

Curriculum Vitae

RAJU RATAN YADAV

Lab No.:111D, Molecular cytogenetics lab, Department of Molecular Biology and Genetic Engineering, G. B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand 263145, India.

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Career Profile:

My research credentials include Plant Molecular Breeding, with experience in growth chamber, greenhouse, and field screening of genotypic and phenotypic traits. This includes experiments in mapping population development, mutant selection, genotyping, and phenotyping, with a focus on making crosses in Soybean and wheat for improvement of nutritional Quality (Biofortification). My expertise also extends to Molecular Biology, Cell Biology, and Genetics, along with Bioinformatics.

I am a creative and self-motivated individual with the ability to easily integrate into a multicultural environment. I possess effective communication skills, leadership ability, and a proven track record of delivering high-quality research results on time by using critical thinking and innovative approaches.

Present Status:

- Ph.D. in Molecular Biology and Biotechnology on the topic “**QTL Mapping for Micronutrients, Analysis of Proteins and Expression Analysis of Micronutrient Transporter Genes in Bread Wheat (*Triticum aestivum* L.)**” under the supervision of Dr. Sundip Kumar, Department of Molecular Biology & Genetic Engineering, G. B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, on 20th July 2024.

National Eligibility Test (NET):

- Qualified NET in (2019) Conducted by UGC-CSIR-Life Science with Rank 51.
- Qualified NET in (2015) Conducted by UGC-CSIR-Life Science with Rank 63.
- Qualified NET in (2015) Conducted by ASRB, ICAR, New Delhi.
- Qualified NET in (2017) Conducted by ASRB, ICAR, New Delhi.
- Qualified GATE (2016) Conducted by Indian institute of science Bangalore.

Educational Qualification:

- **Pre-Ph.D. Coursework** (Molecular Biology, Genetics & Plant Breeding) in 2020 - 25 with 78.8% from G. B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand.
- **M.Sc. Biotechnology** (2011-2013) from the Institute of Bioscience and Biotechnology, C.S.J.M University, Kanpur, Uttar Pradesh, India.
- **B.Sc. Biotechnology** (2008-2011) from V.B.S.P. University, Jaunpur, Uttar Pradesh, India.
- **Intermediate** (2007-08) from Sarvodyaya Vidyapith Inter College, Meeranaj, Jaunpur, Uttar Pradesh, India.
- **High-School** (2006) from Sarvodyaya Vidyapith Inter College, Meeranaj, Jaunpur, Uttar Pradesh, India.

Research Experience:

- Worked as a **Senior Research Fellow (SRF)** in a research project entitled "*Marker assisted elimination of off-flavor generating lipoxygenase-2 Gene from kunitz trypsin inhibitor free soybean genotype*" at the Pulse Research Laboratory, Division of Genetics, Indian Agricultural Research Institute (IARI), PUSA New Delhi from 2015 to 2020.

Experience gained during working in the soybean project -

- Development and maintenance of mapping populations (BC₂F₂, backcross) for soybean flavour improvement.
- Molecular screening of parental lines and segregating populations using gene-specific molecular markers for the lipoxygenase-2 gene.
- Conducting Marker Assisted Backcrossing (MABB) to eliminate the off-flavor generating gene from elite soybean genotypes.
- Phenotyping of soybean germplasm and advanced breeding lines for off-flavor and other key agronomic traits.
- Trained with DNA/RNA isolation from plant tissues, PCR amplification, gel electrophoresis (Agarose and PAGE), and data scoring for marker analysis.
- Planning and execution of field and greenhouse-based experiments, including crossing, and evaluation of selected plant materials.
- Selection of improved lines from segregating generations based on molecular data and phenotypic performance.

Industrial Research Trainee. DBT-Biotech Industrial Training Programme (2014-15):

- Helix Biogenesis Pvt. Ltd, Noida, Uttar Pradesh, India.
Project: "In-vitro Regeneration and Genetic Fidelity Analysis of Calliandra species using RAPD Markers"

Fellowship:

- **Biotech Industrial training fellowship:** Department of Biotechnology, Ministry of Science and Technology India govt. (2014-15).
- **Senior Research Fellowship:** DBT funded Project., Division of Genetics, Indian Agriculture Research Institute, New Delhi, India. (2015-2020).
- **Junior Research Fellowship:** CSIR UGC - NET June, 2020-2022. National Fellowship for OBC Students (NF-OBC).
- **Senior Research Fellowship:** CSIR UGC - NET June, 2022-2025, National Fellowship for OBC Students (NF-OBC).

Plant Variety and Germplasm Registration:

- Germplasm SEL-EC1023 of Soybean (INGR24033) developed by Akshay Talukdar, Manisha Saini, Subhash Chandra, **RR Yadav**, SK Lal, RA Rajendran and BP Mallikarjuna ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi has been registered by Plant Germplasm Registration Committee of Indian Council of Agricultural Research on May 22, 2024.

Teaching/Practical Experience:

- As a Ph.D. scholar, I was involved in taking M.Sc. practical classes at the Dept. of Molecular Biology and Genetic Engineering G.B. Pant University, Pantnagar during the academic session 2022-23 to 2023-2024. I conducted the practical classes of the following courses - (i) Cytology and Cytogenetics, (ii) Molecular Genetics.
- In the above courses, DNA/RNA extraction, purification, quantification, PCR setup and analysis, fractionation of amplified products in Agarose & PAGE, slide preparation of stem and root tips of crops for cytology, SSR marker design using primer 3.0 software and other bioinformatics tools were mainly involved.

Research Publications:

1. **Yadav, R.R.**, Nayak, J.K., Tyagi, S., Joshi, P., Pal, N., Shah, I., Anvesha, S., Verma, S.K. and Kumar, S., 2025. QTL discovery for grain iron and zinc content in wheat: Pathway to biofortification. *Indian journal of genetics and plant breeding*, 85(1), p.3.
2. Singh, A., Rawat, T., Govardhan, O., Sharma, C., Lohani, P., Kumar, A., Hassan, S., Singh, H., Kumar, S., **Yadav, R.R.** and Gautam, S., 2025. Impact of Green Synthesized Iron Oxide Nanoparticles from Rhododendron arboretum on Wheat (*Triticum aestivum*): Evaluation of Morpho-physiological, Biochemical and Yield Attributes. *Biocatalysis and Agricultural Biotechnology*, p.103640.
3. Saini, M., **Yadav, R.R.**, Kumar, R., Chandra, S., KrishanKumar, N., Rathod, M., Taku, M., Yadav, M., Basu, S., Rajendran, R.A., Lal, S.K. and Talukdar, A., 2025. Mapping of quantitative trait loci and mining of candidate genes for seed viability in soybean [*Glycine max* (L.) Merr.]. *Frontiers in Plant Science*, DOI: 10.3389/fpls.2024.1372037.
4. Joshi, P., **Yadav, R. R.**, Nayak, J. K., Tyagi, S., Roy, S. S., Pant, A., & Kumar, S. (2025). Assessment of Calcium Accumulation in the Wheat Aleurone Layer Reveals

Phenotypic Variation across Two Distinct Environmental Conditions. *Journal of Advances in Biology & Biotechnology*, 28(8), 1533-1538.

5. Kumar, S., **Yadav, R. R.**, Nayak, J. K., Bisht, H., Singh, A., Shah, I., ... & Gupta, R. (2025). Genomic-assisted Pyramiding of Semi-dwarfism and Micronutrient-enrichment Traits for Developing Climate-smart Wheat (*Triticum aestivum* L.). *Journal of Advances in Biology & Biotechnology*, 28(9), 183-193.
6. Shah, I., Singh, D., Singh, R.K., Singh, S., **Yadav, R.R.**, Joshi, U., Kamboj, A.D., Kuldeep, Hitaishi, K. and Rawat, N., 2025. Combining ability analysis for fruit yield and related traits in Brinjal (*Solanum melongena* L.) using Line \times Tester mating design. *Plant Science Today*, DOI: 10.14719/pst.5176.
7. Kumar, N.K., Rathod, M., Taku, M., **Yadav, R.R.**, Mujassim, N.E., Saini, M., Kumar, R., Reshma, O., Yadav, M., Mallikarjuna, B.P., Rajendran, R.A., Lal, S.K. and Talukdar, A. Deciphering genetics and mapping of early flowering and maturity in Indian soybean [*Glycine max* (L.) Merr.]. *Indian journal of genetics and plant breeding*.
8. Chandra, S., Taak, Y., Rathod, D.R., **Yadav, R.R.**, Poonia, S., Sreenivasa, V. and Talukdar, A., 2020. Genetics and mapping of seed coat impermeability in soybean using inter-specific populations. *Physiology and Molecular Biology of Plants*, DOI: 10.1007/s12298-020-00906-y.
9. Chandra, S., Talukdar, A., Saini, M., Sipani, N.S., Taak, Y. and **Yadav, R.R.**, 2021. Seed longevity studies in wild type, cultivated and inter specific recombinant inbred lines (RILs) of soybean [*Glycine max* (L.) Merr.]. *Genetic Resources and Crop Evolution*, DOI: 10.1007/s10722-021-01240-2.
10. Yashpal, Rathod, D.R., Chandra, S., Kumar, A., **Yadav, R.R.** and Talukdar, A., 2019. Deploying inter-specific recombinant inbred lines to map QTLs for yield-related traits in soybean. *Indian journal of genetics and plant breeding*, 79(4), p.7.
11. Kumar, A., Chandra, S., Talukdar, A., **Yadav, R.R.**, Saini, M., Poonia, S. and Lal, S.K., 2019. Genetic studies on seed coat permeability and viability in RILs derived from an inter-specific cross of soybean [*Glycine max*]. *Indian journal of genetics and plant breeding*, 79(1), p.7.
12. Kumar, A., Talukdar, A., **Yadav, R.R.**, Poonia, S., Ranjan, R. and Lal, S.K., 2019. Identification of QTLs for seed viability in soybean [*Glycine max* (L.) Merrill]. *Indian journal of genetics and plant breeding*, 79(4), p.9.
13. Sreenivasa, V., Lal, S.K., Babu, P.K., Swamy, H.K.M., **Yadav, R.R.**, Talukdar, A. and Rathod, D.R., 2020. Inheritance and mapping of drought tolerance in soybean at seedling stage using bulked segregant analysis. *Plant Genetic Resources: Characterization and Utilization*, DOI: 10.1017/S1479262120000052.
14. Borah, J., Singode, A., Talukdar, A., **Yadav, R.R.** and Sarma, R.N., 2020. Genome-wide association studies (GWAS) reveal candidate genes for plant height and number of primary branches in soybean [*Glycine max* (L.) Merrill]. *Indian journal of genetics and plant breeding*, 78(4), p.8.
15. Chandra, S., **Yadav, R.R.**, Poonia, S., Yashpal, Rathod, D.R., Kumar, A., Lal, S.K. and Talukdar, A., 2017. Seed Coat Permeability Studies in Wild and Cultivated Species of Soybean. *International Journal of Current Microbiology and Applied Sciences*, 10, p.279.
16. Saini, M., **Yadav, R.R.**, Chandra, S., Kumar, A., Kumar, R., Sheoran, S., Rathod, N.K.K., Yadav, M., Taku, M., Basu, S., Rajendran, A., Lal, S.K. and Talukdar, A., 2023. Accelerated aging test reveals quantitative nature of inheritance of seed viability in soybean [*Glycine max* (L.) Merr.]. *Indian journal of genetics and plant breeding*, 83(1), p.9.

17. Shah, I., Mishra, A.C., Singh, R.K., Rawat, N., Kuriyal, H., Kumar, V., **Yadav, R.R.** and Kuldeep, 2023. Correlational Study on the Relationship between Plant Growth, Seed Yield and Quality Related Traits in Palak under Bundelkhand Region. *Biological Forum – An International Journal*, 15(9), pp.665-669.
18. Nayak, J.K., **Yadav, R.R.**, Tyagi, S., Joshi, P. and Kumar, S., 2023. Estimation of Genetic variability and Frequency Distribution of EMS Mutant derived F2 Population of Wheat (*Triticum aestivum* L.) for Varied Agronomic Traits. *Biological Forum – An International Journal*, 15(10), pp.1498-1503.
19. Tyagi, S., Sharma, H., Nayak, J.K., **Yadav, R.R.**, Joshi, P. and Kumar, S., 2023. In silico analysis of C2 domain gene in triticales family (*Triticum aestivum*, *Hordeum vulgare*, *Secale cereale*). *The Pharma Innovation Journal*, 12(7), pp.996-1001.
20. Kumar, N., Nayak, J.K., Pall, N., Tyagi, S., **Yadav, R.R.**, Joshi, P., Malik, R., Dhaka, N.S., Singh, V.K. and Kumar, S., 2024. Development and characterization of an EMS-mutagenized population of wheat (*Triticum aestivum* L.) for agronomic trait variation and increased micronutrient s content. *Cereal Research Communications*, DOI: 10.1007/s42976-024-00525-3.
21. Rathod, D.R., Yashpal, Chandra, S., **Yadav, R.R.**, Poonia, S., Shreenivasa, V., Deepika, Lal, S.K. and Talukdar, A., 2017. Creation Of Genetic Variability Through Wide Hybridization and Its Assessment Using Ssr Markers In Soybean [*Glycine Max* (L.) Merrill.]. *Journal Of Soils and Crops*, 27(1), Pp.7-17.
22. Rathod, D.R., Yashpal, Chandra, S., **Yadav, R.R.**, Poonia, S., Shreenivasa, V., Deepika, Lal, S.K. and Talukdar, A., 2018. Molecular Characterization of the Recombinant Inbred Line Population Derived from a soja and max Soybean Cross. *International Journal of Current Microbiology and Applied Sciences*, Special Issue-6, pp.1874-1880. *Microbiology and Applied Sciences**, Special Issue-6, pp.1874-1880.

Review paper

- Rahul Kumar, Nitish Ranjan Prakash, **Raju Ratan Yadav**, Krishna Kumar Rathore and Manisha Saini., Exploration of miRNA diversity for nutrient use efficiency
- Rahul Kumar, J Jorben, **Raju Ratan Yadav** and Manoranjan Senapati., Genomics and its application in crop improvement

Book chapters

- Neeraj Pal, Jajati Keshari Nayak, **Raju Ratan Yadav**, Santvana Tyagi, Pooja Joshi, Sundip Kumar., Potential Applications of CRISPR/Cas9 Mediated Genome-Editing Approaches in Improvements of Cereals.
- Charupriya Chauhan¹, AnamikaThakur², VinaySharma^{3,4}, **Raju RatanYadav**⁵, KarthickBabuSivakumar⁶, RakeshKumar⁷, SanjayKumarVerma⁸, RavindraKumarPanwar⁸, SalilKumarTewari⁸ and AshishGautam Proteomics as a tool for analyzing plant responses to abiotic and biotic stresses.
- Santvana Tyagi, **Raju Ratan Yadav**, Jajati Keshari Nayak, Balwant Singh: Mushroom as Nutritional Supplements

Popular article

- Ashish Kumar*, Manisha Saini, **Raju Ratan Yadav** and Krishna Kumar Rathod ICAR-Indian Agricultural Research Institute, New Delhi-110012 *Corresponding author: ashishbhu26@gmail.com miRNA assisted crop improvement for abiotic stress tolerance.
- Ashish Kumar*, Manisha Saini, **Raju Ratan Yadav** and Krishna Kumar Rathod ICAR-Indian Agricultural Research Institute, New Delhi-110012 *Corresponding author: ashishbhu26@gmail.com., Role of double haploids in crop improvement.
- Akshay Talukdar¹, Manisha Saini², Ashish Kumar² and Raju Ratan Yadav³ ICAR-Indian Agricultural Research Institute, New Delhi., A rich source of protein for human nutrition

Magazine:

- Akshay Talukdar*, Rahul Kumar and **Raju Ratan Yadav** Division of Genetics, Indian Agricultural Research Institute, New Delhi 110012 E-mail: akshay.talukdar1@gmail.com., Soybean for Health and Nutritional.
- मानव स्वास्थ्य और पोषण के लिए सोयाबीन के फायदे., आशीष कुमार, भाग्या विजयन, मनीषा सैनी, **राजू रतन यादव** एवं अक्षय तालुकदार" आनुवंशिकी संभाग, भा.कृ.अनु.प. - भारतीय कृषि अनुसंधान संस्थान, नई दिल्ली-110012 तकनीकी मूल्यांकन एवं प्रौद्योगिकी प्रभाग, भा.कृ.अनु.प. - केंद्रीय मृदा लवणता अनुसंधान संस्थान, करनाल-13200

Conference/ Symposium:

- 1st National Genetics Congress (NGC) 2018 for Sustainable Food, Health and Nutrition on "Genetics Security" held at Dr. B. P. Pal Auditorium, ICAR-LARI, Pusa, New Delhi 110012 during December 14-16, 2018.
- National Symposium Remembering Gregor Johann Mendel on his Bicentennial Birth Year (From Scratch to Factor to Gene to Genome) May 5-6, 2022 Department of Genetics & Plant Breeding College of Agriculture G.B. Pant University of Agriculture & Technology, Pantnagar.
- National Conference on "Quality Seed Production: Backbone to the National Food Security" jointly organised by GBPUAT, Pantnagar & ICAR-IISS, Mau, U.P. during March 4-6, 2024.
- National Web Conference on "Sustaining Pulse Production for Self Sufficiency and Nutritional Security"(Pulse WebCon 2021) Feb. 09-11, 2021 Organized by Indian Society of Pulses Research & Development and ICAR - Indian Institute of Pulses Research, Kanpur in collaboration with Indian Council of Agricultural Research, New Delhi
- XIV National Seed Seminar on "Food Security Through Augmented Seed Supply Under Climate Uncertainties" held from January 28-30, 2017 at ICAR - Indian Agricultural Research Institute, New Delhi, India.
- Commemorating 150 Years of Mendel's Laws of Inheritance Symposium on Genomics-based Next Generation Crop Improvement Approaches' November 11-12, 2016, New Delhi, India.
- XVII Agricultural Science Congress (Feb 20-22, 2025): Frontier Sciences and Technologies in Agriculture for A Developed India

LIFE MEMBERSHIP:

- Indian Society of Genetics and Plant Breeding F-2, Ist Floor, A-Block, NASC Complex, D.P.S. Marg, New Delhi 110 012 05-03-2025 No. ISGPB/LM/ 2666.

CERTIFICATE OF AWARD

- New Delhi, India:** A poster titled "Seed viability in soybean: Inheritance and Molecular mapping" was awarded **Best Poster** at the Symposium "Tending Mendel's Garden for a Perpetual and Bountiful Harvest." The event commemorated the birth bicentenary of Gregor Johann Mendel and was held at the ICAR-Indian Agricultural Research Institute from July 19-21, 2022.
- Pantnagar, India** – A paper on disease resistance in common wheat garnered the First **Best Oral** Presentation award at the National Symposium titled "Remembering Gregor Johann Mendel on his Bicentennial Birth Year (From Scratch to Factor to Gene to Genome)." The symposium was hosted by the Department of Genetics & Plant Breeding at G.B. Pant University of Agriculture & Technology on May 5-6, 2022.

Personal Details:

Father's name: Sh. Ganga Prasad Yadav

Mother's name: Smt. Rajdei

Marital status: Married

Nationality: Indian

Language known: Hindi and English

References:

Dr. Sundip Kumar

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Declaration: I do hereby declare that the above particulars of information and facts stated are true, correct, and complete to the best of my knowledge and belief.

Place: Pantnagar (Uttarakhand)

Date: 03rd September 2025

(Raju Ratan Yadav)