Raja Babu Singh Kushwah, Ph. D.

Summary

Self motivated scientist with 10 years of experience in public health and community engagement. Specialized in gene/genome editing in insect/pest using CRISPR/Cas technology. Looking for opportunintes to expand my research focus in field of research coomunications and outreach, also interesed in taking up teaching at college/university.

Highlights

- Designed and developed allelic drive system for resensitizing the insecticide resistance confered by knockdown resistance (*kdr*) mutations in *Drosophila melanogaster* as a proof of principle.
- Expert in mosquito field collections and insecticide resistance studies.
- Molecular biology, cloning and developing assays.
- Trained virologist with basics of bioinformatics.
- Research communications and stakeholder engagement.
- Scientific outreach, policy making for new technologies.
- Ability to manage cross functional teams.

Accomplishments

- Innovated, developed and successfully proved the concept of reversing insecticide susceptibility in *Drosophila melanogaster* as a proof of concept.
- 12 research papers in peer reviewed journals (6 as first author).
- 1 patent for product developed for controlling mosquitoes using plant based active ingredients.
- Reviewed ~10 manuscripts for different journals and 4 book chapters.
- Editor, Frontiers in Genome Editing special issue: Advances and Challenges to Engineering Gene Drives in Insect Systems

Patent

2012 Patanjali PK, Agrawal A, Dubey S, Chauhan M, **Kushwah RBS**, inventors; Institute of Pesticide Formulation Technology, Gurgaon, India. A novel synergistic mosquito repellent composition for the preparation of mosquito coils. Application No. 365/DEL/2010, International classification A01N31/14. 2012 May 04.

- The technology has been taken up by sister concern company Hindustan Insecticide Limited under the same ministry of chemicals and fertilizers, Govt. of India.

Research Experience

Nov2021- Presently **Postdoctoral Research Associate, Texas A&M University, College Station, USA.**

- Working with *Aedes* to generate transgenics using piggyBac and CRISPR/Cas9 tools.
- Enhancing SSA pathway of DNA repair pathway by utilizing tools developed in lab.
- Microinjected Aedes embryos for somatic and germline expressions.

May 2017 – Nov 2021 **Research Scientist at Tata Institute for Genetics and Society (TIGS), Bangalore, India.**

- Studied the insecticide susceptibility in different *Aedine* and *Anopheline* strains maintained at TIGS, insectary facility.
- Supported team in stakeholder engagement and building new collaborations.

May 2017- May 2019 **Visiting Scholar, University of California San Diego, California, USA.**

- Successfully created and accomplished the role of *kdr* mutations in *Drosophila* and reversal of susceptibility by allelic drive.

- Established Insecticide susceptibility set up at Prof. Biers lab.
- Trained visiting scholars and research interns.

May 2016-Sept. 2016 **SRF, National Institute of Malaria Research, New Delhi, India.**
- Worked with physicians to determine patient eligibility for research protocols.
- Recruited patients (malaria therapeutic studies), Conducting subject consent processes.
- Worked following Good Clinical Practice

Dec. 2015-April 2016 **SRF, International Centre for Genetic Engineering and Biotechnology, New Delhi, India**
- Established arboviral infections studies for Dengue and chikungunya infection studies.
- Maintained the two-virus using mosquito cell lines and mammalian cell lines.
- Studied the confection impact in *Aedes aegypti* in BSL3 facility.

May 2011-Nov. 2015 **Senior Research Fellow (SRF), National Institute of Malaria Research, New Delhi, India.**
- Studied the distribution of knockdown resistance (*kdr*) alleles in *Aedes spp.* in India.
- First to report *kdr* alleles including novel alleles and showed association to resistance.
- Did geographical profiling of insecticide susceptibility in *Aedes aegypti* and *Aedes albopictus:* major arboviral vectors in world.

May 2008-Sept. 2010 **Junior Research Fellow, Institute of Pesticide Formulation and Technology, Gurugram, Haryana, India**
- Developed adulticide (smoke & liquid formulations) against mosquitoes (Patent).
- Effective against all the three major genus of mosquitoes.
- Botanical based formulation comparable to synthetic counterparts.

Executive Experience (Academic/Communications and Outreach)

Sept 2023- Presently **Visiting Lecturer, Department of Entomology, Texas A&M University, USA**
- Teaching ENTO618 at TAMU.

June 2005-April, 2008 **Executive lecturer, KEN academy, Nawanshahr, Punjab.**
- Outreach for the Academy from, introduction to registration of students for various courses by visiting schools and colleges.
- Developed curriculum for different levels and courses offered at KEN.
- Taught undergraduate classes at SD college, Palwal, India.
- Student counselling and one-to-one interaction to achieve their future goals.
- Coordination with all teams to accomplish KEN vision and objectives.

Education

2023 Center for Teaching Excellence at TAMU: Academy for Future Faculty: Pursuing

2022 Center for the Integration of Research, Teaching and Learning (CITRL) at TAMU: Completed course: An Introduction to Evidence-Based Undergraduate STEM Teaching

2019 Short Course on "Ethics and Social Implications of Active Genetics" (Jan. 9th– Feb. 6th), at UCSD.

2018 Course on "Technology assessment for policy and management: A case study of synthetic biology" Winter 2018 at The School of Global Policy and Strategy, UCSD.

2016 Ph. D. in Life Sciences, Indira Gandhi National Open University, India.

2005 M. Sc. in Biotechnology, Barakatullah University, Bhopal, MP, India.

2003 B. Sc. in Life Sciences, Maharishi Dayanand University, Rohtak, Haryana, India.