




Faculty Details proforma for DU Web-site

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cc: director@ducc.du.ac.in)

Title	Professor	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				
Phone No	Office	24110544				
	Residence					
	Mobile	9810538742				
Email		arun.sharma@south.du.ac.in				
Web-Page		http://www.dpmb.ac.in/index.php?page=arun-k-sharma				
Educational Qualifications						
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	
Career Profile						
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
Administrative Assignments						
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 2014-2016.						
Areas of Interest / Specialization						
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.						
Subjects Taught						
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, Advances in Plant Molecular Biology and Biotechnology				
2017 onward		Research Methodology				

Time table of the subjects taught during the current semester				
S.No.	Subject	Days	Time	Classroom
1	PMBB803	21	42 h	42 h
2	PMBB805	3	21 h	21 h
3	PMB I	2	4 h	4 h
4	PMB II	2	4 h	4 h
Research Guidance				
1.	Supervision of awarded Doctoral Thesis		10	
1.	Supervision of Doctoral Thesis, under progress		5	
2.	Supervision of awarded M.Phil dissertations		1	
3.	Supervision of M.Phil dissertations, under progress		0	
Publications Profile				
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. <i>J. Biosci.</i> 42:57-68.			
2.	Agarwal, P., Kumar, R. Pareek, A. and Sharma, A.K. (2017) Fruit preferential activity of tomato R/P1 gene promoter in transgenic tomato and <i>Arabidopsis</i> . <i>Mol. Gen. Genomics</i> 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. <i>The Plant Genome</i> . 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. <i>Plant Mol. Biol. Rep.</i> 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.), <i>Fruit ripening: Physiology, Signalling and Genomics</i> . . 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.), <i>Gene and its Engineering</i> . 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. <i>J. Exp. Bot.</i> 65:4561–4575. Citations 6, Impact Factor 5.794.			
8.	Kumar R, Khurana A and Sharma A.K. (2013). Molecular regulators of fruit ripening. <i>Stewart Postharvest Review</i> . 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. <i>Nature</i> 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 (<i>Solanum lycopersicum</i>). <i>Mol Gen. Genomics</i> . 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. <i>Mol Gen. Genomics</i> 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. Biosc.* 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

27. Grover, M., Dhingra, A., **Sharma, A.K.**, Maheshwari S.C. and Tyagi, A.K. (1999). Involvement of phytochrome(s), Ca²⁺ 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. 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.
41. 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

42. **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.
43. 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.
44. **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
45. 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.

Publications in the Last one year

Nil

Conference Organization/ Presentations (in the last three years)

1. **Sharma A.K.**, Parida, A.P., Amrapali and Kumra. H. 2017 Role of methylated DNA binding proteins in gene regulation in plants. In National Conference on "Basic Biology is the Core of Biotechnology (NCBBCB-2017)" to be held during October 30-31, 2017 at Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.
2. Singh V and **Sharma, A.K.** 2017. Identification of AtMBD2 and AtMBD9 interacting partners. In National Conference on "Basic Biology is the Core of Biotechnology (NCBBCB-2017)" to be held during October 30-31, 2017 at Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.
3. Sharma, A and **Sharma. A.K.** Study on role of Methyl-CpG-binding domain protein 1 (AtMBD1) in Abscisic acid response in *Arabidopsis*. In National Conference on "Basic Biology is the Core of Biotechnology (NCBBCB-2017)" to be held during October 30-31, 2017 at Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.
4. Parida, A.P., Raghuvanshi, U., Singh, V., Pareek, A., Bhoomika, Kumar, R. and **Sharma, A.K.** 2017. Identification, sequence analysis and expression profile of genes encoding MBD domain containing proteins suggests their role in fruit development and abiotic stress responses. In National Conference on "Basic Biology is the Core of Biotechnology (NCBBCB-2017)" to be held during October 30-31, 2017 at Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.
5. **Sharma, A.K.** 2017. Genomics for improving tomato fruit quality. In National Seminar on "RECENT TRENDS in GENOMICS & METABOLOMICS" on March 17-18th, 2017 at Bioinformatics Centre, School of Biotechnology, University of Jammu.
6. **Sharma. A.K.** 2015. Chaired a session on "Plant Nutrition: Physiology and Genetics" at 3rd International Plant Physiology Congress- IPPC-2015 on "Challenges and Strategies in Plant Biology Research" held at JNU from December 11, 2015 to December 14, 2015.

Research Projects (Major Grants/Research Collaboration)
<ul style="list-style-type: none"> • DST project on “Role of DNA methylation in silencing of genes in plants” • DBT project on “Expression of antigenic determinants of <i>Vibrio cholerae</i> 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 <i>ctxB</i>, <i>tcpA</i> or <i>acfA</i> from <i>Vibrio cholerae</i> in tomato and evaluation of their immunogenic potential in model animal system” (Joint with Prof. Akhilesh Tyagi) • DRDO project on Expression of <i>OSISAPI</i> gene of rice and <i>CBF1</i> gene of <i>Arabidopsis</i> in tomato to improve cold tolerance • DBT project on “Microarray analysis of ripening-related genes in tomato lines engineered to suppress <i>LeMAD-RIN</i> 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 <i>etr1-1</i> gene encoding ethylene receptor of <i>Arabidopsis</i>” (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
<ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 None
Other Activities

Signature of Faculty Member

Head of the Department