

## Dr. Dinesh A. Nagegowda, Ph.D

Principal Scientist  
CSIR-Central Institute of Medicinal & Aromatic Plants  
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### RESEARCH FOCUS

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Plants produce an overwhelming array of molecules called as “specialized metabolites” required for plant’s defense and its interaction with the environment. Many of these specialized metabolites have highly beneficial use as aromatic and medicinal compounds for humans. Despite their high importance to humans metabolic machinery leading to the formation of specialized metabolites is less understood. In our lab, we use transcriptomic and metabolomic approach combined with *in planta* and heterologous characterization to identify genes and regulators involved in the formation of important specialized metabolites in chosen medicinal and aromatic plants. In addition, our lab also explores utilizing the identified genes and regulators for enhanced production of target specialized metabolites through metabolic engineering in the host plant or culture systems.

### EDUCATION

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<b>Ph.D.</b>	Plant Molecular Biology (Dept. of Botany, Univ. of Hong Kong)	Mar. 2004
<b>M.Sc.</b>	Biotechnology (University of Agricultural Sciences, Bangalore)	Sep. 1998
<b>B. Sc.</b>	University of Agricultural Sciences, Bangalore, India	Nov. 1995

### PROFESSIONAL EXPERIENCE

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<b>Principal Scientist</b>	CSIR-CIMAP Research Centre, Bangalore, India	Apr 2012 – present
<b>Scientist Fellow</b>	CSIR-CIMAP, Lucknow, India	Aug 2009 – present
<b>Assistant Professor</b>	Indian Institute of Advanced Research, Gandhinagar, India	Aug 2008 – Aug 2009
<b>Post-Doctoral Scientist</b>	Dept. of Horticulture, Purdue University, West Lafayette, IN	Aug 2004 – Jul 2008
<b>Research Associate</b>	Dept. of Botany, University of Hong Kong, Hong Kong.	Apr 2004 - Aug 2004

### PUBLICATIONS

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**Google Scholar index:** Citations – 1724; h-index – 18; i10 index – 22

1. Singh A.K., Kumar S.R., Dwivedi, V., Rai, A., Pal S., Shasany A.K., **Nagegowda D.A.\*** (2017). A WRKY transcription factor from *Withania somnifera* regulates triterpenoid withanolides accumulation and

- biotic stress tolerance through modulation of phytosterol and defense pathways. *New Phytologist*, 215, 2017, 1115-1131.
2. Meena S, Rajeev Kumar S, Dwivedi V, Kumar Singh A, Chanotiya CS, Akhtar MQ, Kumar K, Kumar Shasany A, **Nagegowda D.A.\*** (2017). Transcriptomic insight into terpenoid and carbazole alkaloid biosynthesis, and functional characterization of two terpene synthases in curry tree (*Murraya koenigii*). *Sci Rep*. 2017 doi: 10.1038/srep44126.
  3. Pal A., Yadav A., Singh AK., Rastogi S., Gupta MM., Verma R., **Nagegowda D.A.**, Pal A., Shasany AK (2017) Nitrogen treatment enhances sterols and withaferin A through transcriptional activation of jasmonate pathway, WRKY transcription factors and biosynthesis genes in *Withania somnifera* (L.) Dunal. *Protoplasma* 254, 389-399
  4. Meena S., Kumar S.R., Venkata Rao D.K., Dwivedi V., Shilpashree H.B., Rastogi S., Shasany A.K., **Nagegowda D.A.\*** (2016) *De novo* sequencing and analysis of lemongrass transcriptome provide first insights into the essential oil biosynthesis of aromatic grasses. *Frontiers in Plant Science* 7:1129.
  5. Kumar K., Kumar S.R., Dwivedi V., Rai A., Shukla A.K., Shanker K., and **Nagegowda D.A.\*** (2015). Precursor feeding studies and molecular characterization of *geraniol synthase* establish the limiting role of geraniol in monoterpene indole alkaloid biosynthesis in *Catharanthus roseus* leaves. *Plant Science*, 239: 56–66
  6. Singh A.K., Dwivedi V., Rai A., Pal S., Reddy S.G.E., Rao D.K.V., Shasany A.K., and **Nagegowda D.A.\*** (2015). Virus-induced gene silencing of *Withania somnifera* squalene synthase negatively regulates sterol and defence-related genes resulting in reduced withanolides and biotic stress tolerance. *Plant Biotech. J.* 13: 1287-1299
  7. Liao P, Wang H, Hemmerlin A, **Nagegowda DA**, Bach TJ, Wang M, and Chye ML (2014). Past achievements, current status and future perspectives of studies on 3-hydroxy-3-methylglutaryl-CoA synthase (HMGS) in the mevalonate (MVA) pathway. *Plant Cell Rep* 33:1005-22
  8. Rastogi S., Meena S., Bhattacharya A., Ghosh S., Shukla R.K., Sangwan N.S., Lal R.K., Gupta M.M., Lavania U.C., Gupta V., **Nagegowda D.A.,\*** and Shasany A.K.\* (2014) *De novo* sequencing and comparative analysis of holy and sweet basil transcriptomes. *BMC Genomics* 15:588
  9. Rastogi S., Kumar R., Chanotiya C.C., Shanker K., Gupta M.M., **Nagegowda D.A.**, and Shasany A.K. (2013) 4-Coumarate: CoA ligase partitions metabolites for eugenol biosynthesis. *Plant and Cell Physiology* 54:1238-52
  10. Rai A, Smitha SS, Singh AK, Shanker K, **Nagegowda DA\*** (2013) Homomeric and heteromeric geranyl diphosphate synthases from *Catharanthus roseus* and their involvement in monoterpene indole alkaloid biosynthesis. *Molecular Plant*, 6:1531-49
  11. Klempien A, Kaminaga Y, Qualley A, **Nagegowda DA**, Widhalm JR, Orlova I, Shasany AK, Taguchi G, Kish CM, Cooper BR, D'Auria JC, Rhodes D, Pichersky E, Dudareva N (2012) Contribution of CoA Ligases to Benzenoid Biosynthesis in Petunia Flowers. *Plant Cell*, 24: 2015-30
  12. Wang H, **Nagegowda D.A.**, Rawat R., Bouvier-Navé P., Guo D., Bach T.J., and Chye M.L. (2012). Overexpression of *Brassica juncea* wild-type and mutant HMG-CoA synthase 1 in Arabidopsis up-regulates genes in sterol biosynthesis and enhances sterol production and stress tolerance. *Plant Biotech J.* 10: 31-42
  13. Gutensohn M., Kaminaga Y., Klempien A., **Nagegowda D.A.**, Negre F, Huh J.H., Luo H, Weizbauer R., Mengiste T., Tholl D., and Dudareva N. (2011). Role of Aromatic aldehyde synthase in wounding/herbivory response and flower scent production in different Arabidopsis ecotypes. *Plant Journal* 66:591-602
  14. **Nagegowda D.A.\*** (2010) Plant volatile terpenoid metabolism: biosynthetic genes, transcriptional regulation and subcellular compartmentation. *FEBS letters*. 584: 2965–2973.
  15. **Nagegowda D.A.\*** (2010) The small subunit of geranyl diphosphate synthase: A tool to improve aroma and flavour by metabolic engineering. *J. Biosci.* 35: 167–169.
  16. Orlova I\*, **Nagegowda D.A.\***, et al., (2009). The small subunit of snapdragon geranyl diphosphate synthase modifies the chain length specificity of phylogenetically distant geranylgeranyl diphosphate synthase in planta. *Plant Cell* 21: 4002-4017 (\* **Joint-first authors**)
  17. Long M\*, **Nagegowda D.A.\***, Kaminaga Y\*, Ho K.K., Weiner H., Kish C.M., and Dudareva N. (2009). Involvement of snapdragon benzaldehyde dehydrogenase in benzoic acid biosynthesis *Plant Journal* 59: 256-65 (\* **Joint-first authors**)

18. Nieuwenhuizen, N.J., Wang M.Y., Matich A.J., Green S.A., Chen X., Yauk Y.K., Beuning, L.L., **Nagegowda D.A.**, Dudareva N., Atkinson R.G. (2009) Two terpene synthases are responsible for the major terpene profile emitted from the flowers of kiwifruit (*Actinidia deliciosa*) *Journal of Experimental Botany* 60: 3203-19.
19. **Nagegowda D.A.**, Gutensohn M., Wilkerson C., and Dudareva N. (2008). Two nearly identical terpene synthases catalyze the formation of nerolidol and linalool in snapdragon flowers. *Plant Journal*. 55(2): 224-39.
20. Guan Y., Ramalingam S., **Nagegowda D.**, Taylor P., and Chye M.L. (2008). *Brassica juncea* chitinase BjCHI1 inhibits growth of fungal phytopathogens and agglutinates Gram-negative bacteria. *Journal of Experimental Botany* 59: 3475-84
21. Dexter R., Qualley A., Kish C.M., Ma C.J., Koeduka T., **Nagegowda D.**, Dudareva N., Pichersky E. and Clark D. (2007). Characterization of a petunia acetyltransferase involved in the biosynthesis of the floral volatile isoeugenol. *Plant Journal* 49: 265-275
22. Nagesha, N., Ramanjini Gowda, P. H., Madhusudana, S. N., Lokesh, J., Vinay, J. N., Michelle, K., Devaiah, B. N., Madhuvanthi, R., Vani kulkarni, Saraswathi, S., **Dinesh, A. N.**, Gowda, T. K. S., and Mehamooda, K. (2007). Genetic transformation of cantaloupe melon (*Cucumis melo* L.) with the rabies virus glycoprotein gene (*PRGSpRgp*) and immunization studies in mice. *Journal of Horticultural Science & Biotechnology*, **82** (3): 383–386.
23. Dudareva N., Negre F., **Nagegowda D.A.**, and Orlova I. (2006) Plant volatiles: Recent advances and future perspectives. *Critical Reviews in Plant Sciences* 25: 417 – 440
24. Pojer F., Ferrer J.L., Richard S.B., **Nagegowda D.A.**, Chye M.L., Bach T.J. and Noel J.P. (2006) Structural basis for the design of potent and species specific inhibitors of 3-hydroxy-3-methylglutaryl coenzyme A synthases. *Proc. Natl. Acad. Sci. USA* 103(31):11491-6
25. **Nagegowda D.A.**, Ramalingam S., Hemmerlin A., Bach T.J., and Chye M.L. (2005). *Brassica juncea* HMG-CoA synthase: localization of mRNA and protein. *Planta* 221(6):844-56.
26. **Nagegowda D.A.**, Bach T.J., and Chye M.L. (2004). *Brassica juncea* HMG-CoA synthase 1: expression and characterization of recombinant wild-type and mutant enzymes. *Biochem Journal* 383(3): 517-527.

### **Book Chapters:**

27. Kumar SR, Meena S, Kumar K, and **Nagegowda DA** (2016) Deciphering plant specialized metabolism through virus-induced gene silencing approach . In: “Genetic Engineering of Plants – Enhancing Productivity and Product Value”. John Willey & Sons Pvt. Limited
28. Gutensohn M., **Nagegowda D.A.**, and Dudareva N. (2013) Involvement of compartmentalization in monoterpenes and sesquiterpene biosynthesis in plants. In: Isoprenoid synthesis in plants and microorganisms; New concepts and experimental approaches. TJ Bach and M. Rohmer (Eds.). Springer - Plant Sciences. Chapter 11, pp. 155-169
29. Wang H, **Nagegowda D.A.**, Bach T.J., and Chye M.L. (2011) Genetic engineering plants for improved isoprenoid content and stress tolerance. Information Systems for Biotechnology, Virginia Tech December 2011 pp 6-8.
30. **Nagegowda D.A.**, Rhodes D., and Dudareva N (2010) The role of the methylerythritol 4-phosphate pathway in rhythmic emission of volatiles. In: Rebeiz C.A. et al. (Eds.) *The Chloroplast: Basics and Applications*, Springer. Chapter 10. p. 139-153.
31. **Nagegowda D.A.** and Dudareva N. (2007) Plant biochemistry and biotechnology of flavor compounds and essential oils. In: Kayser, Quax (Eds.) *Medicinal plant biotechnology*. From Basic Research to Industrial Applications. Wiley-VCH, Verlag GmbH & Co. KGaA, Weinheim, pp. 469-492.

### **Other Publications:**

32. **Dinesh, A.N.**, Chowda Reddy, R.V., Ramanjini Gowda, P.H., Muniyappa, V., Chandrashekar, S., and Gowda, T.K.S. (2002) Transformation of tobacco with glucanase-chitinase encoding genes using *Agrobacterium tumefaciens* for disease resistance. *Mysore J. Agri. Sci.*, **36**, 141-147.

33. PH Gowda, J Latha, MV Rekha, AN Dinesh, TKS Gowda (2001) 2, 4-d promotes high frequency somatic embryogenesis in groundnut (*Arachis hypogaea* L.) *Legume Research-An International Journal* 24 (2), 97-100.
34. Ramanjini Gowda, P. H., Madusudana, S. N., Dinesh, A. N., and Gowda, T.K.S. (2000) Production of Rabies vaccine in Tobacco plants by *Agrobacterium* mediated transformation. *Journal of the Association for Prevention and Control of Rabies in India* 1, 37-38.

## FELLOWSHIPS AND AWARDS

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- Raman Research Fellowship of CSIR, Govt. of India for the year 2016-2017
- Outstanding publication award from CIMAP Research Centres for the year 2016 by CSIR-CIMAP
- Best publication award for the year 2015 by CSIR-CIMAP
- Outstanding research publication award for the year 2014 by CSIR-CIMAP
- Finalist of NASI-SCOPUS Young Scientist Awards 2014 in the field of Agriculture
- Outstanding research publication award for the year 2013 by CSIR-CIMAP
- Ramalingaswami Fellowship (2008-2013) of Department of Biotechnology, Government of India.
- Selected and attended the Young Investigator Meeting 2011, held at Bhubaneswar, Feb 13 – 17, 2011.
- Financial support to work on Bimolecular Fluorescence Complementation experiment in Dr. Vitaly Citovsky's laboratory at Stony Brook University, New York, from 2/25/2008 to 2/29/2008.
- Financial grant from NSF to attend a “Short Course on Design and Analysis of Plant Microarray Experimentation” held at Boston, USA, from Aug 2<sup>nd</sup> to 4<sup>th</sup>, 2006.
- Best poster award at the “Integrative Plant Biochemistry as We Approach 2010!” July 30 - August 3, 2005 conducted by Phytochemical Society of North America held at Salk Institute, San Diego, USA.
- Post-doctoral fellowship by Purdue University, 2004-2008
- Financial support by Research Grants Council (RGC), The University of Hong Kong, to work in IBMP, Strasbourg, France as part of PhD programme (May-June, 2002 and Mar-April, 2003).
- The University of Hong Kong studentship for Ph.D. (2001-03).
- National Eligibility Test Certificate for Lectureship conducted by Agricultural Scientist Recruitment Board (ASRB), Indian Council for Agricultural Research (ICAR), New Delhi, India.
- Karnataka State Council for Science & Technology (India) student research project (1996-1998).
- University of Agricultural Sciences (Bangalore, India) Merit scholarship from 1992-1995.
- National Merit Scholarship for Talented Children from Rural Areas (Std. 8<sup>th</sup> to 12<sup>th</sup>, 1987-1991)

## INVITED TALKS/LECTURES

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1. Regulation and biosynthesis of specialized metabolites: Some aspects in medicinal and aromatic plants. Research talk delivered at the Kalamalka Forestry Centre, Vernon, British Columbia, Canada on Aug 8, 2017.
2. Transcriptomics-based exploration of specialized metabolism in plants. Invited talk on “NextGen Genomics, Biology, Bioinformatics and Technologies (NGBT)” Conference held from Oct 3rd-5th, 2016 in Cochin, India
3. Why is plant science important?. Invited talk in INSPIRE (Innovations in Science Pursuit for Inspired Research, DST, Govt of India) programme conducted at Mount Carmel College, Bangalore, Oct 20, 2016.
4. Genomics-based exploration of specialized metabolism in medicinal and aromatic plants. Invited talk in ICAR sponsored summer school on “Exploring Genomic Resources for Improvement of Horticultural Crops” from 1-7-2016 to 21-7-2016 at the college of Horticulture, UHS campus, GKVK Post, Bengaluru-65
5. Metabolic engineering of *Catharanthus roseus* for enhanced alkaloid accumulation by overexpressing early steps of biosynthetic pathway. Invited talk in International Conference on Nanotechnology (ICNANO-2016), Visvesvaraya Technological University (VTU), April 21-23, 2016, Muddenahalli, Karnataka
6. Regulation of specialized terpene biosynthesis in medicinal plants. Invited talk delivered at TIFR-NCBS, Bangalore 560065, March 10, 2016
7. Understanding the regulation of specialized terpene metabolism in medicinal plants. Plenary talk delivered in National Seminar on Frontiers in Biotechnology, Bharathiyar University, Coimbatore, February 18-19, 2011

8. Phytochemicals as nutraceuticals: Biosynthesis and metabolic engineering. Invited talk in UGC sponsored National Conference on “Nutraceuticals – Perspectives, Prospects and Challenges” held at Mar Athanasius College, Kothamangalam, Kerala, March 12-13, 2013.
9. Characterization of geranyl diphosphate synthase, the entry point enzyme for the biosynthesis of terpene moiety of monoterpene indole alkaloids in periwinkle. Invited talk in 4<sup>th</sup> Asian Symposium on Plant Lipids, University of Hong Kong, Hong Kong, Dec 2-4, 2011.
10. Biosynthesis of volatile compounds in plants. “Autumn School in Biotechnology” organized by UK-India Education and Research Initiative (UKIERI), Bharathiyar University, Coimbatore, Sep 26, 2011.
11. Some aspects of terpenoids and benzenoids biosynthesis in plants. Central Institute of Medicinal and Aromatic Plants, Lucknow, India, 15<sup>th</sup> June, 2009.
12. Some aspects of volatile biosynthesis in plants. School of Biological Sciences, University of Hong Kong, Hong Kong, 30<sup>th</sup> May, 2009.
13. The contribution of CoA ligases to the benzenoid pathway in petunia flowers. Invited talk presented at the Purdue Horticulture and Landscape Architecture Retreat, West Lafayette, IN, USA, May 9, 2008.
14. Volatile terpenoid metabolism in snapdragon and tobacco. Invited talk presented at the Purdue Horticulture and Landscape Architecture Retreat, West Lafayette, IN, USA, May 10, 2007

## **TRAINING/CERTIFICATES**

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1. Attended and successfully completed a 16 hr course with practicals in “Ionising radiation Protection” from March 19-21 & 23, 2001 conducted by The University of Hong Kong safety department.
2. Attended the “Radiation Safety Orientation Training” conducted by Radiological and Environmental Management department, September 2004, Purdue University, USA.
3. Attended and successfully completed “2<sup>nd</sup> NSF-funded Plant Microarray Short Course On Design and Analysis of Plant Microarray Experimentation” held at Boston, USA from August 2- 4, 2006.

## **MEMBERSHIPS**

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- Society of Biological Chemists, India
- American Society of Plant Biologists, (ASPB), USA.
- Phytochemical Society of North America (PSNA), USA.

## **PROFESSIONAL RECOGNITION**

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- **Associate Professor** (Academy CSIR)
- **Faculty** for CIMAP-JNU PhD programme.
- **Editorial Board** – Biomed Research International , Hindawi Publishers (2013-2016)
- **Associate Editor** (2007-2012) of *Journal of Horticultural Science & Biotechnology*, Headley Brothers Ltd The Invicta Press, UK
- **Reviewer of scientific grants for BARD, Israel**
- **ad hoc reviewer** for journals: *Plant Journal*, *Metabolic Engineering*, *Journal of Experimental Botany*, *Nature Scientific Reports*, *PloS One*, *Frontiers in Plant Sciences*, *Journal of Integrative Plant Biology*, *Journal of the American Society for Horticultural Science*, and *Journal of Horticultural Science & Biotechnology*

## **MENTORING**

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PhDs supervised

**3 awarded by JNU, New Delhi**

**5 on-going**

M.Sc. Projects: **04**

Post-Doc: **02**

Project Assistants supervised: **08**

## **EXTERNALLY FUNDED PROJECTS (HANDLED)**

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### **Completed: 03**

- 02 from Department of Biotechnology
- 01 from Department of Science and Technology

### **Ongoing: 01**

- 01 from Department of Science and Technology (41 lakhs, 2017-2020)

## **CONFERENCE PRESENTATIONS**

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- 1 **A WRKY transcription factor from *Withania somnifera* regulates triterpenoid withanolides accumulation and biotic stress tolerance through modulation of phytosterol and defense pathways. Poster**
- 2 Transcriptomics-based exploration of specialized metabolism in plants. Invited talk on “NextGen Genomics, Biology, Bioinformatics and Technologies (NGBT)” Conference held from Oct 3rd-5th, 2016 in Cochin, India. Page 64. Invited talk.
- 3 Why is plant science important?. Invited talk in INSPIRE (Innovations in Science Pursuit for Inspired Research, DST, Govt of India) programme conducted at Mount Carmel College, Bangalore, Oct 20, 2016. Invited talk.
- 4 Genomics-based exploration of specialized metabolism in medicinal and aromatic plants. Invited talk in ICAR sponsored summer school on “Exploring Genomic Resources for Improvement of Horticultural Crops” from 1-7-2016 to 21-7-2016 at the college of Horticulture, UHS campus, GKVK Post, Bengaluru-65. Invited talk.
- 5 Metabolic engineering of *Catharanthus roseus* for enhanced alkaloid accumulation by overexpressing early steps of biosynthetic pathway. Invited talk in International Conference on Nanotechnology (ICNANO-2016), Visvesvaraya Technological University (VTU), April 21-23, 2016, Muddenahalli, Karnataka. Page 43. Invited talk.
- 6 Understanding the regulation of specialized terpene metabolism in medicinal plants. Plenary talk in National Seminar on Frontiers in Biotechnology, Bharathiyar University, Coimbatore, February 18-19, 2016. Page 7. Plenary talk
- 7 Phytochemicals as nutraceuticals: Biosynthesis and metabolic engineering. Plenary talk in UGC sponsored National Conference on “Nutraceuticals – Perspectives, Prospects and Challenges” held at Mar Athanasius College, Kothamangalam, Kerala, March 12-13, 2013. Page 17, Plenary talk.
- 8 Towards understanding the biosynthesis and regulation of withanolides in *Withania somnifera*. 3<sup>rd</sup> International Plant Physiology Congress Challenges and Strategies in Plant Biology Research. December 11-14, 2015 Convention Centre, JNU, New Delhi, India. PD239, Page 235.
- 9 *De novo* sequencing and transcriptome analysis gives the first insight into terpenoid and carbazole alkaloid biosynthesis in ethnopharmacologically important plant *Murraya koenigii* (Curry tree). International Conference on Medicinal Plants: Resource for Affordable New Generation Healthcare. March 20-22, 2015. CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow-226015, India. Abstract No. T-IC 29, page 132.
- 10 *Withania somnifera* WRKY1 transcription factor regulates phytosterol and withanolides biosynthesis, and defense response. International Conference on Medicinal Plants: Resource for Affordable New Generation Healthcare. March 20-22, 2015. CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow-226015, India. Abstract No. T-IC 29. Abstract No. T-IC 41, page 138.

- 11 Characterization of geranyl diphosphate synthase, the entry point enzyme for the biosynthesis of terpene moiety of monoterpene indole alkaloids in periwinkle. 4<sup>th</sup> Asian Symposium on Plant Lipids, University of Hong Kong, Hong Kong, Dec 2-4, 2011. Invited talk. Abstract No. S3-4. Page 24.
- 12 Involvement of geranyl diphosphate synthase in *Catharanthus roseus* monoterpene indole alkaloid biosynthesis. Metabolic Pathway Modulations – Applications in Health and Agriculture, 80<sup>th</sup> annual meeting of the SBC (India), Nov 12 – 15, 2011, CSIR-CIMAP, Lucknow. ME-05, Page 106.
- 13 Identification and characterization of transcription factors involved in withanolide biosynthesis in *Withania somnifera*. Metabolic Pathway Modulations – Applications in Health and Agriculture, 80<sup>th</sup> annual meeting of the SBC (India), Nov 12 – 15, 2011, CSIR-CIMAP, Lucknow. GR-2, Page 09.
- 14 Completing the benzenoid  $\beta$ -oxidative pathway in petunia flowers. Metabolic Pathway Modulations – Applications in Health and Agriculture, 80<sup>th</sup> annual meeting of the SBC (India), Nov 12 – 15, 2011, CSIR-CIMAP, Lucknow. ME-IT-3, Page 102.
- 15 Oberons, physiological substrates for the dual specific protein kinase from *Arabidopsis thaliana*. Metabolic Pathway Modulations – Applications in Health and Agriculture, 80<sup>th</sup> annual meeting of the SBC (India), Nov 12 – 15, 2011, CSIR-CIMAP, Lucknow. CS-1, Page 231.
- 16 Role of geranyl diphosphate synthase in *Catharanthus roseus* monoterpene indole alkaloid biosynthesis. Young Investigator Meeting 2011, organized by NCBS, Bangalore, held at Bhubaneswar, Feb 13 – 17, 2011. Poster No. 56
- 17 *Arabidopsis* overexpressing wild-type and mutant *Brassica juncea* HMG-CoA synthase shows upregulation of genes in sterol biosynthesis. Paper presented at the 7<sup>th</sup> International Symposium on Biocatalysis and Agricultural Biotechnology, October 10 - 13, 2011, Kyoto, Japan. Abstract No. Gen-1. Page 41.
- 18 Enhanced sterol production and stress-tolerance in *Arabidopsis* overexpressing wild-type and mutant *Brassica juncea* HMGS1. Paper presented at the Cold Spring Harbour Asia Conference on “From Plant Biology to Biotechnology” held at Suzhou, China, Oct 25 – 29, 2010. Page 106.
- 19 One gene, two functions - An aromatic aldehyde synthase involved in wounding response or flower scent production in different *Arabidopsis thaliana* ecotypes. Banff Conference on Plant Metabolism 2010, June 24 - 28, Banff, Alberta, Canada, Abstract P30
- 20 Contribution of CoA ligases to benzenoid biosynthesis in petunia flowers. Paper presented at American Society for Plant Biology Midwest Section Annual Meeting March 27 – 28, 2010, Purdue University, USA. Abstract No. 35.
- 21 Functional characterization of an aromatic aldehyde synthase involved in leaf wounding response or flower scent production in different *Arabidopsis thaliana* ecotypes. Paper presented at American Society for Plant Biology Midwest Section Annual Meeting March 27 – 28, 2010, Purdue University, USA. Abstract No. 42.
- 22 Involvement of snapdragon benzaldehyde dehydrogenase in benzoic acid biosynthesis. Paper presented at American Society for Plant Biology Midwest Section Annual Meeting March 27 – 28, 2010, Purdue University, USA. Abstract No. 52
- 23 Identification and characterization of terpene synthases responsible for volatile profile of curry leaf, *Murraya koenigii* (L.). “TERPNET 2009, 9<sup>th</sup> International Meeting: Biosynthesis and Function of Isoprenoids in Plants, Microorganisms and Parasites” held in Tokyo from May 25<sup>th</sup> – May 29<sup>th</sup>, 2009. Abstract No. 076. Page 37.
- 24 Ectopic expression of snapdragon geranyl diphosphate synthase small subunit results in formation of active chimeric enzyme in tobacco. Paper presented in “TERPNET 2009, 9<sup>th</sup> International Meeting: Biosynthesis and Function of Isoprenoids in Plants, Microorganisms and Parasites” held in Tokyo, Japan, from May 25<sup>th</sup> – May 29<sup>th</sup>, 2009. O-29.
- 25 Two terpene synthases are responsible for the major terpene profile emitted from the flowers of kiwifruit (*Actinidia deliciosa*). Poster presented in “TERPNET 2009, 9<sup>th</sup> International Meeting: Biosynthesis and Function of Isoprenoids in Plants, Microorganisms and Parasites” held in Tokyo from May 25<sup>th</sup> – May 29<sup>th</sup>, 2009. P-41
- 26 Expression of small subunit of snapdragon geranylphosphate synthase results in formation of active chimeric enzyme in tobacco. Banff Conference on Plant Metabolism 2008, July 30-August 3, 2008 Banff, Alberta, Canada, P48, page 56.
- 27 Contribution of CoA ligases to benzenoid biosynthesis in petunia flowers. Banff Conference on Plant Metabolism 2008, July 30-August 3, 2008 Banff, Alberta, Canada. P31, page 47

- 28 Contribution of CoA ligases to benzenoid biosynthesis in petunia flowers. Phytochemical Society of North America Annual Meeting. June 25-29, 2008, Institute of Biological Chemistry, Washington State University, Pullman, USA. PS1-11, page 52.
- 29 Two nearly identical terpene synthases catalyze the formation of nerolidol and linalool in snapdragon flowers. American Society for Plant Biology meeting, Chicago, USA, 2007. Abstract No.471
- 30 Involvement of benzaldehyde dehydrogenase in benzoic acid biosynthesis in snapdragon flowers. American Society for Plant Biology meeting, Chicago, USA, 2007. Abstract No. 519
- 31 Overexpression of the small subunit of geranyl diphosphate synthase from snapdragon enhances the production of monoterpenes in tobacco. In Vitro Biology Meeting, Indianapolis, USA, June 9-13, 2007. Abstract No. P2030
- 32 Structural basis for the design of potent and species specific inhibitors of 3-hydroxy-3-methylglutaryl coenzyme A synthases. TERPNET 2007. 8th International Meeting: biosynthesis and function of isoprenoids in plants, microorganisms and parasites, Strasbourg, France, April 30-May 4, 2007. Abstract No. L14.
- 33 Involvement of compartmentalization in nerolidol and linalool biosynthesis in snapdragon flowers. TERPNET 2007. 8th International Meeting: biosynthesis and function of isoprenoids in plants, microorganisms and parasites, Strasbourg, France, April 30-May 4, 2007. Abstract No. L32
- 34 Overexpression of the small subunit of geranyl diphosphate synthase from snapdragon enhances the production of monoterpenes in tobacco. TERPNET 2007. 8th International Meeting: biosynthesis and function of isoprenoids in plants, microorganisms and parasites, Strasbourg, France, April 30-May 4, 2007. Abstract No. P39
- 35 Characterization of a bifunctional terpene synthase from *Antirrhinum majus* catalyzing the formation of a sesquiterpene, nerolidol, and a monoterpene, linalool. Phytochemical society meeting, Salk Institute, San Diego, USA, 2005.
- 36 *Brassica juncea* HMG-CoA synthase: localization of mRNA and protein. TERPNET 2005, Wageningen, Netherlands, April 20 – 23, 2005. Page 74.
- 37 Expression and characterization of recombinant *Brassica juncea* HMG-CoA synthase 1 and its mutants. TERPNET 2005, Wageningen, Netherlands, April 20 – 23, 2005. Page 104.
- 38 Characterization of *Brassica juncea* HMG-CoA synthase 1. American Society for Plant Biology meeting, Honolulu, Hawaii, USA, July 25 – 30, 2003. Abstract No. 1406
- 39 Characterization of *Brassica juncea* HMG-CoA synthase 1. TERPNET 2003, Lexington, Kentucky, USA, May 14 – 17, 2003. Abstract No. 26.
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