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Research Group & Mentor: Plant developmental Biology group, Dr. Anandita Singh

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Research Work/Project(s): Deciphering the molecular mechanism governing A₂-derived cytoplasmic male sterility in pigeonpea (*Cajanus cajan* L. Millsp.)

Fellowship Holder/Designation: DST- INSPIRE

Additional Information:

Publications:

(1) **Rishu Jain**, Harsha Srivastava, Kuldeep Kumar, Sandhya Sharma, Anandita Singh, and Kishor Gaikwad. "Understanding the role of P-type ATPases in regulating pollen fertility and development in pigeonpea." *Molecular Genetics and Genomics* 299, no. 1 (2024): 68. <https://doi.org/10.1007/s00438-024-02155-0>

(2) Arpita, Kumari, Sandhya Sharma, Harsha Srivastava, Kuldeep Kumar, Muntazir Mushtaq, Palak Gupta, **Rishu Jain**, and Kishor Gaikwad. "Genome-wide survey, molecular evolution and expression analysis of Auxin Response Factor (*ARF*) gene family indicating their key role in seed number per pod in pigeonpea (*C. cajan* L. Millsp.)." *International Journal of Biological Macromolecules* 253 (2023): 126833. <https://doi.org/10.1016/j.ijbiomac.2023.126833>

(3) Era Vaidya Malhotra, **Rishu Jain**, Saurabh Tyagi, K. Venkat Raman, Sangita Bansal, and Debasis Pattanayak. "Identification of dynamic microRNA associated with systemic defence against *Helicoverpa armigera* infestation in *Cajanus scarabaeoides*." *Pest Management Science* 78, no. 7 (2022): 3144-3154. <https://doi.org/10.1002/ps.6941>

(4) Ramesh Kumar, Chavlesh Kumar, **Rishu Jain**, Avantika Maurya, Ashok Kumar, Abha Kumari, and Rakesh Singh. "Molecular cloning and In-silico characterization of NAC86 of Kalmegh (*Andrographis paniculata*)." *Indian Journal of Horticulture* 79, no. 1 (2022): 9-14. <https://journal.iah.org.in/index.php/ijh/article/view/746>

(5) Era Vaidya Malhotra, **Rishu Jain**, Saurabh Tyagi, K. Venkat Raman, Sangita Bansal, Raghavendra Aminedi, and Debasis Pattanayak. "Comparative analysis of herbivory responsive miRNAs to delineate pod borer (*Helicoverpa armigera*) resistance mechanisms in *Cajanus cajan* and its wild relative *Cajanus scarabaeoides*." *Plant Cell Reports* 41, no. 4 (2022): 1147-1161. <https://doi.org/10.1007/s00299-022-02842-5>

(6) Era Vaidya Malhotra, **Rishu Jain**, Sangita Bansal, Suresh Chand Mali, Neelam Sharma, and Anuradha Agrawal. "Development of a new set of genic SSR markers in the genus *Gentiana*: in silico mining, characterization and validation." *3 Biotech* 11 (2021): 1-14. <https://doi.org/10.1007/s13205-021-02969-4>

Brief Biography: Rishu completed her Master's degree in Biotechnology from Guru Nanak Dev University, Amritsar, and is a distinguished recipient of the prestigious DST-INSPIRE fellowship. Her research focuses on the molecular mechanisms underlying cytoplasmic male sterility (CMS) in *Pigeonpea*. Her expertise spans a wide array of molecular techniques, including DNA and RNA isolation, denaturing gel electrophoresis, SDS-PAGE, qRT-PCR, and KASP assays. She possesses technical expertise in integrating experimental and informatics approaches for gene family characterization. Rishu is also well-versed in advanced bioinformatics, particularly in designing gene expression studies, and interpreting NGS-RNA Seq datasets with specialized analytical softwares. Rishu is a keen observer and a fast learner, continually enhancing her expertise and adapting quickly to new methodologies.