

## Swapna Priya Rajarapu

Position: Postdoctoral Research Scholar

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### Education

<b>2009 - 2013</b>	<b>Degree:</b> Doctorate <b>Major:</b> Entomology <b>Dissertation Title:</b> Integrated omics on the physiology of emerald ash borer ( <i>Agrilus planipennis</i> Fairmaire) <b>PI:</b> Drs. Daniel Herms and Larry Phelan <b>University/college:</b> The Ohio State University, USA
<b>2006 -2008</b>	<b>Degree:</b> Masters <b>Major:</b> Biochemistry <b>University/college:</b> Osmania University, India
<b>2003-2006</b>	<b>Degree:</b> Bachelors <b>Major:</b> Biochemistry <b>University/college:</b> Osmania University, India

### Professional experience

<b>Jan 2019-present</b>	Postdoctoral Research Scholar, North Carolina State University “Understanding the molecular interactions of an insect vector and their virus and their ability to modify the host plants.” <b>PI:</b> Dr. Dorith Rotenberg
<b>Nov 2016- Jan 2019</b>	Postdoctoral Researcher, The Ohio State University, USA “Extending durability of aphid resistance by understanding mechanism of virulence to Rag-genes in Soybeans” “Identification of salivary gland effectors of an insect vector, <i>Graminella nigrifrons</i> ” <b>PI:</b> Dr. Andrew Michel
<b>Aug 2017-Dec 2017</b>	Instructor, OSU- Agricultural Institute of Technology, USA Pesticides and their uses
<b>June 2013-Oct 2016</b>	Postdoctoral Research Associate, Purdue University, USA “Engineering of termite-derived biocatalysts for use in sustainable energy production” <b>PI:</b> Dr. Michael Scharf
<b>June 2009 - 2013</b>	Graduate Research Assistant, The Ohio State University, USA
<b>Sep 2009 - May 2010</b>	Graduate Teaching Associate, The Ohio State University, USA

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## RESEARCH

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### Publications

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#### *Under review*

- 2020** Mittapelly, P., **Rajarapu, S.P.**, Phelan, P. L., Michel, A., Symbiont-mediated provisioning of nutrients in the brown marmorated stink bug. Journal of Insect physiology. *Manuscript submitted in July 2020*

#### *In press*

- 2020** **Rajarapu, S.P.**, Ullman, D.E., Uzest, M., Rotenberg, D., Ordaz, N. A., Whitefield, A. E., Plant-virus-vector-interactions, State-of-the art Virology, ISTE Sciences Publishing limited.

#### *Published*

- 2020** **Rajarapu, S.P.\***, Bansal, R., Mittapelly, P. and Michel, A., 2020. Transcriptome Analysis Reveals Functional Diversity in Salivary Glands of Plant Virus Vector, *Graminella nigrifrons*. *Genes*, 11(11), p.1289.

#### *\*Corresponding author*

- 2020** Rotenberg, D., Baumann, A.A., Ben-Mahmoud, S. Christiaens, O., Dermauw, W., Ioannidis, P., Jacobs, C.G., Jentzsch, I.M.V., Oliver, J.E., Poelchau, M.F. and **Rajarapu, S.P et al.** 2020. Genome-enabled insights into the biology of thrips as crop pests. *BMC Biol* 18, 142 <https://doi.org/10.1186/s12915-020-00862-9> (12<sup>th</sup> author)

*Contribution: Orthologous transcripts encoding immunity genes in three thrips species*

- 2020** Mittapelly, P. and **Rajarapu\*, S.P.**, 2020. Applications of Proteomic Tools to Study Insect Vector–Plant Virus Interactions. *Life*, 10(8), p.143.

#### *\*Corresponding author*

- 2017** **Rajarapu, S. P.**, and Scharf, M. E. Saccharification of second generation feedstock by an insect gut-microbe bioreactor using initial protein level assessment. 2017. *Frontiers in energy research* 5, 5. doi: 10.3389/fenrg.2017.00005

- 2015** **Rajarapu, S. P.**, Shreve, J., Bhide, K. P., Thimmapuram, J., Scharf, M. E. Metatranscriptomic profiles of Eastern subterranean termites, *Reticulitermes flavipes* (Kollar) fed on second generation feedstocks. 2015. *BMC genomics* 16.1: 332

- 2013** **Rajarapu, S. P.**, Mittapalli, O., 2013. Glutathione-S-Transferase profiles of a wood boring beetle, the emerald ash borer, *Agrilus planipennis*. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology*. 165, 66-72, 10.1016/j.cbpb.2013.02.010.

- 2012** Mittapalli, O., Mamidala, P., **Rajarapu, S. P.**, 2012. mRNA profiles of piRNA pathway genes in emerald ash borer *Agrilus planipennis*. *Insect Science*.19, 1744-7917

- 2012** **Rajarapu, S. P.**, Mamidala, P., Mittapalli, O., 2012. Validation of reference genes for gene expression studies in the emerald ash borer (*Agrilus planipennis*). *Insect Science*. 19, 41-46.

- 2011 Rajarapu, S. P.,** Mamidala, P., Herms, D.A., Bonello, P., Mittapalli, O., 2011 Antioxidant genes of the emerald ash borer (*Agrilus planipennis*): gene characterization and expression profiles. Journal of Insect Physiology. 57, 819-24.
- 2011** Mamidala, P., **Rajarapu, S. P.,** Jones, S.C., Mittapalli, O., 2011. Identification and Validation of Reference Genes for Quantitative Real-Time Polymerase Chain Reaction in *Cimex lectularius*. Journal of Medical Entomology 48, 947-951.
- 2011** Bai, X., Mamidala, P., **Rajarapu, S. P.,** Jones, S.C., Mittapalli, O., 2011. Transcriptomics of the Bed Bug (*Cimex lectularis*). PLoS ONE 6, e16336.
- 2010** Bhandary, B., **Rajarapu, S. P.,** Rivera-Vega L, Mittapalli, O., 2010. Analysis of Gene Expression in Emerald Ash Borer (*Agrilus planipennis*) Using Quantitative Real Time-PCR. Journal of Visualized Experiments. DOI 0.3791/1974.
- 2010** Mittapalli, O., Bai, X., Mamidala, P., **Rajarapu, S. P.,** Bonello, P., Herms, D.A., 2010. Tissue-specific transcriptomics of the exotic invasive insect pest emerald ash borer PLoS ONE 5, e13708.

#### Awards

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- 2016** International Congress of Entomology travel award, ICE 2016, Orlando, Florida (\$1000)s
- 2013** President's Prize winner for ten-minute paper presentation in plant insect interaction at Entomological Society of America annual meeting 2013, Austin, Texas.
- 2012** President's Prize winner for ten-minute paper presentation in physiology, biochemistry and toxicology section 3 at Entomological Society of America annual meeting, Knoxville, Tennessee.
- 2008** Inter collegiate Competition in Scientific writing secured 2<sup>nd</sup> place, Osmania University, Hyderabad, India.
- 2006** Certificate of excellence in academics in Masters of Biochemistry at Bhavan's Vivekananda Arts and Science College, Osmania University, Hyderabad, India 2006-2008.

#### Grants

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- 2017 Rajarapu, S. P.,** Microbiome contribution to insecticide resistance in global agricultural pest. Qiagen Microbiome Awards. **(Not funded)**
- 2015** Scharf, M. and **Rajarapu S. P.,** Termite digestion of agricultural feedstocks. NSF SusChEM renewal grant. **(Not funded)**
- 2011 Rajarapu, S. P, (PI) \$5000.** Deciphering the counter-defense strategies in the midgut of the emerald ash borer larvae (*Agrilus planipennis* Fairmaire). SEEDS - The OARDC Research Enhancement Competitive Grants Program.

## Oral Presentations

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### **Invited:**

- 2013 Rajarapu, S. P.** Molecular interactions of emerald ash borer with its co-evolved and a novel host. Fall Seminar series. Department of Entomology, Purdue University.
- 2012 Rajarapu, S. P.,** Muilenburg, V., Phelan, L., Herms, D. A., Mittapalli, O., Transcriptomic responses of emerald ash borer midgut on its native and novel host. OARDC-scholar association, The Ohio State University.

### **Submitted presentations:**

- 2017 Rajarapu, S. P.,** Bansal, R, Michel, A. Identification of salivary gland effectors from Black faced leafhopper, *Graminella nigrifrons*. Entomological Society of America Annual meeting 2017, Denver, Colorado.
- 2016 Rajarapu, S. P.,** Dunn, P, and Scharf, M. E. Exploiting the termite digestome for biofuel production. International Congress of Entomology 2016, Orlando, Florida.
- 2015 Rajarapu, S. P.,** and Scharf, M. E. Protein level responses of *Reticulitermes flavipes* gut fed on Corn Stover and Soybean Residue. Entomological Society of America Annual meeting 2015, Minneapolis, Minnesota.
- 2014 Rajarapu, S. P.,** Shreve, J., Bhide, K. P., Thimmapuram, J., Scharf, M. E. Metatranscriptomic profiles of Eastern subterranean termites, *Reticulitermes flavipes* (Kollar) fed on second generation feedstocks. Entomological Society of America Annual meeting 2014, Portland, Oregon.
- 2013 Rajarapu, S. P.,** Phelan, L., Herms, D. A., Mittapalli, O., 2013 Fate of green ash phenolics in the larval midgut of *Agrilus planipennis* Fairmaire. Entomological Society of America Annual meeting 2013, Austin, Texas.
- 2012 Rajarapu, S. P.,** Muilenburg, V., Phelan, L., Herms, D. A., Mittapalli, O., 2012. Midgut-specific profiles of the emerald ash borer larvae (*Agrilus planipennis* Fairmaire). Entomological Society of America Annual meeting 2012, Knoxville, Tennessee.
- 2012** Mittapalli, O., Mamidala, P., **Rajarapu, S. P.,** Herms, D. A., Bonello, P. Midgut transcriptomics of an invasive insect species. International Congress of Entomology Conference. Aug 19-25, 2012
- 2011 Rajarapu, S. P.,** Bai, X., Mamidala, P., Bonello, P., Herms, D. A., Mittapalli, O., 2011. Expression profiles of antioxidant genes in the emerald ash borer (*Agrilus planipennis*). Entomological Society of America Annual meeting 2011, Reno, Nevada.
- 2011 Rajarapu, S. P.,** Bai, X., Mamidala, P., Bonello, P., Herms, D. A., Mittapalli, O., 2011. Deciphering the defense strategies in the emerald ash borer (*Agrilus planipennis*). Third Annual EAB Research and Technology meeting, Shisler conference, Wooster, Ohio.

- 2010 Rajarapu, S. P.,** Bai, X., Bonello, P., Herms, D. A., Mittapalli, O., 2010. Cytochrome P450 signatures in the emerald ash borer (*Agrilus planipennis*), an exotic invasive insect pest. Entomological Society of America Annual meeting 2010, San Diego, California.
- 2010 Rajarapu, S. P.,** Bai, X., Mamidala, P., Bonello, P., Herms, D. A., Mittapalli, O., 2010. Detoxification and antioxidant defense strategies in the emerald ash borer (*Agrilus planipennis*). Third Annual EAB Mini symposium, USDA Forest Service, North Research Station, Delaware, Ohio.
- 2009 Rajarapu, S. P.,** Detoxification strategies in EAB midgut 2009. Second Annual EAB Mini symposium, USDA Forest Service, North Research Station, Delaware, Ohio.

### Poster Presentations

- 2015 Rajarapu, S. P.,** Hoteling, J., and Scharf, M. E. Characterization of ATP binding cassette subfamily C transporters in *Reticulitermes flavipes*. Entomological Society of America Annual meeting 2015, Minneapolis, Minnesota.
- 2013 Rajarapu, S. P.,** Muilenburg, V., Wijeratne, S., Sudhamala, B., Phelan, P. L., Herms, D. A., Mittapalli, O., 2013. Molecular characterization of the interaction between emerald ash borer, an invasive wood-boring beetle, and its novel and coevolved ash host species. Ohio State Agricultural Research and Development Annual conference, Wooster, Ohio.
- 2012 Rajarapu, S. P.,** Muilenburg, V., Phelan, P. L., Herms, D. A., Mittapalli, O., 2012. Omics of the emerald ash borer during interaction with ash. Plant and Animal Genome conference XX. San Diego, California.
- 2011 Rajarapu, S. P.,** Bai, X., Mamidala, P., Bonello, P., Herms, D. A., Mittapalli, O., 2011. Molecular characterization of antioxidant genes in the emerald ash borer, *Agrilus planipennis*. Ohio State Agricultural Research and Development Annual conference, Wooster, Ohio.

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### SERVICE

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- 2020 Executive advisor:** Terra Bite Farms LLC
- 2018 Symposium co-organizer:** “Shifting pest complexes: Management and Challenges in Soybean”  
ESA North Central Branch Meeting, Madison, Wisconsin
- 2017 Symposium co-organizer:** “International collaborations in entomology: successes and challenges”  
Entomological Society of America Annual meeting, Denver, Colorado.
- 2017 Workshop co-organizer:** “Avoiding pitfalls in early graduate school”  
ESA North Central Branch Meeting, Indianapolis, Indiana
- 2016 Moderator** Contributed Papers: Physiology and Biochemistry: Fundamental

- International Congress of Entomology, Orlando, Florida
- 2016**      **Symposium co-organizer:**      “Next Generation Technologies for Insect Control”  
International Congress of Entomology, Orlando, Florida
- 2015**      **Symposium co-organizer:**      “Leadership in Entomology”  
Entomological Society of America Annual meeting, Minneapolis, Minnesota
- 2015**      **Judge**                      Undergraduate poster session  
Entomological Society of America Annual meeting, Minneapolis, Minnesota
- 2013**      **President (2013-2016)**  
Association of Indian Entomologist in North America
- 2012**      **Vice President**                      Entomology Graduate Student Association  
The Ohio State University, Ohio
- 2012**      **Grant review panel member**  
SEEDS, OARDC Research Enhancement Competitive Grants Program, Columbus, Ohio
- 2011**      **Student Volunteer**      Virtual poster assistance  
Entomological Society of America Annual meeting, San Diego, California
- 2011**      **Presenter**                      Insect collection and preservation  
Insect Night Walk, OARDC, Wooster, Ohio
- 2010**      **Student Volunteer**      Direction assistance  
Entomological Society of America Annual meeting, Reno, Nevada
- 2010**      **Presenter**                      Insect collection and preservation  
Insect Night Walk, OARDC, Wooster, Ohio
- 2010**      **Judge,** Poster Presentation, State Science Day, Columbus Ohio
- 2010**      **Judge,** Undergraduate posters, Biological, Mathematical and Physical sciences  
Research Forum, The Ohio State University, Columbus, Ohio
- 2009-10**      **Judge,** Paper Presentations, ORIP summer internship program, The Ohio State  
University, Wooster, Ohio