

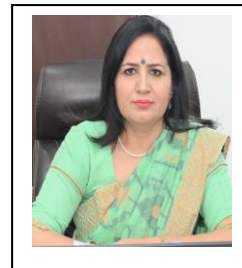
CURRICULUM VITAE

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Research Interests

Plant Genetic Engineering, Edible vaccine production in plants, Oil quality improvement in mustard (*Brassica juncea* L.) using CRISPR-Cas9, Management of insects by dsRNAs Delivery through RNAi, and genetic transformation of grain legumes (*Vigna species*).

Research Projects: 08

1. Project Title: “**Generating insect resistant cowpea plants**” funded by UGC (University Grants Commission), New Delhi, India (2013-2017). Status: Completed.
2. Project Title: “**Expression of decaprenyldiphosphate synthase gene in rice (*Oryza sativa* L.) for biosynthesis of coenzyme Q10**” funded by DST-SERB, Govt. of India. (2014-2017). Status: Completed.
3. Project Title: “**Biofortification of wheat (*Triticum aestivum*) with a potent antioxidant, CoQ10 for nutritional enhancement and abiotic stress tolerance**” funded by DST-EMR, Govt. of India. (2014-2017). Status: Completed.
4. Project Title: “**Development of yellow mosaic virus resistance in blackgram (*Vigna mungo* L. Hepper) and cowpea (*Vigna unguiculata*)**” funded by DBT, Govt. Of India (2011-2013). Status: Completed.
5. Project Title: “**Cloning of bovine rota virus genes for their expression in fodder plants to develop edible vaccine against bovine rota virus infections**” funded by R K Fund, M D University, Rohtak (2018-2019) Status: Completed.
6. Project Title: “**Nanomaterials-mediated topical delivery of RNAi cargo for sustained protection of food legumes against whitefly *Bemisia tabaci* and the virus they transmit**” funded by Haryana State Council for Science, Innovation and Technology (HSCSIT), Haryana. (2021-2026). Status: Completed.

7. Project Title: **“CRISPR-Cas9 targeted mutagenesis of FAE1 homoeologs in an allopolyploid oil seed Indian mustard (*Brassica juncea* L.) to improve oil qualities”** funded by DBT, Govt. Of India (2021-2026). Status: On-Going.
8. Project Title: **“Harnessing nanotechnology and RNAi for eco-friendly management of a devastating pest, legume pod borer (*Maruca vitrata*), and seed micronutrient enrichment in cowpea”** funded by **Haryana State Higher Education Council (HSHEC)**, Govt. of Haryana. (2026-2028). Status: On-Going

Awards and Scholarships

- Awarded University Incentives for fetching extramural R & D Project from Haryana State Council for Science, Innovation and Technology (HSCSIT), Haryana (2022).
- Awarded University Incentives for fetching extramural R & D Project from National Funding Agency (2022).
- Qualified National Eligibility Test (NET) for Lectureship conducted by CSIR, New Delhi, India (2005).
- Awarded University Research Scholarship (URS) by M. D. University, Rohtak, Haryana, India (2006).
- Awarded Senior Research Fellowship by CSIR (Council for Scientific & Industrial Research), New Delhi, India (2007).

Teaching Activities: Teaching M. Sc. and Ph. D. Students of Agriculture Biotechnology and Biotechnology

No. of students completed Ph. D.: 05

No. of students registered for Ph. D.: 05

No. of students supervised for P.G (Dissertation): 80+

Membership of Academic Societies

- Life Member of the Association of Microbiologists of India (AMI).
- Life Member of the Society for Plant Biochemistry and Biotechnology, India.
- Life Member of the Indian Science Congress Association

Selected Publications:

1. Kumari A, Suhag A, Jaiwal R, Jaiwal PK, & Chaudhary D (2026). Nanoclay-Mediated RNA Interference Targeting Insecticide Receptors Enhances Whitefly Mortality and Reduces Fecundity. *Molecular Biotechnology*, 68(6), 2766-2782.
2. Prajapati M, Phogat S, Jaiwal R, Jaiwal PK, Kumar L, Ahlawat YK, & Chaudhary D (2026). Structure-Guided Design and in Vivo Validation of a VP4-Derived Subunit Vaccine Candidate against Bovine Rotavirus, *Molecular Biotechnology*, 68(6), 2847-2865.
3. Kumari A, Suhag A, Jaiwal Y, Sainger M, Jaiwal R, Jaiwal PK & Chaudhary D (2026). RNAi-mediated silencing of Vitellogenin receptor and Ryanodine receptor, key genes,

by using carbon nanotubes for management of whitefly (*Bemisia tabaci*), *Physiology and Molecular Biology of Plants*, 32(3), 509-518.

4. Phogat S, Yadav J, Chaudhary D, Jaiwal R, & Jaiwal PK (2026). Synthesis of an adjuvant-free single polypeptide-based tuberculosis subunit vaccine that elicits in vivo immunogenicity in rats, *Molecular Biotechnology*, 68(3), 1194-1213.
5. Prajapati M, Phogat S, Jaiwal R, Jaiwal PK, Kumar L, Ahlawat Y K, & Chaudhary D (2025). Structure-Guided Design and in Vivo Validation of a VP4-Derived Subunit Vaccine Candidate against Bovine Rotavirus. *Molecular Biotechnology*, 68(6), 2847-2865.
6. Prajapati M, Malik P, Sinha A, Yadav H, Jaiwal YK, Ahlawat YK, Chaudhary D, Jaiwal R, Sharma N, Jaiwal PK, & Chattu, V. K (2024). Biotechnological Interventions for the Production of Subunit Vaccines Against Group A Rotavirus. *Cell Biochemistry and Function*, 42(8), e70031. <https://doi.org/10.1002/cbf.70031>.
7. Bhoria S, Saini P, Chaudhary D, Jaiwal R, & Jaiwal PK (2025). Engineering *Camelina sativa* Seeds as a Green Bioreactor for the Production of Affordable Human Pro-insulin that Demonstrates Anti-diabetic Efficacy in Rats. *Molecular Biotechnology*, 67:575–587
8. Yadav A, Suhag A, Jaiwal R, Chaudhary D, & Jaiwal PK (2024) Current progress and challenges of horizontal gene transfers in whiteflies (*Bemisia tabaci*) for their sustainable management. *Journal of Asia-Pacific Entomology*, 27; 102216.
9. Prajapati M, Chaudhary D, Jaiwal PK, Jaiwal R, & Ahlawat YK (2024). Optimizing *Agrobacterium*-mediated transformation efficiency in an Indian cultivar of *Trifolium alexandrinum* L. *Grass Research*, 4(1).
10. Pal G, Ingole KD, Yavvari PS, Verma P, Kumari A, Chauhan C, Chaudhary D, Srivastava A, Bajaj A & Vemanna RS (2024). Exogenous application of nanocarrier-mediated double-stranded RNA manipulates physiological traits and defence response against bacterial diseases. *Molecular Plant Pathology*, 25(1), e13417.
11. Malik P, Prajapati M, Chaudhary D, Prasad M, Jaiwal R, Jaiwal PK (2023). Production of Bovine Rotavirus VP6 Subunit Vaccine in a Transgenic Fodder Crop, Egyptian Clover (Berseem, *Trifolium alexandrinum*) that Elicits Immune Responses in Rabbit. *Mol Biotechnol*, 65(9):1432-1443.
12. Malik P, Prajapati M, Bhoria S, Jaiwal R, Jaiwal PK, Prasad M, & Chaudhary D (2023). Efficient in vitro direct plant regeneration from mature cotyledon explants of berseem (Egyptian clover, *Trifolium alexandrinum* L.), *Annals of Biology* 39 (2): 150-156.

13. Yadav J, Phogat S, Chaudhary D, Jaiwal R, Jaiwal PK (2023). Synthesis of plant-based, self-adjuvanted, dual antigen specific to Mycobacterium tuberculosis as a novel tuberculosis subunit vaccine that elicits immunogenicity in rabbit. *Biotechnol Lett*, 45(5-6):703-717.
14. Suhag A, Kumari A, Jaiwal A, Chaudhary D, Jaiwal P K, & Jaiwal R (2023). In silico Designing of Effective and Specific dsRNAs and siRNAs for Post-transcriptional Silencing of Whitefly, *Bemisia tabaci* Genes with Minimized Off-target Effects. *Annals of Biology* 39 (1): 58-65.
15. Bhorla S, Yadav J, Yadav H, Chaudhary D, Jaiwal R, & Jaiwal PK (2022) Current advances and future prospects in production of recombinant insulin and other proteins to treat diabetes mellitus. *Biotechnology Letters*, 44(5-6):643-669.
16. Suhag A, Kumari A, Jaiwal A, Chaudhary D, Jaiwal PK and Jaiwal R(2022) In silico Designing of Effective and Specific dsRNAs and siRNAs for Post-transcriptional Silencing of Whitefly *Bemisia tabaci* Genes with Minimized Off-target Effects. *Annals of Biology*, 39 (1): 58-65.
17. Kumar A, Sainger M, Jaiwal R, Chaudhary D, Jaiwal PK (2021) Tissue culture and selection-independent *Agrobacterium tumefaciens*-mediated transformation of a recalcitrant grain legume, cowpea (*Vigna unguiculata* L. Walp). *Mol Biotech*, 63(8), 710-718.
18. Chauhan C, Joshi G, Chaudhary D, Das S (2020) Sequence and functional analysis of cis-elements associated with MIR159 loci from *Brassica juncea* reveal functional diversification and complex transcriptional regulation. *Plant Growth Regulation* 90 (2), 279-306.
19. Kumar A, Jaiwal R, Sreevathsa R, Chaudhary D, Jaiwal PK (2020) Transgenic cowpea plants expressing *Bacillus thuringiensis* Cry2Aa insecticidal protein imparts resistance to *Maruca vitrata* legume pod borer. *Plant Cell Reports* 40:583-594.
20. Kumar A, Sainger M, Jaiwal R, Jaiwal PK and Chaudhary D (2020) An Efficient and Reproducible in vitro Multiple Shoots and Plant Regeneration System for a Recalcitrant Large-seeded Legume, Cowpea [*Vigna unguiculata* (L.) Walp]. *Annals of Agri Bio Research*, 37(1), 13-17.
21. Suhag A, Yadav H, Chaudhary D, Subramanian S, Jaiwal R, Jaiwal PK (2021) Biotechnological interventions for the sustainable management of a global pest, whitefly (*Bemisia tabaci*). *Insect Science* 28:1228-1252.
22. Aggarwal V, Prashant A, Malik J, Chaudhary D, Jaiwal PK, Pundir CS (2020) Influence

of chemically synthesized copper nanoparticles and cupric ions on oxalate oxidation system in germinating Sorghum grain. Indian J Exp Bio, 158: 58- 63.

23. Verma S, Yadav J, Chaudhary D, Jaiwal PK, Jaiwal R (2020) Insecticidal activities of some botanicals on the three species of *Callosobruchus*, Indian J. Agric. Res., 54: A-5376 (1-7). ISSN: 0976-058X.
24. Sindhu M, Kumar A, Yadav H, Chaudhary D, Jaiwal R and Jaiwal PK (2019) Current advances and future directions in genetic enhancement of a climate resilient food legume crop, cowpea (*Vigna unguiculata* L. Walp.). Plant Cell, Tissue and Organ Culture 139: 429-453.
25. Chetan C, Das S and Chaudhary D (2019) Functional analysis of MIR159b promoter in leaf and callus of transgenic *Brassica juncea* var. Varuna using promoter: GUS transcriptional reporter. Annals of Biology 35(2): 167-172.
26. Yadav J, Verma S, Chaudhary D, Jaiwal PK and Jaiwal Ranjana (2019) Tuberculosis: Current status, diagnosis, treatment and development of novel vaccines. Current Pharmaceutical Biotechnology, 20:446-458.
27. Chauhan C, Joshi G, Chaudhary D and Das S (2018) An improved method for rapid analysis of promoters using modified sonication-assisted transient assay. 3 Biotech, 8 198.
28. Verma S, Malik M, Kumar P, Chaudhary D, Jaiwal PK and Jaiwal Ranjana (2018) Susceptibility of four Indian grain legumes to three species of stored pest, bruchid (*Callosobruchus*) and effect of temperature on bruchids. Intl J Entomol Res 3: 5-10. ISSN: 2455-4758.
29. Sindhu M, Kumar A, Sainger M, Jaiwal R and Chaudhary D (2018) In vitro plant regeneration of Cowpea (*Vigna unguiculata* L. Walp) via direct shoot organogenesis from primary leaf explants. Annals of Biology, 34,249-254.
30. Malik K, Birla D, Yadav H, Sainger M, Chaudhary D, Jaiwal PK (2017) Evaluation of carbon sources, gelling agents, growth hormones and additives for efficient callus induction and plant regeneration in Indian wheat (*Triticum aestivum* L.) genotypes using mature embryos. J Crop Sci Biotechnology (Springer) 20: 185–192.
31. Sainger M, Jaiwal A, Sainger PA, Chaudhary D, Jaiwal R and Jaiwal PK (2017) Advances in genetic improvement of *Camelina sativa* for biofuel and industrial bioproducts. Renewable and Sustainable Energy Reviews, 68: 623-637.
32. Birla D, Malik K, Sainger M, Chaudhary D, Jaiwal Ranjana and Jaiwal PK (2016) Progress and challenges in improving nutritional quality of rice. Critical Rev. Food and

Nutri 57: 2455-2481.

33. Sainger M, Chaudhary D, Dahiya S, Jaiwal R, Jaiwal PK (2015) Development of an efficient in vitro plant regeneration system amenable to Agrobacterium-mediated transformation of a recalcitrant grain legume blackgram (*Vigna mungo* L. Hepper). *Physiol. Mol. Biol. Plant* 21: 505-517.
34. Parmar SS, Sainger M, Chaudhary D, Jaiwal PK (2012) Plant regeneration from mature embryo of commercial Indian bread wheat (*Triticum aestivum* L.) cultivar. *Physiol. Mol. Biol. Plants* 18: 177-183.
35. Chhikara S, Chaudhary D, Dhankher OP and Jaiwal PK (2012) Combined expression of barley class II chitinase and type I ribosome inactivating protein in transgenic Brassica juncea provide protection against fungus *Alternaria brassicae*. *Plant Cell Tiss. Org. Cult.* 108: 83-89.
36. Chikkara S, Chaudhary D, Sainger M. and Jaiwal P K (2012) A non-tissue culture approach for generating the transgenics of Indian mustard (*Brassica juncea*). *In Vitro Cellular & Developmental Biol. Plants* 48:7-14.
37. Chhabra, G., Chaudhary, D., Lal, M. and Jaiwal, P. K. (2008) TDZ induces the shoot organogenesis and somatic embryogenesis on cotyledonary node explants of lentil (*Lens culinaris* Medik.). *Physiology and Molecular Biology of Plants*, 14(4):347-53.
38. Chhabra G, Chaudhary D, Sainger M and Jaiwal P K (2011) Genetic transformation of an Indian isolate of *Lemna minor* by *Agrobacterium tumefaciens* and recovery of transgenic plants. *Physiol. Mol. Biol. Plants* 17: 129- 136.
39. Yadav M, Chaudhary D, Singh RP and Jaiwal P K (2010) Agrobacterium mediated genetic transformation of (*Sesamum indicum*) *Plant Cell Tiss. Org. Cult.* 103: 377-386.
40. Chaudhary D, Sainger M, Sahoo L and Jaiwal P K (2010) Genetic transformation of *Vigna* species: Current status and future prospective. In: 14th International Workshop on Genetic Resources and Comparative Genomics of soybean and *Vigna*. National Institute for Agrobiological Sciences (NIAS), Tsukuba, Japan, pp 1-8.
41. Chaudhary D, Madanpotra S, Jaiwal R, Sani R, Kumar PA and Jaiwal P K (2006) *Agrobacterium tumefaciens* –mediated high frequency genetic transformation of an Indian Cowpea (*Vigna unguiculata* L. Walp) cultivar and transmission of transgenes into progeny. *Plant Sci.* 172:692-700.
42. Sainger M, Sainger PA, Kumar, Yadav H, Sindhu M and Chaudhary D (2015) Optimization of parameters for Agrobacterium mediated genetic transformation of mungbean (*Vigna radiata* L. Wilczek). *Proceeding of National Seminar on Innovative*

Research in Life Sciences, Dept. of Zoology, MDU, Rohtak 68-74, ISBN: 978-81-920945-5.

43. Chaudhary D, Sainger M, Kumar A, Yadav H, Sindhu M and Jaiwal R (2015) Transient gus assay to optimize *Agrobacterium* mediated genetic transformation of cowpea (*Vigna unguiculata* L. Walp) Proc. Natl. Seminar on “Innovative Researches in Life Science”, 26-30, ISBN: 978-81-920945-5-7 (2015).

Book published:

1. Anil Kumar Chhillar, Yogesh K. Ahlawat, Ranjana Jaiwal, Pawan K. Jaiwal, Darshna Chaudhary (Editors), **Antimicrobial Peptides** (2026), Publisher ELSEVIER.
2. Yogesh Ahlawat, Pawan Kumar Jaiwal, Darshna Chaudhary (Editors), **Next Generation Strategies for Crop Improvement** (2025), Springer Nature Publisher, Singapore.
3. Pawan Kumar Jaiwal, Anil Kumar Chhillar, Darshna Chaudhary, Ranjana Jaiwal (Editors), **Nutritional Quality Improvement in Plants** (2019): Springer Nature Publisher, Switzerland.

Book chapters:

1. Ahlawat A, Nara S, Kumari A, Ahlawat Y, Jaiwal R, Jaiwal PK, & **Chaudhary D** (2025). RNA Interference (RNAi): A Powerful Tool for Crop Improvement and Stress Resilience. In Next-Generation Strategies for Crop Improvement (pp. 181-213). Singapore: Springer Nature Singapore.
2. Boora N, Ahlawat Y, **Chaudhary D**, Jaiwal PK, & Kundu S (2025). Next-Generation Crop Improvement: Social, Ethical, and Regulatory Perspectives on GMO Commercialization and Future Challenges. In Next-Generation Strategies for Crop Improvement (pp. 405-445). Singapore: Springer Nature Singapore.
3. Anas M, Waqar N, Noor Mohamed Ibrahim PMS, Hasan M, Jaseem KP, Ahlawat Y, Jaiwal PK & **Chaudhary D** (2025). Unravelling Solutions to the Complex Problems: Implementing Climate-Smart Crop Management Strategies. In Next-Generation Strategies for Crop Improvement (pp. 257-306). Singapore: Springer Nature Singapore.
4. Ahlawat YK, Srivastava V, Samani M, Harun S, Rajuloo V, & **Chaudhary D** (2024). Computational Strategies for Maximizing Biomass and Metabolite Yields for Bioproduction. In Medicinal and Aromatic Plants: Current Research Status, Value-Addition to Their Waste, and Agro-Industrial Potential (Vol I) (pp. 143-161).

Cham: Springer Nature Switzerland.

5. Ahlawat YK, Yadav K, Samani M & **Chaudhary D** (2024). Harnessing In-Vitro Propagation for the Sustainable Conservation of Medicinal Plants: Challenges and Prospects. Medicinal and Aromatic Plants: Current Research Status, Value-Addition to Their Waste, and Agro-Industrial Potential (Vol I), 27-37.
6. Sainger M, Chhillar, A K, **Chaudhary D**, Jaiwal, R and Jaiwal, P K (2019) Vitamin B6- C- and E- enrichment in crops, In: Nutritional Quality Improvement in Plants. Eds. Jaiwal, P.K., Chhillar, A.K., Chaudhary, D., Jaiwal, R. 2019 Springer Nature.
7. Sainger M, Sainger PA, **Chaudhary D**, Jaiwal R, Singh RP, Dhankher OP, Jaiwal PK (2015) GM Crops for Developing World in the Era of Climate Change: For Increase of Farmer's Income, Poverty Alleviation, Nutrition and Health. In Genetic Manipulation in Plants for Mitigation of Climate Change (pp. 223-241). Springer, New Delhi.
8. Kapoor S, Parmar SS, Yadav M, **Chaudhary D**, Sainger M., Jaiwal R, Jaiwal PK (2015) Agrobacterium Protocols: Sesame (Sesamum indicum L.), In: Methods in Molecular Biology, Wang, K. (ed.), Volume 2, 1224, pp 37-45. DOI 10.1007/978-1-4939-1658-0_4, © Springer Science+Business Media New York.
9. Dahiya S, **Chaudhary D**, Jaiwal R, Dhankher O, & Singh R, Jaiwal PK(2008). Elemental biofortification of crop plants. Plant membrane and vacuolar transporters. CABI International, Wallingford/Cambridge, 345-371.

Personal Details:

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Responsibilities/Duties:

- Member, Curriculum Development UG, PG and Ph. D program of Centre for Biotechnology
- Act as Organizing Secretary/Joint Organizing of National/International Seminars organized by Centre for Biotechnology and faculty of Life Sciences
- Member of Faculty of Life sciences
- Member, PGBOS, Centre for Biotechnology, M.D. University, Rohtak
- Member, UGBOS, Centre for Biotechnology, M.D. University, Rohtak
- Member of other various administrative and academic committees
- Member of Institutional Bio-safety Committee (IBSC), M.D. University, Rohtak

Place: Rohtak (Haryana)

(Darshna Chaudhary)