



## CURRICULUM VITAE

**1. NAME:** MALAY DAS  
**2. DATE OF BIRTH:** 15.12.1976  
**3. NATIONALITY:** Indian

### 4. CURRENT POSITION AND ADDRESS FOR COMMUNICATION:

Assistant Professor  
Department of Biological Sciences  
Division of Botany  
Presidency University  
86/1 College Street, Kolkata-700073  
West Bengal, India  
Web: <http://www.presiuniv.ac.in>  
**E. mail:** [malay.botany@presiuniv.ac.in](mailto:malay.botany@presiuniv.ac.in), [malaydas76@hotmail.com](mailto:malaydas76@hotmail.com)

### 5. Education

Sl No.	Institution Place	Degree Awarded	Year of completion	Field of Study
1.	University of Kalyani	B.Sc.	1999	Botany (Major), Zoology and Chemistry (Minor)
2.	University of Kalyani	M.Sc.	1999	Botany, Specialization in Genetics and Plant Breeding
3.	Jadavpur University/Bose Institute	Ph.D.	2005	Biotechnological approaches for clonal propagation and molecular characterization of few commercially important bamboo species. (Supervisor- Prof. Amita Pal)

### 6. Employment history

Sl No.	Institution Place	Position	From (Date)	To (date)
1.	Presidency University, Kolkata	Assistant Professor	January, 2013	Till date
2.	Helmholtz Zentrum, Munich, Germany	Alexander von Humboldt fellow	Oct., 2009	Sept., 2012
3.	Virginia Tech University, USA	Postdoctoral fellow	June, 2008	Sept., 2009
4	US-Environmental Protection Agency, USA	National Research Council Associate	Dec., 2005	May, 2008

## 7. LIST OF PUBLICATIONS:

### 7A. RESEARCH PAPERS

1. **Das M** and Pal A (2005)<sup>a</sup> *In vitro* regeneration of *Bambusa balcooa* Roxb.: factors affecting changes of morphogenetic competence in the axillary buds. **Plant Cell, Tissue and Organ Culture** 81: 109- 112. JIF: 3.63

2. **Das M** and Pal A (2005)<sup>b</sup> Clonal propagation and production of genetically uniform regenerants from axillary meristems of adult bamboo. **Journal of Plant Biochemistry and Biotechnology** 14: 185- 188 JIF: 0.32

3. **Das M**, Bhattacharya S and Pal A (2005) Generation and Characterization of SCARs by Cloning and Sequencing of RAPD Products: A Strategy for Species-Specific Marker Development in Bamboo. **Annals of Botany** 95(5): 835–841. JIF: 3.44

4. Bhattacharya S\*, **Das M\***, Bar R and Pal A (2006) Morphological and Molecular Characterization of *Bambusa tulda* with a Note on Flowering. **Annals of Botany** 98(3): 529-535 \*equal contribution. JIF: 3.44

5. **Das M**, Bhattacharya S, Basak J and Pal A (2007) Phylogenetic relationships among the bamboo species as revealed by morphological characters and polymorphism analyses. **Biologia Plantarum** 51(4): 667-672. JIF: 1.65

6. **Das M\***, Bhattacharya S, Singh P, Filgueiras TS and Pal A (2008) Bamboo taxonomy and diversity in the era of molecular markers. **Advances in Botanical Research** 47: 225-268 \*corresponding author. JIF: 1.333

7. Bhattacharya S, Ghosh JS, **Das M** and Pal A (2009) Morphological and molecular characterization of *Thamnocalamus spathiflorus* subsp. *spathiflorus* at population level. **Plant Systematics and Evolution** 282: 13-20. JIF: 1.41
8. **Das M**, Reichman JR, Haberer G, Welzl G, Aceituno FF, Mader MT, Watrud LS, Pfleeger TG, Gutiérrez R, Schaffner AR and Olszyk D (2010) A composite transcriptional signature differentiates responses towards closely related herbicides in *Arabidopsis thaliana* and *Brassica napus*. **Plant Molecular Biology** 72(4-5):545-56. JIF: 4.14
9. Wickett, NJ., Loren AH, Wafula EK, **Das M**, Huang K, Wu B, Timko MP., Yoder J, Westwood J and dePamphilis CW (2011) Expression of the chlorophyll synthesis pathway in a non-photosynthetic plant revealed by the transcriptomes of above ground structures from three parasitic plants from the family Orobanchaceae. **Current Biology** 21: 2098-2104. JIF: 10.02
10. Westwood JH, dePamphilis CW, **Das M**, Fernández-Aparicio M, Honaas LA, Timko MP, Wickett NJ and Yoder JI (2012) The Parasitic Plant Genome Project: New Tools for Understanding the Biology of *Orobanchaceae* and *Striga*. **Weed Science** 60: 295-306 JIF: 1.52
11. Zhang Y, Fernandez-Aparicio M, Wafula E, **Das M**, Jiao Y, Wickett NJ, Honaas LA, Ralph PA, Wojciechowski MF, Timko MP, Yoder JI, Westwood JH, and dePamphilis CW (2012) A horizontally acquired legume gene, albumin 1, in the parasitic plant *Phelipanche aegyptiaca* and related species. **BMC Evolutionary Biology** 13:48 JIF: 3.5
12. **Das M**, Fernandez-Aparicio M, Huang K, Yang Z, Wickett N, Wafula EK, dePamphilis C, Bouwmeester H, Timko MP, Yoder JI and Westwood JH (2013) The parasitic plants *Phelipanche* and *Striga*, which depend on exogenous strigolactones for germination, have retained genes for strigolactone biosynthesis. **BMC Plant Biology** (submitted) JIF: 3.94
13. **Das M**, Haberer G, Panda A, Vandepoele K, Ghosh TC, Schaffner AR (2013) Gene expression patterns can identify functional orthologs and modes of gene function evolution in plants. **Plant Physiology** (in preparation)

## 7B. POSTER PRESENTATIONS IN CONFERENCES

1. Pal A, **Das M**, Bhattacharya S and Basak J. Validation of DNA-based markers for critical assessment of bamboo diversity. 7<sup>th</sup> International Congress of Plant Molecular Biology, The International Society for Plant Molecular Biology, Barcelona, Spain, June 23-28, 2003.
2. **Das M** and Pal A. Influence of physiological age and position of the nodal explants on in vitro regeneration of *Dendrocalamus strictus* from field grown culms. National Symposium on Biotechnology, Society of Plant Tissue Culture Association of India, University of Rajasthan, Jaipur, India. 2003.

3. **Das M**, Schaeffner AR, Mader MT, Reichman JR, Watrud LS, Pfleeger T and Olszyk D. Global expression profiling as a tool to develop molecular markers linked to herbicide stress in *Arabidopsis*. Plant Biology and Botany. American Society of Plant Biology (ASPB), Chicago, Illinois, USA, July 7-11, 2007.
4. Pal A, Bhattacharya S, Ghosh JS, Mitra A and **Das M**. Molecular markers: A trendy approach for bamboo identification. National Seminar on Recent Advances in Plant Sciences, Acharya Nagarjuna University, Andhra Pradesh, India, 2007.
5. **Das M**, Mader MT, Haberer G, Reichman JR, Aceituno FF, Watrud LS, Pfleeger TG, Gutiérrez R, Olszyk DM, Schaffner AR. *Arabidopsis* transcriptional responses differentiating closely related chemicals (herbicides) and cross-species extrapolation to *Brassica*. 19<sup>th</sup> International Conference on *Arabidopsis* Research. Montreal, Canada, July 23-27, 2008.
6. Olszyk D, **Das M**, Lee EH, Pfleeger T, Plocher M. Comparison of Brassicaceae species for phytotoxicity testing. Annual meeting of Agronomy, Crop and Soil Science. Houston, Texas, USA, October 5-9, 2008.
7. dePamphilis C, Wickett N, Westwood J, Timko M, Yoder J, **Das M**, Gowda B, Gunathilake P, Honaas L, Huang K, Lis K, Sheaffer L, Stromberg V, Wall K, Wu B. The Parasitic Plant Genome Project II: Large-scale EST sequencing of *Triphysaria*, *Striga*, and Orobanchaceae. 10<sup>th</sup> World Congress on Parasitic Plants. Kusadasi, Turkey, June 8-12, 2009.
8. **Das M**, Haberer G, Schaffner A.R.. How to identify functional orthologs in Brassicaceae? 7th Tri-National Arabidopsis Meeting. Salzburg, Austria, September 15-18, 2010.
9. Westwood, JH., Fernandez-Aparicio M, **Das M**, Alford S, Stromberg V, Wickett NJ, Huang K, Wu B, Yoder JL, Timko MP, dePamphilis C. The Evolution of Weediness in Parasitic Plants of the Orobanchaceae. Plant and Animal Genome Conference. San Diego, CA, USA, January 15-19, 2011.
10. **Das M**, Haberer G, Schaffner AR. Dissecting genomes of *Arabidopsis thaliana* and *A. lyrata* to identify rules of functionally related ortholog identification in plants. Botaniker Tagung. Berlin, Germany, September 18-23, 2011.

## 7C. INVITED TALKS

1. How to identify functional orthologs in Brassicaceae? Network Meeting of the Alexander von Humboldt Foundation. University of Ulm, Germany, October 5-7, 2010.
2. Gene death, birth and evolution of novel stress gene function in wild and crop species of Brassicaceae. International Seminar entitled “The progress and prospect of 21<sup>st</sup> century research in advance Life Sciences”. Department of Botany, Vivekananda Mahavidyalaya, Haripal, Hooghly, West Bengal, February 15-17, 2014.

3. Parasitic plant genome project: A comparative evolutionary approach to study the genetic changes associated with parasitism. 35th Annual Meeting of PTCA (I) and National Symposium on Advances in Plant Molecular Biology and Biotechnology. IISER, Pune, March 10-12, 2014

4. Meet the challenges: genomics is call of the time. Institute-academic-scholar interaction series. Department of Biotechnology. Haldia Institute of Technology. Haldia, West Bengal, India. March 28, 2014.

## **8. MEMBERS OF PROFESSIONAL SOCIETIES:**

1. American Society of Plant Biology (ASPB)
2. International Network for Bamboo and Rattan (INBAR)

## **9. MAJOR RESEARCH AREAS**

### **(1) Role of gene duplication on the evolution of novel plants stress genes in Brassicaceae**

Gene/genome duplication is a unique phenomenon in flowering plants by which they acquire functional innovation, particularly novel stress response genes. One extreme example is the crop species of Brassicas, which have undergone 3 round of whole genome duplication and additionally one round of whole genome triplication. A significant amount of these retained genes are related to various biotic and abiotic stresses, such as salt/ drought stresses and are undergoing functional divergence to acquire novel stress functions. No systematic efforts have been undertaken to check the consequence of such expansions/mutations on the emergence of novel stress response genes. The availability of very recently sequenced *B. rapa*/*B. napus* genome/transcriptomes now provides us the opportunity to address such questions. The specific research question that we are asking is what is the consequence of whole genome duplication and genome triplication on the evolution of novel stress response genes in Brassicaceae.

#### **Collaborators:**

Prof. Ian Bancroft, University of York, UK

Dr. Martin Trick, John Innes Center, UK

Dr. Georg Haberer, Institute of Bioinformatics and Systems Biology, Germany

Dr. Tony Schaeffner, Institute of Biochemical Plant Pathology, Germany

### **(2) Identification of genes controlling unique flowering times in tree bamboos**

Bamboo is one of the most primitive members of the monocot plant family and possesses a unique flowering behavior, which ranges from 1-120 years. On the basis of the flowering cycle, bamboos have been categorized in three major groups: annual flowering, sporadic or irregular flowering and gregarious flowering. Of these, particular interests is on the gregarious flowering, where the onset of the reproductive phase occurs simultaneously in all the members of a cohort or species across a wide area and subsequently dies together. It is regarded as a bad omen in many of the Eastern Indian states due to enormous crop loss inflicted by an increase in rodent's

population. Although many of these ecological aspects of bamboo are known for decades, yet we know very little about the genes and pathways that regulate such a unique flowering behavior. A major objective of this study will be to identify the molecular players that control induction of flowering in tree bamboos, with major focus on tropical bamboos available in North East India.

#### **Collaborators:**

Prof. Amita Pal, FNASc., Division of Plant Biology, Bose Institute, Kolkata

Prof. Tapas Chandra Ghosh, Bioinformatics Center, Bose Institute, Kolkata

Dr. Bhaskar Gupta, Presidency University, Kolkata

### **(3) Understanding the role of strigolactones in plant's response to osmotic stresses**

Strigolactones are one of the most recently invented groups of plant hormones having multiple physiological and ecological functions in plants. We anticipate that they will have key role in plants tolerance to environmental stresses. This hypothesis has very recently been experimentally proven in the model plant system *Arabidopsis thaliana* based on loss-of-function mutant screening (Ha et al., 2014). Since Brassicaceae is an economically important plant group and hosts many wild halophytic species, we would like to investigate if their osmotolerant mechanism is partially/fully dependent on strigolactone signaling. To answer this question we are performing plant stress phenotyping assays with or without exogenous addition of SLs. We are measuring *in planta* SL level and are comparing that data with the transcript abundance of SL biosynthetic and receptor genes. We expect that the outcome generated from this study will lay the foundation to improve Brassica crop tolerance by engineering SL biosynthetic or signaling pathways.

### **10a. KEY RESEARCH SUPPORTS APPROVED FOR FUNDING**

Sl No.	Title of Project	Funding Agency	PI	Co-PIs	Amount granted
2.	Identification and phylogenetic characterization of genes regulating unique flowering behavior in tree bamboo	CSIR, India	<b>Dr. Malay Das</b> , PU	Prof. Amita Pal, Bose Institute; Dr. Bhaskar Gupta, PU	20,00000.0

### **10b. KEY RESEARCH SUPPORTS UNDER REVIEW**

Sl No.	Title of Project	Funding Agency	PI	Co-PIs	Amount applied for
2.	Targeted identification of novel stress responsive gene copies in <i>Brassica</i> arisen through gene duplication	UGC, India	<b>Dr. Malay Das</b> , PU	-	1979883.0

3.	Targeted identification and molecular characterization of important flowering gene homologs in a rarely flowering tree <i>Bambusa tulda</i>	DBT, India	<b>Dr. Malay Das</b> , PU	Prof. Amita Pal, Bose Institute; Prof. Tapas Ghosh, Bose Institute	3881693.0
4.	Evaluation of the effect of plant growth regulators on abiotic stress tolerance (drought, salinity, heavy metal) in rice and maize	Indo-Hungarian S&T Cooperation	Dr. Bhaskar Gupta	<b>Dr. Malay Das</b> , Dr. Kamala Gupta	16701864.0

## 11. CURRENT DOCTORAL STUDENTS

Name	Title of the project	Funding resource	Tenure
Mr. Prasun Biswas	Identification and Molecular Characterization of Genes Regulating Flowering Induction in Tree Bamboos	UGC-JRF	2013-2018
Ms. Shayani Das Laha	Identification of multi copy retention and functional diversification of important stress response genes in the crop species of Brassicaceae	DST-INSPIRE fellow	2014-2019

## 12. MASTER'S STUDENTS SUPERVISED

Name	Title of the project	Degree subject	Tenure
Ms. Debarati Pramanick	Identification and bioinformatic characterization of flowering genes in bamboo	M.Sc. in Botany, 4 <sup>th</sup> .Semester, Special paper- Plant Biotechnology and Molecular Genetics	April, 2013- June, 2013
Mr. Subhasish Mukherjee	Identification and phylogenetic characterization of duplicated gene copies of ribonucleotide reductase in Brassicaceae	M.Sc. in Botany, 4 <sup>th</sup> .Semester, Special paper- Plant Biotechnology and Molecular Genetics	February, 2014- May, 2014
Ms. Sinchita Biswas	The retention and evolution of the STA1 gene in different members of Brassicaceae	M.Sc. in Botany, 4 <sup>th</sup> .Semester, Special paper- Plant Biotechnology and	February, 2014- May, 2014

		Molecular Genetics	
Mr. Dhritiman Bhattacharya	Following gene evolution through the ages with special emphasis on MTP11	M.Sc. in Botany, 4 <sup>th</sup> .Semester, Special paper- Plant Biotechnology and Molecular Genetics	February, 2014- May, 2014

### 13. PROFESSIONAL RESPONSIBILITIES

- Co-ordinator of UG exams, Department of Botany, Presidency University (2013-2015)
- Peer reviewer for journals: *Plant Cell Tissue and Organ Culture*, *Journal of Research in Environmental Science and Toxicology*, *Journal of Ornamental and Horticultural Plants*