

### Curriculum vitae

NAME	POSITION TITLE
Vani Brahmachari, Ph.D.	Professor

EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Bangalore University, Bangalore	B.Sc.	1974	Botany, Zoology & Chemistry
Madurai K University, Madurai	M. Sc.	1976	Molecular biology
Indian Institute of Science (IISc.), Bangalore	Ph. D	1982	Microbiology

### Employment

2002-present	Professor, Dr. B.R. Ambedkar Centre for Biomedical Research(ACBR), Delhi University
1999-2005	Professor and Director(Offtg) Dr. B.R. Ambedkar Centre for Biomedical Research(ACBR), Delhi University
1998-2002	Professor (on Deputation fro IISc.)at ACBR, Delhi University
1996-1998	Principal Research Scientist (Associate Prof) Developmental Biology and Genetics, IISc. Bangalore
1990-1996	Senior Research Scientist (Assistant Prof) Developmental Biology and Genetics, IISc. Bangalore
1982-1990	Research Associate (CSIR), Research Officer ICMR Centre, Microbiology and Cell Biology Dept. IISc., Bangalore
1985-1986	Post-doctoral Fellow, Wistar Institute for Biology, Philadelphia, USA
1989	MRC, London under Royal Society Exchange Fellowship,

### Teaching

#### I. M.Sc.-Ph.D. Combined Programme in Biomedical Sciences, Delhi University (1999-Present)

- (i) Basic course in concepts of Genetics I Semester: Theory: 4 hours /week & Lab: 8 hours/week
- (ii) Special Course: Genome Biology IV Semester: Theory: 4 hours/week.

Dissertation: 3-4 students/batch

#### II. No.Ph.D. awarded : 25 (Twenty five)

### Honours /Fellowship

Fellow of the Indian National Science Academy, (FNA) 2015

Fellow of National Academy of Sciences, India, (FNASc) 2009

Elected member GRC (Guha Research Conference)

INSA Visiting Fellowship (1998).

INSA-Royal Society Fellowship (1989) for research at Medical Research Council (MRC) London

National Biotechnology Fellowship (1985). The Wistar Institute of Biology, Philadelphia, USA  
INSA Young Scientist Medal 1985.

Dr. M. Sreenivasaiah Memorial Award for Best Thesis in Microbiology, 1983.

Prof. L.N. Rao Memorial Gold Medal for first rank in Botany 1974

Prof. Varadarajan Medal for first rank in M.Sc. Madurai Univ., 1976.

### **Membership of Professional Societies**

1. Indian Society of Biological Chemists
2. Indian Society of Cell Biology, (Executive committee member, 2008-10)
3. Indian Society of Developmental Biology
4. The Indian Science Congress Association

### **Editorial work:**

One of the founder editors of Resonance - a journal for science education published by Indian Academy of Sciences, Bangalore.

Member (past), Editorial Board "International Journal of Human Genetics".

Member Editorial Board-Nature Scientific Reports (2016- )

### **Research Support (2012 & before: Selected)**

1. Understanding the dual function of chromatin remodeling protein INO80 in *Drosophila* development (DBT-Rs.49.23lacs)
2. Dissecting the novel dual function of a chromatin remodeling protein human INO80 to understand its context dependent function. (2011-2013; DU-DST-PURSE Grant: Rs.19.75 lacs)
3. Comparative analysis of genomes of clinical isolates of *M.tuberculosis* for genetic plasticity (CSIR-OSDD; Rs.4.20lacs. 1<sup>st</sup> Aug 2012 to 31<sup>st</sup> Aug 2013.
4. Epigenetic regulation of hexokinase II gene in radioresistant cells. INMAS Task Force project. Rs. 6.00 lacs; April 2012-Oct. 2013.
5. Genome-wide mapping of interaction sites of hINO80,.....on the human genome and analysis of its effect on target gene regulation. CSIR; Rs. 56.25 lacs; 2013-2016.
6. Epigenetics in Health and Disease - (EpiHeD): Work package: Molecular basis of genomic imprinting in mealybugs (CSIR, 2012-17; Rs119.7 lacs)

### **Students registered for Ph.D (2017): Total No. Ph.D. thesis supervised: 21**

1. Mr. Suchit Khanna
2. Ms. Parul Gulati
3. Mr. Kausik Bhattacharyya
4. Ms. Surbhi Kholi

## Publications, Original and peer-reviewed

1. Correlation between desiccation stress response and epigenetic modifications of genes in *Drosophila melanogaster*: an example of environment-epigenome interaction. Sharma, V., Kohli, S., **Brahmachari V.** (2017). *Biochim Biophys Acta. Gene regulatory Mechanisms* 8;1860(10):1058-1068. doi: 10.1016/j.bbagr.2017.08.001. [Epub ahead of print]
2. Human PRE-PIK3C2B, an intronic cis-element with dual function of activation and repression. Maini J, Ghasemi M, Yandhuri D, Thakur SS, **Brahmachari V.** (2017) *Biochim Biophys Acta.* 1860(2): 196-204. doi: 10.1016/j.bbagr.2016.12.003. Epub 2016
3. Distinguishing between biochemical and cellular function: Are there peptide signatures for cellular function of proteins? Jain S., Bhattacharyya K., Bakshi R., Narang A., **Brahmachari V.**(2017) *Proteins.* 2017 Apr;85(4):682-693. doi: 10.1002/prot.25248. Epub 2017
4. In vivo and in silico studies to identify mechanisms associated with Nurr1 modulation following early life exposure to permethrin in rats. Fedeli D, Montani M, Bordoni L, Galeazzi R, Nasuti C, Correia-Sá L, Domingues VF, Jayant M, **Brahmachari V,** Massaccesi L, Laudadio E, Gabbianelli R. *Neuroscience,* (2016); 340:411-423. doi: 10.1016/j.neuroscience.2016.10.071. [Epub ahead of print]
5. Interaction of the Chromatin Remodeling Protein hINO80 with DNA. Mendiratta S, Bhatia S, Jain S, Kaur T, **Brahmachari V.** *PLoS One.* (2016) 11(7):e0159370. doi: 10.1371/journal.pone.0159370. eCollection 2016.
6. The functional diversity of *Drosophila* Ino80 in development. Ghasemi M, Pawar H, Mishra RK, **Brahmachari V** (2015) *Mech. Dev.* 138, 113-121.
7. Functional analysis of mce4A gene of *Mycobacterium tuberculosis* H37Rv using antisense approach. Chandolia A, Rathor N, Sharma M, Saini NK, Sinha R, Malhotra P, **Brahmachari V,** Bose M (2014) *Microbiological Res.* 169, 780-787.
8. The *Mycobacterium tuberculosis* recombinant LprN protein of mce4 operon induces Th-1 type response deleterious to protection in mice. Pasricha R, Saini NK, Rathor N, Pathak R, Sinha R, Varma-Basil M, Mishra K, **Brahmachari V,** Bose M. *Pathog Dis.* 2014 Dec;72(3):188-96.
9. Genome wide DNA Methylation profiling for Epigenetic alteration in Coronary Artery Disease patients. Priyanka Sharma, Gaurav Garg, Arun Kumar, Farhan Mohammad, Sudha Ramesh Kumar, Vinay Singh Tanwar, Satish Sati, Abhay Sharma , Ganesan Karthikeyan , **Vani Brahmachari\***, Shantanu Sengupta \* (2014) *Gene* ,10; 541(1):31-40.
10. Pharmacoepigonomics: An Interplay of Epigenetic Modulation of Drug Response and Modulation of the Epigenome by Drugs. Shweta Mendiratta, Shruti Jain, Jayant Maini and **Vani Brahmachari** (2014) *Current Pharmaceutical Design,* 20(11):1819-30.
11. Identification and validation of a putative polycomb responsive element in the human genome.

Hemant Bengani, Shweta Mendiratta , Jayant Maini, Dasari Vasanthi , Hina Sultana , Mohsen Ghasemi, Jasmine Ahluwalia, Sowmya Ramachandran, Rakesh K Mishra and **Vani Brahmachari** (2013) PLoS One. 2013 Jun 21;8(6):e67217.

12. Proximity of H2A.Z containing nucleosome to the transcription start site influences gene expression levels in the mammalian liver and brain. Bargaje R, Alam P, Patowary A, Sarkar M, Ali T, Gupta S, Garg M, Singh M, Purkanti R, Scaria V, Sivasubbu S, **Brahmachari V**, Pillai B *Nucleic Acids Res.*(2012) 40(18), 8965-78.
13. Modeling SNP mediated differential targeting of homologous 3'UTR by MicroRNA. Ahluwalia JK, Soni K, Sivasubbu S, **Brahmachari V**. *RNA Biol.* 2012 ; 9(3) 351-60.
14. Nucleosomal occupancy and CGG repeat expansion: a comparative analysis of triplet repeat region from mouse and human fragile X mental retardation gene 1. Datta S, Alam MP, Majumdar SS, Mehta AK, Maiti S, Wadhwa N, **Brahmachari V**.(2011) **Chromosome Res.** Volume 19, Issue 4, 445-455.
15. Single nucleotide polymorphism in the genes of mce1 and mce4 operons of Mycobacterium tuberculosis: analysis of clinical isolates and standard reference strains. Pasricha R, Chandolia A, Ponnann P, Saini N.K., Sharma S, Chopra M, Basil M.V., **Brahmachari V** and Bose M. (2011) **BMC Microbiology** 2011, 11:41.
16. Differential serum cytokine levels are associated with cytokine gene polymorphisms in north Indians with active pulmonary tuberculosis. Abhimanyu, Mangangcha IR, Jha P, Arora K, Mukerji M, Banavaliker JN, Indian Genome Variation Consortium, **Brahmachari V**, Bose M. **Infect Genet Evol.** 2011 Jul;11(5):1015-22.
17. Chromatin remodeling protein INO80 has a role in regulation of homeotic gene expression in Drosophila. Shipra Bhatia, Hema Pawar, Vasanthi Dasari, Rakesh K. Mishra, Shanti Chandrashekar and **Vani Brahmachari** (2010), **Genes to Cells**, 15,725-735.
18. Comparative analysis of DNA methylation in transgenic mice with unstable CGG repeats from FMR1 gene. Mohammad Parwez Alam, Sonal Datta, Subeer Majumdar, Abhishek K Mehta, Sujatha Baskaran, Neerja Gulati and **Vani Brahmachari** (2010) **Epigenetics** 5:3, 241-248
19. Functional analysis of an intergenic non-coding sequence within mce1 operon of M.tuberculosis. Monika Joon, Shipra Bhatia, Rashmi Pasricha, Mridula Bose , **Vani Brahmachari** (2010) **BMC Microbiology**,10:128.
20. An analysis of histone modifications in relation to sex specific chromatin organization in the mealybug *Maconellicoccus hirsutus*. V. Mathur, G. Mendiratta, M. Ganapathi, P. K. Kennady, B. S. Dwarkanath, G. Pande and **V. Brahmachari** (2010) *Cytogen. and Genomics.* **Cytogenet Genome Res.** 2010;129:323-331(DOI:10.1159/00031589).
21. Incomplete penetrance and variable expressivity: is there a micro RNA connection? Ahluwalia, J., Hariharan M., Bargaje R., Pillai B., **Brahmachari, V.**, (2009) **BioEssays**: 31, 981-992.
22. Application of SNaPshot technique for analysis of thiopurine methyltransferase gene polymorphism. Gauri Kapoor , Arindam Maitra, Somlata and **Vani Brahmachari**. **IJMR** (2009) **IJMR**, 129;

**500-505 (Commentary by Sonja Pavlovic IJMR, 129,478-480).**

23. Genomic analysis of local isolate of Mycobacterium avium subspecies Paratuberculosis. Jagdeep Singh Sohal , Neelam Sheoran , Krishnamoorthy Narayanasamy , **Vani Brahmachari** , Shoorvir Singh, Swati Subodh. **Veterinary Microbiology** 2009 Mar 2; 134 (3-4):375-82.
24. Epigenetic regulation of cytomegalovirus major immediate-early promoter activity in transgenic mice Abhishek Kumar Mehta , Subeer S. Majumdar , Parwez Alam , Neerja Gulati , **Vani Brahmachari**. **Gene** 428 (2009) 20–24.
25. Characterization of Mce4A protein of Mycobacterium tuberculosis:role in invasion and survival. Neeraj Kumar Saini, Monika Sharma, Amita Chandolia, Rashmi Pasricha, **Vani Brahmachari** and Mridula Bose. **BMC Microbiology** 2008, 8: 200 doi:10.1186/1471-2180-8-200
26. Detection of altered global methylation in coronary artery disease patients. Sharma P, Kumar J, Garg G, Kumar A, Patowary A, Karthikeyan G, Ramakrishnan L, **Brahmachari V**, Sengupta S. **DNA and Cell Biology**, 2008: 27:357-365.
27. Loss of kinase activity in Mycobacterium tuberculosis multidomain protein Rv1364c. Preeti Sachdeva, Azeet Narayan, Richa Misra, **Vani Brahmachari** and Yogendra Singh. **FEBS J.** 2008,275(24):6295-308.
28. Mining of Putative cis-acting Elements for Chromatin Mediated Regulation of Hox Genes in Mammals by in-silico Analysis. Bengani H, Ganapathi M, Singh G.P. And **Brahmachari V**. **J of Expt. Zool. (Mol Devel & Evol.)** (2007), 308: 1-12.
29. A whole genome analysis of 5' regulatory regions of human genes for putative cis-acting modulators of nucleosome positioning. Ganapathi M, Singh G.P, Sandhu K.S., Brahmachari S.K., **Brahmachari V**. **Gene** (2007), 391, 242-251.
30. Genomic Imprinting in coccid insects. Khosla S, Mendiratta M, and **Brahmachari V** **Cytogenet. Genome Res.** (2006);113(1-4):41-52.
31. Mining literature for a comprehensive pathway analysis: A case study for retrieval of homocysteine related genes for genetic and epigenetic studies. Priyanka Sharma, RD Senthilkumar, **Vani Brahmachari**, Elayanambi Sundaramoorthy, Anubha Mahajan, Amitabh Sharma and Shantanu Sengupta, **Lipids in Health and Disease** (2006), 5:1.
32. Characterization of a human SWI2/SNF2 like protein hINO80: Demonstration of catalytic and DNA binding activity Rachit Bakshi, Abhishek Kumar Mehta, Ritu Sharma, Souvik Maiti, Santosh Pasha, **Vani Brahmachari**. **Biochem. Biophys. Res. Comm.** (2006) 339 313–320.
33. Targeted Activation of Transcription in vivo through Hairpin – TFO in Saccharomyces cerevisiae. Mrinal Kanti Ghosh , Anju Katyal , Ramesh Chandra and **Vani Brahmachari** (2005) **Mol. Cellular Biochemistry** 278: 147–155
34. Comparative analysis of chromatin landscape in regulatory regions of human housekeeping and tissue specific genes. Mythily Ganapathi Pragma Srivastava, Sushanta Kumar Das Sutar , Kaushal Kumar,

- Dipayan Dasgupta Gajinder Pal Singh, **Vani Brahmachari** and Samir K. Brahmachari. (2005) **BMC, Bioinformatics**, 6:126
35. Chromosomal fragility and Human genetic Disorders Sujatha Baskaran & **Vani Brahmachari**, **Ind. J. Clin. Biochem.** (2000) 15 (Suppl), 145-157.
36. Comparison of Mammalian Cell Entry (mce) operons of mycobacteria: in silico Analysis and Expression Profiling. Ashwani Kumar, Amita Chandolia, Uma Chaudhry, **Vani Brahmachari** and Mridula Bose, (2005), **FEMS Immun. and Med. Microbiol.** 43,185-195.
37. In Silico Characterization of the INO80 Subfamily of SWI2/SNF2 Chromatin Remodeling Proteins. Rachit Bakshi, Tulika Prakash, Debasis Dash and **Vani Brahmachari** (2004) **Biochem. Biophys. Res. Comm.**, 320, 197-204.
38. Analysis of Expression profile of Mammalian Cell Entry (mce) Operons of Mycobacterium tuberculosis. Ashwani Kumar, Bose M., **Brahmachari V.** (2003) **Infection and Immunity**, 71, 6083-6087.
39. Instability of CGG repeats in transgenic mice. Sujatha B., Sonal D., Arundati Mandal, Neerja Gulati, Totey S.M., Rajesh Anand and **Vani Brahmachari**. **Genomics** (2002), 80, 151-157.
40. Design and structural analysis of hairpin-TFO for transcriptional activation of genes in *S. cerevisiae*. Mrinal K. Ghosh., A. Katyal., **V. Brahmachari**. and R. Chandra. **J. Biomol. Str. and Dynamics** (2002), 20, 265-273.
41. Spontaneous expression of fragile sites at Xq 27.3 in a fragile X patient. Sujatha Baskaran, Preetha Tilak, S. Lincoln, I.M. Thomas and **Vani Brahmachari**. (1999), **Ind. J. Hum. Genet** 5(1), 37-40.
42. Sex specific organisation of middle repetitive DNA sequences in the mealybug *Planococcus lilacinus*. S. Khosla, M. Augustus and **Vani Brahmachari**. **Nucl. Acids Res.** (1999) 27(18), 3745-3751.
43. Fragile -X syndrome: Molecular Etiology and Diagnosis - An overview for clinicians. Sujatha Baskaran & **Vani Brahmachari** 1998. **A Handbook of Prenatal Diagnosis and Reproductive Genetics** Edt. K.A. Rao Jaypee Brothers
44. Triplet repeat polymorphism and fragile X syndrome in the Indian context. Sujatha Baskaran, Naseerullah, M.K., Manjunatha, K.R. (& his group) and **Brahmachari, V.**, **Ind. J. Medical Research** (1998) 107, 29-36.
45. A Male-specific, nuclease-resistant chromatin fraction in the mealybug *Planococcus lilacinus*. Sanjeev Khosla, Prameelarani K, **Vani Brahmachari\*** and Sharath Chandra (1996) **Chromosoma**, 104, 386-392. (\* **Corresponding author**)
46. Cell-type specific and stage specific gene knock outs in mice: An achievement of a long-sought goal. **Vani Brahmachari** (1995) **Current. Science** 68, 249-251
47. Imprintor gene identified. **Vani Brahmachari** (1993) **Current Science** 65, 116-117.
48. Detection of CpA methylase in an insects system; Characterisation and substrate specificity. C. Devajyothi and **Vani Brahmachari** (1992) **Molecular and Cellular Biochemistry** 110, 103-111.
49. Specificity of the mouse cytotoxic T lymphocyte response to adenovirus 5. E1A is immunodominant in H-2b, but not in H-2d or H-2k mice. Rawle FC, Knowles BB, Ricciardi RP, **Brahmachari V**, Duerksen-Hughes P, Wold WS, Gooding LR. (1991), *Journal of Immunology*, 146:3977-84.

50. Preparation of Megabase DNA from Adult insects and Mammalian spleen for pulsed field gel electrophoresis **Vani Brahmachari**, Nagasuma, R., Samir, K. Brahmachari (1989) **J. Genetics** 68, 185-188.
51. Modulation of DNA methyltransferase during the life cycle of a mealybug *Planococcus lilacinus* C. Devajyothi and **Vani Brahmachari** **FEBS Letts** (1989) 250, 134- 138.
52. Modified bases in transfer RNA **Vani, B.R.**, Ramakrishnan, T **Journal of Biosciences** (1984) 6(5) 757-770.
53. Studies on 1-methyl adenine transfer RNA methyl transferase from *Mycobacterium smegmatis* **Vani, B.R.**, Ramakrishnan, T. **Archives of Microbiology** (1984) 140, 91-95.
54. Studies on the effects of in vitro methylation on aminoacylation of transfer RNA. **Vani, B.R.**, Ramakrishnan, T. **Journal of Biosciences** (1984) 6, 213-220.
55. Nucleotide sequence of initiator tRNA from *Mycobacterium smegmatis* **Vani, B.R.**, Ramakrishnan, T., Kuchimo, Y. and Nishimura, S. **Nucl Acids Res.** (1984) 12, 3933-3936.
56. Occurrence of 1-methyl adenosine and absence of ribothymidine in transfer ribonucleic acid of *Mycobacterium smegmatis* **Vani, B.R.**, Ramakrishnan, T., Taya, Y.,Noguchi, S., **J. Bacteriology** (1978) 137, 1084-1087.

Papers published from VB's group.

57. Soni K, Choudhary A, Patowary A, Singh AR, **Bhatia S\***, Sivasubbu S, Chandrasekaran S, Pillai B. "miR-34 is maternally inherited in *Drosophila melanogaster* and *Danio rerio*." *Nucleic Acids Res.* 2013 Apr 1;41(8):4470-80.
58. Yadav VK, Thakur RK, Eckloff B, Baral A, Singh A, Halder R, Kumar A, **Alam MP**, Kundu TK, Pandita R, Pandita TK, Wieben ED and Chowdhury S. Promoter-proximal transcription factor binding is transcriptionally active when coupled with nucleosome repositioning in immediate vicinity. *Nucleic Acids Research* 42 (15): 96029611, 2014. DOI: 10.1093/nar/gku596 [IF- 8.86]

### Contribution to Science education

1. Know your chromosomes: Nature's way of packing genes. Vani Brahmachari, *Resonance* Vol 1. January 1996.
2. Know your chromosomes: Strong holds of family trees. Vani Brahmachari, *Resonance* Vol 1. March 1996.
3. Know your chromosomes: Hybrid cells and Human Genetics, Vani Brahmachari, *Resonance* Vol 1. June 1996.
4. Know your chromosomes: Paths to Disorder are Many. Vani Brahmachari, *Resonance* Vol 2. March 1997.
5. Know your chromosomes: The Uniqueness of Sex Chromosomes. Vani Brahmachari *Resonance* Vol 2. March 1997.
6. Know your chromosomes: But why? Vani Brahmachari, *Resonance* Vol 2, July 1997.
7. The Trail of Genetic Detectives. Vani Brahmachari, *Resonance* Vol 4, July 1999.
8. Modified bases in *Mycobacterial* transfer RNA. Vani Brahmachari, *Resonance*, Aug 2009 pg. 740-753.

### **Book Chapter**

9. Molecular probes for diagnosis of human genetic disorders: linking basic research and diagnostics. **Vani Brahmachari** (2002), in Molecular tools in laboratory diagnosis. Pbl. Association of Clinical Biochemists of India and Institute of Genomics and Integrative Biology, pg. 1-16.
10. Epigenetics as a cause for the eloquent silence of stem cells. Bhatia S. and Brahmachari V.(2009) pg.505-537; in “ Stem Cells: Basics and Applications. Edt.K.D.Deb and S.M.Totey. Publ. Tata McGraw Hill Education Pvt.Ltd.
11. Epigenetics and drug-discovery. In: Encyclopedia of Systems Biology. Publ. Springer, Heidelberg-New York Dubitzky W., Wolkenhauer O.,Yokota H., Cho, K.H.(Eds) 2013, XLVII.