

Bio-data**Name: Dr. Arun Kumar K P****Designation: Scientist C****Present Office Address:**

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**Educational Qualification: (BSc/MSc onwards)**

- 2003 - 2009 **Ph. D** – Centre for DNA Fingerprinting and Diagnostics, Hyderabad, INDIA.
 - Construction, characterization and analysis of expressed sequence tags in the Indian golden silkworm, *Antheraea assama*.
 - Sequencing and analysis of silk genes in wild silkworms
 - Genetics and genomics of the silkworm, *Bombyx mori*
- 2000 - 2002 **MSc (Agril.)** – Department of Biotechnology, University of Agricultural Sciences, Bangalore, INDIA. [GPA 9.15 (91.5%) on 10.00 point scale]
 - Standardization tissue culture regeneration protocol for Field bean (*Dolichos* Sp.)
 - Molecular characterization and bioassay of novel Bt isolates
- 1996 - 2000 **BSc (Agril.)** – University of Agricultural Sciences, Bangalore, INDIA
 [GPA 8.38 (83.8%) on 10.00 point scale]

Area of research interest/working area:

Insect Genetics and Genomics, Phylogenomics, Ecology and Evolution

Professional Experiences (Bullet Form):Jan 2011 – Dec 2017: **Scientist and Group Leader**, Centre for DNA Fingerprinting and Diagnostics, Hyderabad, INDIA**Projects undertaken:**

- Genomics of economically important insects including tobacco cutworm and Coffee white stem borer
- Development of viral resistant silkworm strains using miRNA and RNAi technology
- De novo assembly and transcriptome analysis of the mediterranean fruit fly *Ceratitidis capitata* early embryos to understand sex determination mechanism
- Studies on dosage compensation in the domesticated silkworm *Bombyx mori*
- Evolution of sex chromosomes in *Bombyx mori* to study the domestication of silkworms
- Identification of genes involved in sex determination for manipulating insect sex ratios
- Wild silkworm genetics and genomics to study silk genes and adaptation

Mar 2009 – Jan 2011: **Postdoctoral Research Associate** – California Institute of Technology, USA**Projects undertaken:**

- Development of single allele under-dominance for population gene drive systems.
- Small RNA based gene regulation studies in insects for use in gene drive systems

Dec 2002 – Jul 2003: **Research Associate** – Institute of Agri-Biotechnology, University of Agricultural Sciences, Dharwad, INDIA

Project undertaken:

- Studies on genomic flux and molecular analysis of insecticide resistance in cotton bollworm, *Helicoverpa armigera*

Awards/honour/Fellowship (if any):

2015	Founding Member, Indian National Young Academy of Science (IN-YAS)
2012	Best poster award in ‘International Consultative Meeting on Seribiotechnology’ held at Imphal, Manipur for the poster entitled, “Exploration of the diversity of wild sericigenous insects in Manipur”
2012	Innovative Young Biotechnologist Award (IYBA), Department of Biotechnology, Government of India
2011	Indian National Science Academy (INSA) Young Scientist Medal
2003 - 2008	Junior and Senior Research Fellowships (CSIR, Government of India)
2000 - 2002	Merit Scholarship for postgraduate studies awarded by Jindal Trust, Bangalore, India, for the period of 2 years (2000-2002)
2000	26 th rank in Indian Council of Agriculture Research (ICAR) examination for Junior Research Fellowship to pursue postgraduate studies.

Particulars of memberships in academies/ societies/ professional bodies

- 1) Editorial Board member, *Scientific Reports* Journal (Nature Publishing Group)
- 2) Member, Indian National Young Academy of Science (IN-YAS)
- 3) Member, Expert Group on ‘Research on Technology Development in Silk and its Applications in Biomaterials’ Department of Biotechnology, Government of India
- 4) Member, Research Advisory Committee, Seri-Biotech Research Laboratory, Central Silk Board, Bangalore, India
- 5) Member, Scientific Advisory Committee, NCLAS, National Institute of Nutrition, Hyderabad, India
- 6) Member, Fall Armyworm (*Spodoptera frugiperda*) International Public Consortium
- 7) Member, International Consortium on *Spodoptera litura* Genome Sequencing
- 8) Organizer of the symposium on ‘Genomics and genome engineering in the silkworm’ in the ‘International Congress of Entomology’ held in Orlando, USA from 25-30 September 2016.
- 9) Member, International Committee, The 5th Asia-Pacific Congress of Sericulture and Insect Biotechnology 2017.

Major/ongoing Projects:

Sl. No	Name of the agency	PI / Co-PI	Title	Period	Amount (in lakhs ₹)
1	ICMR	Co-PI	Morphological and molecular taxonomy of the <i>Phlebotomus argentipes</i> species complex in relation to transmission of Kala-azar in India	2015-2017	9

2	IJCSP (DST)	PI	Collaborative studies on genomic diversity among bombycoid silkmoths in Asia	2015-2017	5
3	IAEA	PI	Genetic manipulation of <i>Bombyx mori</i> to develop SIT for management of lepidopteran pests	2015-2017	12
4	DBT	PI	Comparative genetic analysis of sex chromosomes and sex determining genes in silkmoths	2011-2015	150
5	NE-Twinning Project, DBT	Co-PI	Exploration of wild silk moth biodiversity in Manipur and their genetic characterization using molecular markers	2012-2015	12
6	IYBA, DBT	PI	Development of baculovirus resistant silkworm strains through synthetic miRNA based knockdown of essential viral genes	2012-2015	42
7	IFCPAR (DST)	PI	Global transcriptomics of sex specific splicing	2013-2017	71
8	IJCSP, DST	PI	Genetic and genomic basis of the evolution of bombycid and saturniid silkmoths	2012-2014	6
9	IAEA	PI	Development and Evaluation of improved strains of insect pests for Sterile Insect Technique	2013-2014	5

Number of Publications: 30

Journal papers:

- 1) Chakraborty S, Muthulakshmi M, Vardhini D, Jayaprakash P, Nagaraju J and **Arunkumar KP*** (2015) Genetic analysis of Indian tasar silkmoth (*Antheraea mylitta*) populations. **Scientific Reports** 5: 15728. (IF: 4.12)
- 2) Gupta AK, Mita K, **Arunkumar KP*** and Nagaraju J (2015) Molecular architecture of silk fibroin of Indian golden silkmoth, *Antheraea assama*. **Scientific Reports** 5: 12706. (IF: 4.12)
- 3) Sackton TB, Corbett-Detig RB, Nagaraju J, Vaishna RL, **Arunkumar KP*** and Hartl DL (2014) Positive selection drives faster-Z evolution in silkmoths. **Evolution** 68: 2331-2342. (IF: 4.2)
- 4) Singh CP, Vaishna RL, Kakkar A, **Arunkumar KP*** and Nagaraju J (2014) Characterization of antiviral and antibacterial activity of *Bombyx mori* seroin proteins. **Cellular Microbiology** 16: 1354-1365. (IF: 4.41)
- 5) **Arunkumar KP**, Sahu, AK, Mohanty, AR, Awasthi, AK, Pradeep AR, Urs, SR and Nagaraju J (2012) Genetic diversity and population structure of Indian Golden Silkmoth (*Antheraea assama*). **PLoS ONE** 7(8): e43716. (IF: 2.76)
- 6) **Arunkumar KP**, Mita K and Nagaraju J (2009) Silkworm testis specific genes are enriched on Z chromosome and are evolutionarily conserved. **Genetics** 182: 493-501. (IF: 4.07)
- 7) **Arunkumar KP**, Tomar A, Daimon T, Shimada T and Nagaraju J (2008) WildSilkbase: An EST database of wild silkmoths. **BMC Genomics** 9: 338. (IF: 3.73)
- 8) **Arunkumar KP**, Metta M and Nagaraju J (2006) Molecular phylogeny of silkmoths reveals the origin of domesticated silkmoth, *Bombyx mori* from Chinese *B. mandarina* and paternal inheritance of *Antheraea proylei* mitochondrial DNA. **Molecular Phylogenetics and Evolution** 40: 417-427. (IF: 4.4)
- 9) Gandhe AS, **Arunkumar KP**, John SH and Nagaraju J (2006) Analysis of bacteria-challenged wild silkmoth, *Antheraea mylitta* (Lepidoptera) transcriptome reveals potential immune genes. **BMC Genomics** 7:184. (IF: 3.73)

- 10) Prasad MD, Muthulakshmi M, **Arunkumar KP**, Madhu M, Sreenu VB, Pavithra V, Bose B, Swaminathan S, Nagarajaram HA, Mita K, Shimada T and Nagaraju J (2005) Silksatdb: a microsatellite database of silkmoth, *Bombyx mori*. **Nucleic Acids Research** 33: D403-D406. (IF: 11.56)

Papers published in proceedings:

1. Chakraborty S and **Arunkumar KP*** (2016) Book review of the *Annual Review of Genetics* 2015, Bonnie Bassler et al., (eds) **Current Science** 111: 933-935
2. **Arunkumar KP*** and Sambrani N (2015) Book review of the *Annual Review of Genetics* 2014, Bonnie Bassler et al., (eds) **Current Science** 109: 2137-2139
3. **Arunkumar KP*** (2014) Role of biotechnology in seri-development. **Indian Silk** 5: 74-76
4. **Arunkumar KP*** (2014) Book review of the *Annual Review of Genetics* 2013, Bonnie Bassler et al., (eds) **Current Science** 106: 1755-1757.
5. Gopinathan KP and **Arunkumar KP** (2013) Javaregowda Nagaraju (1954-2012). **Current Science** 104:657.
6. **Arunkumar KP*** (2012) Book review of the *Annual Review of Genetics* 2011, Bonnie Bassler et al., (eds) **Current Science** 103: 947-949.
7. Nagaraju J, **Arunkumar KP**, Sriramana K, Muthulakshmi M, Satish V, Madhu M and Subbaiah EV (2004) Silkworm genomics on fast-track. In: Frontier Areas of Entomological Research (Eds. Subrahmanyam, B., Ramamurthy, V.V. and Singh, V.S.). Proceedings of the National Symposium on Frontier Areas of Entomological Research, IARI, New Delhi, India PP 471 - 485. (Book chapter).

Databases developed

SilksatDb: A microsatellite database of silkmoth, *Bombyx mori*

WildSilkbase: An EST database of wild silkmoths

Professional Service

Reviewer of manuscripts submitted to: PLoS ONE, BMC Genomics, Genetica, Genomics, Journal of Biosciences, Journal of Genetics, Insect Molecular Biology, International Journal of Biomedical Science, The Canadian Entomologist, Applied Biochemistry & Biotechnology, Current Science, Journal of Insect Physiology, Journal of Insects, Insect Science, Journal of Virological Methods, Molecular and Cellular Probes, Scientific Reports, etc., and grants submitted to The International Foundation for Science (IFS), Sweden, Department of Science and Technology (DST) and Department of Biotechnology (DBT), Government of India.