

ISWCPC-2023
TECHNICAL PROGRAM
SEMINAR (17-19 January 2023)

Day 1: January 17, 2023 (Tuesday)
Venue: J N Baruah Auditorium

WELCOME & INAUGURATION

15.00 - 16.00	Registration and Inaugural Tea
16.00 - 16.10	Saraswathi Vandana and lamp lighting ceremony
16.10 - 16.15	CSIR Song
16.15 - 16.30	Felicitation of the Chief Guest, the Guest of Honor and the dignitaries
16.30 – 17.00	Welcome address by Prof. G. Narahari Sastry Director, CSIR-NEIST, Jorhat, India & Chairman, ISWCPC-2023
17.00 – 17.05	Introduction to ISWCPC-2023 by Dr. Ratul Saikia , Head, Biological Sciences and Technology Division, CSIR-NEIST, Jorhat
17.05 – 17.15	Briefing about ISWCPC-2023 by Dr. Channa Chikkaputtaiah , Convenor, Principal Scientist, CSIR-NEIST, Jorhat, India
17.15 – 17.25	Address by the Guest of Honor, Prof. Prabodh Trivedi Director, CSIR-CIMAP, Lucknow, India
17.25 – 17.35	Address by the Guest of Honor, Prof. Durai Sundar Institute Chair Professor, IIT Delhi, India
17.35 – 17.45	Address by the Guest of Honor, Prof. Malali Gowda Founder and Director, Bengaluru Genomics Centre, Bangalore, India
17.45 – 17.55	Address by the Special Invited Guest, Prof. Dinesh Kumar Dean Academics, Central University of Haryana, Mahendragarh, Haryana, India
17.55 – 18.05	Address by the Special Invited Guest, Dr. G. Madhavi Sastry Senior Director, Schrodinger Inc., Hyderabad, India
18.05 – 18.45	Address by the Chief Guest Prof. Ch Mohan Rao CSIR-Distinguished Scientist and Former Director, Centre for Cellular and Molecular Biology (CCMB), Hyderabad, India Title: <i>CRISPR: Re-writing the fate</i>
18.45 – 18.55	RELEASE OF CRISPR/CAS-BASED GENOME EDITING BOOK and SOUVENIR OF ISWCPC-2023
18.55 – 19.05	Vote of Thanks by Dr. Jatin Kalita , Principal Scientist, CSIR-NEIST, Jorhat, India
19.05 – 21.30	INAUGURAL DINNER

Day 2: January 18, 2023 (Wednesday)
Venue: J N Baruah Auditorium

08.00 – 08.30	Breakfast (Open Air Arena)
08.30 – 09.00	Registration
SESSION 1 CRISPR/Cas-based computational modelling and Genomics	
Chair: Prof. Ch. Mohan Rao Co-Chair: Dr. Rituraj Konwar Anchoring: Yogita N. Sarki Assistance: Dipshika Gogoi, Kripa Dristi Dihingia, Suparna	

09.00 – 09.30	Keynote Address by the Guest of Honor, Prof. Durai Sundar Institute Chair Professor, IIT Delhi, India Title: <i>Rewriting the Blueprint of Life by Genome Engineering</i>
09.30 – 10.00	Keynote Address by Prof. Malali Gowda, Founder and Director, Bengaluru Genomics Centre, DNA World, Bangalore, India Title: <i>Crop Improvement using Artificial Intelligence Technology</i>
10.00 – 10.20	Prof. Dinesh Kumar Professor (Biotechnology) & Dean Academics, Central University of Haryana, Mahendragarh, Haryana, India Title: <i>CRISPR in Legal and Global Regulatory Landscape of Plant Genome Editing Policies: Perception & Issues</i>
10.20 -10.40	Dr. Prashanth N. Suravajhala Principal Scientist, Amrita Vishwa Vidyapeetham, Kerala, India Title: <i>Systems Genomics: Phenome-Interactome Networks on the Anvil for Identifying Candidate Drug Targets</i>
10.40 -10.50	TEA BREAK
10.50 -11.10	Dr. Nese Sreenivasulu (Online) Research Unit Leader, International Rice Research Institute (IRRI), Philippines Title: <i>Plant systems genetics role in unraveling nutritional diversity in rice grains to translate human health</i>
11.10 -11.30	Dr. Sucheta Tripathy (Online) Senior Principal Scientist, CSIR-Indian Institute of Chemical Biology (CSIR-IICB), Kolkata, India Title: <i>Unravelling the early effectors of crop destroyer Phytophthora capsici for understanding pathogenesis and designing control strategies</i>
11:30 -11.50	Dr. Sung Sun Yim (Online) Assistant Professor, KAIST, South Korea Title: <i>Recording biological surroundings from within</i>
11:50 -12.10	Dr. Rajiv Gandhi Govindaraj Senior Scientist, Hotspot Therapeutics, Boston, USA Title: <i>AI into the allosteric drug hunting process</i>
12.10 -12.25	Dr. Selvaraman Nagamani Scientist, CSIR-NEIST, Jorhat, India Title: <i>Molecular Property Diagnostic Suite (MPDS): An Attempt to Strengthen CADD in Country</i>
12.25 – 13.00	Visit to Molecular Biology lab and Functional Genomics facility
13.00 – 14.00	LUNCH BREAK (Open Air Arena)
SESSION 2	
Biotechnology-based Entrepreneurship/ Industry prospects in India	
Chair: Prof. Sundar Durai	
Co-Chair: Dr. Ratul Saikia	
Anchoring: Yogita N. Sarki	
Assistance: Nooreen Wasmin, Udesha Changmai, Gayatri Gogoi	

14.00 – 14.30	Keynote Address by Prof. G. Narahari Sastry Director, CSIR-NEIST, Jorhat, India
14.30 – 14.50	Dr. Ratna Kumria (Online) Director of Agri Biotech, Federation of Seed industry of India (FSII), New Delhi, India Title: <i>Realising Benefits of Technology in Agriculture</i>
14.50 – 15.10	Dr. Bula Chowdhury Senior Scientist & Coordinator, Guwahati Biotech Park, Govt. of Assam, India Title: <i>Bio-entrepreneurship for NER</i>
15.10 – 15.30	Dr. Jatin Kalita Principal Scientist and Head, Research Planning and Business Development Division CSIR-NEIST, Jorhat, India
15.30 – 15.45	Industry Talk by Mr. Venkat Koushik Pulla, Merck Title: <i>Innovations in CRISPR tools - moving towards translational research</i>
15.45 – 16.00	Industry Talk by Dr. Nitya Nand Sharma, Premas Life Sciences Title: <i>The Revolution of Genome Editing Technologies and the Role of Next Generation Sequencing Tools</i>
16.00 – 16.15	Industry Talk by Dr. Nagesh K. A, Eurofins Genomics Title: <i>Advanced plant genomics approaches with Eurofins genomics</i>
16.15 – 16.30	Industry Talk by Mrs. Rituparna Nandi, Zelle Biotech Title: <i>R&D and associated activities at Zelle Biotech</i>
16.30 – 16.45	Talk by Dr. Krishna Raghav Chaturvedi, American Chemical Society (ACS) Title: <i>Resources at ACS to advance your career</i>
16.45 – 16.55	TEA BREAK
16.55 – 17.15	Dr. Vibha Ahuja Chief General Manager, BCIL, New Delhi, India Title: <i>Regulatory requirement for genome editing in India</i>
17.15 – 17.35	Dr. Bharat Char Chief Scientific Officer, MAHYCO, Jalna, Maharashtra, India Title: <i>New breeding techniques and digital tools for crop improvement – an industry perspective</i>
	Judges for Oral Presentation: Prof. Prabodh Trivedi, Prof. Durai Sundar, Prof. Malali Gowda, Prof. Dinesh Nagegowda
17.35 – 17.45	Oral Presentation by Aravind Kumar Konda Title: <i>MADS-box genes as candidate genes for CRISPR/Cas-based functional genomics to engineer early flowering trait in chickpea</i>
17.45 – 17.55	Oral Presentation by Anuj Sharma Title: <i>Deciphering the role of ROP GTPase regulatory proteins (RGRPs) in modulation of Catharanthus roseus anticancer alkaloid metabolism</i>
17.55 – 18.05	Oral Presentation by Banashree Saikia Title: <i>Cell-biological and CRISPR/Cas9-based loss-of-function analysis</i>

	<i>of SlHyPRP1 and SlDEA1 genes of Solanum lycopersicum L. revealed their role as negative regulators of multi-stress tolerance</i>
18.05 – 18.15	Oral Presentation by Faizia Bano Title: <i>Improvement of Artemisinin content in Artemisia annua through CRISPR-Cas9</i>
18.15 – 18.25	Oral Presentation by Gargi Prasad Saradadevi Title: <i>hda6 mutations cause loss of selective ribosomal RNA (rRNA) gene silencing on a multi-megabase scale and rDNA genomic instability</i>
18.25 – 18.35	Oral Presentation by Gayatri Panda Title: <i>Comparative structural and dynamics study of free and gRNA-bound FnCas9 and SpCas9 proteins</i>
18.35 – 18.45	Oral Presentation by Ginny Antony Title: <i>TAL effector mediated susceptibility in pomegranate bacterial blight</i>
18.45 – 18.55	Oral Presentation by Himakshi Sharma Title: <i>Unravelling the Mechanism of Protein-Protein Interactions in Selected Viral Diseases and Breast Cancer</i>
18.55 – 19.05	Oral Presentation by Hridoy Jyoti Mahanta Title: <i>Decoding Mathematical Modeling and Statistical Learning for Drug Discovery and Epidemiology</i>
19.05 – 19.15	Oral Presentation by Jasmine M. Shah Title: <i>Transgenerational epigenetic memory in the Arabidopsis thaliana under biotic stress</i>
19.15 – 19.25	Oral Presentation by Murali Krishna Paidi Title: <i>Suppression of delta-6 fatty acid desaturase in marine diatoms using CRISPR/Cas system for enhancement of n-3 synthesis</i>
19.25 – 19.35	Oral Presentation by Riwandahun Marwein Title: <i>Transcriptome-wide analysis of North-East Indian (NEI) rice cultivars in response to Bipolaris oryzae infection revealed the importance of early response to the pathogen in suppressing disease progression</i>
19.35 – 21.30	CULTURAL EVENING and WELCOME DINNER (Open Air Arena)
END OF THE DAY 2	
Day 3: January 19, 2023 (Thursday)	
Venue: J N Baruah Auditorium	
SESSION 1	
CRISPR/Cas-based plant genome editing	
Chair: Prof. Sharmistha Banerjee	
Co-Chair: Dr. Mantu Bhuyan	
Anchoring: Banashree Saikia	
Assistance: Priyanka Gogoi, Richa Dhakal, Pooja Talukdar	
08.00 – 08.45	BREAKFAST
08.45 – 09.15	Keynote Address by Prof. Prabodh Trivedi Director, CSIR-CIMAP, Lucknow, India Title: <i>Functional genomics and crop improvement using genome-editing approach</i>
09.15 – 09.35	Dr. Yiping Qi (Online)

	Associate Professor, University of Maryland, USA Title: <i>Boosting plant genome editing with a versatile CRISPR-Combo system</i>
09.35 – 09.55	Dr. Dinesh A. Nagegowda Senior Principal Scientist & Scientist-In Charge, CSIR-CIMAP Lucknow, Bangalore Centre, India Title: <i>Functional genomics for understanding and improvement of medicinal and aromatic traits</i>
09.55 – 10.15	Dr. Sudripta Das Scientist-F, Institute of Bioresources and Sustainable Development (IBSD), Imphal, India Title: <i>Precision Gene Editing: The Challenge of Regulating Plant Genomic Innovations</i>
10.15 – 10.35	Dr. Kutubuddin Ali Molla Scientist, ICAR-CRRI, Cuttack, India Title: <i>Genome editing mimics natural mutation for developing climate-resilient rice</i>
10.35 – 10.45	TEA BREAK
10.45 – 11.05	Dr. Tanushri Kaul (Online) Group Leader, Nutritional Crop Improvement, ICGEB, New Delhi, India Title: <i>How CRISP is CRISPR? Re-designing Future Crops for Enhanced Herbicide-Resistance and Productivity Employing CRISPR/Cas9</i>
11.05 – 11.25	Prof. Salvinder Singh Professor, Assam Agricultural University, Jorhat, India Title: <i>Genome Engineering of Musa balbisiana cv. Bhimkol through CRISPR/Cpf1 Technology</i>
11.25 – 11.45	Dr. Siddharth Tiwari Scientist-E, National Agri-Food Biotechnology Institute (NABI), Mohali, Punjab, India Title: <i>CRISPR/Cas-mediated genome editing in banana for nutritional trait improvement</i>
11.45 – 12.05	Dr. Sudhakar Reddy Palakolanu Scientist and Group Leader, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, India Title: <i>New breeding tools (NBTs) for dryland cereal crops for sustainable agriculture and enhancing the nutritional security</i>
12.05 – 12.25	Prof. Goetz Hensel (Online) Head, Centre of Plant Genome Engineering (CEPLAS), Heinrich Heine University, Dusseldorf, Germany Title: <i>CRISPR/Cas-based functional genomics in cereals</i>
12.25 – 12.55	Dr. Channa Chikkaputaiah Principal Scientist,

	<p>CSIR-NEIST, Jorhat, India Title: <i>Development of biotic and abiotic stress tolerance, and crop improvement through CRISPR/Cas-based genome editing system and functional genomics approaches</i></p>
13.00 – 14.00	LUNCH BREAK
14.00 – 15.30	<p>POSTER PRESENTATION</p> <p>Theme 1: CRISPR/Cas based Plant Genome Editing Judges:</p> <ul style="list-style-type: none"> • Prof. Dinesh A. Nagegowda • Prof. Salvinder Singh • Dr. Siddharth Tiwari • Dr. Sudhakar Reddy Palakolanu • Dr. Kutubuddin Ali Molla <p>Theme 2: Computational Biology and Plant Functional Genomics Judges Group I:</p> <ul style="list-style-type: none"> • Prof. Dinesh Kumar • Dr. Arunkumar Kallare • Dr. S. Nagamani <p>Judges Group II:</p> <ul style="list-style-type: none"> • Dr. Giressha T. Mohannath • Dr. Rajiv Gandhi Govindaraj • Dr. N. Velmurugan <p>Theme 3: Biological Sciences Judges:</p> <ul style="list-style-type: none"> • Dr. Prashanth N. Suravajhala • Dr. Sreeramaiah Gangappa • Dr. Amit Mishra • Dr. Prasenjit Manna • Dr. Anil K. Singh
<p>SESSION 2 CRISPR/Cas-based functional genomics and Biotechnology Chair: Prof. Dinesh Kumar Co-Chair: Dr. S. B. Wann Anchoring: Riwandahun Marwein Assistance: Lipsa Priyadarshini, Upasna Goswami, Babli Borah, Twinkle Borah</p>	
15.30 – 15.50	<p>Prof. Sharmistha Banerjee School of Life Sciences, University of Hyderabad, Telangana, India Title: <i>Differential encapsidation of host factors influence HIV-1 population dynamics and infectivity: a case study aided by CRISPR/Cas9 gene editing of human Staufens</i></p>
15.50 – 16.10	<p>Dr. Rituraj Konwar Principal Scientist, Biological Sciences and Technology Division, CSIR-NEIST, Jorhat, India Title: <i>Genome Editing Tools for Cancer Management: Progress and Prospects</i></p>

16.10 – 16.30	Dr. Kallare P. Arunkumar Scientist, Central Muga Eri Research & Training Institute (CMER&TI), Jorhat, India Title: <i>Molecular basis of polyphagy and insecticide resistance in agriculture pests</i>
16.30 – 16.50	Dr. Gireesha T. Mohannath Senior Assistant Professor, BITS Pilani, Hyderabad Campus, Telangana, India Title: <i>How epigenetic mutants could impact epigenomic studies? Lessons from Arabidopsis ribosomal DNA studies</i>
16.50 – 17.10	Dr. Sreeramaiah N. Gangappa Assistant Professor, IISER, Kolkata, India Title: <i>Complex genetic interactions among MYC transcription factors underlie seedling photomorphogenesis in Arabidopsis</i>
17.10 – 17.30	Dr. Amit Kumar Mishra Assistant Professor, Mizoram University, Aizawl, Mizoram, India Title: <i>Understanding the role of plant U-box E3 ubiquitin ligases in response to drought and oxidative stresses</i>
17.30 – 17.40	TEA
17.40 – 18.40	Panel Discussion: CRISPR/Cas: Present and Future for Indian Scenario Panellists on the dais: Prof. G. Narahari Sastry Prof. Prabodh Trivedi Prof. Sharmistha Banerjee Prof. Dinesh Nagegowda Prof. Malali Gowda Prof. Dinesh Kumar Prof. Salvinder Singh Dr. Sudripta Das Dr. Siddhartha Tiwari Dr. Sudhakar Reddy Palakolanu Moderator: Dr. Anil Challa
18.40 – 19.10	Valedictory Prize Distribution Announcement: Dr. Himangshu K. Bora Closing remarks and way forward: Prof. G. Narahari Sastry
19.10 – 19.20	Vote of Thanks by Dr Selvaraman Nagamani , CSIR-NEIST, Jorhat
19.20 – 21.30	Cultural Evening & Dinner
END OF THE DAY 3	

ISWCPC-2023		
WORKSHOP (20-21 January 2023)		
Day 4: January 20, 2023 (Friday)		
SESSION I		Resource Persons (RPs)
WORKSHOP ON COMPUTATIONAL BIOLOGY		
Venue: STINER HUB		
(All 60 participants)		
9:00 - 9:30	Welcome address to resource persons and workshop participants by Prof. G. Narahari Sastry , Director, CSIR-NEIST, Jorhat Introduction and Felicitation of resource persons Briefing about the workshop by Dr. C. Chikkaputtaiah , CSIR-NEIST, Jorhat	
9:30 - 13.15	Computational Biology and CRISPR/Cas a) Overview and implications (30min) b) Theory, Practical (Hands on/Demo) of Computational CRISPR/Cas	Prof. G. Narahari Sastry Dr. Pankaj Barah (Tezpur University) Dr. S. Nagamani and Dr. Hridoy Mahanta (CSIR-NEIST Jorhat)
SESSION II		
WORKSHOP ON CRISPR/CAS PIPELINE PART 1		
Venue: STINER HUB (All 60 participants)		
14.00 - 14.20	CRISPR/Cas: Introduction and Overview	Dr. Anil Challa (Shiv Nadar Uni)
14.20 - 14.40	Advanced CRISPR-Cas tools: Base editing and Prime editing for rewriting genetic letters	Dr. Kuttubuddin Ali Molla (ICAR-CRRI)
14.40 - 15.00	CRISPR/Cas based plant genome editing: Overview	Dr. Sudhakar Palakolanu (ICRISAT Hyderabad)
15.00 - 15.20	TRBO system for efficient CRISPR/Cas genome editing	Dr. Gireesha T. Mohannath (BITS Hyderabad)
15.20 – 16.30	Gene selection, sgRNA design, off-target analysis, virtual CRISPR/Cas construct design	Dr. Anil Challa with other RPs
WET LAB EXPERIMENTS (16.30 – 19.00) in 3 groups of 20 participants each		
Venue: BSTD Labs		
16.30 -	Cloning of sgRNA oligonucleotide into an entry plasmid	

17.45		BSTD team with RPs
15min	Step 1: Linearization of sgRNA entry plasmid	
15min	Step 2: sgRNA oligonucleotide phosphorylation and annealing	
15min	Step 3: Ligation of phosphorylated sgRNA oligonucleotide into a linearized sgRNA entry plasmid	
15min	Step 4: Transformation of <i>E.coli</i> competent cells with the ligated product	
15min	Step 5: Confirmation of transformed <i>E. coli</i> cells with colony PCR	
17.45 – 19.00	Gateway assembly of sgRNA entry plasmid, Cas12a plasmid and destination plasmid	
20 min	Step 1: Set up Gateway LR reaction	
55 min	Step 2: Confirmation of final Gateway Assembly product using <i>EcoRI</i> restriction digestion	
(To be parallelly performed during section B, Step 2)	Agrobacterium transformation of CRISPR/Cas12a plasmid	
	Step 1: Mixing of Agro-competent cells with the restriction digestion confirmed plasmid and electroporation. Step 2: Plating of Agro transformed cells into antibiotic selection media.	
END OF DAY 4		

Day 5: January 21, 2023 (Saturday)		
SESSION I		Resource Persons
WORKSHOP ON CRISPR/CAS PIPELINE PART 2		
Venue: BSTD Labs		
Continuation of CRISPR/Cas wet lab experiment in BSTD Labs		
9.00 - 10.30	Plant transformation (rice calli) using Agrobacterium-mediated gene transfer method	Group 1: Dr. Sudhakar P Dr. Anil Challa
15 min	Step 1: Discussion by resource persons about principles and methods of transformation	
75 min	Step 2: Practical demonstration of rice calli transformation with <i>Agrobacterium</i> harbouring the CRISPR/Cas12a plasmid <ul style="list-style-type: none"> - Divided into 3 Groups; - Parallel demonstration of experiments and discussion with resource persons 	Group 2: Dr. Kuttubuddin Ali Molla Dr. Gireesha T.M Group 3 Dr. Kallare P. Arunkumar Dr. C. Chikkaputtaiah

		Group 1	Group 2	Group 3
9.15 - 9.45	A practical demonstration by BSTD lab members and discussion with resource persons	10 students	10 students	10 students
9.45 -10.15		10 students	10 students	10 students

SESSION II		Resource Persons
DEMO OF SEQUENCING TECHNOLOGIES AND VARIOUS SOPHISTICATED ANALYTICAL INSTRUMENTS		
Venue: CID Labs and STINER HUB		
10.15 – 15.00	Parallel demonstration of Sanger sequencing, NGS and visit to Sophisticated Analytical Instrumentation Facility (SAIF)	BSTD and CID team with RPs
60 min	Component 1: Sanger and NGS (theory)	
60 min	Component 2: Sanger and NGS (practical demo)	
60 min	Component 3: SAIF visit	

	Sanger and NGS (theory) Dr. Romi Wahengbam Dr. Tridip Phukan, Dr. Pankaj Bharali and CID team	Sanger and NGS (practical demo) Dr. Prasenjit Manna Dr. Romi Wahengbam Dr. Anjum Dihingia and CID team	SAIF visit Mrs. Archana Yadav Dr. Jyotilakshmi HB Ms. Babli Borah Ms. Veigyabati Devi
10.30 - 11.30	Group 1 (20 students)	Group3 (20 students)	Group 2 (20 students)
11.30 - 12.30	Group 2 (20 students)	Group 1 (20 students)	Group 3 (20 students)
12.30 – 13.30	Group 3 (20 students)	Group 2 (20 students)	Group 1 (20 students)
13.30 – 14.30	LUNCH BREAK		

SESSION III		Resource Persons
DATA ANALYSIS AND INTERPRETATION OF SANGER AND NGS DATA FOR CRISPR/CAS GENOME EDITING EVENTS AND OTHER FUNCTIONAL GENOMICS APPLICATIONS		
Venue: STINER HUB		
14.30 – 14.50	Overview of Sanger and NGS Data analysis for CRISPR/Cas and other Functional Genomics applications	Dr. KP Arunkumar Dr. Pankaj Barah

14.50 – 15.50	Data Analysis: Sanger Seq for CRISPR/Cas editing events	Dr. Sudhakar Reddy P Dr. Kutubuddin Ali Molla Dr. Anil Challa with BSTD team
15.50 – 17.00	Data Analysis: NGS for CRISPR/Cas and other functional genomics applications	Dr. Pankaj Barah Dr. Romi Wahengbam Dr. N. Velmurugan with CID team and ACDS team
17.00 – 17.30	Tea and Interaction of participants with all resource persons and ACDS, BSTD, and CID team	
17.30 – 17.50	Concluding Remarks and way forward	Prof. G. Narahari Sastry , Director, CSIR-NEIST, Jorhat
17.50 – 18.00	Vote of thanks	Dr. S.B. Wann , CSIR-NEIST, Jorhat
END OF DAY 5		