

ACADEMIC PROFILE



DR. Kamala Gupta

Associate Professor in Botany

M.Sc., Ph.D.

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<https://scholar.google.de/citations?user=1JEGVpwAAAAJ&hl=en>

- **Specialization:** Plant Physiology, Molecular Biology, Biotechnology
- **Date of joining in this college:** 15.09.2006
- **Total teaching experience in college and University level:** ≈ 20 years
- **Area of research:** Plant Abiotic Stress Signalling
- **Title of Ph.D. thesis (if any):** Ph.D (2006) Thesis entitled “*Biochemical and Molecular Analysis of Mechanism of Polyamine Action in Rice cultivars in response to salinity stress*” to Jadavpur University under the Supervision of Prof. D. N. Sengupta **Division of Plant Biology, Bose Institute.** Kolkata-700009.
- **Post Doctoral Experience:**
 - a. “*Structure and Functional Analysis of a 42 kDa protein from rice cultivar*” as an adhoc **DBT-Postdoctoral Fellow** in the **Department of Chemistry, Bose Institute**, Kolkata, India. (2006). “*Studying the signaling mechanism of SnRK during salt stress by high-throughput protein microarray*”
 - b. **Raman Post Doctoral Fellowship** from UGC to visit and work in **Boyce Thompson Institute for Plant Research, Cornell University, New York, USA.** (August' 2013 - July 2014)
- **Research guidance (if any):** 1 [Ms. Saswati Saha (Ph.D. registration from Jadavpur University under joint supervision with Dr. Mahua Ghosh Chaudhuri, [Co-Guide: School of Materials Science Nanotechnology, Jadavpur University]). Thesis title: ‘*Synthesis of multifarious biologically fabricated silver nanoparticles, their characterization and application*’ (Ph.D. thesis awarded April, 2017).]
- **Research projects [completed / ongoing] (if any):** 4

RESEARCH GRANT AND EXTRAMURAL SUPPORT:

1. **Principal Investigator** in **DST-SERB** Major Research Project entitled “Study the molecular mechanism of Polyamine action during salinity stress in indica rice cultivars” **2013-2016** SERB/LS-553/2012. Rs 23 Lakhs. One JRF
2. Principal Investigator in **UGC BSR** project entitled 'Biochemical and Molecular Analysis of Mechanism of Polyamine Action in Rice cultivars in response to salinity stress' (Rs. 6 Lakhs) **2014-2016**
3. **Principal-Investigator jointly with Dr. Bhaskar Gupta** in **Multi-Institutional DBT (RGYI)** sanctioned Major Research Project entitled “Molecular dissection of Polyamine mediated hyperosmotic stress tolerance in cultivars of Indica rice”. **2013-2016**. BT/PR6031/GBD/27/374/2012 dated 02/12/2013 Rs 17.75 Lakhs. One JRF
4. **Co-Investigator** in **West Bengal Dept. of Science & Technology Major Research Project** (3 years) **2013-2016** Principal Investigator: Dr. Bhaskar Gupta, Asst. Professor, Dept. of Biological Sciences, Presidency University. (Rs. 23 Lakhs approx) <http://dstwb-council.gov.in/> . One JRF
5. **Raman Fellowship** from UGC to visit and work in **Boyce Thompson Institute for Plant Research, New York, USA**. (August' 2013 - July 2014) Project title: Studying the signaling mechanism of SnRk during salt stress by high-throughput protein microarray. Rs 11 lakhs **Completed**
6. **Co-Investigator** in a Major Research Project entitled “*Conservation & Documentation of Wild Biodiversity in Bethune College Campus & Surroundings*” funded by **West Bengal Biodiversity Board** [506/3K(BIO)-4/2009 dated 09.12.2009], Govt. of West Bengal, India, started from February 2010. Duration: Three Years. Amount: Rs.8, 00,000/-. Man power: Two Project Fellows. **Completed**
7. **Principal Investigator** of **University Grants Commission (UGC)** New Delhi, funded project entitled, “*Identification and documentation of microbes from sewage effluents of different localities in Kolkata*” UGC-MRP No: F.W.PSW-042/10-11(ERO) started from November, 2010. Duration: One and half years. Amount: Rs. 1, 47,000/- . **Completed**

➤ **List of selected publications:**

A. Published papers in Journals:

1. "Editorial: Abiotic stress adaptation and tolerance mechanisms in crop plants", B. Gupta, J. Shrestha, *Frontiers in Plant Science*, 2023, 14, 1183650; [DOI: <https://doi.org/10.3389/fpls.2023.1183650>] [IF: 5.6].
2. "Gibberellic acid interacts with salt stress on germination, growth and polyamine gene expression in fennel (*Foeniculum vulgare* Mill.) seedlings", H. Attia, K. Gupta, B. Gupta, *Physiology and Molecular Biology of Plants*, 2022, 28, 1-14; [DOI: <https://doi.org/10.1007/s12298-022-01183-z>] [IF: 3.5].
3. "Hydrogen peroxide and polyamines act as double edged swords in plant abiotic stress responses", K. Gupta, A. Sengupta, M. Chakraborty, B. Gupta, *Frontiers in Plant Science*, 2016, 7, 1343; [DOI: <https://doi.org/10.3389/fpls.2016.01343>] [IF: 5.6].
4. "Polyamines as redox homeostasis regulators during salt stress in plants", J. Saha, E.K. Brauer, A. Sengupta, S.C. Popescu, K. Gupta, B. Gupta, *Frontiers in Environmental Science*, 2015, 3, 21; [DOI: <https://doi.org/10.3389/fenvs.2015.00021>] [IF: 5.4].
5. "Molecular phylogenetic study and expression analysis of ATP-binding cassette transporter gene family in *Oryza sativa* in response to salt stress", J. Saha, A. Sengupta, K.

- Gupta, B. Gupta, *Computational Biology and Chemistry*, 2015, 54, 18-32; [DOI: <https://doi.org/10.1016/j.compbiolchem.2014.10.004> [IF: 3.1].
6. "Mechanism of Salinity Tolerance in Plants: Physiological, Biochemical, and Molecular Characterization", B. Gupta, B. Huang, *International Journal of Genomics*, 2014, 2014, Article ID 709051; [DOI: <https://doi.org/10.1155/2014/709051> [IF: 2.3].
 7. "Genome-wide analysis and evolutionary study of sucrose non-fermenting 1-related protein kinase 2 (SnRK2) gene family members in Arabidopsis and Oryza", J. Saha, C. Chatterjee, A. Sengupta, K. Gupta, B. Gupta, *Computational Biology and Chemistry*, 2014, 49, 59-70; [DOI: <https://doi.org/10.1016/j.compbiolchem.2014.01.002> [IF: 3.1].
 8. "Plant polyamines in abiotic stress responses", K. Gupta, A. Dey, B. Gupta, *Acta Physiologiae Plantarum*, 2013, 35(7), 2015-2036; [DOI: <https://doi.org/10.1007/s11738-013-1239-4> [IF: 2.6].
 9. "Plant Abiotic Stress: 'Omics' Approach", B. Gupta, A. Sengupta, J. Saha, K. Gupta, *Journal of Plant Biochemistry and Physiology*, 2013, 1, e108; [DOI: <https://doi.org/10.4172/2329-9029.1000e108> [IF: 1.2].
 10. "High-performance thin-layer chromatographic analysis of antioxidants present in different parts of *Saraca asoca* (Roxb.) de Wilde", J. Saha, S. Mukherjee, K. Gupta, B. Gupta, *Journal Of Pharmacy Research*, 2013, 7(9), 798-803; [DOI: <https://doi.org/10.1016/j.jopr.2013.08.019> [IF: 0.5].
 11. Roy P, Niyogi K, Sengupta DN and Ghosh B (2005) Spermidine treatment to rice seedlings recovers salinity stress induced damage of Plasma membrane and PM-bound H⁺-ATPase in salt-tolerant and salt sensitive rice cultivars. *Plant Science* 168:583-591. (Elsevier) <http://dx.doi.org/10.1016/j.plantsci.2004.08.014> (Joint first author)
 12. "Recent Advances on Virus Induced Gene Silencing (VIGS): Plant Functional Genomics", B. Gupta, J. Saha, A. Sengupta, K. Gupta, *Journal of Plant Biochemistry & Physiology*, 2013, 1(5), e116; [DOI: <https://doi.org/10.4172/2329-9029.1000e116> [IF: 1.2].
 13. "Isolation and characterization of heavy metal tolerant Gram-positive bacteria with bioremedial properties from municipal waste rich soil of Kestopur canal (Kolkata), West Bengal", K. Gupta, C. Chatterjee, B. Gupta, *Biologia*, 2012, 67(5), 827-836; [DOI: <https://doi.org/10.2478/s11756-012-0070-5> [IF: 1.5].
 14. Saha J, Sadhukhan P, Mukherjee R, Jele M, Ray RS, Gupta K, Mukherjee S and Mukherjee S (2011). Conservation and proliferation of butterflies. *Emerging Trends in Plant Science* (ISBN- 978-93-80673-52-3) Edition 1, 123-12715.
 15. "Spermidine and abscisic acid-mediated phosphorylation of a cytoplasmic protein from rice root in response to salinity stress", K. Gupta, B. Gupta, B. Ghosh, D.N. Sengupta, *Acta Physiologiae Plantarum*, 2012, 34(1), 29-40; [DOI: <https://doi.org/10.1007/s11738-011-0802-0> [IF: 2.6].
 16. "Spermidine-mediated in vitro phosphorylation of transcriptional regulator OSBZ8 by SNF1-type serine/threonine protein kinase SAPK4 homolog in indica rice", B. Gupta, K. Gupta, D.N. Sengupta, *Acta Physiologiae Plantarum*, 2012, 34(4), 1321-1336; [DOI: <https://doi.org/10.1007/s11738-012-0929-7> [IF: 2.6].
 17. Saha J, Mitra T, Gupta K, Mukherjee S (2012) Evaluation of phytoconstituents and HPTLC studies on *Saraca asoca* (roxb.)Wilde. *International Journal of Pharmacy and Pharmaceutical Sciences* 4(2) 96-99.
 18. Mitra T, Saha J, **Gupta K** and Mukherjee S (2011) Antioxidant activity study of the flowers of *Saraca asoca* (Roxb.) Wilde. *Emerging Trends in Plant Science* (ISBN- 978-93-80673-52-3) Edition 1, 96-101

B. Published papers in Seminars/Symposia/Conferences:

1. Basu S, Ghosh S, **Gupta B**, Gupta K (2010) Isolation and biochemical characterization of lead and chromium tolerant bacteria from contaminated soil and their role as potential bioremediator. *Proceedings of National Symposium on Dimensions of Animal Science Researches and Human Need*; UGC, Presidency College (Kolkata); September 07 – 09, 2009, pp 48-55.

C. Published Books / Chapters in Books:

1. Gupta B*, Debmallik T, Gupta K* (2017) Polyamines and ROS: Understanding their Role in Plant Drought Homeostasis, In V.P.Singh, S.Singh, S.M.Prasad (eds.) Mechanisms Behind Phytohormonal Signalling and Crop Abiotic Stress Tolerance, Chapter 3, Nova Science Publishers, USA (ISBN: 978-1-53610-713-5)
2. Khatun S, Islam A, Gupta K*, **Gupta B***(2017) Detection of Edible Mushroom Species by Using Molecular Markers, In: B.P. Singh, V.K. Gupta (eds.), Molecular Markers in Mycology, Fungal Biology, Chapter 9, Springer International Publishing Switzerland, http://dx.doi.org/10.1007/978-3-319-34106-4_9 (ISBN: 9783319341040)
3. Sengupta A, Chakraborty M, Saha J, **Gupta B***, Gupta K* (2016) Polyamines: Osmoprotectants in Plant Abiotic Stress Adaptation, In: Noushina Iqbal et al. (Eds): Osmolytes and Plants Acclimation to Changing Environment: Emerging Omics Technologies (1st Edition), Springer, Chapter 7, 97-127. http://dx.doi.org/10.1007/978-81-322-2616-1_7 (ISSN: 9788132226154)
4. **Gupta B**, Gupta K, Huang B (2014) Role of Polyamines in Plant Abiotic Stress Responses. In: Pessarakli M (ed), Handbook of Crop Stress Physiology (3rd Edition), CRC Press (Taylor & Francis), Chapter 19, 369-388. <http://dx.doi.org/10.1201/b16675-24>
5. Dey A, Gupta K, **Gupta B*** (2014) Role of Polyamines in Plant-Pathogen Interactions. In: Anjum NA, Gill SS & Gill R (eds), Plant Adaptation to Environmental Change: Significance of Amino Acids and their Derivatives, CABI, Oxfordshire, UK, Chapter 12, Page no: 222. <http://dx.doi.org/10.1079/9781780642734.0222>
6. Gupta K., Dey A. and **Gupta B*** (2013) Polyamines and their Role in Plant Osmotic Stress Tolerance, in Climate Change and Plant Abiotic Stress Tolerance (eds N. Tuteja and S. S. Gill), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, Chapter 40, 1053-1071. <http://dx.doi.org/10.1002/9783527675265.ch40>

D. Participation in Seminars/Symposia/Conferences/Workshops:

PAPER(S) AND POSTER(S) PRESENTED BY SELF/RESEARCH SCHOLARS:

1. Poster presentation, 'Polyamine Mediated Biomimetically Stabilized Silver Nanoparticles: Synthesis, Characterization and Antimicrobial Efficacy Against Multi-drug Resistant Bacterial Strains' by **Kamala Gupta**, Saswati Saha, Mahua Ghosh Chaudhuri, and Bhaskar Gupta, in *National Symposium* on 'Advances in Biology: Exploitation of Phyto-resources' organized by Dept. of Botany Dr. APJ Abdul Kalam Govt. College, New Town, Kolkata, held on Nov 2-3, 2017 at Ramakrishna Mission Institute of Culture, Kolkata (1st Prize).
2. Poster presentation, 'ENHANCED CELLULAR UPTAKE OF SILVER NANOPARTICLES BY MEANS OF BIO-MIMIC ACTION' by **Kamala Gupta**, Saswati Saha, Mahua Ghosh Chaudhuri, and Bhaskar Gupta, in *International Science Seminar* jointly organized by Burdwan Raj College and Indian Chemical Society, on 10th Oct, 2017.

3. Delivered invited lecture in one day *National Seminar* on “Current Innovation in Biotechnology for Human Welfare” sponsored by West Bengal State Council of Science & Technology on 7th November 2015, organized by GNIPST.
4. Poster presentation, “Molecular Phylogenetic and Expression Analysis of ATP-Binding Cassette Transporter Gene Family in *Oryza sativa* in Response to Salt Stress” by Jayita Saha, Atreyee Sengupta, Mayukh Chakraborty, Chitrita Chatterjee, Bhaskar Gupta and **Kamala Gupta** at the *National Symposium* on “Molecules to System” organized by Department of Biological Sciences, Presidency University, Kolkata, 29th - 31st January, **2015**.
5. Poster presentation, “Are polyamines boons or bane for the rice cultivars growing in arsenic affected areas of the world?” by Atreyee Sengupta, Mayukh Chakraborty, Jayita Saha, Sampurna Mukherjee, **Kamala Gupta** and Bhaskar Gupta at the *National Symposium* on “Environmental impact on biodiversity and plant development” organized by Department of Biological Sciences, Presidency University, Sponsored by DBT-BUILDER Program, 19th -20th February, **2015**.
6. Poster presentation, “Exogenous Application of Spermidine Mitigate The Harmful Effect of Salt Stress in Rice Seedlings” by Jayita Saha, Atreyee Sengupta, Mayukh Chakraborty, Chitrita Chatterjee, Bhaskar Gupta and **Kamala Gupta** at the *National Symposium* on “Evolving Plant Biology : From Chromosomes to Genomics” organized by West Bengal Academy Of Science And Technology (WAST) in collaboration with Bose institute, Kolkata, University of Calcutta and The Ramakrishna Mission Institute of Culture, 27th -29th November, **2014**.
7. Poster presentation, “Spermidine ameliorates the harmful effect of salt stress in rice seedlings” by Jayita Saha, Mayukh Chakraborty, Atreyee Sengupta, Ushasi Bhaumik, Bhaskar Gupta and **Kamala Gupta** at the *National Symposium* on “Environmental impact on biodiversity and plant development” organized by Department of Biological Sciences, Presidency University, Kolkata, 19th -20th February, **2015**.
8. Poster presentation, "Analysis of spermidine activated SnRK2 interacting proteins in Arabidopsis during salinity stress by high throughput protein microarray", in Plant Biology-14 *International Conference* organized by ASPB, in Portland (OR), USA, July 12-16th, **2014**.
9. Poster presentation, "A large-scale interaction screen of tomato kinases and *Pseudomonas syringae* type III effectors reveals SnRKs as effector targets and players in plant immune signaling", in Plant Biology-14 *International Conference* organized by ASPB, in Portland (OR), USA, July 12-16th, **2014**.
10. Poster presentation, "Molecular Phylogenetic and Expression Analysis of ATP-Binding Cassette Transporter Gene Family in *Oryza sativa* in response to salt stress" by Jayita Saha, Atreyee Sengupta, Chitrita Chatterjee, Swagata Majumdar, **Kamala Gupta**, Bhaskar Gupta at the "*National Symposium* on Advances in Plant Molecular Biology and Biotechnology" and the 35th Annual meeting of PTCA, IISER Pune, India, during March 10-12, **2014**.
11. Poster presentation, ‘A new insight into the role of spermidine in alleviating arsenic toxicity in rice’-Bhaskar Gupta and **Kamala Gupta** in Acharya P C Ray *National Young Scientists’ Conference* Organised by The Presidency University, The Calcutta University and Vivekananda Vijnana Mission, Kolkata, February 17 – 18, **2012**.
12. Chitrita Chatterjee, Bhaskar Gupta, **Kamala Gupta**. “Isolation & partial characterization of heavy metal tolerant bacteria”. *International Conference* on Ecotoxicology & Environmental Sciences (ICEES 2011) from Nov. 28, 2011 to Nov. 30, **2011** at-Miramar Residency, Panaji, Goa, India.
13. **Kamala Gupta**, Bhaskar Gupta, Sabari Sarkar, Anamika Das, Shemushi Banerjee, Hemlata “Isolation and partial characterization of bacterial strains showing heavy metal tolerance” *National seminar* on Bioresource and Human welfare, Lady Brabourne College, Kolkata, January 20th -21st, **2011**
14. Poster presentation entitled “Molecular mechanism of polyamine action during salinity stress in Rice”- **Kamala Gupta**, Bhaskar Gupta, K.P.Das, D.N.Sengupta” in an *International Symposium* on A Journey from Plant Physiology to Plant Biology, Bose Institute, Kolkata, November 24-28, **2008**.
15. Oral paper presentation entitled “An insight on the role of polyamines- **Kamala Gupta** and Bhaskar Gupta” in UGC sponsored *National Symposium* on Current Trends in Zoological Research, Presidency College (2007), Kolkata, p.16.
16. Poster presentation entitled “Role of polyamines in rice salinity stress tolerance-**Kamala Niyogi**, Papiya Roy, Saswati Laha, Bharati Ghosh, Dibyendu N Sengupta” in the *International 10th FAOBMB Congress*, Indian Institute of Science, Bangalore, Dec 6-11, **2003**.

INTERNATIONAL/NATIONAL WORKSHOPS

- Title: “Mentoring Undergraduate Researchers: Setting Expectations and Designing Doable Projects” at ILR Conference Centre, Cornell University, USA on 28th February, 2014.
- Title: "Identifying Your Mentoring Philosophy and Putting it into Practice with Students" at ILR Conference Centre, Cornell University, USA on 14th March, 28th March and 11th April, 2014

➤ **Participation in OP/RC/FIP/FDP:**

- Successfully completed the **NEP - 2020 Orientation Programme** on the theme: Holistic and Multidisciplinary Education under Malaviya Mission Teacher Training Programme (MM-TTP) of University Grants Commission (UGC) organized by the UGC Malaviya Mission Teacher Training Centre, Aligarh Muslim University, Aligarh from 07 February to 16 February 2024.
- **Orientation Program (OP) & Refresher Course (RC):** Achieved Grade ‘A’ in both *OP (2009)* Calcutta University, Kolkata. and *RC (2012, 2015)* conducted by UGC Academic Staff College (ASC), Jadavpur University, Kolkata.
- **Successfully completed a comprehensive Training curriculum** which included Laboratory safety, Chemical and Hazardous waste handling, Greenhouse facility training and Radioactive materials training (2013-14) in Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, New York.

➤ **Membership of Learned Societies/ Editorial Boards, etc. (if any):**

Member of Executive committee of ‘*Plant Physiology Forum, Kolkata*’ [Life Member]

19. **Patents (if any):** Nil

20. **Awards (if any):**

- Received **National Scholarship** in **B.Sc.** and **M.Sc** from Calcutta University for being a University rank holder.
- Qualified Graduate Aptitude Test in Engineering (**GATE-1997**), with subjects Chemistry, Microbiology, and Biochemistry; conducted by Indian Institute of Technology, INDIA.
- Qualified **State Level Eligibility Test** for Lecturer (2001), conducted by College Service Commission, West Bengal, India.
- Qualified the prestigious National Eligibility Test for Lecturer and Junior Research Fellowship (**NET-JRF, 2001**), conducted by Council for Scientific & Industrial Research and University Grants Commission (CSIR & UGC), New Delhi, INDIA.
- Was amongst the top 25 selected for the prestigious **Shyama Prasad Mukherjee award 2001**, conducted by Council for Scientific & Industrial Research and University Grants Commission (CSIR & UGC), New Delhi, INDIA.
- Received **Raman Fellowship** from UGC to visit and work in **Boyce Thompson Institute** for Plant Research, Cornell University, Ithaca, New York, **USA**. (August' 2013 - July 2014)

21. **Other notable activities (if any):**

- a. **INVITED LECTURE:** Delivered Prof. S.M. Sircar Memorial Lecture entitled “*Role of Polyamine in Plant Abiotic stress*” organized by Plant Physiology Forum, Department of Botany, University of Calcutta and Bose Institute, Kolkata July, 2013.

GOVERNMENT GENERAL DEGREE COLLEGE, SINGUR

- b. Invited Peer Reviewer:** International Journals like American Journal of Plant Sciences (AJPS), Journal of Integrative Agriculture, Turkish Journal of Botany, Frontiers in Plant Science etc.
- c. Outreach:** Invited Paper-Setter, Examiner, Moderator, External evaluator in M.Sc and B.Sc. curriculum in various College/Universities (Calcutta University, Presidency University, Visva Bharati University, West Bengal State University, St. Xavier's College, Bethune College, Presidency College etc.); Conducted Student's Campus recruitment, Organized several National Level Symposia
