

## NAHEP-CAAST

ICAR-Indian Agricultural Research Institute, New Delhi 110 012  
Genomics of Agriculturally Important Insects (18-28 September 2019)

Venue for lectures: Virology Auditorium, ICAR, IARI, New Delhi

Venue for Practicals: IBDC Unit, Division of Entomology, ICAR-IARI, New Delhi

### *Training Schedule*

<b>Day 1</b>	<b>Wednesday, 18<sup>th</sup> September, 2019</b>
9.00-10.00 h	Registration
10.00-11.30 h	<b>Inauguration Programme:</b>
	Lighting of Lamp
	Welcome Address: Dr. K. M. Manjaiah, Associate Dean, P. G. School
	About NAHEP-CAAST: Dr. C. Viswanathan, Project Investigator, CAAST
	About the Training Programme: Dr. S. Subramanian, Course Director
	Students' Self introduction
	Remarks: Dr. Rashmi Aggarwal, Dean, ICAR- IARI, New Delhi
	Remarks: Dr. A. K. Singh, Joint Director (Res), ICAR- IARI, New Delhi
	Inaugural Address: Dr. A. K. Singh, Director, ICAR- IARI, New Delhi
	Vote of Thanks: Dr. Sagar, D., Course Coordinator
	Photo session
11.00-11.30h	Tea
11.30-11.45 h	<b>Pre Training Evaluation</b> Dr. S. Subramanian and Dr. D. Sagar
12.00-13.00h	Lecture 1: Insect Genomics – An overview ( <b>Dr. S. Subramanian</b> )
14.15-17.00h	Practical 1: DNA isolation from insects ( <b>Dr. Sagar, D., IARI, New Delhi</b> )
<b>Day 2</b>	<b>Thursday, 19<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 2: Genomic sequencing: An Overview ( <b>Dr. Kishore Gaikwad, NIPB, New Delhi</b> )
11.00-11.15h	Tea
11.15 -13.00h	Lecture 3: Bioinformatic tools for whole genome sequencing - An introduction [ Lecture cum Demonstration] ( <b>Dr. A. Kumar, IARI, New Delhi</b> )
14.15-17.00h	Practical 2: RNA isolation from insects ( <b>Dr. Sagar, D., IARI, New Delhi</b> )

<b>Day 3</b>	<b>Friday, 20<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 4: Metagenomic approaches: An overview ( <b>Dr. K. Annapurna, IARI, New Delhi</b> )
11.00-11.15h	Tea
11.15-12.15 h	Lecture 5: Molecular phylogeny – Principles and practices ( <b>Dr. Anirban Roy, IARI, New Delhi</b> )
12.15-13.15	Lecture 6: PCR – Real Time PCR ( <b>Dr. A. Kumar, IARI, New Delhi</b> )
14.15-17.00h	Practical 3: RNA isolation and cDNA synthesis in insects ( <b>Dr. Sagar, D., Dr. S. Subramanian and Ms. Rajna</b> )
<b>Day 4</b>	<b>Saturday, 21<sup>st</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 7: Gene Silencing and Genome editing in insect pest management ( <b>Dr. R. Asokan, IIHR, Bengaluru</b> )
11.00-11.15h	Tea
11.15-13.00h	Lecture 8: DNA Barcoding of insects – Principles and practices ( <b>Dr. T. Venkatesan, NBAIR, Bengaluru</b> )
14.15-17.00h	Practical 4: PCR techniques for insects ( <b>Dr. S. Subramanian and Dr. Sagar, D., IARI, New Delhi</b> ) Practical 5: Generating barcodes for insects ( <b>Dr. Naresh M. Meshram and Dr. P.R. Shashank, IARI, New Delhi</b> ) Practical 6: Use of PCR for prey-predator relations ( <b>Dr. Sachin Suroshe, IARI, New Delhi</b> )
<b>Sunday 22<sup>nd</sup> September, 2019 - HOLIDAY</b>	
<b>Day 5</b>	<b>Monday, 23<sup>rd</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 9. House- keeping genes for expression analysis:- Insect case studies ( <b>Dr. B. Ramcharan, NIPB, New Delhi</b> )
11.00-11.15h	Tea
11.15-13.00h	Lecture 10: Insect genomics – Challenges and solutions ( <b>Dr. Dushyant Singh Baghel, Nucleome Informatics, Hyderabad</b> )
14.15-17.00h	Practical 7: Evaluation of RNAi constructs for insect pests ( <b>Dr. Vinay K. Kalia</b> )
<b>Day 6</b>	<b>Tuesday, 24<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 11: Transcriptome sequencing – strategies and approaches ( <b>Dr. Ranjeet Ranjan, IARI, New Delhi</b> )
11.00-11.15h	Tea

11.15-13.00h	Lecture 12: Enzyme kinetics – An over view <b>(Dr. Anil Dahuja, IARI, New Delhi)</b>
14.15-17.00h	Practical 8: Genotyping of insecticide resistance <b>(Dr. S. Subramanian and Dr. Suresh M. Nebapure, IARI, New Delhi)</b>
<b>Day 7</b>	<b>Wednesday, 25<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 13: Computational tools for gene annotation <b>(Dr. A. R. Rao, IASRI, New Delhi)</b>
11.00-11.15h	Tea
11.15-13.00h	Lecture 14: Quantitative PCR – principles and practices <b>(Dr. B. Ramakrishnan, IARI, New Delhi)</b>
14.15-17.00h	Practical 9: Handling of raw sequences, curation, and assembly / Gene annotation and preparation of data for accessioning <b>(Dr. A. Kumar, Dr. V. Govindasamy, Baskaran IARI, New Delhi)</b>
<b>Day 8</b>	<b>Thursday, 26<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 15: The Genomic Basis of Nematode Parasitology <b>(Dr. Uma Rao, IARI, New Delhi)</b>
11.00-11.15h	Tea
11.15-13.00h	Lecture 16: Molecular Markers for Entomological Research <b>(Dr. S. Mohankumar, TNAU, Coimbatore)</b>
14.15-17.00h	Practical 10: Molecular phylogeny <b>(Dr. Anirban Roy &amp; Dr. A. Kumar, IARI, New Delhi)</b>
<b>Day 9</b>	<b>Friday, 27<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 17: RNAi approaches for pest management <b>(Dr. Vinay K. Kalia, IARI, New Delhi)</b>
11.00-11.15h	Tea
11.15-12.15h	Lecture 18: Rearing of insects for insect Genomics <b>(Dr. Kirti Sharma and Dr. S. Subramanian, IARI, New Delhi)</b>
12.15 – 13.15 h	Visit to Laboratories –Division of Entomology <b>(Dr. Sagar, D.)</b>
14.15-17.00h	Practical 11: Visit to Phenomics Facility: Dr. C. Viswanathan, IARI, New Delhi Visit to Sequencing Facility: Dr. B. Ramcharan, NIPB, New Delhi Visit to Bioinformatic Facility: Dr. A.R. Rao, ICAR-IASRI, New Delhi

<b>Day 10</b>	<b>Saturday, 28<sup>th</sup> September, 2019</b>
9.30 -10.00h	Lab – Preparation /Observation /Mini Exercises
10.00-11.00h	Lecture 19: Plant-Parasitic Nematode Genomics: An Update <b>(Dr. Vishal Somvanshi, IARI, New Delhi)</b>
11.00-11.15h	Tea
11.15-13.00h	<b>Interaction session &amp; Post Training evaluation</b>
14.15-17.00h	<b>Valediction and Certificate distribution: CAAST Team</b>