

## Matthew L. Aardema

Sackler Institute for Comparative Genomics  
American Museum of Natural History  
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### Current Position

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**Gerstner Scholar in Bioinformatics and Computational Biology,** 2015 - present  
American Museum of Natural History

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### Education

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**Ph.D.** Department of Ecology and Evolutionary Biology, Princeton University 2015  
*Advisor: Peter Andolfatto*

**M.S. (dual degree)** Department of Entomology and Program in Ecology, 2010  
Evolutionary Biology & Behavior, Michigan State University  
*Advisor: J. Mark Scriber*

**B.S.** Department of Zoology, Michigan State University 2008

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### Teaching Experience

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Assistant in Instruction (AI), EEB 327 "Immune Systems:  
From Molecules to Populations", Princeton University 2015

Assistant in Instruction (AI), EEB 309 "Evolutionary Biology", 2011, 2012, 2013  
Princeton University

Statistics Workshop Leader for Senior Thesis Writing, Princeton University 2011 – 2013

Assistant in Instruction (AI), EEB/MOL 355 "Intro to Statistics for Biology" 2013  
Princeton University

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### Peer-Reviewed Publications

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Vu B, Jafari A, **Aardema ML**, Tran H, Nguyen D, Dao T, Nguyen T, Tran T, Nguyen C, Fox A, Bañuls A-L, Thwaites G, Nguyen K, Wertheim H. (2016) Population structure of colonizing and invasive *Staphylococcus aureus* strains in northern Vietnam. *Journal of Medical Microbiology*. doi: 10.1099/jmm.0.000220

**Aardema ML**, von Loewenich FD (2015) Varying influences of selection and demography in host-adapted populations of the tick-transmitted bacterium, *Anaplasma phagocytophilum*. *BMC Evolutionary Biology* 15:58.

**Aardema ML**, Scriber JM (2015) Ultraviolet coloration in tiger swallowtail butterflies (*Papilio glaucus* group, Papilionidae) with a method for objectively quantifying adult butterfly wing wear. *Journal of the Lepidopterist's Society* 69:58-62.

Huhn C, Winter C, Wolfsperger T, Wüppenhorst N, Strašek Smrdel K, Skuballa J, Pfäffle M, Petney T, Silaghi C, Dyachenko V, Straubinger RK, Schaarschmidt-Kiener D, Ganter M, **Aardema ML**, von Loewenich FD (2014) Analysis of the population structure of *Anaplasma phagocytophilum* using multilocus sequence typing. *PLoS One* 9:e93725.

- Aardema ML**, Scriber JM (2013) No evidence that male choice contributes to the maintenance of a shared, sex-limited trait in mimetic and non-mimetic female tiger swallowtail butterflies, *Papilio glaucus*. *Evolutionary Biology* 40:108-116.
- Zhen Y, **Aardema ML**, Medina EM, Schumer M, Andolfatto P (2012) Parallel molecular evolution in an herbivore community. *Science* 337:1634-1637.
- Scriber JM, Maher E, **Aardema ML** (2012) Differential effects of short term winter thermal stress on diapausing tiger swallowtail butterflies (*Papilio* spp.). *Insect Science* 19:277-285.
- Aardema ML**, Ying Z, Andolfatto P (2012) The evolution of cardenolide-resistant forms of Na<sup>+</sup>,K<sup>+</sup>-ATPase in Danainae butterflies. *Molecular Ecology* 21:340-349.
- Kunte K, Shea C, **Aardema ML**, Scriber JM, Juenger TE, Gilbert LE, Kronforst MR (2011) Sex Chromosome Mosaicism and Hybrid Speciation among Tiger Swallowtail Butterflies. *PLoS Genetics* 7:e1002274.
- Aardema ML**, Scriber JM, Hellmann JJ (2011) Considering Local Adaptation in Issues of Lepidopteran Conservation-a Review and Recommendations. *American Midland Naturalist* 165:294-303.
- Ording, GJ, Mercader RJ, **Aardema ML**, Scriber JM. (2010) Allochronic isolation and incipient speciation in tiger swallowtail butterflies. *Oecologia* 162:523-531.
- Mercader RJ, **Aardema ML**, Scriber JM (2009) Climate induced host use divergence in a hybrid zone. *Oecologia* 158: 651- 662.
- Mercader RJ, **Aardema ML**, Scriber JM (2008) Old hickory records and John Abbot's drawings: North American host records evaluated for *Papilio glaucus*. *Journal of the Lepidopterist's Society* 62: 166 - 170.

## Manuscripts, In Review or Preparation

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- Aardema ML**, Andolfatto P (Submitted) Phylogenetic incongruence and the origins of cardenolide-resistant forms of Na<sup>+</sup>,K<sup>+</sup>-ATPase in North American *Danaus* butterflies. *Evolution*.
- McCulloch KJ, Yuan F, Zhen Y, **Aardema ML**, Smith G, Llorente-Bousquets J, Andolfatto P, Briscoe AD (Submitted) Sexual dimorphism and species divergence following UV opsin duplication in butterflies. *Proceedings of the National Academy of Sciences*.
- Aardema ML**, Edwin S, Fukova I, Muñoz AM, Scriber JM, Briscoe AD, Andolfatto P (In Prep) Effective population size and the efficacy of selection in Lepidoptera. *Molecular Biology and Evolution*.
- Aardema ML**, Fukova I, Scriber JM, Andolfatto P (In Prep) Differential introgression across a butterfly hybrid zone. *Molecular Ecology*.

## Select Presentations

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| EEB research symposium, City University of New York (CUNY)<br>Invited talk: "Evolutionary processes in butterflies and bacteria"   | 2016 |
| Infectious Disease Genomics, Wellcome Genome Campus<br>Poster Presentation: "Genomic comparisons of phenotypically distinct isolates of the rodent malaria <i>Plasmodium chabaudi</i> reveal genes of potential functional importance" | 2015 |
| Conférences Jacques-Monod, Infectious Diseases as Drivers of Evolution<br>Oral Presentation: "Divergent demographic histories among host-adapted populations of a tick-borne infectious bacteria"                                      | 2014 |

## Select Presentations (Cont.)

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Society for Molecular Biology and Evolution (SMBE) Annual Meeting 2014  
Oral Presentation: "Contrasting influences of natural selection across multiple Lepidopteran species"

## Research Grants, Fellowships and Awards

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Princeton Center for Health and Wellbeing, Research Grants (\$6500) 2014

Walbridge Award, Princeton Environmental Institute (\$7000) 2011

Dr. Paul Wooley Memorial Award for Outstanding MS Degree 2011

Hutson Research Grant (\$1200) 2009

Plant Sciences Recruitment Fellowship (2 yrs. stipend, tuition) 2008 – 2010  
Michigan State University

National Science Foundation- Research Experience for Undergraduates (REU). 2008  
Scriber Lab (\$4600) Project Title: "Female-limited, secondary sexual characteristics in *Papilio* male mate recognition."

Undergraduate Research Support, College of Natural Science (\$4000), 2007, 2008  
Michigan State University

Scriber Scholar Award in Butterfly Biology and Conservation (\$2000) 2007

"Enhancing Linkages between Mathematics and Ecology" (ELME) 2007  
Fellowship (~\$8300), Kellogg Biological Station, Michigan State University

## Student Mentoring

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Sanna Edwin, Undergraduate Student at Karolinska Institute 2015  
Project Title: "Codon bias in Lepidoptera in relation to effective Population size"

Elizabeth Pérez-Rodríguez, Undergraduate Student at University of Arkansas at Pine Bluff (Visiting Researcher, Princeton Univ.) 2014  
Project Title: "Differential influences of Horizontal Gene Transfer (HGT) within infectious bacterial species of *Anaplasma*"

Emily Chen, Student at Morris Knolls High School 2012  
Project Title: "Evolution of Na<sup>+</sup>,K<sup>+</sup>-ATPase in fireflies of the genera *Photuris* and *Photinus*"

Molly McGuire, Undergraduate Student at Michigan State University 2010  
Project Title: "Variation in levels of avian predation on the larvae of *Papilio glaucus* on four different host tree species"

## Additional Outreach

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Consultant, Elephants Alive! (in collaboration with Save the Elephants) 2013 - present

Presenter at the Science & Engineering Expo (SEE Princeton) 2013