Suyog S. Kuwar

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EDUCATION

Max Planck Institute for Chemical Ecology, Jena, Germany **01/2010 - 06/2016**

- PhD, Molecular Biology, Excellent (summa cum laude / with highest distinction)
- IMPRS International Max Planck Research School fellow

Institute of Bioinformatics and Biotechnology, University of Pune India **06/2004 - 03/2009**

- Master of Science in Biotechnology (5 years integrated)

RESEARCH EXPERIENCE

Department of Entomology and Nematology, University Florida, USA **02/2017 - 12/2018**

Department of Entomology, Iowa State University, USA **10/2016 - 02/2017**

- Post Doctoral Research Associate
- Supervisor: Prof. Dr. Bryony C. Bonning
- "Modification of toxins derived from Bacillus thuringiensis for enhanced toxicity against selected insect pests"

Max Planck Institute for Chemical Ecology, Jena, Germany **01/2010 - 06/2016**

- PhD, Project
- Supervisor: Prof. Dr. David G. Heckel
- "The adaptive response of the serine protease superfamily of the cotton bollworm *Helicoverpa armigera* to dietary protease inhibitors"
- A comprehensive resource of all the digestive proteases from *H. armigera, S. frugiperda* and *M. sexta* and adaptive responses studied for understanding the underlying mechanisms of adaptation in general.

Indian Institute of Science Education and Research, Pune **04/2009 - 12/2009**

- M. Tech. project student, in Biology discipline
- Supervisor: Prof. Dr. Anjan Banerji
- "Analysis of phloem proteome of potato in response to pathogen challenge"
- The differentially expressed putative peptides/proteins in the phloem channel of both resistant and susceptible potato cultivars in response to pathogen challenge were studied.

National Chemical Laboratory, Pune, India **06/2008 - 03/2009**

- Master's degree project 2 in Biochemical Sciences Division
- Supervisor: Dr. Vidya Gupta and Dr. Ashok Giri
- "Identification and Characterization of *Helicoverpa armigera* gut amylases"

National Chemical Laboratory, Pune **03/2007 - 07/2007**

- Summer project student in Biochemical Engineering Division
- Supervisor: Dr. Sanjay Nene
- "Preparation of heterogeneous form of amino acylase (E.C.3.5.1.14) by covalent immobilization and crosslinking"

Savitribai Phule Pune University, Pune **06/2006 - 03/2007**

- Master's degree project 1 in Department of Microbiology
- Supervisor: Prof. Dr. B. P. Kapadnis
- "Screening of chitinase producing bacilli and degradation of chitin"

SKILLS

Subjects:

Cell Biology, Molecular Biology, Biochemistry, Microbiology, Animal and Plant tissue culture, Virology, Immunology, Plant biotechnology, fermentation technology, Nanotechnology, Bioinformatics, Genomics, Intellectual property rights, Environmental biotechnology, C-Programming

Techniques:

Phage display, Proteins expression and purificaton, Protein modifications/ engineering, Basic separation technique, Immunological techniques, Molecular Biology technique, Enzyme techniques, Microbiology, Animal and Plant cell culture technique, Fermentation technique, Bioinformatics.

AREAS OF RESEARCH INTEREST

Insect digestive physiology, Genomics, Evolutionary adaptation of insects, Regulation of gene expression in eukaryotes (transcription factors)

PUBLICATIONS

Vaidya, B. K., **Kuwar, S. S.**, Golegaonkar, S. B., Nene, S. N., (2012). Preparation of cross-linked enzyme aggregates of L-aminoacylase via co-aggregation with polyethyleneimine. Journal of Molecular Catalysis B-Enzymatic, 74, 184-191, **doi**: doi.org/10.1016/j.molcatb.2011.10.003

Kuwar, S. S., Pauchet, Y., Vogel, H., Heckel, D. G., (2015). Adaptive regulation of digestive serine proteases in the larval midgut of *Helicoverpa armigera* in response to a plant protease inhibitor. Journal of Insect Biochemistry and Molecular Biology 59, 18-29, **doi**: doi.org/10.1016/j.ibmb.2015.01.016

Kanost M. R., Arrese E. L., Cao X., Chen Y-R, **Kuwar S. S.**, ... Goldsmith M. R., et al., (2016). Multifaceted biological insights from a draft genome sequence of the tobacco hornworm moth, *Manduca sexta.* Insect Biochemistry and Molecualar Biology 76, 118-147, **doi:** doi.org/10.1016/j.ibmb.2016.07.005

Gouin A, **Kuwar S. S.**,... d'Alençon E. et al., (2017). Two genomes of highly polyphagous lepidopteran pests (*Spodoptera frugiperda*, Noctuidae) with different host-plant ranges. Scientific Reports 7,11817, **doi:** doi.org/10.1038/s41598-017-10461-4

Pearce S. L., Clarke D. F., East P. D., Elfekih S., Gordon K. H. J., Jermiin L. S., McGaughran A., Oakeshott J.G., Papanikolaou A., **Kuwar S. S.** , Perera O. P., et al. (2017). Genomic innovations, transcriptional plasticity and gene loss underlying the evolution and divergence of two highly polyphagous and invasive *Helicoverpa* pest species. BMC Biology, 15:63, **doi:** doi.org/10.1186/s12915-017-0402-6

Kuwar, S. S., Pauchet, Y., Heckel, D. G., (2015). Effects of class-specific, synthetic and natural protease inhibitors on life history traits of *Helicoverpa armigera*. (Submitted : Achieves of Insect Biochemistry & Physiology.)

Kuwar, S. S. and Heckel, D. G. Genome wide comparative analysis of digestive serine protease super-families in *Helicoverpa armigera*, *Spodoptera frugiperda*, and *Manduca sexta* (Submitted: BMC Genomics)

Kuwar, S. S., Vogel, H., Heckel, D. G. Host specific transcriptional response of *Helicoverpa armigera* larvae fed on leaves of cotton or soybean (Prepared for submission: Insect Molecular Biology)

Kuwar, S. S., Pauchet, Y., Vogel, H., Gebauer-Jung, S., Wielsch, N., Svatoš, A., Heckel, D. G. Identification of SKTI-sensitive and SKTI-insensitive proteases at translational level. (In preparation)

ACHIEVEMENTS

ISCE Student Poster Award: for outstanding contribution as a poster in International Chemical Ecology Conference 2013, International Society of Chemical Ecology, Asia-Pacific Association of Chemical Ecologists, Melbourne, Australia, Aug 2013

Selected to attend the Centre for Plant Integrative Biology (CPIB) summer school "Mathematical Modelling for Biologist 2010" at Sutton Bonington Campus, Nottingham, UK

International Max Planck Research School Fellowship for PhD studies, Max Planck Institute for Chemical Ecology, Jena, Germany. January 2010

GATE 2009 Qualified with 84.45 percentile

ORAL PRESENTATION

Kuwar S. Molecular evolution of the serine protease superfamily and adaptive response to a plant protease inhibitor in *Helicoverpa armigera*. 9th International Workshop on Molecular Biology and Genetics of the Lepidoptera, Kolympari, Crete, GREECE, Aug 2014

Kuwar S. Transcriptional and translational response to a plant protease inhibitor and Annotation of serine protease superfamily in *Helicoverpa armigera*. 2nd International Symposium on Insect Midgut Biology 2012, Guangzhou, CHINA, Sep 2012

Kuwar S. Adaptive evolution of serine protease superfamily and transcriptional response to a plant protease inhibitor in *Helicoverpa armigera*. 11th IMPRS Symposium, MPI for Chemical Ecology, Dornburg, GERMANY, Feb 2012

POSTER PRESENTATIONS

Kuwar S.*, Pauchet Y., Vogel H., Heckel D.G. Adaptive regulation of midgut serine proteases of *Helicoverpa armigera* in response to Soybean Kunitz trypsin inhibitor. Seventh International Symposium on Molecular Insect Science, Amsterdam, Netherland, Jul 2014

Kuwar S.*, Pauchet Y., Vogel H., Wielsch N., Svatoš A., Heckel D. G. Molecular evolution of serine protease superfamily and adaptive response to a plant protease inhibitor in *Helicoverpa armigera*. SAB Meeting 2014, MPI for Chemical Ecology, Jena, GERMANY, May 2014

Kuwar S.*, Svatoš A., Pauchet Y., Vogel H., Wielsch N., Heckel D. G. Molecular evolution of serine protease superfamily and adaptive response to soybean Kunitz trypsin inhibitor in *Helicoverpa armigera*. International Chemical Ecology Conference 2013, International Society of Chemical Ecology, Asia-Pacific Association of Chemical Ecologists, Melbourne, AUSTRALIA, Aug 2013

Kuwar S.* Differential regulation of serine protease multigene family against a plant protease inhibitor in *Helicoverpa armigera*. SAB Meeting 2012, MPI for Chemical Ecology, Jena, GERMANY, Oct 2012

Kuwar S.*, Pauchet Y., Vogel H., Heckel D. G. Annotation of serine protease superfamily and transcriptional response to a plant protease inhibitor in *Helicoverpa armigera*. 6th Annual Arthropod Genomic Symposium, Kansas State University, Arthropod Genomics Center, Kansas City, UNITED STATES, Jun 2012

Kuwar S.*, Pauchet Y., Vogel H., Heckel D.G. Adaptive evolution and regulation of digestive serine protease superfamily in *Helicoverpa armigera*. ICE Symposium, MPI for Chemical Ecology, Jena, GERMANY, Sep 2011

Kuwar S.* Molecular evolution of digestive serine proteases of *Helicoverpa armigera*. 10th IMPRS Symposium, MPI for Chemical Ecology, Dornburg, GERMANY, Feb 2011

Vaidya B. K., **Kuwar S.***, Golegaonkar S. B., Nene S. N. Kinetic modeling of thermal inactivation of soluble and immobilized aminoacylase on novel acrylic beaded polymers. Industry-IBB Meet organized by Institute of Bio-informatics and biotechnology, University of Pune, INDIA, Mar 2008

"National conference on Genomics, Proteomics and Systems biology" held at IISc campus Bangalore jointly organized by Department of Biotechnology, Sir M.VIT and department of Biotechnology DSCE, Bangalore, INDIA 1-3 Oct 2008.

PROFESSIONAL SERVICES

Article reviewing for:

PLOS ONE

Biology — Open Access Journal of Biochemistry & Molecular Biology

Life — Open Access Journal of Origins and Evolution of Life

PUBLIC OUTREACH

Article in the Public Understanding of Life Sciences / Chemical Ecology about "Digestion Inhibitors as Plant Protectors" October 2011 https://www.ice.mpg.de/ext/fileadmin/extranet/common/documents/PULS-CE/Newsletter18_en.pdf

Contributed in explaining plant-insect interactions to public in 4th Long Night of the Sciences in Jena November 25, 2011 and 2013

Participated in UF DNA Day 2018 by visiting Fort white hight school at 32038 Fort White, FL, United States and tought about the "Forensics" to school students.