genome Biology & Evolution*, **10**, 1663-1672.

Deitz KC, Athrey GA, Jawara M, Overgaard HJ, Matias A, Slotman MA (2016) Genome-wide divergence in the West-African malaria vector *Anopheles melas. G3: Genes, Genomes, Genetics*, **6**, 2867-2879.

Hodges TK, Athrey GA, **Deitz KC**, Overgaard HJ, Matias A, Caccone A, Slotman MA (2013) Large fluctuations in the effective population size of the malaria mosquito *Anopheles gambiae s.s*. during vector control cycle. *Evolutionary Applications*, **6**, 1171-1183.

Deitz KC, Athrey GA, Reddy MR, Overgaard HJ, Arnez AM, Jawara M, della Torre A, Pinto J, Kiszewski A, Constantini C, Abaga S, Caccone A, Slotman MA (2012) Genetic isolation within the malaria mosquito *Anopheles melas*. *Molecular Ecology*, **18**, 4498-4513.

Deitz KC, Reddy VP, Reddy M, Satyanarayanah N, Lindsey M, Overgaard HJ, Musa J, Caccone A, Slotman MA (2012) Limited usefulness of microsatellite markers between the closely related malaria vectors *Anopheles gambiae* and *Anopheles melas*. *Journal of Heredity*, **3**, 585-593.

Dudycha JL, Brandon CS, **Deitz KC** (2012) Population genomics of resource exploitation: insights from gene expression profiles of two *Daphnia* ecotypes fed alternate resources. *Ecology and Evolution*, **2**, 329-340.

Manuscripts in preparation

Reilly PF*, **Deitz KC***, Chakraborty M, Emerson JJ, Andolfatto P. Lineage-specific signatures of evolutionary constraint in the genomes of the *Drosophila yakuba* clade. *equal contributions.

Han C, Reilly P, **Deitz KC**, Matute DR, Andolfatto P. Genome-wide signatures of non-random mating suggest extreme micro-environment population structure in *Drosophila santomea*.

Articles

Deitz KC (2018) "Parallel cloning by site specific recombination". Insect Genetic Technologies Research Coordination Network – Technology Topics.

Grants & Awards

American Museum of Natural History, 2020-2022
Award Amount: $24,000 research allowance

Texas A&M University Dissertation Fellowship, Office of Graduate and Professional Studies, 2016-2017
Award Amount: $18,000 + tuition

National Science Foundation Doctoral Dissertation Improvement Grant, June 2016
Project Title: "The Genomics of Hybrid Sterility & Speciation in the *Anopheles gambiae* Species Complex"
Principal Investigator: Michel A. Slotman, Ph.D., Co-PI: Kevin C. Deitz, M.S.
Award Amount: $19,305

Texas A&M University, Department of Entomology, J.H. Benedict, Sr. Memorial Graduate Student Scholarship, 2015
Award Amount: $2,500

Texas A&M University, Department of Entomology, Herb Dean '40 Endowed Scholarship, 2015
Award Amount: $2,500

Texas A&M University Genomics Seed Grant Program, 2013-2015
Project Title: "Identifying targets for the transgenic control of the malaria vector *Anopheles gambiae*"
Principal Investigator: Michel A. Slotman, Ph.D., Collaborators: Kevin C. Deitz, M.S., Luciano V. Cosme, M.S.
Award Amount: $27,167

Texas EcoLab Grant, December 2012
Project Title: "Quantifying the biodiversity of West Nile vectors in central Texas"
Award Amount: $8,561.93

Texas A&M University Ecology and Evolutionary Biology Student Travel Grant, March 2011
Award Amount: $440

Texas A&M University College of Agriculture and Life Sciences Lechner Graduate Presentation Grant, February 2011
Award Amount: $500

Teaching Experience

American Museum of Natural History

Fall 2020	Computational Genomics 2, co-instructor

Princeton University, Lewis-Sigler Institute for Integrative Genomics, Invited Lectures

Spring 2018	"Mutation, Selection, & Genetic Drift" ISC-236 An Integrative, Quantitative Introduction to the Natural Sciences, Instructor: Julien Ayroles

Texas A&M University, Department of Entomology, Teaching Assistantships

Spring 2015	FIVS-123 Forensic Investigations, Instructor: Kevin M. Heinz ENTO-425 Disease Ecology, Instructor: Micky D. Eubanks
Fall 2015	ENTO-208 Veterinary Entomology, Instructor: Gabriel L. Hamer ENTO-210 Global Public Health Entomology, Instructor: Michel A. Slotman
Spring 2015	ENTO-423 Medical Entomology, Instructor: Adrienne Brundage
Fall 2014	ENTO-208 Veterinary Entomology, Instructor: Gabriel L. Hamer
Spring 2012 – Fall 2014	ENTO-210 Global Public Health Entomology, Instructor: Michel A. Slotman

Texas A&M University, Department of Entomology, Invited Lectures

Spring 2012	"Using population genetics to inform malaria control" GENE-412 Population and Ecological Genetics, Instructor: J. Spencer Johnston
Fall 2011	"A population genetic analysis of the malaria vector *Anopheles melas*" GENE-412 Population and Ecological Genetics, Instructor: J. Spencer Johnston

Mentoring Experience

2018-2019	Katlyn Rymarzow, Ecology and Evolutionary Biology Undergraduate, Princeton University Thesis: "Effects of Reduced *Syntaxin 1a* Expression on *Drosophila melanogaster* Social Behavior"
2017-2018	Francisca Bermudez, Ecology and Evolutionary Biology Undergraduate, Princeton University

	Thesis: "Applying Next-Generation Sequencing to the Genetics and Ecology of *Rhodnius pallescens"*
2015-2016	Bradley Dye, Biomedical Sciences Undergraduate, Texas A&M University Thesis: "Quantifying the Relationship Between *Tep1* Genotype and *Plasmodium* Infection in *Anopheles gambiae"*

Presentations

2020. **Deitz KC.** An Integrative Genomics Framework for Studying the Ecology and Evolution of Human Disease Vectors. University of Delaware, Department of Entomology and Wildlife Ecology Department Seminar, April 2020. **Invited presentation.**

2018. **Deitz KC**, Andolfatto P. What is the best way to sequence a *Drosophila* genome? Annual *Drosophila* Research Conference, April 2018. (Poster)

2016. **Deitz KC**, Takken W, Slotman MA. Hybrid Allelic Imbalance and Gene Expression Evolution in the *Anopheles gambiae* Species Complex. Evolution 2016, June 2016. (Poster)

2015. **Deitz KC**, Takken W, Slotman MA. The Effect of Hybridization on Gene Expression in the *Anopheles gambiae* Complex. Annual meeting of the American Society of Tropical Medicine and Hygiene, October 2015. (Poster)

2014. **Deitz KC**, Athrey G, Jawara M, Overgaard HJ, *Anopheles* Genome Consortium, Slotman MA. Genome-wide isolation within the West-African malaria vector *Anopheles melas.* Annual meeting of the American Society of Tropical Medicine and Hygiene, November 2014, (Poster)

2014. **Deitz KC**, Athrey G, Fontaine MC, Besansky NJ, Neafsey DE, Slotman MA. Genomic analysis of divergence within the malaria vector *Anophels melas*. Annual meeting of the Society for Vector Ecology, October 2014, **Invited presentation.**

2014. **Deitz KC**, Athrey G, Slotman MA. Genomic analysis of divergence within the malaria vector *Anophels melas.* Texas A&M Department of Entomology Graduate Student Forum, 28 August 2014.

2013. **Deitz KC**, Slotman MA. Population genomic analysis of isolation within the African malaria vector *Anopheles melas*. Entomology Society of America Annual Meeting, Austin, TX.

2013. **Deitz KC**, Slotman MA. Digging deeper within the *Anopheles gambiae* complex: Speciation within *Anopheles melas*? 6th International Congress of the Society for Vector Ecology, La Quinta, CA. **Invited presentation.**

2011. **Deitz KC**, Reddy MR, Overgaard HJ, Arnez AM, Satyanarayana N, Jawara M, della Torre A, Petrarca C, Pinto J, Kenge P, Constantini C, Abaga S, Lanzaro G, Kiszweski A, Caccone A, Slotman MA. Genetic isolation between *Anopheles melas* populations. American Society of Tropical Medicine and Hygiene 60th Annual Meeting, Philadelphia, PA.

2011. **Deitz KC**, Reddy MR, Overgaard HJ, Arnez AM, Satyanarayana N, Jawara M, Abaga S, Caccone A, Slotman MA. Genetic isolation between populations of the West-African malaria mosquito *Anopheles melas*. Evolution 2011, Norman, OK.

2011. Dudycha JL, **Deitz KC**, Brandon CS. Genome-by-environment interactions and the evolutionary divergence of resource complexity. Gordon Research Conference on Ecology and Evolutionary Genomics, Biddeford, ME. (Poster)

2010. **Deitz KC**, Reddy MR, Overgaard HJ, Arnez AM, Satyanarayana N, Jawara M, Abaga S, Caccone G, Slotman MA. The population genetic structure of the West-African malaria mosquito *Anopheles melas*. Evolution 2010, Portland, OR. (Poster)

2010. **Deitz KC**, Reddy MR, Overgaard HJ, Arnez AM, Satyanarayana N, Jawara M, della Torre A, Pinto P, Abaga S, Caccone G, Slotman MA. The population genetic structure of the malaria vector *Anopheles melas* in West Africa. American Society of Tropical Medicine and Hygiene 59th Annual Meeting, Atlanta, GA. (Poster)

Training

November 16, 2018	Columbia University NIH Grant Workshop Series Modules: Navigating NIH, Know Your K Awards, Know Your Kangaroo (K99/R00), Writing Effective Specific Aims
February 1 – March 1, 2018	Field work for postdoctoral research, São Tomé and Príncipe, West Africa Collection of endemic *Drosophila santomea, D. yakuba*, and *Aedes* and *Anopheles* mosquitoes in collaboration with Daniel Matute (UNC) and Paul Schmidt (UPenn).
Spring 2018	Responsible Conduct in Research (EEB-505, half-term course), Princeton University
November 7, 2014	Open Source for Open Science, Texas A&M University Ecology & Evolutionary Biology

	Modules: R basics, Using R for Phylogenetics, Next Generation Sequencing - Data Processing & Gene Expression Analysis
July 14-18, 2014	19th Summer Institute in Statistical Genetics, University of Washington Department of Biostatistics & School of Public Health Modules: Quantitative Genetics, Quantitative Trait Loci Mapping
July 10-12, 2014	Open Source for Open Science, Texas A&M University Ecology & Evolutionary Biology Modules: Introduction to the R Environment, R for Scientific Programming, Unix/Linux Commands in Bash and R, Publication Quality Graphs

Professional Memberships

Genetics Society of America, 2017 - Present
The American Society of Tropical Medicine and Hygiene, 2010 – Present
The Entomological Society of America, 2013 – 2014
The Society for the Study of Evolution, 2010 – Present
The Society for Vector Ecology, 2013 – 2017

Professional Service

Peer Review

PLoS ONE, 2012 & 2020, *Molecular Ecology*, 2013 & 2014, *PLoS Neglected Tropical Diseases*, 2013 & 2014, *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 2017, *Infection, Genetics & Evolution,* 2017, *American Journal of Tropical Medicine and Hygiene*, 2018 & 2019, Computational and Structural Biotechnology Journal, 2020

Texas A&M University Entomology Graduate Student Organization

President 2012 – 2013, Fundraising Chair 2011 – 2012, Social Chair 2010 – 2011, Member 2009 – 2017

12th Annual Texas A&M University Ecological Integration Symposium (eeb.tamu.edu/eis/)

Organization Committee Member & Outreach Chair 2010 – 2011

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