



Dr. Ramya S L

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RESEARCH INTEREST

Plant-insect interaction, molecular biology, insect digestive physiology, insect detoxification and resistance mechanism, RNAi in pest management, endosymbionts, CRISPER/Cas, gene editing, NGS, genetic diversity, phylogenetic analysis, SSR, SNP, HRM analysis, barcoding, gene expression and insecticide degradation.

EDUCATION

PhD in Biotechnology (March 2012-July, 2016) University of Mysore, Karnataka.

- Thesis Title: “Genetic diversity and Mechanism of Insecticide Resistance in Diamondback moth, *Plutella xylostella* (Linnaeus)”.
- Supervisor: Dr.T.Venkatesan, Principal Scientist, NBAIR, Bangalore.

Master of Science in Biotechnology (Aug 2009 to June 2011) Mangalore University, Mangalore

- Course include: Cell Biology, Genetics, Biochemistry, Molecular Biology, Animal and Plant Biotechnology, Metabolism, Enzymology, Immunology, Microbiology, Bioinformatics, Biostatistics, Bioethics, Bio-safety and IPR.
- Academic Average: 70.82% (First class with Distinction).

Bachelor of Science in Biotechnology (July 2006 to June 2009) ALVA’s College, Mangalore University

- Academic Average: 75.72% (First Class with Distinction).

Matriculation Examination of Karnataka – May 2004 St. Victors Girls High School.

- Academic Average: 82.08%.

Ph.D. WORK DETAIL

National Bureau of Agricultural Insect Resource (Affiliated to University of Mysore) - PhD Research

Project: Genetic diversity and Mechanism of Insecticide Resistance in Diamondback moth, *Plutella xylostella* (Linnaeus)”.

- Worked on Metabolic/Biochemical mechanism of insecticide resistance in Lepidopteron insect pest *Plutella xylostella* and its parasitoides, *Cotesia vestalis*.
- Assess the diversity of microflora present in *Plutella xylostella* and its parasitoides *Cotesia Vestalis* and its role in insecticide degradation.
- Assess the role of microflora in stress tolerance and detection of Hsp’s

- Mapping of genetic diversity of *Plutella xylostella* collected from different geographical locations using SSR markers.
- Gene expression studies using QPCR
- Molecular characterization and genetic diversity analysis using COI
- Insecticide degradation using gut microbes and metabolite analysis by GCMS and LCMS

PROFESSIONAL EXPERIENCE

Research Associate: QTLomics Technologies Pvt Ltd (October 2014 – Present)

- NGS Sequencing using Oxford nanopore minions
- RNAi in pest management
- Knowledge on CRISPER casp technology
- Transformant identification by single PCR primer method using NGS technology (Oxford nanopore-Minions).
- Plant genotyping using SNP marker and melt curve analysis.
- Gene expression studies using QPCR
- Hybrid purity testing, inbred line purity testing, lot purity testing
- DNA fingerprinting
- DNA barcoding
- Bar-HRM kit development for authentication of herbal products and identification of adulterants in traded spices.

Project Associate: National Bureau of Agricultural Insect Resource (June 2012 - October 2014)

- Assess the role of microflora in stress tolerance and detection of HSp's
- **RNAi in insect pest management**-Trained in designing dsRNA, bioassay and expression analysis
- Molecular characterization and Phylogenetic analysis of agriculturally important insects using COII, 12S rRNA, NADH and ITS2 marker
- Molecular characterization and bar-coding of agriculturally important pest termite and beetles.
- Assess the diversity of gut microflora present in *Cotesia vestalis*
- Microbial mediated insecticide resistance in *Cotesia vestalis*
- Molecular characterization and Phylogenetic analysis of agriculturally important insects using COII, 12S rRNA, NADH and ITS2 markers.

PUBLICATIONS

- **Ramya, S. L., Venkatesan, T., Srinivasa Murthy, K., Jalali, S. K.** 2015. Detection of carboxylesterase and esterase activity in culturable gut bacterial flora isolated from diamondback moth, *Plutella xylostella* from India and its possible role in indoxacarb degradation. *Brazilian Journal of Microbiology*. 47(2): 327-336. (Impact factor: 0.6, Naas rating: 6.45)
- **Ramya, S. L., Venkatesan, T., Srinivasa Murthy, K., Jalali, S. K.** 2015. Degradation of acephate by *Enterobacter asburiae* (PX-E), *Bacillus cereus* (PX-B.C.Or) and *Pantoea agglomerans* (PX-Pt.ag.jor) isolated from diamondback moth *Plutella xylostella* (L), an important pest of cruciferous crops. *Journal of Environmental Biology*. 37 (4): 611-618. (ISI Impact factor: 0.56, Naas rating: 6.55).

- **Ramya, S. L.**, Venkatesan, T., Srinivasa Murthy, K., Jalali, S. K. 2016. Field evolved insecticide resistance and biochemical validation of enzyme activities in diamondback moth, *Plutella xylostella*. **Indian Journal of Plant Protection (Naas rating: 4.3)**.
- **Ramya, S. L.**, Srinivasa Murthy, K., Venkatesan, T., Jalali, S. K. 2013. Biochemical and Molecular diversity analysis of culturable bacteria in *Cotesia plutellae* (Kurdjumov) (Hymenoptera: Braconidae), a parasitoid of diamondback moth *Plutella xylostella* (Linnaeus). **Journal of Biological control (NAAS rating: 3.96)**. 27(4): 260-267.
- Srinivasa Murthy, K., **Ramya, S. L.**, Venkatesan, T., Jalali, S. K., Abraham Vargees. 2014. Biochemical basis of insecticide resistance and determination of esterase enzyme patterns in field collected populations of *Cotesia vestalis* (Haliday) (Hymenoptera: Braconidae) from India. **Annals of Biological Research (SJIS Impact factor 4.132)**. 5 (11): 7-15.
- Srinivasa Murthy, K., **Ramya, S. L.**, Venkatesan, T., Jalali, S. K., Jency Jose. 2013. Feminisation due to Wolbachia in *Cotesia vestalis* (Haliday), a parasitoid of the Diamondback moth *Plutella xylostella* (Linnaeus). **Global Journal of Biology, Agriculture and Health Sciences**. 2(3): 192-195
- Srinivasa Murthy, K., Rajeshwari R., **Ramya, S. L.**, Venkatesan, T., Jalali, S. K., Abraham Vargees. 2015. Genetic diversity among Indian termites based on mitochondrial 12S rRNA gene. **European Journal of Zoological Research**. 4 (1): 1-6.
- Srinivasa Murthy, K., Venkatesan, T., **Ramya, S. L.**, Jalali, S. K., Abraham Verghese. 2015. Insecticide degradation by gut bacteria in *Cotesia Vestalis* a potential parasitoid of diamondback moth, *Plutella xylostella* (L). **Asian Journal of Science and Technology**. 3 (11): 1960-1967.

POSTERS

- **Ramya, S. L.**, Venkatesan, T., Srinivasa Murthy, K., and Jalali, S. K. 2014. Molecular diversity analysis of culturable bacterial flora of Diamondback moth, *Plutella xylostella* from India and its possible role in degradation of Indoxocarb. Proceedinds of XIVth International Conference on Bacteriology and Applied Microbiology. Montreal, Canada. pp. 839.
- **Ramya, S. L.**, Venkatesan, T., Srinivasa Murthy, K., and Jalali, S. K. 2014. Molecular ecology of *Bacillus cereus* isolated from diamondback moth, *Plutella xylostella* (Linnaeus) a notorious pest of cruciferous crops from India and its role on acephate degradation. Proceeding of EMBL conference: Experimental Approach to Ecology and Evolution of Yeast and Other Model Organisms. Heidelberg, Germany. Pp. 103
- **Ramya, S. L.**, Venkatesan, T., Srinivasa Murthy, K., Jalali, S. K. 2014. Biochemical mechanism of insecticide resistance in field populations of diamondback moth, *Plutella xylostella* from India. Proceedings of the 2nd International Conference on Agricultural and Horticultural Sciences. Hyderabad, India. 2(4):205.
- Srinivasa Murthy, K., **Ramya, S. L.**, Venkatesan, T., Jalali, S. K. 2013. Fitness benefits of the bacterium *Wolbachia* in improving the biocontrol potential of the parasitoid, *Cotesia plutellae* (Kurdjumov) (Hymenoptera: Braconidae). Proceedings of the 13th Workshop of the IOBC Global Working Group on Mass Rearing and Quality Assurance. Bangalore, India. Pp. 41.

BOOK CHAPTER

- Venkatesan, T., Jalali, S. K. **Ramya, S. L.**, and Prathiba, M. Mealybugs and their management in agricultural and horticultural crops. 2016. Springer. Pp: 223-229.
- K. Srinivasa Murthy, T. Venkatesan, S. K. Jalali, **S. L. Ramya**. Reproductive Alterations by *Wolbachia* in the Braconid *Cotesia vestalis* (Haliday). 2015. Springer. Pp 347-351.

REVIEWER

- Reviewer of International Journal of Agricultural Science (*Bioinfo publications*)

AWARDS

- Secured “Best Poster” award in 2nd International conference on Agricultural and Horticultural Sciences, 2014 (OMIC'S Group conference) at **Hyderabad, India**.
- Availed Travel grant from “International Union of Microbiological Societies” to attend “XIVth International Conference on Bacteriology and Applied Microbiology” held during July 27th – August 1st, 2014 at **Montreal, Canada**.
- Availed Travel grant from “EMBL” to attend “EMBL conference: Experimental Approach to Ecology and Evolution of Yeast and Other Model Organisms held during October 12-15, 2014 at **Heidelberg, Germany**.
- Availed partial travel grant from “Centre for International Cooperation in Science” (CICS) to attend International Conference at **Montreal, Canada**.

TECHNICAL PROFICIENCY

- qPcr (Roch LC480) and PCR techniques
- Insecticide resistance studies
- RNAi technology in pest management
- Hands on experience in Lepidopteran pest *Plutella xylostella*, *Helicoverpa armigera* and coleopteran like beetles and Isoptera viz., Termites
- Hsp detection in insects
- Molecular identification and barcoding of insects like *P. xylostella*, *C. vestalis*, Termites, beetles using 12s rRNA, Col, ITS2
- Insecticide degradation study by MSM and GCMS/LCMS analysis
- Microbial identification by 16S rRNA sequencing and phylogenetic analysis
- Blast analysis, primer designing and basic bioinformatics analysis
- NGS technology –Oxford Nano pore (Minions), Library preparation and Sanger validations
- HRM (High Resolution Melt curve)
- RAPD, IISR, SSR SNP marker assays
- Simple probe based SNP detection
- Bar-HRM techniques

TRAINING

- Participated in the NAIP training course on “**Application of RNAi tools in pest management**” during 23rd to 29th march, 2014 at Indian Institute of Horticultural Research (IIHR), Bangalore, India.
- Attended 3 days lecture series on “Recent Trends in Botanical Sciences” conducted by Mangalore University and sponsored by “Karnataka Science and Technology Bangalore”.
- Participated in one day National Environment Awareness Campaign on “Global Warming Present and Future Scenario” conducted by Mangalore University in association with “Ministry of Environment and Forests-Govt. of India and Karnataka Rajya vijnana Parishath”.
- Participated in one day workshop on “Community Participation in Biodiversity Conservation” conducted by Mangalore University in association with “Karnataka Rajya Vijnana Parishat and Ministry of Environment and Forests-Govt of India”.

Academic Projects

- Studies on the Development of Enriched **Probiotic Shrikhand** at ‘Dairy science College’, Bangalore during M.Sc. (June 2010 – July 2010).
- Under gone 8 days job training program on “Histopathology, Clinical Pathology and Cytopathology” at “KMC Hospital” Mangalore during B.Sc.
- Under gone three days job training program on “Clinical Biochemistry” at “KMC Hospital” Mangalore during B.Sc. During this period I’m exposed to the routine lab work like sample receiving, sample processing and use of fully automated gadgets like analyzer. Hormone analyzer etc.

IT SKILLS

- Microsoft office skills
- Power point presentation
- Basic bioinformatics skills

OTHER ACHIEVEMENTS

- Cleared “**Bharathanatyam Junior Examination**” with 1st class conducted by “Karnataka Secondary Education Examination Board”.
- Secured ‘**First**’ Place in ‘Group Dance’ in Fishco Fest conducted by “College of Fisheries Mangalore”.
- Secured ‘**First**’ Place in “District level Dance Tournament” conducted by “Dakshina kannada Districts Panchayath and Education Department”.
- Secured ‘**First**’ Place in ‘Group Dance’ conducted by “Alvas College Moodbidri”.
- Secured ‘**First**’ place in ‘Group Dance’ in Moments 2010 conducted by ‘Mangalore University’.
- Secured ‘**Second**’ place in ‘Fashion show’ in moments 2010 Conducted by ‘Mangalore University’

PERSONAL DETAILS

- Date of Birth: 01/01/1989
- Sex: Female.
- Nationality: INDIAN.
- Languages Known: English, Kannada, Hindi, and Tulu

DECLARATION

I hereby declare that above furnished detail are true to the best of my knowledge.

Ramya S.L