




Faculty Details proforma for DU Web-site

Title	Prof.	First Name	S. B.	Last Name	Babbar	Photograph
Designation		Professor				
Address		Room No. 3, Department of Botany, University of Delhi, North Campus, Delhi 110007				
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Email		babbars@rediffmail.com				
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Educational Qualifications						
Degree		Institution			Year	
Ph.D.		Ph.D (<i>In Vitro</i> Sporophytic Development of Pollen in some Angiosperms), University of Delhi			1983	
M.Phil.		M.Phil.(Botany), University of Delhi			1978	
PG		M.Sc. (Botany), University of Delhi			1977	
UG		B.Sc. (Hons.- Botany), University of Delhi			1975	
Pre-medical		Pre – medical, University of Delhi			1973	
Career Profile						
<p>2004-till date: Professor, Department of Botany, University of Delhi.</p> <p>1996- 2004: Reader, Department of Botany, University of Delhi.</p> <p>1988-1996: Senior Lecturer, Department of Botany, University of Delhi.</p> <p>1985-1988: Lecturer, Department of Botany, University of Delhi.</p> <p>1984-1985: Research Scientist (PL-480 Project), Department of Botany, University of Delhi.</p> <p>Jan-March 1984: Lecturer (ad hoc), K.M. College, University of Delhi</p> <p>Nov 1983-Jan 1984: Research Associate (UGC), Department of Botany, University of Delhi.</p> <p>Jan-April 1983: A Contract, FERRO, USDA, US Embassy, New Delhi</p>						
Administrative Assignments						
<p>1978 – 1979: Vice-President, Delhi University Botanical Society</p> <p>May 1989-August 1996: Resident Tutor of P.G. Men’s Hostel, University of Delhi</p> <p>August 1996-January 1997: Warden of P.G. Men’s Hostel, University of Delhi</p>						

Secretary, Departmental Academic Staff Council from 1993 to 1996.

1986-1994, 1996-202: Teacher-in-charge, teaching arrangements in the department

1994-1996: Teacher-in-charge of Central Tissue Culture Facility in the Department

1995-1999, 2005-2008: Convener, Stores Committee in the Department

1994-2002: Staff Advisor, Delhi University Botanical Society

1999-2003: Convener, Equipment Repair & Maintenance Committee of the Department

1998, 1999, 2000: Co-ordinator for annual B.Sc. Practical examinations of the University of Delhi

2002-2005: Convener, Library Committee, Department of Botany.

2011- : Convener, Committee for Ad Hoc Panel

2017- : Teacher-in-Charge, Administration in the Department

2017- : Staff Advisor, Delhi University Botanical Society

Areas of Interest / Specialization

In Vitro Plant Morphogenesis. Research work deals with *In Vitro* Androgenesis, Micropropagation, Alternative Gelling Agents for Microbial and Plant Tissue Culture Media, Role of NO in *In Vitro* Morphogenesis and DNA Barcoding of Plants.

Subjects Taught

Cell Biology, Plant Biotechnology, Phycology

Time table of the subjects taught during the current semester

TUESDAY

BOT 101:

Cell and Molecular Biology : Lecture (8.45 am-9.40 am, Room No. 37), Practical (10.35 am-4.05 pm, Lab. No. 45, Group 1), Group 2)

FRIDAY

Cell and Molecular Biology : Lecture (9.40 am-10.35 am, Room No. 37), Practical (10.35 am-4.05 pm, Lab. No. 45)

Research Guidance

Supervision of awarded Doctoral Thesis

Kumari, Sunita. 1996. Developmental, Histochemical and Ultrastructural Studies on Thallus to Sporangium *Padina tetrastromatica* Hauk., *Spatoglossum variable* Figari et Denotaris and *Pocockiella variegata* (Lamour) Papenfuss. University of Delhi. (under co-supervision of Late Prof. M.R.V. Raghavan)

Ram (née Bhalla), Monika. 1997. Studies in Development on Carposporophyte and Tetrasporophyte of the red alga, *Coelarthrum opuntia* (Endlicher) Børgesen. University of Delhi. (under co-supervision of Late Prof. M.R.V. Raghavan)

Jain, Neeru. 1999. Studies on *In Vitro* Production Of Plants of Black Plum, *Syzygium cuminii* (L.) Skeels, A Myrtaceous Fruit Tree and 'Isabgol' and 'Gum Katira' as Alternative Gelling Agents. University of Delhi.

Walia, Neetika. 2003. *In Vitro* Studies on an Edible Oil-yielding Plant, *Carthamus tinctorious* L. and a Medicinal Tree, *Crataeva nurvala* Buch. Ham. University of Delhi.

Raina, Anupam. 2006. *In Vitro* Regeneration and Reproductive Biology of Mulberry. University of Delhi. (under co-supervision of Prof. S. S. Bhojwani)

Jain, Ruchi. 2006. Alternative Gelling Agents for Microbial and Plant Tissue Culture Media: An Exploratory and Comparative Study. University of Delhi.

Goel, Deepa. 2006. Development of Transgenic Tomato (*Lycopersicon esculentum* Mill.) with Improved Tolerance to Drought and Salinity. University of Delhi. (under co-supervision of Dr. K. C. Bansal, NRCPB, IARI, New Delhi)

Misra, Sasmita. 2007. Molecular Analysis of Drought Stress Tolerance, *In Vitro* Propagation and Genetic Fidelity of Micropropagated *Populus x euroamericana* Plants. University of Delhi. (under co-supervision of Prof. S.C. Gupta).

Kaur, Amandeep. 2008. Safflower: *In Vitro* Multiplication, Stress Physiology and Selection of Salt-Tolerant Variants. University of Delhi.

Lata, Charu. 2010. Putative Role of Nitric Oxide in *In Vitro* Morphogenesis. University of Delhi.

Khurana, Ashima. 2012. Investigations in Nitric oxide (NO) Induced flowering of *Lemna aequinoctialis* Welw., University of Delhi.

Hemant Kumar Singh. 2012. DNA barcoding of some species of *Dendrobium* Swartz. University of Delhi (co-supervisor Dr. Saurabh Raghuvanshi, Department of Plant Molecular Biology, University of Delhi).

Iffat Parveen. 2013. Evaluation of recommended loci for DNA barcoding of Indian orchids. University of Delhi.

Shreyasee Biswas. 2016. Effect of Elevated Levels of Arsenic on the Growth, Antioxidative Status and Secondary Metabolite of *Plumbago zeylanica* L., University of Delhi. (Under the Co-supervision of Prof. A. K. Bhatnagar).

Doctoral Thesis Submitted

Saloni. DNA barcoding of medicinal plants. University of Delhi.

Deepak Singh. Developing easy-to-use cost effective *in vitro* and agro-technologies for mass multiplication of selected orchids. University of Delhi.

Deepshikha Chaterjee. Nitric oxide and *in vitro* flowering. University of Delhi.

Supervision of Doctoral Thesis, under progress

Akansha Priya. Applicability of DNA barcoding for authenticating herbal plants.

Samvedna Chauhan. Role of Nitric Oxide in Plant Growth and Development.

Supervision of awarded M.Phil dissertations

Narayan, Jai Prakash. 1997. Albino Plant Production in Anther Cultures: An Enigmatic Problem Impeding the Application of *In Vitro* Androgenesis in Improvement of Cereal Crops. University of Delhi.

Kalia, Sanjay. 1997. Development of Plants with Variant Gametophytic Genome in Anther Cultures: A Review. University of Delhi.

Sahay, Shalini. 2000. Isolated Microspore Culture of *Brassica*: A Review. University of Delhi.

Jain, Ruchi. 2001. Guar Gum as an Alternative Gelling Agent for Culture Media : A Preliminary Assessment. University of Delhi.

Rajnee, Km. 2001. Towards Micropropagation of two Ligneous Taxa: *Jacaranda acutifolia* Humb. & Bonpl. and *Choerospondias axillaries* B. L. Burt & A. W. Hill. University of Delhi.

Misra, Jitendra Kr. 2003. *In Vitro* Androgenesis: Events Preceding its Final Manifestation. University of Delhi.

Devi, Rajkumar Sanyaima. 2004. Cryopreservation of *In Vitro* Grown Axillary Shoot Buds of *Crataeva nurvala* Buch. Ham. University of Delhi.

Gangotri, W. 2007. Checking the Applicability of Guar Gum Derivatives and Cross-linked Guar Gum for culture Media. University of Delhi.

Devi, Lemis K. 2009. Preliminary Investigations on the Effects of Nitric Oxide on Senescence of Detached Cotyledonary Leaves of *Brassica juncea*. University of Delhi.

Saloni 2011. DNA barcoding of medicinal plants: an *in silico* approach. University of Delhi.

Samvedna Chauhan. 2012. Investigating the effects of nitric oxide on *in vitro* flowering of *Lemna gibba* L.: a long day plant. University of Delhi.

Shradha Nirwan. 2014. *In vitro* studies on important medicinal plants: Kalmegh (*Andrographis paniculata*) and Tilpushpi (*Digitalis purpurea*). University of Delhi.

Publications Profile

RESEARCH PAPERS PUBLISHED IN REFEREED/PEER REVIEWED JOURNALS

Chatterjee D, Biswas S and Babbar SB. 2018. Impact of cadmium and nitric oxide on withanolides and elemental contents of the medicinal herb, *Withania somnifera* (L.) Dunal. *Med Plants* 10(1): 65-74.

Chowlu, K., Malik, S., Kumar, P. And Babbar, S.B. 2017. *Oberonia bopannae* (Orchidaceae: Epidendroideae: Malaxideae), a new species from Arunachal Pradesh (India), with notes on allied species. *Phytotaxa* 316: 285-291.

Singh DS, Priya A, Malik S, Kapoor R and Babbar SB. 2017. Isolation and identification of endophytic fungi from two medicinally important orchids, *Satyrium nepalense* D. Don and *Herminium lanceum* (Tunb. Ex Sw.) Vujk. *Med Plants* 9 (2): 95-101.

Malik S, Mir BA, Singh HK, Chaudhary M, Raina SN and Babbar SB. 2017. DNA Barcodes distinguish *Withania somnifera* and *Withania ashwagandha*. *Proc Nat Acad Sci, India Section B: Biol Sci.* doi:10.1007/s40011-017-0879-3

Parveen I, Singh HK, Malik S, Raghuvanshi S and Babbar SB. 2017. Evaluating five different loci (rbcl, rpoB, rpoC1, matK and ITS) for DNA barcoding of Indian orchids. *Genome DOI: 10.1139/gen-2016-0215*

Singh, D.K. and Babbar, S.B. 2016. *In vitro* propagation and chemical profiling of *Herminium lanceum* (Thunb. ex Sw.) Vujik, a medicinally important orchid, for therapeutically important phenolic acids. *Plant Biotechnology In Press.*

Babbar, S. B. and Singh, D.S. 2016. Protocols for *In Vitro* Mass Multiplication and Analysis of Medicinally Important Phenolics of a Salep Orchid, *Satyrium nepalense* D.Don ("Salam Mishri"). In: Jain, S. M. (Ed.) *Protocols for In Vitro Cultures and Secondary Metabolite Analysis of Aromatic and Medicinal Plants, Second Edition. Methods in Molecular Biology* 1391: 1-11.

Singh, D.S.; Nirwan, S. and Babbar, S.B. 2015. Micropropagation of *Anacyclus pyrethrum* and chemical profiling of the regenerated plants for pellitorine, the active principle. *Plant Cell, Tissue & Organ Culture* **122**: 249-255.

Khurana, A.; Kumar, R. and Babbar, S.B. 2014. Nitric oxide is involved in salicylic acid-induced flowering of *Lemna aequinoctialis* Welw. *Acta Physiologiae Plantarum***36**: 2827-2833.

Babbar, S.B.; Raghuvanshi, S.; Singh, H.K.; Parveen, I. and Saloni. 2012. An overview of the DNA barcoding of plants. *Phytomorphology* **62**: 69-99.

Gangotri, W.; Jain-Raina, R. Ad Babbar, SB. 2012. Evaluation of guar gum derivatives as gelling agents for microbial culture medium. *World J Microbiol Biotech* **28**(5) 2279-2285.

Singh, H.K.; Parveen, I; Raghuvanshi, S. and Babbar, S.B. 2012. The Loci Recommended as universal Barcodes for plants on the basis of floristic studies may not work with congeneric species as exemplified by the DNA barcoding of *Dendrobium* species. *BMC Research Notes* **5**: 42 (Article No.).

Parveen, I.; Singh, H.K.; Raghuvanshi, S.; Pradhan, U.C. and Babbar, S.B. 2012. DNA barcoding of endangered Indian

Paphiopedilum species. *Molecular Ecology Resources* **12**: 82-90.

Kalra, C. and Babbar, S.B. 2012. Stimulatory and period-specific effect of nitric oxide on *in vitro* caulogenesis in *Albizia lebbeck* (L.) Benth. *Acta Physiol. Plant.* **34(1)**: 387-392.

Khurana, A.; Khurana, J.P. and Babbar, S.B. 2011. Nitric oxide induces flowering in the duckweed, *Lemna aequinoctialis* Welw. (Syn. *L. paucicostata* Hegelm.), under noninductive conditions. *J Plant Growth Regul* **30**: 378-385.

Goel, D; Singh, A.K.; Yadav, V.; Babbar, S.B.; Murata, N. and Bansal, K.C. 2011. Transormation of tomato with bacterial coda gene enhances tolerance to salt and water stress. *Journal of Plant Physiology* **168**: 1286-1294.

Jain-Raina, R. and Babbar, S.B. 2011. Evaluation of blends of alternative gelling agents with agar and development of 'xanthagar', a gelling mix, suitable for plant tissue culture media. *Asian Journal Biotechnology* **3**:153-164.

Kalra, C. and Babbar, S.B. 2010. Nitric oxide promotes *in vitro* organogenesis in *Linum usitatissimum* L. *Plant Cell, Tissue & Organ Culture: Journal of Plant Biotechnology.* **103**: 353-359.

Goel, D., Singh, A.K., Yadav, V., Babbar, S.B. and Bansal, K.C. 2010. Overexpression of osmotin gene confers tolerance to salt and drought stresses in transgenic tomato (*Solanum lycopersicum* L.). *Protoplasma* **245**: 133-141.

Walia, N, A Kaur and S B Babbar. 2007. Proliferation and differentiation from endosperms of safflower (*Carthamus tinctorius*). *Biologia Plantarum.* **51(4)**: 749-753.

Walia, N, A Kaur and S B Babbar. 2007. An efficient, *in vitro* cyclic production of shoots from adult trees of *Crataeva nurvala* Buch- Ham. *Plant Cell Reports.* **6(3)**: 277-284.

Sannayaima, R K, A Kaur, A Gupta and S B Babbar. 2006. Cryopreservation of *in vitro*-grown shoot tips of *Crataeva nurvala* Buch.- Ham, an important tree. *CryoLetters.* **27(6)**: 375-386.

Jain, R and S B Babbar. 2006. Xanthan gum: an economical substitute of agar for *in vitro* multiplication of an orchid, *Dendrobium chrysotoxum* Lindl. *Current Science.* **91(1)**: 27-28.

Babbar, S B and R Jain. 2006. Xanthan gum: an economical partial substitute for agar in microbial culture media. *Current Microbiology.* **52(4)**: 287-292.

Jain, R and S B Babbar. 2006. Xanthan gum: an economical substitute for agar in plant tissue culture media. *Plant Cell Reports.* **25(2)**: 81-84.

Jain, R, V Anjaiah and S B Babbar. 2005. Guar gum: a cheap substitute for agar in microbial culture media. *Letters in Applied Microbiology.* **41(4)**: 345-349.

Walia, N, A Kaur and S B Babbar. 2005. *In vitro* regeneration of high oil-yielding variety of safflower (*Carthamus tinctorius* var HUS-305). *Journal of Plant Biochemistry and Biotechnology.* **14(1)**: 65-68.

Jain, R and S B Babbar. 2005. Guar gum and isubgol as cost-effective alternative gelling agents for *in vitro* multiplication of an orchid, *Dendrobium chrysotoxum*. *Current Science.* **88(2)**: 292-294.

Babbar, S B, P K Agarwal, S Sahay and S S Bhojwani. 2004. Isolated microspore culture of Brassica: an experimental tool for

developmental studies and crop improvement. *Indian Journal of Biotechnology*. 3(2): 185-202.

Jain, N and S B Babbar. 2003. Effect of carbon source on the shoot proliferation potential of epicotyl explants of *Syzygium cuminii*. *Biologia Plantarum*. 47(1): 133-136.

Jain, N and S B Babbar. 2003. Regulatory role of iron and EDTA in shoot development from the epicotyl explants of *Syzygium cuminii*. *Journal of Plant Physiology*. 160(5): 569-572.

Jain, N and S B Babbar. 2003. Regeneration of 'juvenile' plants from the nodal explants of a more than 30-year-old tree of black plum, *Syzygium cuminii* (L.) Skeels. *Plant Cell, Tissue and Organ Culture*. 73(3): 257-263.

Walia, N, S Sinha and S B Babbar. 2003. Micropropagation of *Crataeva nurvala*. *Biologia Plantarum*. 46(2): 181-185.

Jain, N and S B Babbar. 2002. Gum Katira - a cheap gelling agent for plant tissue culture media. *Plant Cell, Tissue and Organ Culture*. 71(3): 223-229.

Ram, M and S B Babbar. 2002. Transient existence of life sans cell membrane: one of the strategies of siphonous seaweeds for survival and propagation. *BioEssays*. 24(7): 588-590.

Ram, M and S B Babbar. 2001. Prochlorophytes: are they still a phylogenetic riddle? . *Proceedings of Indian National Science Academy- Plant*. B 67(1&2): 21-42.

Ram, M, M R Vijayaraghavan and S B Babbar. 2000. Wound response and regeneration in *Coelarthrum opuntia*. *Aquatic Botany*. 68(4): 345-351.

Jain, N and S B Babbar. 2000. Recurrent production of plants of Black Plum, *Syzygium cuminii* (L.) Skeels, a myrtaceous fruit tree, from in vitro cultured seedling explants. *Plant Cell Reports*. 19(5): 634-637.

Babbar, S B, J P Narayan and S S Bhojwani. 2000. Occurrence of albino plants in anther and pollen cultures: a problem limiting the application of in vitro androgenesis in crop improvement. *Plant Tissue Culture*. 10(1): 59-87.

Babbar, S B, S Kumari, L Kaur and M R Vijayaraghavan. 1999. Histochemical studies on tetrasporogenesis in *Spatoglossum variaible* Figari et de Notaris (Dictyotales, Phaeophyta). *Phytomorphology*. 49(1): 13-20.

Babbar, S B and N Jain. 1998. Isubgol as an alternative gelling agent for plant tissue culture media. *Plant Cell Reports*. 17(4): 318-322.

Kumari, S, L Kaur, M R Vijayaraghavan and S B Babbar. 1997. Tetrasporogenesis and in situ germination in a tropical brown seaweed - *Padina tetrastratica* Hauk (Dictyotales, Phaeophyta). *Phytomorphology*. 47(4): 359-369.

Jain, N, S Gupta and S B Babbar. 1997. Isubgol as an alternative gelling agent for microbial culture media. *Journal of Plant Biochemistry and Biotechnology*. 6(2): 129-131.

Babbar, S B and S C Gupta. 1997. Phasic requirement of coconut milk for Datura metel microspore embryogenesis. *Phytomorphology*. 40(1&2): 53-57.

Babbar, S B and S C Gupta. 1986. Obligatory and period specific requirement of iron for microspore embryogenesis in Datura metel anther cultures. *Journal of Plant Research*. 99(2): 225-232.

Babbar, S B and S C Gupta. 1986. Putative role of ethylene in Datura metel anther cultures. *Physiologia Plantarum*. 68(1): 141-144.

Govil, S, S B Babbar and S C Gupta. 1986. Regeneration of plantlets from in vitro cultured anthers of Black mustard (*Brassica nigra* Koch.). *Plant Breeding*. 97(1): 64-71.

Babbar, S B and S C Gupta. 1986. Induction of androgenesis and callus formation in in vitro cultured anthers of a myrtaceous fruit tree (*Psidium guajava* L.). *Journal of Plant Research*. 99(1): 75-83.

Babbar, S B and S C Gupta. 1986. Effect of carbon source on Datura metel microspore embryogenesis and the growth of callus raised from microspore-derived embryos. *Biochemie und Physiologie der Pflanzen*. 181(5): 331-338.

Babbar, S B and S C Gupta. 1986. Promotory and inhibitory effect of activated charcoal on microspore embryogenesis in Datura metel. *Physiologia Plantarum*. 66(4): 602-604.

Babbar, S B and S C Gupta. 1985. Chemicals affecting androgenic response in Datura metel - glutamine, glutamic acid, serine and inositol. *Beiträge zur Biologie der Pflanzen*. 60(3): 459-466.

Babbar, S B and S C Gupta. 1984. Pathways in pollen sporophyte development in anther cultures of Datura metel and *Petunia hybrida*. *Beiträge zur Biologie der Pflanzen*. 59(3): 475-488.

Babbar, S B and S C Gupta. 1983. Pollen plantlet production in anther cultures of Datura metel as affected by centrifugation, low pressure and anther density. *Tropical Plant Science Research*. 1(4): 475-488.

Babbar, S B and S C Gupta. 1982. Promotory effect of polyvinylpyrrolidone and L- cysteine HCl on pollen plantlet production in anther cultures of Datura metel. *Zeitschrift für Pflanzenphysiologie*. 106(5): 459-464.

Babbar, S B, A Mittal (née Vishnoi) and S C Gupta. 1980. In vitro induction of androgenesis, callus formation and organogenesis in *Iberis amara* Linn. anthers. *Zeitschrift für Pflanzenphysiologie*. 100(5): 409-414.

Babbar, S B and S C Gupta. 1980. Chilling induced androgenesis in anthers of *Petunia hybrida* without any culture medium. *Zeitschrift für Pflanzenphysiologie*. 100(3): 279-283.

Gupta, S C and S B Babbar. 1980. Enhancement of plantlet formation in anther cultures of Datura metel L. by pre-chilling of buds. *Zeitschrift für Pflanzenphysiologie*. 96(5): 465-470.

Babbar, S B and S C Gupta. 1979. Nuclear divisions in protoplasts isolated from microspore tetrads of *Datura metel* - A critical appraisal. *Zeitschrift für Pflanzenphysiologie*. 95(3): 279-282.

Vishnoi, A, S B Babbar and S C Gupta. 1979. Induction of androgenesis in anther cultures of *Withania somnifera*. *Zeitschrift für Pflanzenphysiologie*. 94(2): 169-171.

OTHER PUBLICATIONS (CHAPTERS/ARTICLES IN BOOKS/PROCEEDINGS)

Babbar, S B, N Walia and A Kaur. 2009. Large-scale in vitro multiplication of *Crataeva nurvala*. *Methods in Molecular Biology (Clifton NJ), Protocols for In Vitro Cultures and Secondary Metabolite Analysis of Aromatic and Medicinal Plants*, (ed. S M Jain and P K Saxena) 547: 61-70.

Babbar, S B, N Walia, and A Kaur. 2008. Safflower. In *A Compendium of Transgenic Oil-seed Crop Plants*, ed. C Kole and T H Hall, 247-262. UK: Blackwell Publ Oxford.

Babbar, S B, M Ram and A Raina. 2006. Prochlorophytes: phylogenetic riddle to important players in global environment. In *Biodiversity, Conservation, and Systematics*, ed. P Singh, 21-42. Jodhpur: Scientific Publishers.

Babbar, S B, N Kumari and J K Mishra. 2004. In Vitro androgenesis: events preceding its cytological manifestation. In *Plant Biotechnology and Molecular Markers*, ed. P S Srivastava, A Narula and S Srivastava, 1-17. New Delhi: Anamaya Publishers.

Babbar, S B and N Jain. 2000. Biotechnology of ornamental flowering plants. In *Biotechnology in Horticulture and Plantation Crops*, ed. K L Chadha, P N Ravindran and L Sahijram, 704-793. New Delhi : Malhotra Publishing House.

Babbar, S B, N Walia and S N Raina. 2000. In vitro androgenesis and its application to horticultural crops. In *Biotechnology in Horticulture and Plantation Crops*, ed. K L Chadha, P N Ravindran and L Sahijram, 79-119. New Delhi: Malhotra Publishing House.

Babbar, S B and S Kalia. 1998. Plants with altered or non gametophytic genome in anther cultures. In *Plant Tissue Culture and Molecular Biology; Applications and Prospects*, ed. P S Srivastava, 17-64. New Delhi: Narosa Publishing House.

POPULAR ARTICLES:

Babbar, S.B. 1996. Prions: the infectious agents apparently lacking nucleic acids. *The Botanica* **46**: 231-236.

Babbar, S.B. and Jain, N. 1997. Gene silencing: a bane or boon. *The Botanica* **47**: 53-57.

Walia, N. and Babbar, S.B. 1998. 'Porphyria' – a metabolic disorder makes no distinction between plants and animals. *The Botanica* **48**: 129-134.

Babbar, S.B. and Ram, M. 1999. Synchronous mass spawning in siphonous algae: a reproductive strategy for efficient self propagation. *The Botanica* **49**: 116-119.

Walia, N. and Babbar, S. B. 2000. Biosensors. *The Botanica* **50**: 119-124.

Sahay, S. and Babbar, S. B. 2000. Biological warfare: concepts and implications. *The*

Botanica **50**:112-128.

Ram, M. and Babbar, S. B. 2002. 'Raktbeej' and *Bryopsis*: fantasy and reality! The Botanica **51**: 67-71.

Singh, H.K; Malik, S. and Babbar, S.B. 2015. DNA barcoding: applications and future prospects. Botanica **64&65**:75-79.

Publications in the Last One Year

Chatterjee D, Biswas S and Babbar SB. 2018. Impact of cadmium and nitric oxide on withanolides and elemental contents of the medicinal herb, *Withania somnifera* (L.) Dunal. Med Plants 10(1): 65-74.

Chowlu, K., Malik, S., Kumar, P. And Babbar, S.B. 2017. *Oberonia bopannae* (Orchidaceae: Epidendroideae: Malaxideae), a new species from Arunachal Pradesh (India), with notes on allied species. Phytotaxa 316: 285-291.

Singh DS, Priya A, Malik S, Kapoor R and Babbar SB. 2017. Isolation and identification of endophytic fungi from two medicinally important orchids, *Satyrium nepalense* D. Don and *Herminium lanceum* (Tunb. Ex Sw.) Vujk. Med Plants 9 (2): 95-101.

Malik S, Mir BA, Singh HK, Chaudhary M, Raina SN and Babbar SB. 2017. DNA Barcodes distinguish *Withania somnifera* and *Withania ashwagandha*. Proc Nat Acad Sci, India Section B: Biol Sci. doi:10.1007/s40011-017-0879-3

Parveen I, Singh HK, Malik S, Raghuvanshi S and Babbar SB. 2017. Evaluating five different loci (rbcl, rpoB, rpoC1, matK and ITS) for DNA barcoding of Indian orchids. Genome DOI: 10.1139/gen-2016-0215

Conference Organization/ Presentations (in the last three years)

Conference Presentations/Participation

A poster entitled, "DNA barcode reference library for Indian medicinal plants of high trade volume" by Saloni Malik and Shashi B. Babbar, Department of Botany, University of Delhi, presented in the 6th International Barcode of Life Conference held at the University of Guelph, Guelph, Canada from September 18-21, 2015 by the former was adjudged as the Best Poster and was awarded "Genome Prize for Research Excellence" under the category Socio-economic Application with a cash award and citation.

Delivered as a resource person a lecture entitled, "DNA Barcoding: A Novel Tool for Providing Unique Molecular Recognition Tags to Species for Identification and Detection" in Refresher Course

for teachers at the Department of Botany, Punjabi University, Patiala on December 23, 2015.

Delivered a key-note address entitled, "DNA Barcoding: Concept, Technology, Applications and Our Experience" in National Conference "Plant Science Research: Looking Beyond 21st Century for Environmental and Agricultural Revolution" organized by the Society for Plant Research and/at the Department of Botany, University of Delhi, on February 6, 2016.

Delivered an Invited lecture on "Conservation and Sustainable Utilization of Medicinal Orchids: Possible Role of DNA Barcoding, Plant Biotechnology, Phylogenetic Analysis and Chemical Profiling" and chaired a session in the The National Conference cum Workshop on "Advances in Orchid Biology with Focus on Climate Change, Medicinal and Floricultural Plants and Sustainable Economic Utilization", organized by The Orchid Society of India (TOSI) jointly with and at Dr YSR Horticultural University, Venkataramannagudem, West Godavari District, Andhra Pradesh during February 26-28, 2016.

As a Resource person delivered three lectures entitled, 1. DNA Barcoding: Concept, History, Methodology and Developments in Plants; 2. DNA Barcoding: Applications with Some Illustrative Examples, and 3. DNA Barcoding: *In Silico* Analysis for Species Discrimination and Identification, on March 15, 2016 in Hands on Training Workshop on "Molecular Profiling and Genome Analysis", jointly Organized by the Institutional Biotech Hub, Department of Botany and Bioinformatics Infrastructure Facility Centre Nagaland University, Lumami.

Delivered an invited talk entitled, "Species Identification sans Physical Presence: DNA BARCODING - Concept, History, Applications, Methodology, and Developments in Plants" in One-day Workshop for TY B.Sc. Botany 2016-2017 organized at at R. J. College of Arts, Science and Commerce, under the aegis of Board of Studies in Botany, University of Mumbai, Mumbai, on June 11, 2016.

Delivered an invited lecture entitled, "DNA BARCODING: Molecular Method for *In Absentia* Identification of Species" on June 11, 2016 in a Refresher course for teachers organized by the University of Mumbai at Kalina Campus, Mumbai.

Delivered the keynote address in the inaugural session of the National workshop on "DNA Barcoding: Molecular Biology and Phylogenetic Taxonomy" organized by the SIT Group of Institutions at SIT College, SIDHI, M.P. on October 1, 2016. Delivered an invited lecture entitled, "DNA Barcoding: Fundamentals and Applications" in the National Conference on "Digitization of Biodiversity by DNA Barcodes" organized by the Department of Zoology, DR. H.S. Gour University, Sagar, M.P. on February 12, 2017.

Delivered an invited lecture entitled, "DNA Barcoding for Validating Botanical Identities of Herbals and Taxonomic Delimitations" in the National Conference on "Understanding Himalayan Phytodiversity in a Changing Climate" organized by the Botanical Survey of India, Sikkim Himalayan Regional Centre, Gangtok, Ministry of Environment, Forest & Climate Change, in collaboration with East Himalayan Society for Spermatophyte Taxonomy and Sikkim University, Gangtok on March 11, 2017.

Delivered a keynote address entitled, "Species Identifications *sans* Physical Presence: Concept, History, Methodology, Developments in Plants and Applications", In the National Seminar on "Recent Trends in Genomics and Metabolomics" organized by the School of Biotechnology, University of Jammu, Jammu on March 17-18, 2017.

Chaired a session and Delivered an invited lecture entitled, "Orchids provided proof-of-concept for DNA barcoding in plants and paved way for the application of technology for establishing the botanical identities of herbals and taxonomic delimitations" on March 24, 2017 in the National Conference cum Workshop on "Recent Trends in Biology, Culture, Conservation, Commercialization and Sustainable Utilization of Medicinally And Floriculturally Important Orchids & Orchid Show" organized jointly by the Orchid Society of India and Graphic Era University at Graphic era University Dehradun from March 24-25, 2017.

Delivered an invited lecture on "DNA BARCODING: Concept, History, Methodology and Applications" in Miranda House, University of Delhi on February 19, 2018.

Chaired and delivered the lead lecture entitled, "Possible Role of DNA Barcoding, Plant Biotechnology, Phylogenetic Analysis and Chemical Profiling in Conservation and Sustainable Utilization of Medicinal Plants" in the Botany section of the Uttarakhand Science and Technology Congress held at Vigyan Dham, Dehradun from March 8-10, 2018.

Delivered an invited lecture on "Orchids Provided Proof-of-Concept for the Applicability of DNA Barcoding to Plants" on March 16, 2018 in the National Conference cum Workshop on "Current Trends in Conservation, Sustainable Development, Biological and Social Benefits of Medicinally and Floriculturally Significant Orchids and Orchid Show" organized by the Orchid Society of India (TOSI) jointly with and at Regional Agricultural Research Station, Kerala Agricultural University, Ambalavayal, Waynad, Kerala from March 16-18, 2018.

Delivered a plenary lecture on, "DNA Barcoding, Plant Biotechnology, Phylogenetic Analysis and Chemical Profiling for Conservation and Sustainable Utilization of Medicinal Plants" on March 23, 2018 in the National Conference on "organized at Swami Shradhanand College, University of Delhi.

Research Projects (Major Grants/Research Collaboration)

Name of Project: Investigations on *In Vitro* Morphogenic Potential of Explanted Tissues and Organs of Guava (*Psidium guajava* L.)

Position in Project: Principal Investigator

Period: 1986-1987

Funding Agency: University Grants Commission

Grant: Rs.15,000.00

Name of Project: *In Vitro* Production of Guava (*Psidium guajava*) Plants through Somatic and Microspore Embryogenesis

Position in Project: Principal Investigator

Period: 1995-1998

Funding Agency: University Grants Commission

Grant: Rs.3,63,500-00+PA(1)

Name of Project: Selection of Stress Tolerant and Pathogen Resistant Somatocloned and Gametocloned of *Carthamus tinctorius* through Tissue Culture

Position in Project: Principal Investigator

Period: 2001-2004

Funding Agency: University Grants Commission

Grant: Rs.4,20,048-00+Pa(1)

Name of Project: INCO-DC Project on Improved Oilseed *Brassica* Crops through Breeding,

Mutagenesis and Transformation in (Doubled) Haploid Plant Material

Position in Project: Co-Principal Investigator

Period: 1999-2002

Funding Agency: European Commission (INCO-DC Project)

Grant: Rs.22,75,534-00

Name of Project: Production of Gynogenic Haploids of Selected Female and Male Clones and Reproductive Biology of Mulberry

Position in Project: Principal Investigator

Period: 2002 – 2005

Funding Agency: Department of Biotechnology, Government of India

Grant: Rs.9,64,000-00

Name of Project: DNA Barcoding of Selected Species of *Dendrobium*, an Orchid, for Checking the Applicability of the Concept to Plants

Position in Project: Project Coordinator and Principal Investigator

Period: 2007 – 2010

Funding Agency: Department of Biotechnology, Government of India

Grant: Rs.56,24,000-00

Name of Project: DNA Barcoding of Endangered Indian Medicinal Plants

Position in Project: Principal Investigator

Period: 20012 – 2015

Funding Agency: Indian Council of Medical Research, New Delhi

Name of Project: Development of high output suspension cultures of selected medicinal plants as perennial source of herbals and biomolecules.

Position in Project: Principal Investigator

Period: 20012 – 2015

Funding Agency: Indian Council of Medical Research, New Delhi

Awards and Distinctions

Recipient of:

National Merit Scholarship of the Ministry of Education & Social Welfare, Government of India, from 1975 to 1977.

All India Junior Research Fellowship of the University Grants Commission, New Delhi from 1977 to 1979.

All India Senior Research Fellowship of the University Grants Commission, New Delhi from 1979 to 1981.

Senior Research Fellowship of the Council of Scientific & Industrial Research, New Delhi from 1981 to 1982.

Research Associate of the University Grants Commission, New Delhi from Nov 1983 to Jan 1984.

Association With Professional Bodies

Reviewer for many National and International journals

Advisory

Member, Content Advisory Committee for Biology, Distance Learning Division, Department of Secondary & Higher Education, Ministry of Human Resource Development, Government of India, 2006-2008.

Member, Syllabus Revision Committee as an outside expert for the Course LSC-01 (Cell and Molecular Biology) of the Faculty of Science, Indira Gandhi National Open University, New Delhi.

Memberships

Life Member, Delhi University Botanical Society, Department of Botany, University of Delhi, Delhi.

Life Member, Society for Environmental Scientists, Delhi.

Life Member, Eco-transformation Center: Center for Environment and Rural Upliftment, Delhi.

Life Member, Society for Plant Biochemistry and Biotechnology, New Delhi.

Life Member, International Society of Plant Morphologists, Delhi.

Life Member, The Orchid Society of India, Chandigarh.

Life Member, Society for Conservation and Resource Development of Medicinal Plants, New Delhi.

Member, Committee of Courses constituted by the University of Delhi for the revision and semesterization of the undergraduate course on Agro-chemicals and Pest Management (2011).

Member-Secretary, University Units Complaint Committee (Faculty of Science), University of Delhi (2011-12).

Member, Governing Body, Ramanujam College, University of Delhi (2012 - 2014).

Member, Governing Body, Maharaja Agrasen College, University of Delhi (2012 -2014).

Chairman, Governing Body, Maharaja Agrasen College, University of Delhi (2014)

E.C. nominee on the Management Committee of Mansarover Hostel, University of Delhi (2012-)

Member, Board of Post-Graduate Studies in Biotechnology and Bioinformatics, North Eastern Hill University (NEHU), Shillong, Meghalaya (2014-17).

Member, Governing Body, Hindu College, University of Delhi (2014-).

Member, Executive Council, University Sports Council, University of Delhi (2016 -) .

Chairman, Procurment Committee, School of Open Learning, University of Delhi (April 2014 –

Chairman, 9th Annual Flower Show Committee, University of Delhi (2017).

Member, Governing Body, Laxmibai College, University of Delhi (March 30, 2017 -).

Chairman, Governing Body, Laxmibai College, University of Delhi (April 2017 - 2018).

Member Syllabus Revision Committee (SRC) for UG and PG syllabus in Botany of Sikkim University (2017).

Life Member, East Himalayan Society for Spermatophyte Taxonomy. Life Member, Society for Conservation and Resource Development of Medicinal Plants, New Delhi.

Chief Election Officer, Delhi University Students' Union (DUSU) Elections 2017-18.

Chairman, Annual Flower Show 2018, University of Delhi.

President, East Himalayan Society for Spermatophyte Taxonomy (2018-2019).

Member, Apex Committee of National Certification System for Tissue Culture Raised Plants (NCS-TCP), Department of Biotechnology, Ministry of Science and Technology, Government of India (2018 -).

Member, Project Monitoring and Evaluation Committee (PMEC) of National Certification System for Tissue Culture Raised Plants (NCS-TCP), Department of Biotechnology, Ministry of Science and Technology, Government of India (2018 -).

Office Bearer

Staff Advisor, Delhi University Botanical Society, Department of Botany, University of Delhi, 1994-2002, 2007-2008.

Councilor, Executive Council of the International Society of Plant Morphologists (ISPM, 2011-2015).