

## Robert Augustus Zinna II

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## Education

2011-2016 Washington State University  
PhD, Entomology

2005-2009 Winthrop University  
Bachelor's of Science in Biology, Minor in Chemistry  
GPA- 3.243

## Research Experience

**Position:** PERT Postdoctoral Fellow **Employer:** University of Arizona  
**Supervisor:** Dr. Michael Riehle ([mriehle@ag.arizona.edu](mailto:mriehle@ag.arizona.edu))  
**Date(s) of Employment:** February 2016-Present  
**Description of Job Responsibilities:** Development and analysis of transgenic based approaches to mosquito control.

**Position:** Graduate Research Assistant **Employer:** Washington State University  
**Supervisor:** Dr. Laura Lavine ([Lavine@wsu.edu](mailto:Lavine@wsu.edu))  
**Date(s) of Employment:** August 2011-February 2016  
**Description of Job Responsibilities:** Insect rearing, qPCR design and analysis, DNA/RNA extraction, bioinformatics-based approaches to transcriptome analysis.

**Position:** Research Specialist I **Employer:** Medical University of South Carolina  
**Supervisor:** Keith Kirkwood, PhD, Dds ([klkirk@musc.edu](mailto:klkirk@musc.edu))  
**Date(s) of Employment:** July 2009 to July 2011  
**Description of Job Responsibilities:** quantitative pathology scoring using analysis software ([Visopharm](#)), digital quantification of immunohistological samples, Micro-Computed Tomography analysis ([GE Microview](#)), laboratory maintenance, technical support.

**Position:** Undergraduate Research Assistant **Employer:** Winthrop University  
**Supervisor:** Dr. Julian Smith III ([smithJ@winthrop.edu](mailto:smithJ@winthrop.edu))  
**Date(s) of Employment:** Jan 2008 to April 2009  
**Description of Job Responsibilities:** Maintain culture of *Aeolosoma* spp, design and test immunofluorescent antibodies, electron microscope sample preparation and operation, confocal microscopy sample preparation and operation.

**Position:** SC INBRE Undergraduate Research Assistant **Employer:** Winthrop University  
**Supervisor:** Dr. Kristi Westover ([WestoverK@winthrop.edu](mailto:WestoverK@winthrop.edu))  
**Date(s) of Employment:** June 2008 to August 2008  
**Description of Job Responsibilities:** Collect, clean, and analyze bioinformatic data pertaining to mutation rates in antigen-specific codon regions of avian H1N1, organize and curate EndNote databank pertaining to various projects, technical support.

**Position:** INBRE Partial Assistant **Employer:** Winthrop University  
**Supervisor:** Dr. Eric Birgbaeur ([birgbaeurE@winthrop.edu](mailto:birgbaeurE@winthrop.edu))  
**Date(s) of Employment:** June 2007 to August 2007  
**Description of Job Responsibilities:** Maintain and monitor laboratory supply of *Gallus* embryos, perform micro-dissection of embryonic retinal neurons, design and test explanting and dose-dependence inhibition experiments, laboratory cleanliness.

## Training

RNA-seq analysis pipeline, transcriptome annotation, analysis, and assembly using Unix tools.

**Michigan State University, April 2013**

Large-scale simultaneous multiple alignment and phylogeny estimation using SATé. **Smithsonian Institution, May 2012 (travel scholarship awarded, see Awards)**

## Publications

### *Journal Articles*

**Robert. A. Zinna**, Douglas J. Emlen, Laura Corley-Lavine, Ian Dworkin (in preparation). Mechanisms of sexual dimorphism and nutritional plasticity: A transcriptomic analysis. *Molecular Ecology* (in preparation)

**Robert. A. Zinna**, Hiroki Gotoh, Jema Rushe, Douglas J. Emlen, Laura Corley-Lavine, Teruyuki Niimi (in preparation). Sp-family genes and their role in the development of exaggerated weaponry. *Evolution and Development* (in preparation)

Hiroki Gotoh, **Robert A Zinna**, Hitoshi Miyakawa, Asano Ishikawa, Yuki Ishikawa, Yasuhiro Sugime, Douglas J. Emlen, Laura C. Lavine, and Toru Miura. (in preparation). Developmental roles of appendage patterning genes in extreme mandible enlargement in the stag beetle *Cyclommatus metallifer*. *Evolution and Development* (in preparation)

**Robert. A. Zinna**, Hiroki Gotoh, Colin Brent, Adam Dolezal, Aurora Kraus, Douglas J. Emlen, Laura Corley-Lavine (2016) Endocrine Control of Exaggerated Trait Growth in Rhinoceros Beetles. *Integrative and Comparative Biology*

Hiroki Gotoh, **Robert A. Zinna**, Ian Warren, Michael DeNeiu, Teruykui Niimi, Ian Dworkin, Douglas J. Emlen, Toru Miura, and Laura C. Lavine. (2016) Identification and functional analyses of sex determination genes in the sexually dimorphic stag beetle *Cyclommatus metallifer*. *BMC Genomics* 17(1):1

- Ian A Warren, J. Cristobal Vera, Annika Johns, **Robert A Zinna**, James H Marden, Doug J Emlen, Ian Dworkin and Laura C Lavine. (2014). Insights into the development and evolution of exaggerated traits using de novo transcriptomes of two species of horned scarab beetles. *PLoS one*, 9(2), e88364
- McCullough, E. L. and **Zinna, R. A.** (2013). Sensilla density corresponds to the regions of the horn most frequently used during combat in the giant rhinoceros beetle *Trypoxylus dichotomus* (Coleoptera: Scarabaeidae: Dynastinae). *Annals of the Entomological Society of America* 106: 518-523 (cited in *Phenomena*, see notable press)
- Dunmyer J, Herbert B; Li Q, Martin K, **Zinna R**, Yu H, Kirkwood K (2012) Sustained MAPK Activation with *Aggregatibacter actinomycetemcomitans* Causes Inflammatory Bone Loss. *MOM*. 27(5):397-407. (doi: 10.1111/j.2041-1014.2012.00656.x). Epub 2012 Jul 11
- Qiyang Li, Hong Yu, **Robert A Zinna**, Kylie Martin, Bethany Herbert, Angen Liu, Carlos Rossa, and Keith L Kirkwood (2011) Silencing MAP Kinase-activated Protein Kinase-2 Arrests Inflammatory Bone Loss. *JPET*. 336(3):633-42 (doi:10.1124/jpet.110.172395)
- H Yu, Q Li, B Herbert, **R Zinna**, K Martin, C R Junior and K L Kirkwood (2011) Anti-inflammatory Effect of MAPK Phosphatase-1 Local Gene Transfer in Inflammatory Bone Loss. *Gene Therapy*. 18:344-353 (doi:10.1038/gt.2010.139 )

### **Conference Presentations**

- **2016:** Using RNA-seq to understand the endocrine control of trait exaggeration. *Society for Integrative and Comparative Biology Annual Meeting, Portland, OR* [Awarded best student talk. see **Awards**]
- **2015:** Endocrine signals and their role in the evolution of trait exaggeration. *Entomology Society of America Pacific Branch Meeting, Coeur d'Alene ID*
- **2015:** From fruit flies to the nobel prize: Using insects to teach science to non-majors. *Entomology Society of America Pacific Branch Meeting, Coeur d'Alene ID* (invited talk)
- **2014:** Sensilla density corresponds to the regions of the horn most frequently used during combat in the giant rhinoceros beetle *Trypoxylus dichotomus* (Coleoptera: Scarabaeidae: Dynastinae). *Society for Integrative and Comparative Biology Annual Meeting, Austin TX*
- **2013:** Next-generation Entomology: diffusing innovation in molecular biology to answer basic and applied questions. *Entomology Society of America Pacific Branch Meeting, Lake Tahoe NV* (invited talk, emergency cancellation)

### **Published Abstracts**

- Westover, K and **Zinna, R.** (2009) Mutation rates in epitope and non-epitope regions of the hemagglutinin gene of Influenza A. *Winthrop University Abstract Collection 2009*
- JS Smith III and **Zinna, R.** Development of the Nervous System in the paratomic fission plane of *Aeolosoma headley*. *Winthrop University Abstract Collection 2009.*
- Birgbauer, E, **Zinna, R**, Lambert C. (2007) Effect of Lysophospholipids on Retinal Axon Guidance. *Winthrop University Summer Undergraduate Research Experience 2007*

## Fellowships

**2016:** National Institutes of Health Postdoctoral Excellence in Research and Teaching award (ID# 2K12GM000708-16) ~ \$65,000/yr

**2013:** National Science Foundation/Japan Society for the Promotion of Science East Asia Pacific Summer Institute Fellowship (ID# 1311025) -\$12,500

## Awards

**2016:** Department of Comparative Endocrinology Aubrey Gorbman Best Student Presentation, Society for Integrative and Comparative Biology Annual Meeting - \$150

**2015:** Washington State University “Three Minute Thesis” second place winner - \$1,500

**2015:** College of Agriculture, Human, and Natural Resource Sciences “Three Minute Thesis” First place winner - \$1000

**2014:** Biology Graduate Student Association “Best Abstract” - \$60

**2014:** Society for Integrative and Comparative Biology Travel Grant - \$400

**2014:** Washington State University Entomology Travel Grant - \$600

**2013:** Washington State University College of Agricultural, Human, and Natural Resource Sciences Graduate Student Scholarship - \$1000

**2013:** Washington State University Graduate and Professional Student Association Teaching Assistant Excellence Award- Honorable Mention

**2013:** Entomological Society of America Pacific Branch Travel Scholarship - \$200

**2012:** University of Texas, Austin Multiple Sequence Alignment Travel Scholarship- \$700

**2012:** Washington State University Entomology Department George Tamaki Memorial Scholarship - \$600

**2009:** Winthrop University Undergraduate Research Scholar - \$2000

**2007:** South Carolina IDeA Networks of Biomedical Research Excellence Summer Undergraduate Research Internship- \$1600

**2007-2009:** South Carolina SMART Grant - \$4000/academic year

**2006-2009:** South Carolina Palmetto LIFE Extension -\$2500/academic year

**2005-2009:** South Carolina Palmetto LIFE Scholarship -\$5000/academic year

## Teaching Experience

Fall Semester 2015                      Washington State University  
Teaching Assistant for ENTOM103: Introductory Entomology  
Instructor: Dr. R.S. Zack ([Zack@wsu.edu](mailto:Zack@wsu.edu))

Spring Semester 2015                      Washington State University  
Teaching Assistant for ENTOM102: Insects and Human Disease  
Instructor: Dr. Jeb Owen ([jowen@wsu.edu](mailto:jowen@wsu.edu))

Fall Semester 2014                      Washington State University  
Teaching Assistant for BIOL321: Principles of Animal Development  
Instructor: Dr. Erica Crespi ([crespi@wsu.edu](mailto:crespi@wsu.edu))

Fall Semester 2013                      Washington State University  
Teaching Assistant for ENTOM 150: Insects, Science, and Culture

Instructor: Dr. Laura Lavine ([lavine@wsu.edu](mailto:lavine@wsu.edu)) and Dr. David Crowder ([dcrowder@wsu.edu](mailto:dcrowder@wsu.edu))

Fall Semester 2012 Washington State University  
Teaching Assistant for ENTOM 150: Insects, Science, and Culture  
Instructor: Dr. Carol Anelli ([Carol\\_Anelli@wsu.edu](mailto:Carol_Anelli@wsu.edu))

Spring Semester 2012 Washington State University  
Teaching Assistant for BIOL 106: Organismal Biology  
Instructors: Dr. Asaph Cousins ([Acousins@wsu.edu](mailto:Acousins@wsu.edu)) and Dr. Raymond Lee ([rlee@mail.wsu.edu](mailto:rlee@mail.wsu.edu))

September 2011 Washington State University  
Teaching Assistant for Entomology 101: Insects and People POGIL learning session  
Instructor: Dr. R.S. Zack ([Zack@wsu.edu](mailto:Zack@wsu.edu))

July 2008-August 2008 Winthrop University  
Undergraduate Assistant- General Zoology Laboratory (BIOL 206H)  
Instructor: Dr. Paula Mitchell ([mitchellP@winthrop.edu](mailto:mitchellP@winthrop.edu))

## Outreach

**2015:** Coordinated demonstration of nocturnal insect and arachnids at the Palouse Clearwater Environmental Institute's 2<sup>nd</sup> annual "Animals of the Night" event.

**2015:** Taught elementary school course on insect body parts and insect collecting at the Palouse Clearwater Environmental Institute's "Insectigations" event.

**2014:** Coordinated insect demonstrations, "raise-a-beetle" event, cockroach races, and face painting at the WSU Entomology Graduate Student Insect Exposition

**2014:** Coordinated demonstration of nocturnal insect and arachnids at the Palouse Clearwater Environmental Institute's 1<sup>st</sup> annual "Animals of the Night" event.

**2014:** Coordinated honey bee demonstration and insect identification at the Palouse Clearwater Environmental Institute's "Summer of Sustainability" event

**2014:** Demonstrated insect identification for the Idaho Stake Primary Presidency Boy Scout Troop

**2012:** Served cricket chili and mealworm tacos at the Entomology Insect Feed.

**2012:** Insect demonstration for Moscow Parks and Recreation summer youth program.

**2012:** Dyed silk scarves with cochineal for WSU's "Summer of Excellence" program.

**2012:** Organized an insect easter egg hunt at WSU's Insect Expo.

**2011:** Organized and participated in the EGSA children's reading series.

**2011:** Served cricket chili and mealworm tacos at the Entomology Insect Feed.

**2009:** Demonstrated chemical reactions for Mole Day at York County Museum.

**2009:** Assisted with natural history summer camp through Charleston Museum.

## Service

**2015:** Organized "Scorpion Pit" talk critiques at the 2016 Institutional Research and Academic Career Development Award (IRACDA) conference at the University of Arizona

**2015:** Organized "Insects in EDEN: Frontiers in insect Ecology, Development, and Evolution" symposium at the Pacific Branch meeting of the Entomological Society of America (resulting in six new ESA members)

**2015:** Dr. William Wiley Research Exposition Co-Chair (\$23,600 in scholarships awarded to participants)

**2014:** Dr. William Wiley Research Exposition Subcommittee member (\$14,00 in scholarships awarded to participants)

## **Leadership Roles**

**2014-2015:** Entomology Graduate Student Association- Outreach Coordinator

**2014-2015:** Entomology Graduate Student Association- Vice-President

**2014-2015:** College of Agriculture, Human, and Natural Resources District Representative for the Graduate and Professional Student Association

**2013-2014:** Entomology Graduate Student Association – Graduate and Professional Student Association Senator

**2012-2013:** Entomology Graduate Student Association – Graduate and Professional Student Association GPSA Senator

**2007-2009:** Student Affiliates of the American Chemical Society – Treasurer (2 terms)

## **Notable Press**

Smith, A. (2015). Presenting for the Future. *The Daily Evergreen*.

<[http://www.dailyevergreen.com/news/article\\_719e21d2-bb05-11e4-8a3d-f3da1cc37148.html](http://www.dailyevergreen.com/news/article_719e21d2-bb05-11e4-8a3d-f3da1cc37148.html)>

Daily Evergreen Staff (2015) Student Research on display at Wiley. *The Daily Evergreen*.

<[http://www.dailyevergreen.com/news/article\\_dd84006a-b8ad-11e4-8c43-eb3e3184329c.html](http://www.dailyevergreen.com/news/article_dd84006a-b8ad-11e4-8c43-eb3e3184329c.html)>

Zimmer, C. (2014). The mystery of the sea unicorn. *National Geographic's Phenomena: The Loom*.

<<http://phenomena.nationalgeographic.com/2014/03/18/the-mystery-of-the-sea-unicorn/>>

Gabriel, M. (2014). Students to show, tell about research. *The Daily Evergreen*.

<[http://www.dailyevergreen.com/news/article\\_55fa1c72-8318-11e3-9d84-](http://www.dailyevergreen.com/news/article_55fa1c72-8318-11e3-9d84-001a4bcf6878.html?mode=jqm)

[001a4bcf6878.html?mode=jqm](http://www.dailyevergreen.com/news/article_55fa1c72-8318-11e3-9d84-001a4bcf6878.html?mode=jqm)>

Weiford, L. (2013). Creepy crawlers, stingers, do good at the farm. *WSU News*

<<http://news.wsu.edu:80/articles/37608/1/Creepy-crawlers,-stingers,-do-good-at-the-farm>>