Swapna R. Purandare

Contact Information

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Work Experience

June 2017-Present Jamia Millia Islamia,New Delhi, India
- Ramanujan Fellow, DST-SERB, Government of India
- Multidisciplinary Center for Advanced Research and Studies

Postdoctoral experience

August 2016 - June 2017 The Ohio State University, USA
- Postdoctoral Research Associate, Department of Entomology
- Adviser: Dr. Kelley Tilmon

July 2015 - July 2016, South Dakota State University, USA
- Postdoctoral Research Associate, Plant Science Department
- Adviser: Dr. Kelley Tilmon and Dr. David Wright

August 2014 - July 2015, University of Nebraska - Lincoln, USA
- Postdoctoral Research Associate, School of Biological Sciences
- Adviser: Dr. Colin Meiklejohn

Education

2008 - 2014, University of Nebraska - Lincoln, USA
- **Ph.D**., School of Biological Sciences
- **Master of Science**, School of Biological Sciences

- Area of Study: Ecology, Evolution and Behavior
- Advisers: Dr. Brigitte Tenhumberg and Dr. Jennifer Brisson
- Dissertation Title: Investigations into sensory ecology and gene evolution of the pea aphid (*Acyrthosiphon pisum*)

University of Pune, Maharashtra, India
- Bachelor of Engineering,
- Area of Study: Electronics and Industrial Electronics

Publications

Jaquiery, J., Peccoud, J., Ouisse, T., Legeai, F., Prunier-Leterme, N., Gouin, A., Nouhaud, P., Brisson, J. A., Bickel, R. D., **Purandare, S.R.**, Poulain, J., Battail, C., Lemaitre, C., Mieuzet, L., Le Trionnaire, G., Simon, J. C., and C. Rispe. Disentangling the causes for faster-X evolution in aphids. bioRxiv doi.org/10/1101/125310

Purandare S. R., Bickel R. D., Jaquiery J., Rispe C.,& J.A. Brisson (2014). Accelerated evolution of morph-biased genes in pea aphids. ***Molecular Biology and Evolution*** , 31, 2073-2083.

Purandare S.R., Tenhumberg B., & J.A. Brisson (2014) Comparison of the wing polyphenic response of pea aphids (*Acyrthosiphon pisum*) to crowding and predator cues. ***Ecological Entomology*** , 39, 263-266.

Purandare S.R. & B. Tenhumberg (2012) Influence of aphid honeydew on the foraging behavior of *Hippodamia convergens* larvae.***Ecological Entomology***, 37, 184-192.

Technical Skills

Laboratory skills: PCR, qRT-PCR, primer design and verification.

Bioinformatics and data analysis: Analysis of next generation sequencing (NGS) data, familiarity with wide range of software tools and packages used in the analysis of NGS data such as mapping and alignment of transcriptomic data using Tophat, Bowtie, BWA, Cufflinks, Denovo assembly using Trinity, differential gene expression analysis using Cuffdiff and DESeq2.

Dissertation Research Summary

My dissertation research focused on sensory ecology, polyphenism, and gene evolution of the pea aphid(*Acyrthosiphon pisum*). As a part of it, I explored the evolutionary consequences of phenotypic plasticity in the pea aphid. Pea aphids produce morphs that have the same genotype but different phenotypes depending on the environmental conditions. I compared the rates of evolution of morph-biased genes (genes highly expressed in one morph relative to other morphs) with genes equally expressed in all morphs to test if conditional gene expression results in relaxed purifying selection and accelerated rate of evolution. In addition, I compared the chemosensory gene expression profiles of the pea aphid morphs that have distinct chemical ecology. I examined expression of odor binding protein, chemosensory protein, and olfactory and gustatory receptor genes to determine how it differs between polyphenic and polymorphic pea aphid morphs. Further, I investigated the influence of prey (aphid) cues on foraging behavior of predators (ladybird beetle larvae) and the effect of ladybird beetle predator cues on wing polyphenic response of the pea aphid.

Awards and Fellowships

- Department of Science and Technology, Government of India: Ramanujan Fellowship. 2015
- First Prize for the poster titled "Investigating the molecular genetic basis of ecological adaptation in the pea aphid (*Acyrthosiphon pisum*)" at Biology Graduate Student Association Symposium, 2013 :$100
- Second Prize for the talk titled "Understanding mechanisms underlying predator induced wing polyphenism in the pea aphid (*Acyrthosiphon pisum*)" in Entomological Society of America, North Central Branch Meeting, June 2012 :$200
- National Evolutionary synthesis Center Travel Award for participation in Next Generation Sequencing Course, 2012 :$500
- Advance-Nebraska Program Travel Award, 2012 :$250
- School of Biological Sciences: Fellowship for External Course Work, 2012 :$1000
- School of Biological Sciences Graduate Student Research Scholarship, 2012 :$2000
- School of Biological Sciences: Travel Award, 2012 :$600
- School of Biological Sciences: Graduate Student Scholarship, 2011: $2000
- School of Biological Sciences: Travel Award, 2011: $600
- School of Biological Sciences: Travel Award, 2010: $400
- UNL Foundation: Walker Fellowship Award, 2010: $1542.50
- School of Biological Sciences: Graduate Student Scholarship, 2010: $890
- School of Biological Sciences: Travel Award, 2010: $500
- Center for Grassland Studies: Arthur William Sampson Fellowship in pasture management, 2009: **$20,500 + tuition remission**.
- School of Biological Sciences: Burk Fund Research Award, 2009: $1500

Invited Talks and Presentations

- Entomological Society of America NCB Meeting, June 2016
  " Investigating Rag virulence among natural soybean aphid populations in South Dakota"
- Spring Seminar Series presented jointly by SDSU Department of Plant Science And USDA-ARS North Central Agricultural Research Laboratory, February 2016
  "Aphid ecology, Evolution, and Polyphenism"
- Ecology, Evolution and Behavior Seminar, UNL, April 2014
  "Investigations into sensory ecology and gene evolution of the pea aphid (*Acyrthosiphon pisum*)"
- Research and Design Seminar, UNL, October 2012
  "Investigating olfactory system polyphenism in the pea aphid (*Acyrthosiphon pisum*)"
- Entomological Society of America NCB Meeting, June 2012
  "Understanding mechanisms underlying predator induced wing polyphenism in the pea aphid (*Acyrthosiphon pisum*)"
- Research and Design Seminar, UNL,September 2011
  "Understanding molecular mechanisms underlying predator induced wing polyphenism in the pea aphid (*Acyrthosiphon pisum*)"
- Entomological Society of America Annual Meeting, December 2010
  "Understanding mechanisms underlying foraging behavior of lady beetle larvae"
- Center for Grassland Studies, November 2010
  "Role of Aphid honeydew in foraging behavior of the ladybird larvae"
- Research and Design Seminar, UNL, April 2010
  "Foraging Behavior of Convergent Ladybird Beetle Larvae"
- Research and Design Seminar, UNL, April 2009
  "Use of Sensory Cue Information in Foraging Behavior of Convergent Ladybird Beetle Larvae (*Hippodamia convergens*)"

Poster Presentations

- Biology Graduate Student Association Symposium, April 2013
  "Investigating the molecular genetic basis of ecological adaptation in the pea aphid (*Acyrthosiphon pisum*)"
- Ecological Genomics Symposium, October 2012
  "Investigating the molecular genetic basis of ecological adaptation in the pea aphid (*Acyrthosiphon pisum*)"
- Biology Graduate Student Association Symposium, April 2012
  "Influence of predator cues on wing polyphenism in the Pea aphid (*Acyrthosiphon pisum*)"
- UNL Graduate Student Research Fair, April 2012
  "Influence of predator cues on wing polyphenism in the Pea aphid (*Acyrthosiphon pisum*)"
- Ecological Genomics Symposium, November 2011
  "Rates of evolution of morph-biased genes in the pea aphid (*Acyrthosiphon pisum*)"
- Ecological Society of America, August 2010
  "Influence of aphid honeydew on the patch residence time of convergent ladybird beetle larvae"
- UNL Graduate Student Research Fair, April 2010
  "Role of Aphid Honeydew in foraging behavior of ladybird beetle larvae"
- Biology Graduate Student Association Symposium, March 2010
  "Does Aphid honeydew presence influence foraging behavior of ladybird beetle larvae?"

Teaching Qualification and Experience

- OARDC Instructor, Joint partnership for Plant-Insect Interaction Course at the College of Wooster

- Teaching assistant, Life Sciences Lab (LIFE 121L), 2013 - 2014
- Preparing for future faculty fellow, University of Nebraska-Lincoln, 2012
- Teaching assistant, Organismic Biology Lab (BIOS103L), 2010 - 2011
- Biology instructor, NSF funded RUTE program (Research for Undergraduates in Theoretical Ecology), Summer 2009
- Teaching assistant, General Biology Lab (BIOS101L), 2008 - 2009
- Institute for international teaching assistant, University of Nebraska-Lincoln, 2008
- Mentor of seven undergraduate students and two high school students

Professional Activities

- Reviewer: Ecological Entomology, Integrative Zoology, Entomological Science
- Conducted Beetle Blitz session for elementary school students at an outreach event "Bug's World" at OARDC, Wooster, Ohio, March 2017
- Organized and conducted an outreach event "Insects Are Awesome" at Camelot Intermediate School, Brookings, SD November 2015
- Volunteered at an outreach event "Eight-Legged Encounters" as a part of the Sunday with a scientist program at Natural History Museum, Morrill Hall, UNL, 2013, 2014
- Served as a Graduate student representative on Evolutionary Biology Faculty Search committee, 2012-2013
- Served on a panel for Institute for International Teaching Assistants at UNL, July 2012
- Midwest Ecology and Evolution Conference, held at UNL, March 2009 - Concurrent oral session committee: organized and planned concurrent sessions - Session moderator for behavioral ecology talks