




## Faculty Details proforma for DU Web-site

Title	Prof.	First Name	Arun	Last Name	Sharma	Photograph
Designation		Professor				
Address		Department of Plant Molecular Biology University of Delhi, South Campus, Benito Juarez Road, New Delhi - 110021				
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<b>Educational Qualifications</b>						
Degree		Institution			Year	
Ph.D.		Jawaharlal Nehru University, New Delhi			1987	
M.Phil. / M.Tech.		Jawaharlal Nehru University, New Delhi			1982	
PG		Meerut University, Meerut			1980	
UG		Meerut University, Meerut			1978	
Any other qualification						
<b>Career Profile</b>						
Yale University, New Haven, USA		Post-doctoral Fellow	1998	Research		
Wayne state University, Detroit, USA		Research Associate	1989-1991	Research		
Jawaharlal Nehru University New Delhi		Research Scientist	1991-1994	Research		
University of Delhi, South Campus		Scientist	1995-1997	Research		
University of Delhi, South Campus		Lecturer	1997-2002	Teaching and Research		
University of Delhi, South Campus		Reader/Associate Professor	2002-present	Teaching and Research		
<b>Administrative Assignments</b>						
1. Member of Board of Research Studies, Faculty of Interdisciplinary and Applied Sciences, University of Delhi, South Campus from year 2003 to 2005, 2008-2010 and since 2014						
<b>Areas of Interest / Specialization</b>						
My research revolves around study of regulation of gene expression for understanding of subject like gene silencing in plants, and to use this knowledge for area like expression of biomolecules of pharmaceutical importance in plants. Other areas are sequencing of tomato genome, manipulation of fruit ripening in tomato and development of cold tolerance in tomato.						
<b>Subjects Taught</b>						
1997-2007	Basic Molecular Biology, Biochemistry, Molecular basis of differentiation and morphogenesis					
2007-2010	Biochemistry and Metabolomics, Molecular Basis of differentiation and morphogenesis					
2010 onward	Plant Biochemistry and Metabolism					
<b>Research Guidance</b>						
<i>List against each head (If applicable)</i>						
1.	Supervision of awarded Doctoral Thesis				10	

1. Supervision of Doctoral Thesis, under progress	5
2. Supervision of awarded M.Phil dissertations	0
3. Supervision of M.Phil dissertations, under progress	0

## Publications Profile

### 1. Books/Monographs (Authored/Edited)

### 2. Research papers published in Refereed/Peer Reviewed Journals

1. Parida, A.P., Sharma, A. and **Sharma, A.K.** (2017) AtMBD6, a methyl CpG binding domain protein, maintains gene silencing in Arabidopsis by interacting with RNA binding proteins. *J. Biosci.* 42:57-68.
2. Agarwal, P., Kumar, R. Pareek, A. and **Sharma, A.K.** (2017) Fruit preferential activity of tomato RIP1 gene promoter in transgenic tomato and *Arabidopsis*. *Mol. Gen. Genomics* 292:145-156.
3. Kumar, R., Jiwani, G., Pareek, A., SravanKumar, T., Khurana, A. and Sharma, A.K. 2016. Evolutionary profiling of group II PLP-dependent decarboxylase gene family suggests expansion and functional diversification of histidine decarboxylases in tomato. *The Plant Genome*. 9:1-15.
4. Kumar R., Agarwal P., Pareek A., Tyagi A.K. and **Sharma A.K.** (2016). Genomic Survey, Gene Expression, and Interaction Analysis Suggest Diverse Roles of ARF and Aux/IAA Proteins in Solanaceae. *Plant Mol. Biol. Rep.* 33:1552-1572.
5. Kumar, R. and **Sharma, A. K.** (2014) Ethylene perception and signaling in ripening fruit. In: Nath, P., Bouzayen, M., Mattoo, A. K. and Pech, J. C. (Eds.), *Fruit ripening: Physiology, Signalling and Genomics*. . Publisher: CABI, Oxfordshire, U K, pp 193-201.
6. **Sharma A.K.** and Sharma M.K. (2014). Plants as host for recombinant DNA. In: Das, H.K. (Ed.), *Gene and its Engineering*. Wiley India Pvt. Ltd. New Delhi, India, pp. 410-433.
7. Kumar R, Khurana, A and **Sharma A.K.** (2014). Role of plant hormones and their interplay in development and ripening of fleshy fruits. *J. Exp. Bot.* 65:4561–4575. **Citations 6, Impact Factor 5.794.**
8. Kumar R, Khurana A and **Sharma A.K.** (2013). Molecular regulators of fruit ripening. *Stewart Postharvest Review*. Published online December 2013, doi: 10.2212/spr.2013.4.6
9. Tomato Genome Consortium (2012) The tomato genome sequence provides insights into fleshy fruit evolution. *Nature* 485:635-641.
10. Kumar, R., Agarwal, P, Tyagi, A.K. and **Sharma, A.K.** (2012) Genome-wide investigation and expression analysis suggest diverse roles of auxin-responsive GH3 genes during development and response to different stimuli in tomato (*Solanum lycopersicum*). *Mol Gen. Genomics*. 287:221–235.
11. Kumar R, Sharma M.K., Kapoor S., Tyagi A.K. and **Sharma A.K.** (2012) Transcriptome analysis of rin mutant fruit and in silico analysis of promoters of differentially regulated genes provides insight into LeMADS-RIN-regulated ethylene-dependent as well as ethylene-independent aspects of ripening in tomato. *Mol Gen. Genomics* 287:189–203.
12. Kumar, R., Tyagi, A.K. and **Sharma, A.K.** (2011) Genome-wide analysis of auxin response factor (ARF) gene family from tomato and analysis of their role in flower and fruit development. *Mol Gen. Genomics* 285:245-260.
13. Sharma M.K., Kumar, R., Solanke A.U., Sharma, R. Tyagi A K. and **Sharma A.K.** (2010) Identification, phylogeny, and transcript profiling of ERF family genes during development and abiotic stress treatments in tomato. *Mol Gen. Genomics* 284:455-475.
14. Sharma, M.K., Solanke A.U., Jani D., Singh Y. and Sharma A.K. (2009). A simple and efficient

Agrobacterium-mediated procedure for transformation of tomato. *J. Biosci.* 34:423-433.

15. Solanke A.U., Sharma M.K., Tyagi A. K. and Sharma A.K. (2009) Characterization and phylogenetic analysis of environmental stress-responsive *SAP* gene family encoding A20/AN1 zinc finger proteins in tomato. *Mol. Gen. Genet.* 282:153-164.
16. Mueller, L.A., ..... , Mathur, S. Vyas, S., Solanke, A.U., Kumar, R., Gupta, V., **Sharma, A.K.**, Khurana, P., Khurana, J.P. Tyagi, ..... Stiekema W. (2009). A snap shot of the emerging tomato genome sequence: The tomato genome sequencing consortium. *The Plant Genome* 2:78-92. Crop Science Society of America.
17. Sharma A.K., Sharma M.K. (2009). Plants as bioreactors: Recent developments and emerging opportunities. *Biotechnology Advances* 27:811–832
18. Gupta V., Mathur, S., Solanke A.U., Sharma M.K., Kumar R., Vyas S., Khurana, P., Khurana, J.P., Tyagi A.K. and Sharma A. K. (2009). Genome analysis and genetic enhancement of tomato. *Critical Reviews in Biotechnology.* 29:152-181. Informa UK Ltd.
19. Solanke, A.U. and **Sharma A.K.** (2008). Signal transduction during cold stress in plants. *Physiol. Mol. Biol. Plants.* 14:69-79. Publisher: Springer Berlin / Heidelberg.
20. Sharma, M.K., Jani, D., Thungapathra, M., Gautam, J.K., Meena, L.S., Singh, Y, Ghosh, A, Tyagi, A. K. and **Sharma, A.K.** (2008). Expression of accessory colonization factor subunit A (ACFA) of *Vibrio cholerae* and ACFA fused to cholera toxin B subunit in transgenic tomato (*Solanum lycopersicum*). *J. Biotechnology* 135:22-27. Elsevier B.V.
21. Sharma, M.K., Singh, N.K., Jani, D., Sisodia, R., Thungapathra, M., Gautam, J.K., Meena, L.S., Singh, Y, Ghosh, A, Tyagi, A. K. and **Sharma, A.K.** (2008). Expression of toxin co-regulated pilus subunit A (TCPA) of *Vibrio cholerae* and its immunogenic epitopes fused to cholera toxin B subunit in transgenic tomato (*Solanum lycopersicum*). *Plant Cell Rep.* 27:307-318. Publisher: Springer Berlin / Heidelberg
22. Jani, D., Singh, N.K., Bhattacharya, S., Meena, L.S., Singh, Y., Upadhyay, S.N., **Sharma A.K.** & Tyagi, A.K. (2004). Studies on Immunogenic potential of plant-expressed cholera toxin B subunit. *Plant Cell Reports* 22:471-477. Publisher: Springer Berlin / Heidelberg
23. Tyagi A.K., **Sharma, A. K.**, Raghunath C. and Jani, D. (2004). Plants as bioreactors. *Indian J. Biotechnol.* 3:274-290. Publisher: National Institute of Science Communication and Information Resources, CSIR, Delhi.
24. Veluthambi, V., Gupta A.K. and **Sharma, A.K.** (2003). The current status of plant transformation technologies. *Current Sci.* 84:368-380. Publisher: Current Science Association & Indian Academy of Sciences.
25. Jani, D., Meena, L.S., Haq, Q.M.R., Singh, Y., **Sharma, A.K.** and Tyagi, A.K. (2002). Expression of cholera toxin B subunit in transgenic tomato plants. *Transgen. Res.* 11:447-454. Publisher: Kluwer Academic Publishers, Netherlands
26. Mohanty, A., Grover, M., Chaudhury, A., Haq, Q. R., **Sharma, A.K.**, Maheshwari S.C. and Tyagi, A.K. (2000). Analysis of the activity of promoters from two photosynthesis-related genes *psaF* and *petH* of spinach in a monocot plant, rice. *Indian J. Biochem. Biophys.* 37: 447-452. Publisher: National Institute of Science Communication and Information Resources, CSIR, Delhi. -
27. Grover, M., Dhingra, A., **Sharma, A.K.**, Maheshwari S.C. and Tyagi, A.K. (1999). Involvement of phytochrome(s),  $Ca^{2+}$  and phosphorylation in light-dependent control of transcript levels for plastid genes (*psbA*, *psaA* and *rbcl*) in rice (*Oryza sativa*). *Physiol. Plant* 105: 701-707. Publisher: Blackwell Publishing Ltd, Oxford
28. Grover, M., **Sharma, A.K.**, Maheshwari S.C. and Tyagi, A.K. (1998). Regulation of plastid gene expression in rice involves calcium protein phosphatases/kinases for signal transduction. *Plant Sci.* 137: 185-190. Publisher: Elsevier Science, Ireland Ltd.
29. **Sharma, A.K.**, Raghuram, N., Chandok, M.R., Das, R., and Sopory, S.K. (1994). Investigation on the nature

of phytochrome induced transmitter for the regulation of nitrate reductase in etiolated leaves of maize. J. Exp. Bot. 45: 485-490. Publisher: Oxford University Press.

30. Pradhan, S., **Sharma A.K.**, and Sopory, S.K. (1993). Cloning of BamHI repeat from *Amaranthus* and study of methylation in genomic DNA during dedifferentiation. Biochem. Mol. Biol. Internat. 30: 571-578. Publisher: Academic Press, Australia.
31. Kumar G. and **Sharma, A.K.** (1993) Localization of adjacent binding domains of cellular proteins over the minute virus of mice P4 promoter by site-specific photoaffinity labelling. Gene 127: 237-242. Publisher: Elsevier Science Publishers B. V.
32. Kumar, G., **Sharma A.K.** and Jayaraman K. (1992). Incorporation of BrdU in DNA fragments may affect protein-DNA interactions in a site dependent manner. Oncogenes 7:1453-1455. Publisher: Nature Publishing Group, U.K.
33. **Sharma, A.K.** and Kumar G. (1991) A 53 kDa protein binds to the negative regulatory region of JC virus early promoter. FEBS Letters 281:272-274. Publisher: Elsevier Science Publishers B. V.
34. Das, R., **Sharma, A.K.** and Sopory, S.K. (1989). Regulation of NADH- glutamate dehydrogenase activity by phytochrome, calcium and calmodulin in *Zea mays*. Plant Cell Physiol. 30:317-323. Publisher: Oxford University Press.
35. **Sharma, A.K.** and Sopory, S.K. (1988). Regulation of nitrate reductase activity by phytochrome and cytokinin. Plant Physiol. Biochem. 15:107-115. Publishers: Society for Plant Physiology and Biochemistry, New Delhi, India
36. Gupta, A.K., **Sharma, A.K.** and Sopory, S.K. (1987). Inhibition of nitrate reductase induction in germinating barley embryos by endosperm. Plant Sci. 54:141-145. Publisher: Elsevier Science, Ireland Ltd.
37. **Sharma, A.K.** and Sopory, S.K. (1987). Effect of phytochrome and kinetin on nitrite reductase activity in *Zea mays*. Plant Cell Physiol. 28:447-454. Publisher: Oxford University Press.
38. **Sharma, A.K.** and Sopory, S.K. (1984). Independent effects of phytochrome and nitrate on nitrate reductase and nitrite reductase activities in maize. Photochem. Photobiol. 39:491- 493. Publisher: The American Society for Photobiology.
39. Sopory, S.K., **Sharma, A.K.**, Rao, L.V.M. and Guha-Mukherjee, S. (1983). Mechanism of phytochrome regulation of nitrate reductase and nitrite reductase in maize, Plant Physiol. Biochem. 10:17-23. Publishers: Society for Plant Physiology and Biochemistry, New Delhi, India
40. **Research papers published in Academic Journals other than Refereed/Peer Reviewed Journals**
41. **Research papers published in Refereed/Peer Reviewed Conferences**
42. **Research papers Published in Conferences/Seminar other than Refereed/Peer Reviewed Conferences**
43. Tyagi, A.K., Khurana, J.P., **Sharma, A.K.**, Mohanty, A., Dhingra A., and Gaur, T. (2002). Mechanism of Regulation of gene expression for chloroplast proteins. In: S.K. Sopory, R. Oelmuler and S.C. Maheshwari (Eds.), Signal Transduction in Plants: Current Advances. Publisher: Kluwer Academic/Plenum Publishers, New York, pp. 297-307.
44. Tyagi A.K. and **Sharma, A.K.** (2000). Transcriptional regulation of plant gene expression. In: The changing scenarios in plant sciences (Professor H.Y. Mohan Ram commemoration volume), (eds, V.S. Jaiswal , A.K. Rai, U. Jaiswal & J.S. Singh), pp 308-327. Publisher: Allied Publishers Ltd., New Delhi
45. **Sharma, A.K.**, Mohanty, A., Singh Y. and Tyagi, A.K. (1999). Transgenic plants for the production of edible vaccines and antibodies for immunotherapy. Curr. Sci. 77: 524-529. Publisher: Current Science Association & Indian Academy of Sciences.
46. Tyagi, A.K., **Sharma, A.K.**, Grover, M., Mohanty, A., Dhingra, A., Raghuvanshi, S., Bajaj, S. and Maheshwari, S.C. (1998). Investigation on expression and engineering of genes in rice. In: Gupta, P.K. ed. Proceedings of the Symposium on Genetics and Biotechnology in Crop Improvement. pp. 169-181.

Publisher: Rastogi Publications, Meerut, India.

**47. Sharma, A.K.,** Raghuram, N., Chandok M.R., and Sopory, S.K. (1993). Signal transduction in phytochrome regulation of nitrate reductase in maize. In Proceedings of DAE symposium on Photosynthesis and Plant Molecular Biology from March 17-19 at Jawaharlal Nehru University New Delhi, pp. 171-177. Publisher: Jawaharlal Nehru University New Delhi

**48.** Sopory, S.K. and **Sharma, A.K.** (1990). Spectral quality of light hormones and nitrate assimilation. In Nitrogen in Higher Plants (ed. Y.P. Abrol), pp 129-157. Publisher: Research Studies Press Ltd, John Wiley & Sons Inc.

**3. Other publications (Edited works, Book reviews, Festschrift volumes, etc.)**

Conference Organization/ Presentations (in the last three years)

List against each head (If applicable)

**1. Organization of a Conference**

1. Co-Chair person and member of local organizing committee at 6<sup>th</sup> International Solanaceae Genome Workshop at Hotel Le Meridien, New Delhi from November 8-13, 2009.

**2. Participation as Paper/Poster Presenter**

1. **Sharma, A.** and Parida, A. (2012) Study for analysis of role of methylated dna binding protein Atmbd6 of *Arabidopsis*. In: International Conference on Biotechnology for Food Security: New Frontiers at National Agricultural Science Centre PUSA, New Delhi, India from February 21-24, 2012.
2. Parida, A.P. and Sharma, A.K. (2011) Role of AtMBD10, a methyl CpG binding protein of *Arabidopsis* in RNA mediated gene silencing. In: International Conference on Plant Science in Post Genomic Era (ICSPGE-2011) held at Sambalpur University Orissa from February 17-19, 2011.
3. **Sharma, A.K.;** Solanke, A.U. and Tyagi, A.K. (2010) Studies on improvement of cold-tolerance of tomato. In: Conference on "BIOTECHNOLOGY: Fusion of Advanced Research and Teaching at Madurai Kamaraj University on January 2-4, 2010.
4. Kumar, R.; Kapoor, S.; Tyagi, A.K. and **Sharma, A.K.** (2010) Study on role of LeMADS-RIN, a MADS box transcription factor in ripening of tomato fruit. In: Indo French symposium "Genomics and Biotechnology of Fruit Quality" held in Lucknow, India from January 18-20, 2010.

Research Projects (Major Grants/Research Collaboration)

- DST project on "Role of DNA methylation in silencing of genes in plants"
- DBT project on "Expression of antigenic determinants of *Vibrio cholerae* in tomato or tobacco and evaluation of their immunogenic potential" (Joint with Prof. Akhilesh Tyagi)
- DBT project on "Preparation of an array of ripening-related genes from tomato and other fruit crops and study of their expression profile during fruit ripening"
- DBT project on "Expression of *ctxB*, *tcpA* or *acfA* from *Vibrio cholerae* in tomato and evaluation of their immunogenic potential in model animal system" (Joint with Prof. Akhilesh Tyagi)
- DRDO project on Expression of *OSISAP1* gene of rice and *CBF1* gene of *Arabidopsis* in tomato to improve cold tolerance
- DBT project on "Microarray analysis of ripening-related genes in tomato lines engineered to suppress *LeMAD-RIN* gene for MADS box transcription factor to study developmental regulation of ripening
- DBT project on Manipulation of fruit ripening by phase specific gene silencing - a case study with tomato LeEIL1 and LeEIL3.
- DBT project on Over-expression of cold-induced genes encoding for mitogen activated protein kinase 3 and alternative oxidase 1 in tomato to improve cold-tolerance

- DST Purse grant project on “Studies on role of epigenetic changes in gene regulation and mechanism of their interpretation for gene regulation” (Joint with Dr. S. Kapoor and Dr. S. Raghuvanshi)
- DBT project on “Transcriptome analysis and genetic manipulation of tomato targeted at folate enhancement” (Joint with Dr. S. Raghuvanshi)
- DBT project on “Delay of fruit ripening of tomato by expression of mutant *etr1-1* gene encoding ethylene receptor of *Arabidopsis*” (Joint with Dr. Saurabh Raghuvanshi).
- DBT project on “Tomato Ripening work” (Joint with Prof. J.P. Khurana)
- DBT project on “Regulation of ripening in tomato by genetic manipulation of epigenome.

#### Awards and Distinctions

Nominated as Fellow of The National Academy of Sciences, India in 2012.

#### Association With Professional Bodies

**1. Editing**

**2. Reviewing**

Gene; Indian Journal of Virology; Journal of Biosciences; Journal of Experimental Botany; Journal of Plant Biochemistry and Biotechnology; Journal of Plant Physiology; Molecular Genetics and Genomics; Physiology and Molecular Biology of Plants; Plant Cell Reports; Transgenic Research  
Indian Journal of Biotechnology

**3. Advisory Committees and Boards**

1. Member of Board of Research Studies, Faculty of Interdisciplinary and Applied Sciences, University of Delhi, South Campus from year 2003 to 2005, 2008-2010, 2014-16.
2. Member of Faculty of Interdisciplinary and Applied Sciences, University of Delhi, South Campus since 2015.
3. Member of Board of Examinations at Central University of Bihar, Patna since 2011.
4. Member, Board of Studies in Biotechnology, Khalsa College, Amritsar since 2013.

**4. Memberships**

Society for Plant Biochemistry and Biotechnology  
Indian Society of Developmental Biologists  
Indian Photobiology Society

**5. Office Bearer**

#### Other Activities

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(Signature of Faculty Member)

(Signature & Stamp  
of Head of the Department)