

Genomics of Plant Pathogens and Agriculturally Important Microbes – Dec 19-31, 2018
Training Schedule

Venue for lectures: Auditorium, Division of Plant Pathology
 ICAR-Indian Agricultural Research Institute, New Delhi

Venue for practicals: PG Laboratory, Division of Plant Pathology
 ICAR-Indian Agricultural Research Institute, New Delhi

| <i>Wednesday, 19 Dec 2018</i> | |
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| 09:30-10:00h | Registration |
| 10:00-10:10h | Welcome address Dr. K. Manjaiah, Associate Dean, PG School |
| 10:10-10:20h | About NAHEP-CAAST C. Viswanathan, PI cum Course Director |
| 10:20-10:30h | About the Students Winter School Dr. A. Kumar |
| 10:30-10:45h | Ice breaking; student's introduction |
| 10:45-10:55h | Training inauguration & Inaugural address Dr. Rashmi Aggarwal, Dean (I/C), IARI |
| 10:55-11:00h | Vote of thanks Dr. K. Annapurna |
| 11:00-11:30h | Tea |
| 11:30-11:45h | Pre-training evaluation Dr. A.Kumar and K. Annapurna |
| 12:00-13:00h | Lecture 1: Genotyping of plant pathogens and Microbes: Strategies and Methods Dr. A. Kumar |
| 14:00-17:00h | Practical 1 : DNA isolation from pathogenic fungi and bacteria Dr. A. Kumar /Dr. Deepa Kamil DNA isolation from PGP microorganisms Dr. K. Annapurna / Dr. V. Govindasamy/ Dr. Ramakrishnan |
| <i>Thursday, 20 Dec 2018</i> | |
| 10:00-11:00h | Lecture 2: Functional Genomics of agriculturally important microbes Dr. K. Annapurna, IARI, Delhi |
| 11:00-11:15h | Tea |
| 11:30-13:00h | Lecture 3: Small genome sequencing: experimental strategies and recent approaches Dr. Kishore Gaikwad, NRCPB, Delhi |

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| 14:15-17:15h | <p>Practical 1 (Continued) : DNA isolation from pathogenic fungi and bacteria Dr. A. Kumar /Dr. Deepa Kamil DNA isolation from PGP microorganisms Dr. K. Annapurna / Dr. V. Govindasamy/ Dr. Ramakrishnan</p> |
| Friday, 21 Dec 2018 | |
| 10:00-11:00h | <p>Lecture 5: Single Molecular Real Time Sequencing (SMRT): a revolutionary genome sequencing technology in 21st century Mr. Rakshit Chaudhary, PacBio, SpincoBiotech, Chennai</p> |
| 11:00-11:15h | Tea |
| 11:30-13:00h | <p>Lecture 4: Bioinformatic analyses of whole-genome sequence data Dr. Jyothi Malik, Qiagen, Delhi</p> |
| 14:15-17:15h | <p>Practical 2: PCR Primer designing and validation (<i>Ralstonia solanacearum/Magnaporthe</i>) Drs. A. Kumar and Deebea Kamil</p> <p>PCR Primer designing and validation (PGP microorganisms) Drs. K. Annapurna , V. Govindasamy IARI, Delhi</p> <p>Practical 3: RAW sequence handling and curation, and assembly (<i>Ralstonia solanacearum/Magnaporthe</i>) Drs. A.Kumar and Deepa Kamil</p> <p>RAW sequence handling and curation, and assembly (PGP microorganisms) Drs. V. Govindasamy, B. Ramakrishnan and K. Annapurna, IARI, New Delhi</p> |
| Saturday, 22 Dec 2018 | |
| 10:00-11:00h | <p>Lecture 6: Nanopore - Next Generation hassle free Genome Sequencing Dr. Paras Yadav, ILS, Delhi</p> |
| 11:00-11:15h | Tea |
| 11:30-13:00h | <p>Lecture 7: Functional genomics of fungal pathogens Dr. Rashmi Aggarwal, IARI, New Delhi</p> |
| 14:15-17:15h | <p>Practical 4: Gene annotation and preparation of data for accessioning Drs. A. Kumar, V. Govindasamy, S. Subramanian, and K. Annapurna, IARI, New Delhi</p> |
| Sunday, 23 Dec 2018 Holiday | |
| Monday, 24 Dec 2018 | |
| 10:00-11:00h | <p>Lecture 8: Genome Assembly: Concepts and updates Dr. Arpita Ghosh, Eurofins, New Delhi</p> |
| 11:00-11:15h | Tea |

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| 11:30-13:00h | Lecture 9: Methods to decode plant viral genome and their pathogenesis Dr. Supria Chakraborti, JNU, Delhi |
| 14:15-17:15h | Practical 5: Molecular phylogeny Dr. Anirban Roy and A. Kumar, IARI, New Delhi |
| Tuesday, 25 Dec 2018 Holiday | |
| Wednesday, 26 Dec 2018 | |
| 10:00-11:00h | Lecture 10: Strategies for transcriptome sequencing Dr. C. Viswanathan, IARI, New Delhi |
| 11:00-11:15h | Tea |
| 11:30-13:00h | Lecture 11: Databases for microbial and pathogenomics Dr. B. Ramkrishnan, IARI, New Delhi |
| 14:15-17:15h | Practical 7: Bacterial transformation using electroporation for tagging with gfp gene Dr. A.Kumar, IARI, New Delhi |
| Thursday, 27 Dec 2018 | |
| 10:00-11:00h | Lecture 12: Whole genome based molecular phylogeny Dr. Anirban, IARI, New Delhi |
| 11:00-11:15h | Tea |
| 11:30-13:00h | Lecture 13: Viral Genomics Dr. V. K. Baranwal, IARI, New Delhi |
| 14:15-17:15h | Practical 8: RNA isolation for RNA seq and qPCR Drs. A. Kumar and V. Govindasamy, IARI, New Delhi |
| Friday, 28 Dec 2018 | |
| 10:00-11:00h | Lecture 14: Application of qPCR in plant pathology and microbiology Dr. A.Kumar, IARI, New Delhi |
| 11:00-12:00h | Practical 9: qPCR for validation of RNA seq data Dr. A. Kumar IARI, New Delhi |
| 14:15-16:15h | Visit to Phenomics facility, Dr. C. Viswanathan Visit to Sequencing facility, Dr. B. Ramcharan, NRCPB, Delhi Visit to Bioinformatic facility, Dr. A. R. Rao |
| Saturday, 29 Dec 2018 | |
| 10:00-11:00h | Lecture 15: Gene finding strategies and their validation <i>in silico</i> Dr. Dinesh Kumar, IASRI, New Delhi |
| 11:00-11:15h | Tea |

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| 11:30-13:00h | Lecture 16: Data mining and machine learning tools for whole genome sequencing Dr. A. R. Rao, IASRI, New Delhi |
| 14:15-17:15h | Practical 10: qPCR for absolute quantitation of microorganisms in environmental samples Dr. B. Ramakrishnan, IARI, New Delhi |
| <i>Sunday 30 Dec 2018 Holiday</i> | |
| <i>Monday, 31 Dec 2018</i> | |
| 10:00-11:00h | Lecture 17: Nematode genomics-an update Dr. Umarao, IARI, New Delhi |
| 11:00-11:15h | Tea |
| 11:30-12:30h | Interaction with students |
| 12:30 -13:00h | Post training evaluation Drs. A. Kumar and K. Annapurna, IARI, New Delhi |
| 14:15-17:15h | Valediction and certificate distribution CAAST-Team |