Dr. SATENDRA KUMAR MANGRAUTHIA
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1. Personal bio-data:

a) Position/Designation : **Scientist**

b) Joining date in ICAR : **June, 2008, (DOB: 01/01/1982)**

c) Discipline and Specialization : **Biochemistry, Molecular Biology, RNAi**

d)Training/advance exposure in the area of work:

- Indo-US Post-Doctoral Research Fellowship award (from Jan 2013 to Dec, 2013) sponsored by Indo-US Science & Technology Forum (IUSSTF) to work in laboratory of Prof. Jian Kang Zhu at Purdue University,USA for a period of 12 months.
- August 2004-June 2008: Doctoral student, Thesis title "Characterization of viral suppressors of RNA silencing and their regulatory role in plant gene expression" , Indian Agricultural Research Institute, New Delhi, India.
- Attended twenty-one days winter School on *Biosecurity and Biosafety*: *Policies, Procedures and Issues* sponsored by Indian Council of Agricultural Research and organized by National Bureau of Plant Genetic Resources, New Delhi from January 14-February 3, 2009.
- Attended Global Biosafety Management Program (GBMP): Approach to Product Development and Regulation, October 3-5, 2011 Jaipur, Organized by Cornell University and Sathguru Center for Executive Education.
- Attended South Asia Conference on Current Approaches to the Environmental Risk assessment (ERA) of Genetically Engineered Crops held on May 16-18, 2011 at New Delhi, Organized by CERA, BCIL, DBT and MoEF.
- Organized (as course co-ordinator) a twenty-one days winter school on **Bt rice evaluation and deployment strategy** sponsored by Indian Council of Agricultural Research and organized by Directorate of Rice Research, Hyderabad from September 7-27, 2011.
- Attended Training programme on "Data Analysis Using SAS" from November 24-30, 2010 at National Academy of Agricultural Research and Management (NAARM) Hyderabad.

e) Contribution to the scientific advancement:

Contribution of Dr. Satendra is well appreciated in the field of genomics of RNA interference (RNAi) suppressor protein genes of *Papaya ringspot virus (*PRSV*), Cucumber mosaic virus* and *Papaya leafcurl virus*. First report of complete genome sequence of two different pathotypes of PRSV-India, its recombination and phylogenetic survey in understanding PRSV evolutionary linkages is another significant achievement. He studied the molecular diversity of *Rice tungro bacilliform virus* (RTBV) and *Rice tungro spherical virus* (RTSV) isolates present in India, and developed diagnostic tools for rapid identification of viruses from diseased samples and insect vectors. He has developed RNAi vector and transformed it into rice to develop RTSV resistance. The genome sequencing of South Indian isolate of RTSV done by Dr. Mangrauthia has widened the understanding of biology of virus. His study of genome wide identification and expression analysis of microRNAs in rice in response to heat stress will add to understanding of molecular biology of high temperature stress in rice. His work on identifying DNA demethylation factors involved in epigenetic regulation and chromatin remodeling is new discovery of plant biology.

2. Future Planning of research:

Utilizing molecular tools to understand the stress perception and response of rice.

3. Publications:

- Sailaja B, Voleti SR, Subrahmanyam D, Sarla N, Vishnu Prasanth V, Bhadana VP, **Mangrauthia SK** (2014). Prediction and expression analysis of microRNAs associated with heat stress in Oryza sativa. *Rice Science*, DOI: 10.1016/S1672-6308(13)60164-X.
- Xingang Wang,Cheng-Guo Duan,Kai Tang, Bangshing Wang, Huiming Zhang, Mingguang Lei, Kun Lu, **Satendra K. Mangrauthia**, Pengcheng Wang, Guohui Zhu, Yang Zhao, and Jian-Kang Zhu (2013). RNA-binding protein regulates plant DNA methylation by controlling mRNA processing at the intronic heterochromatin-containing gene IBM1. *Proc Natl Acad Sci USA*, doi: 10.1073/pnas.1315399110.
- Sailaja B, Anjum N, Patil YK, Agarwal S, Malathi P, Krishnaveni D, Balachandran SM, Viraktamath BC, and **Mangrauthia SK** (2013). The complete genome sequence of a south Indian isolate of Rice tungro spherical virus reveals evidence of genetic recombination between distinct isolates. *Virus Genes* **47**: 515-523.
- P. Malathi and **Mangrauthia SK** (2013). Deciphering the multiplication behaviour of Rice tungro bacilliform virus by absolute quantitation through real-time PCR. *Archives of Phytopathology and Plant Protection* (Taylor & Francis) **46**: 2366-2375.
- Surekha Agarwal and **Satendra K. Mangrauthia** (2013)**.** Advances, challenges and prospects in Small RNA Mediated approaches of Virus Resistance in Plants. *Journal of Genomes and Exomes* (Libertas Academica), **2**: 43–62.
- **Mangrauthia S.K.**, Malathi P, Agarwal S, Ramkukmar G, Krishnaveni D, Neeraja CN, Sheshu Madhav M, Ladhalakshmi D, Balachandran SM, Viraktamath BC (2012). Genetic

variation of coat protein gene among the isolates of Rice tungro spherical virus from tungro-endemic states of the India. *Virus Genes* **44**: 482-487.

- P. Manimaran, G. Ravi Kumar, M. Raghurami Reddy, S. Jain, T. Bhaskar Rao, **S.K. Mangrauthia**, R.M. Sundaram, S. Ravichandran, S.M. Balachandran (2013). Infection of Early and Young Callus Tissues of Indica Rice BPT 5204 Enhances Regeneration and Transformation Efficiency. *Rice Science* **20**:415-426.
- **Mangrauthia S.K.**, Malathi P, Agarwal S, Sailaja B, Singh J, Ramkumar G, Krishnaveni D, Balachandran SM (2012). The Molecular Diversity and Evolution of Rice tungro bacilliform virus from Indian perspective. *Virus Genes* **45:**126–138.
- **Mangrauthia, S.K.**, Singh, P. and Praveen, S. (2010). Genomics of helper component proteinase reveals effective strategy for *Papaya ringspot virus* resistance. *Molecular Biotechnology*. **44**:22-29.
- **Mangrauthia, S.K.,** B. Parameswari, S. Praveen and R.K. Jain (2009). Comparative genomics of Papaya ringspot virus pathotypes P and W from India. *Archives of Virology*. **154**: 727-730.
- **Mangrauthia, S.K.,** B.Parameswari, R.K.Jain and Shelly Praveen (2008). Role of genetic recombination in molecular architecture of Papaya ringspot virus. *Biochemical Genetics*. **46**:835-846.
- **Mangrauthia, S.K.,** Viplendra P. Singh Shakya, R.K.Jain and Shelly Praveen (2009). Ambient temperature perception in papaya for Papaya ringspot virus interaction. *Virus Genes*. **38**:429-434.
- **Mangrauthia,S.K** ., Choudhary N.L., and Tyagi A (2008). Cloning and characterization of drought responsive partial gene sequence(s) from Oryza sativa L. subsp. Indica. *Indian journal of Biochemistry and Biophysics*. **45**: 387-392.
- **Mangrauthia, S.K**., Malathi, P., Balachandran, S.M., Reddy, C.S. and Viraktamath, B.C. (2010). Global analysis of Rice tungro spherical virus coat proteins reveals new roles in evolutionary consequences. *Journal of Plant Biochemistry and Biotechnology*. **19**:263-266.
- **Mangrauthia, S.K**., Jain, R.K and Praveen, S (2008). Sequence Motifs Comparisons Establish A Functional Portrait of A Multifunctional Protein HC-Pro from *Papaya Ring Spot Potyvirus*. *Journal of Plant Biochemistry and Biotechnology*. **17**: 201-204.
- **Mangrauthia,S.K.,** Malathi, P, Krishnaveni, D., Reddy, CS, Viraktamath, B.C., Balachandran, S.M. Neeraja, C.N . Biswal, AK. (2010). Rapid detection of Rice tungro virus by RT-PCR and Dot Blot Hybridization. *Journal of Mycology and Plant Pathology*. 40:445-449.
- Parameswari, B., **Mangrauthia, S.K**., Praveen, S. and Jain, R.K (2007). Complete genome sequence of an isolate of *Papaya ringspot virus* from India. *Archives of Virology*.**152** (4):843-845.
- Praveen, S., **Mangrauthia, S.K**., Singh, P. and Mishra, A. K (2008). Behavior of RNAisuppressor protein 2b of *Cucumber mosaic virus* in planta in presence and absence of virus. *Virus Genes*. **37**: 96-102.
- Praveen, S. and **Mangrauthia, S.K** (2006). Viral suppressors: small RNA regulators. *Indian journal of virology*. 17**(2)**: 67-77.
- P Malathi , Umarani Brahma, Jagrati Singh, D Krishnaveni, S M Balachandran, C N Neeraja, G S Laha, B C Viraktamath and **Mangrauthia S.K** (2012). PCR Based Diagnosis of Rice Tungro Bacilliform and Spherical Virus from Infected Plants and Insect Vectors. *Indian Journal of Plant Protection*, 39(4):294-298.

- **Mangrauthia, S.K**., Praveen,S., and Viraktamath, B. C. (2011). Expanding roles of viral RNAi suppressors: Present status and future prospects. *Journal of Biochip Tissue Chip* 2011/S1: 2153-0777-10000S1-2/Special Issue 2011doi: 10.4172/2153-0777.10000S1 (International Journal, Omics Publication).
- Ladhalakshmi D., Laha G. S., Singh R,. Karthikeyan A., **Mangrauthia S. K**., Sundaram R. M., Thukkaiyannan P. and Viraktamath B. C. (2012). Isolation and characterization of Ustilaginoidea virens and survey of false smut disease of rice in India. *Phytoparasitica*, **40**: 171-176.
- Manimaran P., Ramkumar G., Mohan M., **Mangrauthia S. K**., Padmakumari A.P., Muthuraman P., Bentur J.S., Viraktamath B.C and Balachandran S. M. (2011). Bt rice evaluation and deployment strategies. *GM Crops* **2**: 135-137.
- Natarajkumar P., Sujatha K., Laha G.S., Viraktamath B.C., Mishra B., Rao K.Srinivasa, Hari Y., Hajira S., Pranathi K., Balachiranjeevi Ch., Yugander A., Sama V.S.A.K., Balachandran S.M., Madhav M. Sheshu, Ram T., Rani N.Shobha, Neeraja C., **Mangrauthia S.K**., Reddy G. Ashok, Sundaram R. M (2011). Identification, molecular mapping and marker-assisted introgression of novel bacterial blight resistance genes from wild relatives of Oryza. *The Indian Journal of Genetics and Plant Breeding*. **71**:1-8.
- V Vishnu Prasanth, D V N Chakravarthi, T Vishnu Kiran, Y Venkateswara Rao, Madhusmita Panigrahy, **Mangrauthia S. K.**, B C Viraktamath, D Subrahmanyam, S R Voleti, N Sarla (2012). Evaluation of rice germplasm and introgression lines for heat tolerance, *Journal of Biological Research*. **3**:5060-5068.

4. Other relevant activities of Scientist:

- Guiding M.Sc and PhD students of different universities.
- Investigator of DBT/DST funded projects
- Member in various institutional committees