Profile of the Scientist

Name	**Dr. Sayanti Guha Majumdar** 
Designation	**Scientist (Bioinformatics)**
Division/Section	**Agricultural Knowledge Management Unit**
Research Area	1. **Genomic Selection** 2. **Epigenetics** 3. **Transcriptomics** 4. **Metagenomics**

Personal Information

a) Contact Details:

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b) Joining date in:

i. ICAR: 11-04-2023

ii. ICAR- IISR: 21-07-2023

Educational Career

Degree	University/Institute	Year of Completion
B.Sc. (Ag)	Uttar Banga Krishi Viswavidyalaya, West Bengal	2012
M.Sc. (Bioinformatics)	ICAR-Indian Agricultural Research Institute, New Delhi	2014
Ph.D. (Bioinformatics)	ICAR-Indian Agricultural Research Institute, New Delhi	2019

Thesis Title

M.Sc.	Development of epigenetic database in livestock species
Ph.D.	Development of integrated model for Genomic Selection

Publications

Sayanti Guha Majumdar, Anil Rai, and Dwijesh C. Mishra. (2023). Estimation of Error Variance in Genomic Selection for Ultrahigh Dimensional Data. *Agriculture*, 13(4), 826. https://doi.org/10.3390/agriculture13040826

Dwijesh Chandra Mishra, **Sayanti Guha Majumdar**, Anuj Kumar, Jyotika Bhati, K. K. Chaturvedi, Ranjeet Ranjan Kumar, Suneha Goswami, Anil Rai and Neeraj Budhlakoti. (2023). Regulatory Networks of lncRNAs, miRNAs, and mRNAs in Response to Heat Stress in Wheat (Triticum Aestivum L.): An Integrated Analysis, *International Journal of Genomics*, vol. 2023, Article ID 1774764. https://doi.org/10.1155/2023/1774764

Parinita Das, Monendra Grover, Dwijesh Chandra Mishra**, Sayanti Guha Majumdar**, Sundeep Kumar, Krishna Kumar Chaturvedi, Subhash Chander Bhardwaj, Amit Kumar Singh and Anil Rai. (2023). Genome-wide identification and characterization of Puccinia striiformis responsive lncRNAs in Triticum aestivum. *Frontiers in Plant Science*, 14. doi: 10.3389/fpls.2023.1120898

Md Asif Khan, Anil Rai, DC Mishra, Neeraj Budhlakoti, Subhrajit Satpathy and **Sayanti Guha Majumdar**. (2023). Comparative study of multi-trait genomic and phenotypic selection indexes for selection of superior genotypes. *Indian Journal of Genetics and Plant Breeding*, *83*(01), 88–94. https://doi.org/10.31742/ISGPB.83.1.11

Soumya Sharma, Sunil Archak, **Sayanti Guha Majumdar**, Dwijesh Chandra Mishra and Anil Rai. (2022). Comparison of Supervised Machine Learning Techniques in Classifying Vitamin Biosynthesis Genes. *Journal of Indian Society of Agricultural Statistics*, 76(3), 185–190.

Sneha Murmu, Himanshushekhar Chaurasia, **Sayanti Guha Majumdar**, AR Rao, Anil Rai and Sunil Archak. (2022) Prediction of protein–protein interactions between anti-CRISPR and CRISPR-Cas using machine learning technique. *Journal of Plant Biochemistry and Biotechnology*. https://doi.org/10.1007/s13562-022-00813-1

Neeraj Budhlakoti, Dwijesh Chandra Mishra, **Sayanti Guha Majumdar**, Anuj Kumar, Sudhir Srivastava, Shesh N Rai and Anil Rai. (2022). Integrated Model for Genomic Prediction under Additive and Non-Additive Genetic Architecture. *Frontiers in Plant Science*, 13:1027558. doi: 10.3389/fpls.2022.1027558

Dwijesh Chandra Mishra, Neeraj Budhlakoti, **Sayanti Guha Majumdar** and Anil Rai. (2021). Innovations in Genomic Selection: Statistical Perspective. Special Proceedings of the 23rd Annual Conference of SSCA 2021, pp 101-111.

Sayanti Guha Majumdar, Anil Rai, and Dwijesh C. Mishra. (2020). Comparative Study of Statistical Models for Genomic Prediction. *Journal of Indian Society of Agricultural Statistics*, 74(2): 91-98.

Sayanti Guha Majumdar, Dwijesh C. Mishra and Anil Rai. (2020). Effect of genotype imputation on integrated model for genomic selection. *Journal of Crop and Weed*, 16(1): 133-137. 10.22271/09746315.2020.v16.i1.1283

Sayanti Guha Majumdar, Anil Rai, and Dwijesh C. Mishra. (2020). Integrated Framework for Selection of Additive and Nonadditive Genetic Markers for Genomic Selection. *Journal of Computational Biology*, 27(6): 845-855. https://doi.org/10.1089/cmb.2019.0223

Sayanti Guha Majumdar, Anil Rai, and Dwijesh C. Mishra. (2019). Identification of genetic markers for increasing agricultural productivity: An empirical study. *Indian Journal of Agricultural Sciences*, 89 (10): 1708–1713.

Books or Chapter Published

- Dwijesh Chandra Mishra, **Sayanti Guha Majumdar**, Neeraj Budhlakoti, Anuj Kumar & Krishna Kumar Chaturvedi. (2022). OMICS Tools and Techniques for Study of Defense Mechanism in Plants. In: Kumar, R.R., Praveen, S., Rai, G.K. (eds) Thermotolerance in Crop Plants. Springer, Singapore. https://doi.org/10.1007/978-981-19-3800-9_11

- Neeraj Budhlakoti, **Sayanti Guha Majumdar**, Amarkant Kushwaha, Chirag Maheshwari, Muzaffar Hasan, D. C. Mishra, Anuj Kumar, Jyotika Bhati and Anil Rai. (2022). Tools and Techniques for Genomic Imprinting. In: Wani, S.H., Kumar, A. (eds) Genomics of Cereal Crops. Springer Protocols Handbooks. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-2533-0_18

- Jyotika Bhati, Himanshu Avashthi, Anuj Kumar, **Sayanti Guha Majumdar**, Neeraj Budhlakoti and Dwijesh Chandra Mishra. (2022). Protocol for Identification and Annotation of Differentially Expressed Genes Using Reference-Based Transcriptomic Approach. In: Wani, S.H., Kumar, A. (eds) Genomics of Cereal Crops. Springer Protocols Handbooks. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-2533-0_7

Software Developed

a) R Package

Name of R Package	Reference
GSelection	**Sayanti Guha Majumdar**, Anil Rai and Dwijesh Chandra Mishra (2019). GSelection: Genomic Selection. R package version 0.1.0. https://CRAN.R-project.org/package=GSelection
varEst	**Sayanti Guha Majumdar**, Anil Rai and Dwijesh Chandra Mishra (2019). varEst: Variance Estimation. R package version 0.1.0. https://CRAN.R-project.org/package=varEst
metaCluster	Dipro Sinha, **Sayanti Guha Majumdar**, Anu Sharma and Dwijesh Chandra Mishra (2021). metaCluster: Metagenomic Clustering. R package version 0.1.0. https://CRAN.R-project.org/package=metaCluster
FWRGB	Tanuj Misra, Alka Arora, Sudeep Marwaha, Shailendra Kumar, Mrinmoy Ray, Sudhir Kumar and **Sayanti Guha Majumdar** (2021). FWRGB: Fresh Weight Determination from Visual Image of the Plant. R package version 0.1.0. https://CRAN.R-project.org/package=FWRGB

b) Database Developed:

Livestock Epigenetic Database
URL: http://bioinformatics.iasri.res.in/edil/