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Subject Specialization: Cytogenetics

Area of interest: Molecular Biology, Tissue Culture, Chemistry of Biomolecules, Soil Microbiology and Traditionally Fermented Beverages

No. of Ph. D students: (a) Supervised: 2 (b) Ongoing: 4
No. of M. Phil: (a) Supervised: 0 (b) Ongoing: 0
No. of Publications: (a) Journals: 79 (b) Books: 1 (c) Book Chapters- 8

Selected Publications

1. A Ghosh, S Majumder, R Samadder, S Sarkar, S Nandi, P Subba, S Chakraborty, S Acharyya, S Saha, **Malay Bhattacharya*** Study of in vitro antioxidant and antibacterial potential of different tea clones Pharmacological Research - Modern Chinese Medicine. (2023) <https://doi.org/10.1016/j.prmcm.2023.100312>
2. S Majumder, A Ghosh, S Saha, S Acharyya, S Chakraborty, P Subba, S Nandi, S Sarkar and **Malay Bhattacharya*** *In vitro* bioactivities and gastrointestinal simulation validate ethnomedicinal efficacy of five fermented kodo-based Himalayan

- traditional drinks and bioaccessibility of bioactive components. Food Production, Processing and Nutrition. (2023) <https://doi.org/10.1186/s43014-023-00184-7>
3. S Chakraborty, S Saha and **Malay Bhattacharya*** Synthesized green silver nano particles of *Herpetospermum darjeelingense* shows enhanced in vitro antimicrobial, antioxidant and hepatoprotective activity. Research Journal of Pharmacognosy and Phytochemistry. (2023) Vol 15 issue 4
 4. S Acharyya, S Saha and **Malay Bhattacharya***. Emergence of highly mercury tolerant plant growth promoting bacteria in tea plantation soil of Darjeeling hills. Research Journal of Biotechnology (2023)
 5. T Baishya, P Das, G J Ashraf, T K Dua, P Paul, G Nandi, A Dutta, D Limbu, A Kumar, M Deb Adhikari, **Malay Bhattacharya** and R Sahu. Preparation of silver nanoparticles by *Osbeckia stellata* aqueous extract via green synthesis approach: Characterization and assessment of their antioxidant, antidiabetic, cytotoxicity, and antibacterial properties. Biotechnol Appl Biochem, (2023) 1–11. DOI: <https://doi.org/10.1002/bab.2512>
 6. A Islam, P Choudhury, K Sarkar, R K Das, **Malay Bhattacharya** and P Ghosh. Molecular iodine catalyzed C(sp²)-H sulfenylation of biologically active enaminone compounds under mechanochemical conditions and studies on their biocidal activity including molecular docking and DFT. Molecular Diversity (2023) <https://doi.org/10.1007/s11030-023-10677-9>
 7. S Chakraborty, S Majumder, A Ghosh and **Malay Bhattacharya*** Endemic and endangered ethno-herbal medicinal climber of Darjeeling Hills (*Edgaria darjeelingensis* C.B.Clarke) is a treasure of anti-cancer molecules: a study on GC-MS analysis and probable biosynthetic pathways. Indian Journal of Traditional Knowledge (2023) Vol 22(2), 371-380 DOI: 10.56042/ijtk.v22i2.38484
 8. A Ghosh, S Saha, S Majumder, S Chakraborty and **Malay Bhattacharya** *In vitro* assessment of the antioxidant and antibacterial activities of some shade tree barks from tea plantation of Terai region of West Bengal. 2023. Journal of Pharmacognosy and Phytochemistry. (2023) 12(1): 556-561 DOI: <https://doi.org/10.22271/23957476.2023.v9.i1b.1405>
 9. S Majumder, A Ghosh, S Chakraborty and Malay Bhattacharya. The Himalayan ethnic beverage tongba with therapeutic properties in high-altitude illness and metabolic similarities to Japanese sake Acta Universitatis Sapientiae, Alimentaria (2023) 15(1):67-83.
 10. T Baishya, P Das, G J Ashraf, T K Dua, P Paul, G Nandi, **Malay Bhattacharya** and R Sahu. Tissue specific changes of phytochemicals, antioxidant, antidiabetic and anti-inflammatory activities of tea [*Camellia sinensis* (L.)] extracted with different solvents (2022). <https://doi.org/10.1515/znc-2022-0174>
 11. S Sarkar, S Majumder, A Ghosh, S Saha, S Acharyya, S Chakraborty, Malay Bhattacharya*. Metabolomic exploration of CTC tea manufacturing waste validates

its potentiality as organic fertilizer (2022). Turk J. Food Agric. Sci. 2022, 4 (2): <http://Doi:10.53663/turjfas.1164579>

12. S Majumder, A Ghosh, S Chakraborty and **Malay Bhattacharya***. Brewing and biochemical characterization of *Camellia japonica* petal wine with comprehensive discussion on metabolomics. (2022) Food Production, Processing and Nutrition 4:29 <https://doi.org/10.1186/s43014-022-00109-w>
13. A Ghosh, S Chakraborty, S Majumder, **Malay Bhattacharya***. Comprehensive In silico Investigation Validates Two Flavonoid Compounds of *Derris robusta* (Roxb. ex DC.) Benth. to Supplant Remdesivir as Natural Therapeutic Remedy Against a Range of Coronaviruses. Letters in Applied NanoBioScience. Volume 12, Issue 4, 2023, 108 <https://doi.org/10.33263/LIANBS124.108>
14. S Saha, A Ghosh, S Acharyya & **Malay Bhattacharya***. Metabolites of Albizia inhibit in vitro growth of phosphate solubilizing microbial consortia isolated from tea garden soil of Darjeeling hills, India. Biodiversitas (June 2022). Vol 23, Number 6, 2865-2870 <https://doi.org/10.13057/biodiv/d23061>
15. S Majumder, A Ghosh, S Saha, S Acharyya, S Chakraborty, S Sarkar, **Malay Bhattacharya***. Valorization of CTC tea waste through kombucha production and insight into GC-MS based metabolomics. Canrea Journal: Food Technology, Nutritions, and Culinary, (2022); 5 (1): 38–56 <https://doi.org/10.20956/canrea.v5i1.594>
16. A Ghosh, S Majumder, S Sarkar & **Malay Bhattacharya***. Insights into physicochemical assessment of shade tree litter biomass in tea plantations of terai region. International Journal of Sustainable Agricultural Research, (2022), Vol. 9, No. 2, 46-54 <https://doi.org/10.18488/ijisar.v9i2.2968>
17. G Sen, I Sarkar, S Chhettri, P Kar, A Roy, A Sen and **Malay Bhattacharya***. Rhizospheric soil metabarcoding analysis of *Alnus nepalensis* from Darjeeling hills reveals the abundance of nitrogen-fixing symbiotic microbes. Journal of Forest Research (2022), VOL. 27, NO. 2, 106–112 <https://doi.org/10.1080/13416979.2022.2037813>
18. S Majumder, S Saha, A Ghosh, S Chakraborty, S Acharyya, S Sarkar and **Malay Bhattacharya*** Comparative *in vitro* biological characterization of black and green tea infusions fermented with brewer's yeast and SCOBY with special emphasis on antioxidant activity. Nutrafoods (2022) 1:357-369 <https://doi.org/10.17470/NF-022-0045>
19. S Majumder, S Saha, A Ghosh, S Chakraborty, S Acharyya, S Sarkar and **Malay Bhattacharya*** Fusion of tea infusion and bakhar (starter of ethnic liquor haria) to develop “tea haria”: a novel approach to ferment tea with insight into *in vitro* biochemical attributes and metabolomics. Journal of Food Technology Research (2022). 9:1, 1-17. <https://doi.org/10.18488/jftr.v9i1.2909>

20. I Sarkar, P Kar, G Sen, S Chhetri, **Malay Bhattacharya**, S Bhattacharyya and A Sen. Metagenomic outlooks of microbial dynamics influenced by organic manure in tea garden soils of North Bengal, India. Archives of Microbiology (2022) 204:33 <https://doi.org/10.1007/s00203-021-02635-6>
21. S Sarkar, S Saha, S Majumder, A Ghosh, S Chakraborty, S Acharyya and **Malay Bhattacharya*** (2021) *In vitro* antioxidant and antibacterial potential of tea leaves harvested from small tea plantations of sub-Himalayan Terai region. Nutrafoods 2:300-312 <https://DOI.org/10.17470/NF-021-0039>
22. A Ghosh, S Majumder, S Saha, S Chakraborty, **Malay Bhattacharya*** (2021) Leaves and barks of Albizia shade trees in tea plantation shows both insect attractant and pesticidal properties: a GC-MS based investigation. Asian Journal of Agriculture; 5:2; 84-89. <https://doi.org/10.13057/asianjagric/g050205>.
23. S Majumder, S Saha, A Ghosh, S Acharyya, S Sarkar, S Chakraborty and **Malay Bhattacharya** (2021) Production of fermented tea petal decoction with insights into in vitro biochemical tests, antioxidant assay and GC-MS analysis. Food Production, Processing and Nutrition; (2021) 3:32 1-10. <https://doi.org/10.1186/s43014-021-00075-9>.
24. A Ghosh, S Majumder, S Saha, S Chakraborty & **Malay Bhattacharya*** (2021) Leaves and barks of *Albizia* shade trees in tea plantation shows both insect attractant and pesticidal properties: a GC-MS based investigation. Asian Journal of Agriculture. 5:2. DOI: <https://doi.org/10.13057/asianjagric/g050205>
25. S Acharyya, S Saha, S Majumder & **Malay Bhattacharya*** (2021) Characterization of a mercury tolerant strain of *Staphylococcus arlettae* from Darjeeling hills with an account of its antibiotic resistance pattern and metabolome. Archives of Microbiology <https://doi.org/10.1007/s00203-021-02563-5>
26. S Majumder, A Ghosh, S Chakraborty, S Saha, & **Malay Bhattacharya*** (2021). Metabolomics affirms traditional alcoholic beverage raksi as a remedy for high-altitude sickness. *Journal of Ethnic Foods*, 8(1), 1-10. <https://doi.org/10.1186/s42779-021-00094-4>
27. B Sinha, **Malay Bhattacharya**, S Saha & S Saha (2021). Spectroscopic Studies and Antimicrobial Evaluation of New Mixed Ligand Mn (II), Ni (II), Cu (II) Complexes Synthesized from an Ionic Liquid-Supported Schiff Base and 1-Methyl Imidazole. *Polycyclic Aromatic Compounds*, 1-13. <https://doi.org/10.1080/10406638.2021.1963790>
28. S Chakraborty, S Majumder, A Ghosh & **Malay Bhattacharya***. Comprehensive profiling of aroma imparting biomolecules in foliar extract of *Hibiscus fragrans* Roxburgh: a metabologenesis perspective. (2021). *Journal of Biomolecular Structure and Dynamics*. DOI: 10.1080/07391102.2021.1943525
29. Majumder, A Ghosh, S Chakraborty and **Malay Bhattacharya1***. The Rhythmic Growth Pattern of Microbes is Antithetical to Antioxidant Activity of Kombucha: A

- New Finding Food Biochemistry. (2021) Asian Journal of Biochemistry, Genetics and Molecular Biology 8(2): 1-7. DOI: 10.9734/AJBGMB/2021/v8i230188
30. S Saha, S Acharyya, S Sarkar and **Malay Bhattacharya***. Study of tolerance ability in phosphate solubilising microorganisms isolated from tea plantations soil of lower Darjeeling hills. (2021). Bulletin of the National Research Centre. 45:109 <https://doi.org/10.1186/s42269-021-00564-4>
 31. I Sarkar, G Sen, **Malay Bhattacharya**, S Bhattacharyya & A Sen. *In silico* inquest reveals the efficacy of Cannabis in the treatment of post-Covid-19 related neurodegeneration (2021) Journal of Biomolecular Structure and Dynamics. <https://doi.org/10.1080/07391102.2021.1905556>
 32. S Chakraborty, S Majumder, A Ghosh, S Saha and **Malay Bhattacharya***. Metabolomics of potential contenders conferring antioxidant property to varied polar and non-polar solvent extracts of *Edgaria darjeelingensis* C.B.Clarke. (2021) Bulletin of the National Research Centre. 45:48 <https://doi.org/10.1186/s42269-021-00503-3>
 33. R Labar, P Kar, P Biswas, A Sen, **Malay Bhattacharya***. Evolution of matK Gene among the Elite Tea Clones (*Camellia sinensis*) Revealed by Nucleotide Substitution within the Consensus Region (2021). Journal of Applied Biology & Biotechnology Vol. 9(1), pp. 32-40 DOI <https://doi.org/10.7324/jabb.2021.9105>
 34. S Majumder, A Ghosh, S Chakraborty and **Malay Bhattacharya***. Withdrawal of Stimulants from Tea Infusion by SCOBY During Kombucha Fermentation: A Biochemical Investigation (2020). International Journal of Food and Fermentation Technology, 10(1): 21-26 DOI: 10.30954/2277-9396.01.2020.5
 35. M Mukherjee, S Chakraborty, S Sarkar, S Saha, S Majumder, A Ghosh and **Malay Bhattacharya***. Soil Nutritional Status of Tea Plantations In Plains of Sub Himalayan West Bengal, India (2020). Current Agriculture Research Journal 8(3) 239-246 DOI: <http://dx.doi.org/10.12944/CARJ.8.3.10>
 36. S Saha, S Chakraborty, S Acharyya, S Sarkar, S Majumder, A Ghosh, **Malay Bhattacharya***. Phosphate solubilizing microorganism consortium of virgin Tiger hill forest soil shows high level tolerance to pesticide, antibiotic, antifungal and heavy metals (2020). Ecobiotech 3(4) 578-588 DOI: 10.31163/2618-964X-2020-3-4-578-588
 37. P Kar, S Dutta, A K Chakraborty, **Malay Bhattacharya** & A Sen. Leaf extract of ethnomedicinally important Bharangi (*Clerodendrum serratum*) may improve neuromodulatory activity in mice model (2020) Indian Journal of Traditional Knowledge.19(4), 2020, 702-707. IPC Code: Int. Cl.20: A61K 38/00, A61K 8/49, B63C 1/04, A61K 38/00
 38. S Majumder, S Sarkar, A Ghosh, S Acharyya, S Saha, S Chakraborty & **Malay Bhattacharya***. Photosynthetic organs of wild Indian tea tree are rich in patchouli

components: a GC-MS based metabolomics, (2020) Natural Product Research <https://doi.org/10.1080/14786419.2020.1851222>

39. S Majumder, A Ghosh, S Chakraborty and **Malay Bhattacharya***. GC-MS analysis reveals *Dendrobium candidum* is a mosquito-attractant orchid with mosquitocidal compounds. (2020); International Journal of Mosquito Research; 7(6): 09-12. DOI: <https://doi.org/10.22271/23487941.2020.v7.i6a.483>
40. S Majumder, A Ghosh and **Malay Bhattacharya***. Natural anti-inflammatory terpenoids in *Camellia japonica* leaf: probable biosynthesis pathways of GC-MS derived metabolomes. (2020) Bulletin of the National Research Centre. 44:14144:141 <https://doi.org/10.1186/s42269-020-00397-7>
41. R. Singha, P. Basak, **Malay Bhattacharya** and P Ghosh. Graphene oxide catalysed one-pot synthesis of pyrimido [4,5-b]quinolinone-2,4-diones and their biological evaluation. (2020) Chemistry Select, 5, 6514–6525 doi.org/10.1002/slct.202000989
42. P. Kar, A. K. Chakraborty, S. Dutta, **Malay Bhattacharya**, T. K. Chaudhuri & A. Sen. Fruit juice of silverberry (*Elaeagnus*) and bayberry (*Myrica*) may help in combating against kidney dysfunctions. (2019) *Clinical Phytoscience*, 5:22, 1-9r <https://doi.org/10.1186/s40816-019-0117-z>
43. R. Labar, I. Sarkar, A. Sen & **Malay Bhattacharya***. Effect of solvent with varying polarities on phytochemical extraction from mature tea leaves and its evaluation using biochemical, antimicrobial and in-silico approaches DOI: 10.7897/2230-8407.1008247
44. B Sinha, **Malay Bhattacharya**, & S Saha. Transition metal complexes obtained from an ionic liquid-supported Schiff base: synthesis, physicochemical characterization and exploration of antimicrobial activities (2019). *Journal of Chemical Sciences*, 131(3), 19. <https://doi.org/10.1007/s12039-019-1593-x>
45. T Usha, S K Middha, **Malay Bhattacharya**, P Lokesh & A K Goyal, Rosmarinic Acid, a New Polyphenol from *Baccaurea ramiflora* Lour. Leaf: A Probable Compound for Its Anti-Inflammatory Activity. (2014). *Antioxidants*, 3, 830-842. doi:10.3390/antiox3040830
46. A Goyal, T Mishra, **Malay Bhattacharya**, P Kar & A Sen. Evaluation of phytochemical constituents and antioxidant activity of selected actinorhizal fruits growing in the forests of Northeast India. (2013). *Journal of Biosciences*. 38(4)797-803
47. **Malay Bhattacharya** & A Sen. *In vitro* regeneration of pathogen free *Kaempferia galanga* L. - a rare medicinal plant. (2013). *Research in Plant Biology*. 3(3)24-30
48. **Malay Bhattacharya**, P. Mandal & A Sen. Detection and characterization of antioxidants in different solvent fractions of ginger (*Zingiber officinale* Rosc.). (2009); *Indian Journal of Plant Physiology*. 14:1, 23-27.

49. S. Sur, **Malay Bhattacharya**, A.K. Bhotra, L.S. Tisa & A. Sen. Bioinformatic Analysis of Codon Usage patterns in a Free Living Diazotroph, *Azotobacter vinelandii*. (2008) *Biotechnology*. 7(2):242-249
50. A.K. Sit, **Malay Bhattacharya**, V. Arunachalam & B. Sarkar. Weed floristic composition in palm gardens in Plains of Eastern Himalayan region of West Bengal. (2007) *Current Science*. 92:10, 1434-1439.
51. **Malay Bhattacharya** & A. Sen, Rapid in vitro multiplication of disease-free *Zingiber officinale* Rosc. (2006). *Indian Journal of Plant Physiology*. 11:4, 379-384.
52. A K. Sit, **Malay Bhattacharya** & K. C. Chenchiah. Effect of benzyl amino purine on in vitro shoot multiplication of ginger (*Zingiber officinale* Rosc. cv Garubathan). (2005). *Journal of Plantation Crops*. 33:3, 184-186.