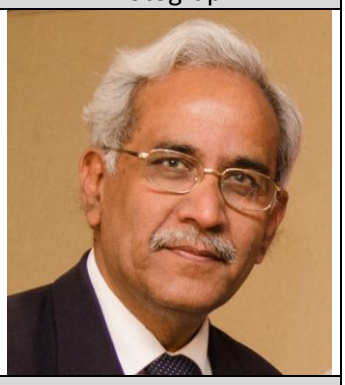
Faculty Details proforma for DU Web-site

Title	Dr	First Name	Akhilesh	Last Name	Tyagi	Photograph
Designation		Professor				
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Educational Qualifications

Degree	Institution	Year
B.Sc.	**Meerut University**	**1974**
M.Sc.	**Garhwal University**	**1976**
M.Phil.	**Meerut University**	**1977**
Ph.D.	**Delhi University**	**1983**

Career Profile

- Professor, Department of Plant Molecular Biology, Delhi University, 1994 onwards
- Post-Doctoral Fellow, University of Munich, 1990-1991
- Reader, Department of Plant Molecular Biology, Delhi University, 1988-1994
- Scientist, Unit for Plant Cell and Molecular Biology, Delhi University, 1987-1988.
- Post-Doctoral Researcher, University of Duesseldorf/Munich, Germany, 1984-1986.
- Scientist, Unit for Plant Cell and Molecular Biology, Delhi University, 1983-1984

Administrative Assignments

- President, National Academy of Sciences, India (2015-2016)
- President, Indian Society for Plant Physiology, New Delhi (2017-2018)
- Vice-President, Indian National Science Academy (2010-2011)
- General Secretary, National Academy of Sciences, India (2006-2009)
- Vice-President, Society for Plant Biochemistry and Biotechnology, New Delhi, (1995-2005)
- Chairman, DBT-UGC Task Force on Human Resource Development, Government of India (2003-2006)
- Chairman, PAC Plant Sciences, DST (2007-2015)
- Director, National Institute of Plant Genome Research, New Delhi (2009-2016)
- Executive Director (Additional Charge), National Agri-food Biotechnology Institute, Mohali (2013-2016)
- Director, Interdisciplinary Centre for Plant Genomics (ICPG), Delhi University, (2005-

2009)

- Coordinator, Centre for Plant Molecular Biology, University of Delhi South Campus, New Delhi (1996-09), Indian Initiative for Rice Genome Sequencing (2000-05), Rice Functional Genomics Project (2004 onwards), Indian Initiative for Tomato Genome Sequencing (2005-11), Next Generation Challenge Program on Chickpea Genomics (2009-14), Team Leader for Centre of Excellence in Biotechnology (2007-13), Seed Biology Project (2013-onwards)
- Chairman, Board of Research Studies, Faculty of Interdisciplinary and Applied Sciences, University of Delhi South Campus, New Delhi (1995-2003)
- Head, Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi (1988, 1992-1995, 1998-2001)

Areas of Interest / Specialization

Plant Biology: Genomics, Regulation Biology of Stress and Reproduction

Subjects Taught

Cell and Molecular Biology, Eukaryotic Gene Regulation

Research Guidance

Post-doctoral (19+ 3 ongoing), Ph.D. (24 +5 ongoing), M.Phil. (3), M.Sc. (22+2 ongoing), Short-term Trainee (45)

Publications Profile

[Total publications (258) include publications in peer reviewed journals originating abroad (186) or in India (17) and publications in books or general articles/ others (55)]

Publications in peer reviewed journals originating abroad

1. **Tyagi AK**, Rashid A & Maheshwari SC. High frequency production of embryos in *Datura innoxia* from isolated pollen grains by combined cold treatment and serial culture of anthers in liquid medium. Protoplasma 99 (1979) 11-17.

2. Maheshwari SC, **Tyagi AK**, Malhotra K & Sopory SK. Induction of haploidy from pollen grains in angiosperms -- the current status. Theor. Appl. Genet. 58 (1980) 193-206.

3. **Tyagi AK**, Rashid A & Maheshwari SC. Enhancement of pollen embryo formation in *Datura innoxia* by charcoal. Physiol. Plant. 49 (1980) 296-298.

4. **Tyagi AK**, Rashid A & Maheshwari SC. Promotive effect of polyvinylpolypyrrolidone on pollen embryogenesis in *Datura innoxia*. Physiol. Plant. 53 (1981) 405-406.

5. **Tyagi AK**, Rashid A & Maheshwari SC. Sodium chloride resistant cell line from *Datura innoxia* Mill. -- a resistance trait carried from cell to plantlet and vice versa in vitro. Protoplasma 105 (1981) 327-332.

6. Maheshwari SC, Rashid A & **Tyagi AK**. Haploids from pollen grains -- retrospect and prospect. Amer. J. Bot. 69 (1982) 865-879.

7. Maheshwari SC, **Tyagi AK**, Rashid A & Maheshwari N. Plant cell and tissue culture -- the current scene. B. J. Bot. 12 (1983) 53-65.

8. **Tyagi AK**, Rashid A & Maheshwari SC. Streptomycin resistance of a cell line from haploid *Datura innoxia* Mill. is transferred from cell to plantlet and back in vitro. J. Exp Bot. 35 (1984) 756-761.

9. **Tyagi AK**, Bharal S, Rashid A & Maheshwari N. Plant regeneration from tissue cultures initiated from immature inflorescences of a grass *Echinochloa colonum* (L.) Link. Plan Cell Rep. 4 (1985) 115-117.100.

10. Carrillo N, Seyer P, **Tyagi A** & Herrmann RG. Cytochrome b559 genes from *Oenothera hookeri* and *Nicotiana tabacum* show a remarkably high degree of conservation as compared to spinach. Curr. Genet. 10 (1986) 619-624.

11. Rother C, Jansen T, **Tyagi A**, Tittgen J & Herrmann RG. Plastocyanin is encoded by an uninterrupted nuclear gene in spinach. Curr. Genet. 11 (1986) 171-176.

12. **Tyagi AK** & Herrmann RG. Location and nucleotide sequence of the pre-apocytochrome gene on *Oenothera hookeri* plastid chromosome (Euoenothera plastome I). Curr. Genet. 10 (1986) 481-486.100.

13. **Tyagi A**, Hermans J, Steppuhn J, Jansson Ch, Vater F & Herrmann RG. Nucleotide sequence of cDNA clones encoding the complete "33 kDa" precursor protein associated with the photosynthetic oxygen-evolving complex from spinach. Mol. Gen. Genet. 207 (1987) 288-293.

14. Tyagi S, Sporlein B, **Tyagi A**, Herrmann RG & Koop HU. PEG- and electroporation-induced transformation in *Nicotiana tabacum*: influence of genotype on transformation frequencies. Theor. Appl. Genet. 78 (1989) 287-292.

15. Rajyalakshmi K, Grover A, Maheshwari N, **Tyagi AK** & Maheshwari SC. High frequency regeneration of plantlets from leaf-bases via somatic embryogenesis and comparison of polypeptide profiles from morphogenic and non-morphogenic calli in wheat (*Triticum aestivum*). Physiol. Plant. 82 (1991) 617-623.

16. Chaudhury A, Maheshwari SC & **Tyagi AK**. Transient expression of electroporated gene in leaf protoplasts of *indica* rice and influence of template topology and vector sequences. Physiol. Plant. 89 (1993) 842-846.

17. Chowdhry CN, **Tyagi AK**, Maheshwari N & Maheshwari SC. Effect of L-proline and L-tryptophan on somatic embryogenesis and plantlet regeneration of rice (*Oryza sativa* L. cv. Pusa 169). Plant Cell, Tissue and Organ Culture 32 (1993) 357-361.

18. Flieger K, **Tyagi A**, Sopory S, Cseplo A, Herrmann RG & Oelmuller R. A 42 base pai promoter fragment of the gene for subunit III of photosystem I (*psaF*) is crucial for its activity. Plant Journal 4 (1993) 9-18.

19. Kapoor S, Maheshwari SC & **Tyagi AK**. Organ-specific expression of plastid-encoded genes in rice involves both quantitative and qualitative changes in mRNAs. Plant Cell Physiol. 34 (1993) 943-947.

20. Kelkar NY, Maheshwari SC & **Tyagi AK**. Light-dependent accumulation of mRNAs for chloroplast-encoded genes in *Vigna aconitifolia*. Plant Sci. 88 (1993) 55-60.

21. Oelmuller R, Bolle C, **Tyagi AK**, Niekrawietz N, Breit S & Herrmann RG. Characterization of the promoter from the single-copy gene ferredoxin-$NADP^+$ oxidoreductase from spinach. Mol. Gen. Genet. 237 (1993) 261-272.

22. Kapoor S, Maheshwari SC & **Tyagi AK**. Developmental and light-dependent cues interact to establish steady-state levels of transcripts for photosynthesis-related genes (*psbA, psbD, psaA* and *rbcL*) in rice (*Oryza sativa* L.). Curr. Genet. 25 (1994) 362-366.

23. Chaudhury A, Maheshwari SC & **Tyagi AK**. Transient expression in intact seed embryos of indica rice after electroporation-mediated gene delivery. Plant Cell Reports 14 (1995) 215-220.

24. Kochhar A, Khurana JP & **Tyagi AK**. Nucleotide sequence of the *psbP* gene encoding precursor of 23 kDa polypeptide of oxygen-evolving complex in *Arabidopsis thaliana* and its expression in the wild-type and a constitutively photomorphogenic mutant. DNA Research 3 (1996) 277-285.

25. Grover M, Sharma A, Dhingra A, Maheshwari SC & **Tyagi AK**. Regulation of plastid gene expression in rice involves calcium and protein phosphatases/kinases for signal transduction. Plant Science 137 (1998) 185-190.

26. Jain P, Kochhar A, Khurana JP & **Tyagi AK**. The *psb*O gene for 33-kDa precursor protein of the oxygen-evolving complex in *Arabidopsis thaliana* -- Nucleotide sequence and control of its expression. DNA Research 5 (1998) 221-228.

27. Khurana JP, Kochhar A & **Tyagi AK**. Photosensory perception and signal transduction in higher plants -- molecular genetic analysis. Critical Reviews in Plant Sciences 17 (1998) 465-539.

28. Grover M, Dhingra A, Sharma A, Maheshwari SC & **Tyagi AK**. Involvement of phytochrome(s), Ca^{++} and phosphorylation in light-dependent control of transcript levels for plastid genes (*psb*A, *psa*A and *rbc*L) in rice (*Oryza sativa*). Physiol. Plant. 105 (1999) 701-707.

29. Grover M, Gaur T, Kochhar A, Maheshwari SC & **Tyagi AK**. Nucleotide sequence of

psbQ gene for 16 kDa protein of oxygen-evolving complex in *Arabidopsis thaliana* and regulation of its expression. DNA Research 6 (1999) 173-177.

30. Mohanty A, Sharma NP & **Tyagi AK**. *Agrobacterium*-mediated high frequency transformation of an elite indica rice variety Pusa Basmati 1 and transmission of the transgenes to R2 progeny. Plant Science 147 (1999) 127-137.

31. **Tyagi AK**, Mohanty A, Bajaj S, Chaudhury A & Maheshwari SC. Transgenic rice : a valuable monocot system for crop improvement and gene research. Critical Reviews in Biotechnology 19 (1999) 41-79.

32. **Tyagi AK** & Mohanty A. Rice transformation for crop improvement and functional genomics. Plant Science 158 (2000) 1-18.

33. Gupta P, Raghuvanshi S & **Tyagi AK**. Assessment of the efficiency of various gene promoters via biolistics in leaf and regenerating seed callus of millets, *Eleusine coracana* and *Echinochloa crusgalli*. Plant Biotechnology 18 (2001) 275-282.

34. Raghuvanshi S, Kelkar A, Khurana JP &**Tyagi AK**. Isolation and molecular characterization of the *COP1* gene homolog from rice, *Oryza Sativa* L. Subsp. *Indica* var Pusa Basmati 1 DNA Research 8 (2001) 73-79.

35. Thakur JK, **Tyagi AK** & Khurana JP. *OsIAA1*, an *Aux/IAA* cDNA from rice, is up-regulated by auxin and down-regulated by light. DNA Research 8 (2001) 193-203.

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37. Jani D, Meena LS, Haq QMR, Singh Y, Sharma A & **Tyagi AK**. Expression of cholera toxin B subunit in transgenic tomato plants. Transgenic Research 11 (2002) 447-454.

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42. Dhingra A, Khurana JP & **Tyagi AK**. Involvement of G-proteins, calmodulin and tagetitoxin-sensitive RNA polymerase in light-regulated expression of plastid genes (*psbA, psaA* and *rbcL* in rice (*Oryza sativa* L.). Plant Science 166 (2004) 163-168.

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45. Jani D, Singh NK, Bhattacharya S, Meena LS, Singh Y, Upadhyay, Sharma AK & **Tyagi AK**. Studies on immunogenic potential of plant-expressed cholera toxin B subunit. Plant Cell Rep. 22 (2004) 471-477.

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47. Singh NK, Raguvanshi S, Srivastava SK, Gaur A, Pal AK, Dalai V, Singh A, Ghazi IA, Yadav M, Dixit A, Batra K, Gaikwad K, Sharma TR, Mohapatra T, Mohanty A, Bharti AK, Kapur A, Gupta V, Kumar D, Vij S, Ravi V, Khurana P, Sharma S, McCombie D, Messing J, Wing R, Sasaki T, Khurana P, Khurana JP & **Tyagi AK.** Sequence analysis of the long arm of rice chromosome 11 for rice-wheat synteny. Functional and Integrative Genomics 4 (2004) 102-117.

48. Sood S, **Tyagi AK** & Tripathy BC. Inhibition of photosystem I and photosystem II in wheat seedlings with their root-shoot transition zones exposed to red light. Photosynthesis Res. 8 (2004) 31-40.

49. Dasgupta U, Jain M, **Tyagi AK** & Khurana JP. Regulatory elements for light-dependent and organ-specific expression of *Arabidopsis thaliana PSBO1* gene encoding 33 kDa polypeptide of the oxygen-evolving complex. Plant Science 168 (2005) 1633-1642.

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51. Kulshreshtha R, Kumar N. Balyan HS, Gupta PK, Khurana P, **Tyagi AK** & Khurana JP. Structural characterization, expression analysis and evolution of the red/far-red sensing

photoreceptor gene, *PHYTOCHROME C* (*PHYC*) localized on the 'B' genome of hexaploid wheat (*Triticum aestivum* L.). Planta 221 (2005) 675-689.

52. Kulwal P, Kumar N, Gaur A, Khurana P, Khurana JP, **Tyagi AK**, Balyan HS & Gupta PK. Mapping of a major QTL for pre-harvest sprouting tolerance on chromosome 3A in bread wheat. Theor. Appl. Genet. 111 (2005) 1052-1059.

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54. Thakur JK, Jain M, **Tyagi AK** & Khurana JP. Exogenous auxin enhances the degradation of a light down-regulated and nuclear-localized OSiIAA1, an Aux/IAA protein from rice, via proteasome. Biochem. Biophys. Acta 1736 (2005) 196-205.

55. The Rice Chromosomes 11 and 12 Sequencing Consortia. The sequence of rice chromosomes 11 and 12, rich in disease resistance genes and recent gene duplication. BMC Biology 3 (2005) 20 (18 pages). (Co-authored as Coordinator of the Indian Initiative for Rice Genome Sequencing)

56. Jain M, Kaur N, Garg R, Thakur JK, **Tyagi AK** & Khurana JP. Structure and expression analysis of early auxin-responsive Aux/IAA gene family in rice (*Oryza sativa*). Functional & Integrative Genomics 6 (2006) 47-59.

57. Jain M, Kaur N, **Tyagi AK** & Khurana JP.Comprehensive analysis of auxin responsive *GH3* gene family in rice (*Oryzasativa*). Func. Integr. Genomics 6 (2006) 36-46.

58. Jain M, Nijhawan A, **Tyagi AK** & Khurana JP. Validation of housekeeping genes as internal control for studying gene expression in rice by quantitative real-time PCR. BBRC 345 (2006) 646-651.

59. Jain M, **Tyagi AK** & Khurana JP. Genome-wide analysis, evolutionary expansion, and expression of early auxin-responsive *SAUR* gene family of rice (*Oryza sativa*). Genomics 88 (2006) 360-371.

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61. Jain M, **Tyagi AK** & Khurana J. Overexpression of putative topoisomerase 6 genes from rice confers stress tolerance in transgenic *Arabidopsis* plants. FEBS J. 273 (2006) 5245-5260.

62. Kumar M, Kulwal PL, Gaur A, **Tyagi AK,** Khurana JP, Khurana P, Balyan HS & Gupta PK. QTL analysis for grain weight in common wheat. Euphytica 151 (2006) 135-144.

63. Sarawat M, Negi MS, Lakshmikumaran M, **Tyagi AK,** Das S & Srivasatava PS. A standardized protocol for genomic DNA isolation from *Terminalia arjuna* for genetic analysis. EJB 9(2006) 86-91.

64. Vadianathan R, Khurana JP, **Tyagi A** & Khurana P. The chloroplast genome of mulberry: complete nucleotide sequence, gene organization and comparative analysis. Tree Genetics and Genomes 3 (2006) 49-59.

65. Varshney RK, Hoisington DA & **Tyagi AK.** Advances in cereal genomics and applications in crop breeding. Trends in Biotechnology 24 (2006) 490-497.

66. Vij S & **Tyagi AK.** Genome-wide analysis of the stress associated protein (SAP) gene family containing A20/AN1 zinc-finger(s) in rice and their phylogenetic relationship with *Arabidopsis*. MGG 276(2006) 565-571.

67. Vij S, Gupta V, Kumar D, Vydianathan R, Raghuvanshi S, Khurana P, Khurana JP & **Tyagi AK**. Decoding the rice genome. Bioessays 28 (2006) 421-432.

68. Agarwal P, Arora R, Ray S, Singh AK, Singh VP, Takatsuji H, Kapoor S & **Tyagi AK** Genome-wide identification of C_2H_2 zinc-finger gene family in rice and their phylogeny and expression analysis. Plant Mol. Biol. 65 (2007) 467-485.

69. Ahmed N, Saini V, Raghuvanshi S, Khurana JP, **Tyagi, Akhilesh K**, Tyagi Anil K & Hasnain SE. Molecular analysis of a leprosy immunotherapeutic bacillus provides insights into *Mycobacterium* evolution. PLOS ONE 2 (2007) e968 (8 pages).

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71. Gupta V, Khurana R & **Tyagi AK.** Promoters of two anther-specific genes confer organ-specific expression in a stage-specific manner in transgenic systems. Plant Cell Reports 26 (2007) 1919-1931.

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77. Singla B, **Tyagi AK**, Khurana JP & Khurana P. Analysis of expression profile of selected genes expressed during auxin-induced somatic embryogenesis of leaf base system of wheat (*Triticum aestivum*) and their possible interactions. Plant Mol. Biol 65(2007) 677-692.

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79. Vij S & **Tyagi AK.** Emerging trends in functional genomics of abiotic response in crop plants. Plant Biotech. Jour. 5(2007) 361-380.

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81. Jain M, **Tyagi AK** & Khurana JP. Constitutive expression of a meiotic recombination protein gene hemolog, *OsTOP6A1*, from rice confers abiotic stress tolerance in transgenic *Arabidopsis* plants. Plant Cell Reports 27 (2008) 767-778.

82. Jain M, **Tyagi AK** & Khurana JP. Differential gene expression of rice two-component signaling elements during reproductive development and regulation by abiotic stress. Functional & Integrative Genomics 8(2008) 175-180.

83. Jain M, **Tyagi AK** & Khurana JP. Genome-wide identification, classification, evolutionary expansion and expression analyses of homeobox genes in rice. FEBS J 275(2008) 2845-2861.

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85. Mir RR, Rustgi S, Sharma S, Singh R, Goyal A, Kumar J, Gaur A, **Tyagi AK**, Khan H, Sinha M, Balyan HS & Gupta PK. A preliminary genetic analysis of fibre traits and the use of new genomic SSRs for genetic diversity in jute. Euphytica 161(2008) 413-427.

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analysis of basic leucine zipper (bZIP) transcription factor family in rice. Plant Physiol 146 (2008) 333-350.

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93. Vyas S, Gaur A, **Tyagi AK** & Purohit SD. Assessment of genetic diversity in *Feronia limonia* (L.) Swingle using inter simple sequence repeats. International J. Sustainable Forestry 27 (2008) 328-342.

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256. **Tyagi AK**. Editorial: MAS biotechnology. Everyman's Science 47 (2012) 147-148.

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258. Giri J & **Tyagi A**. Genetically engineered crops: India's path ahead. Nature India (Special Volume: Biotechnology – An agent for sustainable socio-economic transformation) pp 25-28. NPG India, Gurgaon.

Conference Organization/ Presentations (in the last three years)

- Patron and Chair, National Organizing Committee, 3rd International Plant Physiology Congress, New Delhi, 2015.
- Member, Organizing/Advisory/Scientific Committee 13/14th/15th International Rice Functional Genomics Symposium, 15/16/17
- Also served on Organising Committee of several National Conferences
- Delivered ~35 invited lectures in national/international organizations/conferences

Research Projects (Major Grants/Research Collaboration)

Note: Several of the following projects have been undertaken as Coordinator/ PI of Multi-lab institutional or multi-institutional projects

DST Project : Mechanism of light-regulated expression of photosynthesis related plastid genes in rice

RF Project : Targetted and high level of gene expression in transgenic and transplastomic rice

DBT Project : Non-Cellulosic polysaccharides of lessor known-millets and grain legumes and their physiological effects

DBT Project: Centre for Plant Molecular Biology Phase-I

DBT Project : Expression of antigenic determinants of *Vibrio cholerae* in tomato or tobacco and evaluation of their immunogenic potential

RF Project: Genetic transformation of rice and rice chloroplasts Phase-II

DBT Project : Functional genomics of rice to understand flower and seed

DBT Project : A novel gene OSISAP1 of rice and a method of introducing stress tolerances in plant system using the gene OSISAP1

DBT Project : Expression of ctxB, tcpA or acfA from *Vibrio cholerae* in tomato and evaluation of their immunogenic potential in model animal system

DBT Project : Indian Initiative for Rice Genome Sequencing – to identify genes/markers of agricultural importance

DBT Project : Development of ESTs, gene identification and transformation in sugarcane

DBT Project : Centre for Plant Molecular Biology II

DBT Project : The *Mycobacterium w.* genome program: Complete genome sequencing and comparative genomics

DBT Project : Indian Initiative on Tomato Genome Sequencing

DBT Project : Gene expression profiling during flower and seed development and functional validation of identified genes

DBT Project: Centre for Plant Molecular Biology III

DBT Project: DBT Centre of Excellence for development of high throughput approaches to understand molecular basis of heterosis in rice for precision breeding

DST Project: J.C.Bose fellowship

DBT Project : Functional analysis ……rice

DBT Project : Next generation ……..chickpea genomics

DBT Project : Analysis of diversity……..in rice and chickpea

DBT Project: Centre for advanced ……..developmental biology

DBT Project : Functional characterization of genetic and epigenetic regulatory networks involved in the reproductive development in rice

Awards and Distinctions

Fellowships :

- Fellow, The World Academy of Sciences, Trieste, 2009.
- Fellow, Indian Academy of Sciences, Bangalore, 2004.
- Fellow, National Academy of Agricultural Sciences, New Delhi, 2001.
- Fellow, Indian National Science Academy, New Delhi, 1999.
- Fellow, National Academy of Sciences, India, Allahabad, 1998.
- Elected Member, Plant-Tissue Culture Association of India, 2001.

Awards :

- JC Bose National Fellowship Award, DST, Government of India, 2007-2022.
- SN Patnaik Memorial Lecture Award, Utkal University, Bhubneswar, 2016.
- APJ Abdul Kalam Lecture Award, Jiwaji University, Gwalior, 2016.
- TN Khoshoo Memorial Lecture Award, TOSI, 2015.
- Archana Sharma Memorial Lecture Award, WAST, 2014.
- SK Sinha Memorial Lecture Award, ISPP, 2013.
- Shri Ranjan Memorial Lecture Award, NASI, 2012.
- SK Mukherjee Commemoration Lecture Award, ISCA, 2012.
- Shri Om Prakash Bhasin Award for Science and Technology, 2011.
- NASI – Reliance Industries Platinum Jubilee Award, NASI, 2006.
- National Bioscience Award, DBT, Govt. of India, New Delhi, 1999.

- FC Steward Memorial Lecture Award, PTCA INDIA, 2010.
- BP Pal Memorial Award, ISCA, 2008.
- BN Chopra Lecture Award, INSA, 2007.
- Birbal Sahni Medal 2006, IBS, 2006.
- Platinum Jubilee Award Lecture, ISCA, 2006.
- B.P. Pal Memorial Award Lecture of NASI, 2005.
- Memento and Citation of the All India Congress of Cytology and Genetics, 2005.
- Y. Subbarow Memorial Lecture, IP University, New Delhi, 2005.
- International Year of Rice 2004 Research Accomplishment Award as part of IRGSP.
- The 2003 World Technology Award for Biotechnology (Corporate Division) as part of IRGSP, WTN, San Francisco, 2003.
- Sinha Memorial Lecture Award, Indian Botanical Society, 2002.
- SPIC Science Foundation Lecture Award, TNAU, Coimbatore, 1998.

International Distinctions :

- Co-Chair, Indo-US Joint Working Group (JWG) on Agriculture, 2016.
- Member, Advisory Board, Asian Federation of Biotechnology, RoK, 2015.
- Patron and Chair, National Organizing Committee, 3rd International Plant Physiology Congress, New Delhi, 2015.
- Co-Chair, BBSRC(UK)-DBT(India) Crop Genomics & Technologies Initiative Assessment Panel, 2014.
- Member, Membership Advisory Committee in Biological Systems and Organisms, The World Academy of Sciences, Italy, 2013-2018.
- Chairman, 11th Internatl Rice Functional Genomics Symposium Organizing Committee, 2013.
- Co-Organiser, Indo-German Symposium on Plant Biology, Indian National Science Academy and Science Academy of Germany, New Delhi, 2011.
- Co-Chair, International SOL Program, 2007-2009.
- Member, Scientific Advisory Group, EU-SOL Project, 2007-2009.
- Co-convenor, International Workshop on Tomato Genomics, 2006.
- Member, Organizing/Advisory/Scientific Committee of 5th International Rice Genetics Symposium and 2nd/3rd/4th/5th/9th/10th/11th/12th/13/14th/15th International Rice Functional Genomics Symposium, 2004/05/06/07/11/12/13/14/15/16/17.
- Co-convenor, International Satellite Conference on Chloroplasts : Development and Function, 2001.
- Indian Representative to International Tomato Genome Sequencing Project.
- Indian Representative to International Rice Genome Sequencing Project.
- Indian Representative to International Rice Functional Genomics Consortium.
- Member, Joint Advisory Committee, Indo-Swiss Collaboration in Biotechnology.
- Fellowship by FERRO, USDA, Government of USA, 1998.

Lectures :

- Delivered >250 invited lectures in India, Chaired 50 sessions in National Conferences.
- Delivered >50 lectures and chaired 20 sessions in international meetings.
- Taught Molecular Cell Biology, Regulation of Eukaryotic Gene Expression, Eukaryotic Gene Structure and Function to M.Sc./M.Phil. students.

Membership of Administrative/Scientific Management Committee:

- Chairman, Finance Committee, Biotech Park, Lucknow (2016-2019)
- Chairman, PMMC,GBPUAT, Pantnagar (2009-2012)
- Chairman, PMC of the DBT India-IRRI Network Programme, DBT (2011-2014)
- Chairman, PAMC for Multi-centric Network Projects, DBT (2011-2013)
- Co-Chairman, Task Force on Plant Biotechnology, DBT (2011-2014)
- Member (*ex-officio*), Central Advisory Board of Education, DHE, MHRD, GoI (2015-2016)
- Member (*ex-officio*), The Academic Council, University of Delhi, New Delhi (1988, 1992-95, 1998-2001, 2007-09)
- Member (*ex-officio*), The Court, University of Delhi, New Delhi (1992 onwards)
- Member (*ex-officio*), The Court, JNU, New Delhi (2009-2016)
- Member on Various Academic/Administrative/Review/Governing Committees of Delhi University and UGC
- Member, Sectoral Monitoring Committee, CSIR (2016 onwards)
- Member, Distinguished Fellows Selection Committee, SERB (2017)
- Member, Apex Committee for Plant Biotechnology and Allied Areas, DBT (2016-2019)
- Member, Promotions and Assessment Committee, IISc, Bangalore (2016-2018)
- Member, PMC on Solanaceae Genome Initiative, DBT, New Delhi (2015-2018)
- Member, SAC for DBT-IISc Partership Program, DBT, New Delhi (2013-2018)
- Member, SAC for ILS, Bhubneshwar (2012-2018)
- Member, Governing Body, CIAB, Mohali (2012-2019)
- Member, Governing Board, SRI, Delhi (2014 onwards)
- Member *(ex-officio),* Board of Directors, Mohali Biotechnology Park, Mohali (2015-2016).
- Non-official Independent Director on Board, BIRAC, New Delhi (2017-2020).
- Member, School Board, SLS, CUR, Ajmer (2014-2017)
- Member, SAC, Bose Institute, Kolkata (2014-2017)
- Member, Research Board, MSSRF, Chennai (2014-2016)
- Member, Board of Governors, UNESCO Regional Biotechnology Centre, NCR Delhi, Faridabad (2011-2015)
- Member, Governing Body, Biotech Park, Lucknow (2011 onwards)
- Member, RAC, National Bureau of Plant Genetic Resources, New Delhi (2011-2014)
- Member, Standing Committee on RRI, JNU, New Delhi (2011-2013)
- Member, Patent Facilitation Committee, DBT, New Delhi (2011-2014)
- Member, Niche Area Committee for Vision 2025, DBT, New Delhi (2011)

- Member, Academic Council, IARI, New Delhi (2011-2013)
- Member, Expert Committee for Ramalingaswami Re-entry Fellowship, DBT (2010-2012)
- Member, Expert Committee for Tata Innovation Fellowship, DBT (2010-2012, 2014-2017).
- Member, Task Force on Bioinformatics, Computational and Systems Biology, DBT (2010-12, 2014-2017)
- Member, Society and Governing Body of NABI, Mohali (2010-2016)
- Member, Executive Council, Indian National Science Academy, New Delhi (2009-10)
- Member, Technical Advisory Committee (TAC) for CEIB, DBT (2009-12)
- Member, Fast Track Agri-Biotech Review & Approval Committee, DBT (2009-2011)
- Member, Steering Committee of National Bioresource Development Board, DBT (2007-12)
- Member, SERC, DST (2007-10)
- Member, SAC of NBRI, Lucknow ((2007-10)
- Member, Research Programme Committee,NAIP, ICAR, New Delhi (2006-09)
- Member, Life Sciences Research Development Board, DBT (2006-09)
- Member, GEAC, MOEF, Government o India (2006-09)
- Member, Biotechnology Research and Promotion Committee, DBT (2003-06)
- Member, Standing Committee, CSIR (2005-07)
- Member, Working Groups on "Biotechnology" and "Leveraging International Collaboration Inputs" of the Steering Committee on Science and Technology for the Formulation of Eleventh Five Year
- Member, Apex Committee, Program Support in High Priority Areas of Biology, Indian Institute of Science, Bangalore (1996-2007)
- Member, Task Force on Plant Biotechnology, Department of Biotechnology, New Delhi (1997 -2005)
- Member, Scientific Panel of Crop Sciences, Indian Council for Agricultural Research, New Delhi (1999-2002)
- Member, Scientific Advisory Committee, NIPGR, New Delhi (1999-2005, 2007-09)
- Member, Research Advisory Committee (1999-01) and Governing Council (2002-05), CDFD, Hyderabad
- Member, Academic Council, TERI-SAS, New Delhi (2000-03)
- Member, Research Advisory Committee, CTRI, Hyderabad (2001-04)
- Member, Research Advisory Committee, CIMAP, Lucknow (2001-04)
- Member, Research Advisory Committee, CSSRI, Karnal (2001-04)
- Member, Monitoring-cum-evaluation Committee, RCGM, DBT (2002-05)
- Member, Research Advisory Committee, NRC on Banana, Trichy (2003-06)
- Member, Task Force on Biotechnology, ICAR (2003-06)
- Member, Board of Management, IARI, New Delhi (2004-06)
- Member, Research Advisory Committee, IIHR, Bangalore (2004-07)
- Member, Programme Advisory Committee, Plant Sciences, DST (2004-07)
- Member, Advisory Committee of the Vth Phase of CAS, Calcutta University (2004-2009)

- Member, Executive Council, NASI, Allahabad (2005-06)
- Member, Research Advisory Committee, IISR, Ahmedabad (2005-07, 2010-12))
- Member, Research Advisory Committee (Biotechnology), SRI, New Delhi (2005-09)
- Member, Academic Committee, NCPGR (2005-07)
- Member, Committee on Bio-security and Bio-safety, DBT (2005-08)
- Member, Project Monitoring Committee on Solanaceae Genome Initiative, DBT (2005-10)
- Member, Scientific Advisory Committee on CMRTD, DBT (2002-08)
- Member, Scientific Advisory Committee on Bioresources, DBT (2005-08)
- Member, Faculty of Science, M S University, Udaipur (2003-06)
- Member, Advisory Committee of M.Sc. (Biotech) Program, CSKHPAU, Palampur (2005-08)
- Member, Scientific Panel on Horticulture, ICAR (2004-07)

Association With Professional Bodies

Associated with a large number national and international professional bodies

Other Activities

- Member, Editorial Board, Transgenic Research, 2000 onwards; MGG, 2007 onwards; Rice, 2008 onwards; International Journal of Plant Genomics, 2009 onwards; PeerJ 2012-2014; Journal of Plant Biochemistry and Biotechnology, 1992-2006, 2007 onwards; ISA of NISCAIR, ISA, 2011-2013, 2015-2017; Everyman's Science, ISCA, 2010-2013; PINSA 2002-2007; Indian Journal of Biotechnology, 2005-2007; Resonance, 2005-2007.