

Dr. Mohd. Tariq

Parul Institute of Applied Sciences
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Education and Training

Year	Degree/Certificate	Discipline	Institution/Board
2018	Ph. D	Biotechnology	Kumaun University, Nainital, India
2012	M.Sc.	Biotechnology	Graphic Era University, Dehradun, India
2010	B .Sc.	Zoology (H)	Ramjas College, University of Delhi, India
2007	12 th	PCB	CBSE, New Delhi
2004	10 th	Science	CBSE, New Delhi

Employment Details

Position	Place (Deptt. /Institute/University)	Period	
		From	To
Junior Research Fellow (JRF)	Centre for Biodiversity and Conservation Management G.B. Pant National Institute of Himalayan Environment (GBPNIHE) Almora, Uttarakhand	18/04/2013	17/04/2015
Senior Research Fellow (SRF)	Centre for Biodiversity and Conservation Management GBPNIHE, Almora, Uttarakhand	18/04/2015	22/03/2018
Assistant Professor	Deptt. of Biotechnology and Microbiology, Meerut Institute of Engineering and Technology, Meerut, Uttar Pradesh	10/08/2018	31/10/2020
Research Associate- CSIR	Centre for Biodiversity and Conservation Management GBPNIHE, Almora, Uttarakhand	02/11/2020	12/03/2021
Assistant Professor	Parul Institute of Applied Sciences Parul University, Vadodara, Gujarat	24/06/2022	Till date

Dissertation

M.Sc.: Title “Micro-propagation of *Amomum subulatum* Roxb.” under the supervision of Dr. S.K. Nandi, Department of Biotechnological Applications, GBPNIHE, Almora.

Publications:

A. Research Papers:

1. **Tariq, M.**, Dongre, S., Padmapriya, G. (2022). Analysis of Risk Factors for Cardiovascular Disease among Adults Living in Rural Areas of India: A Survey. *Cardiometry*, (24), 320-325.
2. **Tariq, M.**, Nandi, S.K., Bhatt, I.D., Bhavsar, D., Roy, A. & Pande, V. (2021). Phytosociological and Niche Distribution Study of *Paris polyphylla* Smith, an Important Medicinal Herb of Indian Himalayan Region. *Tropical Ecology*, 62 (2), 163-173.
3. Wani, I.A, Verma, S., Mustahq, S., Alsahli, A.A, Alyemeni, M.N., **Tariq, M.**, Pant, S. (2021). Ecological Analysis and Environmental Niche Modelling of *Dactylorhiza hatagirea* (D. Doo) Soo: A Conservation approach for critically endangered medicinal orchid. *Saudi Journal of Biological Sciences*, 28 (4), 2109-2122.
4. Khan, H., Marya., Belwal, T., **Tariq, M.**, Atanasov, A. G., & Devkota, H. P. (2019). Genus *Vanda*: A review on traditional uses, bioactive chemical constituents and pharmacological activities. *Journal of Ethnopharmacology*, 229, 46-53.
5. Amir, A., Kapoor, N., Kumar, H., **Tariq, M.** & Siddiqui, M, A. (2019). *In silico* Homology Modelling and Epitope Prediction of Drug Target Protein in Human Herpes Virus 8 (HHV8). *Biotech Today*, 9 (1), 41-48.
6. Venkatasubramanian, P., Balasubramani, S.P., Nandi, S. K. & **Tariq, M.** (2018). Bioactive metabolite as a tool to monitor conservation approaches of elite and threatened medicinal plants species. *Current Science*, 114 (3), 554-561.
7. Deb, C.R., Rout, G.R., Mao, A.A., Nandi, S.K., Singha, R.K.N., Vijayan, D., Langhu, T., Kikon, Z.P., Pradhan, S., **Tariq, M.** & Swain, D. (2018). *In vitro* propagation of some threatened plant species of India. *Current Science*, 114 (3), 567-575.
8. **Tariq, M.**, Belwal, T., Bhatt, I.D., Pande, V. & Nandi, S.K. (2018). Polyphenolics in the leaves of *Paris polyphylla*: An important high value Himalayan medicinal herb. *Industrial Crops and Products*, 117, 66-74.
9. Amir, A., Kapoor, N., Kumar, H., **Tariq, M.**, & Siddiqui, M, A. (2018). *In silico*, physico-chemical characterization and Analysis of Sandalwood Proteins. *International Journal of Agricultural Invention*, 3 (2), 150-157.
10. Purohit, S., Nandi, S. K., Paul, S., **Tariq, M.**, & Palni, L. M. S. (2017). Micropropagation and genetic fidelity analysis in *Amomum subulatum* Roxb.: a commercially important Himalayan plant. *Journal of Applied Research on Medicinal and Aromatic Plants*, 4, 21-26.
11. **Tariq, M.**, Paul, S., Bhatt, I.D., Chandrasekar, K., Pande, V., & Nandi, S.K. (2016). *Paris polyphylla* Smith: An Important High Value Himalayan Medicinal Herb. *International Journal of Advanced Research*, 4(11), 850-857.

B. Book Chapter/Articles/E-Books:

1. **Tariq, M.**, Choudhary, S., Singh, H., Siddiqui, M, A., Kumar, H., Amir, A., & Kapoor, N. (2021). Role of Nanoparticles in Abiotic Stress, In: F. Ahmed, M. Sultan (Eds.), *Technology in Agriculture* (pp.323-338). IntechOpen Ltd, London, United Kingdom
2. **Tariq, M.**, Choudhary, S., & Singh, H. (2021). Nanotechnology: A Promising Technology for Agriculture Oriented Research. *Krishi Udyan Darpan (Innovative Sustainable Farming)*, 1 (1), 26-27.
3. Jantwal, A., Durgapal, S., Upadhyay, J., Rana, M., **Tariq, M.**, Dhariwal, A., & Joshi, T. (2021). *Centella asiatica*, in: T. Belwal, S.M. Nabavi, S.F. Nabavi, A.R. Dehpour, S. Shirooie (Eds.), *Naturally Occurring Chemicals against Alzheimer's Disease* (pp.257-269). Academic Press, United States (Elsevier Inc.)
4. Belwal, T., Giri, L., Bahukhandi, A., **Tariq, M.**, Kewlani, P., Bhatt, I. D., & Rawal, R. S. (2019). *Ginkgo biloba*, in: S.M. Nabavi, A.S. Silva (Eds.), *Nonvitamin and Nonmineral Nutritional Supplements* (pp. 241-250). Academic Press, United States (Elsevier Inc.)
5. Singh, L., **Tariq, M.**, Chandrasekar, K., Bhatt, I.D., & Nandi, S.K (2017). Ecological Niche Modelling-An important tool for predicting suitable habitat and conservation of the Himalayan medicinal herbs. *ENVIS Bulletin Himalayan Ecology*, 25, 154-155.
6. **Tariq, M.**, Bhatt, I.D., & Nandi, S.K (2016). *Paris polyphylla* Smith, a high value medicinal herb of Indian Himalayan Region. *Hima Paryavaran*, 29 (I), 16-17.
7. Nandi, S.K., **Tariq, M.**, Bhatt, I.D., Purohit, S., Rawat, V., & Rawat, S. (2016). Micropropagation of economically important Himalayan medicinal plant species for conservation and commercialization. In: *The Hi-tech Micropropagation techniques for biomass and metabolite production*. Indian Agricultural Statistics Research Institute, New Delhi.
8. Nandi, S.K., Rawat, S., Bhatt, I.D., Giri, L., Rawat, V., & **Tariq, M.** (2016). Plant cell culture for metabolite production in some Himalayan medicinal species. In: *The Hi-tech Micropropagation techniques for biomass and metabolite production*. Indian Agricultural Statistics Research Institute, New Delhi.
9. Pundir, M., **Tariq, M.**, Bhatt, I.D., & Nandi, S.K. (2013). *Fagopyrum* (Buckwheat): A Potential Crop for Indian Himalayan Region. *Hima Paryavaran*, 25 (II), 10-12.

C. Papers Communicated/Accepted/In press

1. **Tariq, M.**, Nandi, S.K. & Bhatt, I.D. (2020). Adopting biotechnological approaches for conservation of *Paris polyphylla* Smith: An important high value Himalayan medicinal herb. *Saudi Journal of Biological Sciences* (Communicated)

Recognition:

- Received **1st Runner up award** for Poster Presentation on Case Study entitled “Diabetes Patch” in National Healthcare Science Conclave, 2023 Parul University, Vadodara
- Recipient of **Research Associate Fellowship**, 2020, CSIR, New Delhi, India (Award Letter No. 09/560(0003)2019-EMR-I).
- Recipient of **Emerging Scientist Award**, 2020, from Agricultural Technology Development Society, Ghaziabad, Uttar Pradesh, India
- Nominated as **Bentham Ambassador** by Bentham Science Publishers (2020-2021)
- Recipient of **Young Scientist Award**, 2019, from Society of Bioinformatics and Biological Sciences, Allahabad, Uttar Pradesh, India

Research Skills:

- **Tissue culture:** Propagation from pre-existing meristems (shoot, leaf and nodal culture), organogenesis, non-zygotic (somatic) embryogenesis, excised embryo culture, cell suspension and callus culture, media preparation, optimization.
- **Propagation techniques:** Seed germination, vegetative propagation using plant growth hormones and mass propagation using rhizome fragmentation, Micro- and Macro-propagation of woody and herbaceous plants, propagation by conventional methods, setting up of field experiments.
- **Molecular tools:** DNA isolation, PCR, Gel electrophoresis, protein purification.
- **Ecological Assessment:** Phytosociological assessment and mapping of medicinal plants using Habitat distribution modelling via MaxEnt, DIVA GIS software and working knowledge of ArcView.
- **Analytical methods:** UV-Spectrophotometer, Gel Documentation System, Chromatography (HPLC), Portable Photosynthesis Analyzer (InfraRed Gas Analyzer)

Educational Activities:

Education Focus

To enhance my research skills and learn advanced techniques used in medicinal and commercial plant studies in order to do persistent and advanced research. Performing supervised collaborative research and to write research proposals resulting in the quality publication, thereby broadening my horizon that will benefit me in future roles as a scientist and scientific community attaining expertise in professional skills crucial for embarking upon a successful career.

Teaching Experience

Subject taught entitled “Bioenergetics and Bio-membranes, Biophysics, Cell Biology, Enzymes and Enzyme Technology, Nanotechnology” to undergraduate students (2018-2020).

Subject taught entitled “Plant Biotechnology, Techniques in Microbiology, Instrumentation” to postgraduate students (2018-2020).

Mentoring

Pooja Rana, M.Sc. Dissertation (2016). Influence of different environmental conditions on the morphological and physiological attributes of in vitro propagated *Podophyllum* spp.

Roopali Singhal, M.Sc. Dissertation (2019). Isolation and characterization of *Lactobacillus acidophilus* from Yoghurt.

Simran Jain, M.Sc. Dissertation (2020). A study on preliminary phytochemical screening of *Averrhoa carambola* Fruit.

Research Mentor for Mushroom Cultivation Startup (Mushy Lab) for Under Graduate students

Workshops/Seminar

- Presented a paper entitled “in vitro clonal propagation of *Amomum subulatum* Roxb.: An economically important Himalayan plant” at 37th Annual Meeting of PTCA held at National Botanical Research Institute, Lucknow, 2015-16
- Presented a paper entitled “Conservation Planning of *Paris polyphylla* Smith, An Important Medicinal Herb of the Indian Himalayan Region Using Predictive Distribution Modelling” at 11th Uttarakhand State Science & Technology Congress at UCOST Dehradun, 2016-17
- Presented a paper entitled “Ecological and Biotechnological Approaches for Conservation of Medicinal and Aromatic Plants (MAPs) with Special Significance to Indian Himalayan Region” at International E-conference on Agricultural & Biological Sciences (I-E-CABS) 2020
- Presented a paper entitled “Propagation studies towards conservation of *Paris polyphylla* Smith: An Important High Value Himalayan Medicinal Herb” at 4th International Conference on Global Approaches in Natural Resource Management for Climate Smart Agriculture (GNRSA-2020) during Pandemic Era of COVID-19 held at Shobhit Deemed University, Meerut, 2021
- Attended **National Training Programme** on “Ecological Niche Modelling” organized by Department of Botany, North-Eastern Hill University, Shillong, Meghalaya, India (2013-14)
- Participated in the **Hands-on Training** on “Field Surveys for Vegetation Studies and Herbarium Methods” organized by the Biodiversity Conservation & Management (BCM) Theme of G.B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora, Uttarakhand (2013-14)
- Attended **National Workshop** on “Hands-on Training in the field of Plant Reproductive Biology” organized by Centre for Biodiversity Studies, BGSB University, Rajouri, J&K, India (2013-14)
- Two days **Training program** in “Designing and use of Markers: Biochemical and genetic” G.B. Pant Institute of Himalayan Environment & Development, Kosi-Katarmal, Almora, Uttarakhand, from 01 to 02 December 2014.
- Attended **Hands-on Training** on “DNA Barcoding and its Applications” organized by Dept. of

Biotechnology, Dolphin (PG) Institute of Biomedical and Natural Sciences, Dehradun in collaboration with Wildlife Institute of India and Zoological Survey of India, Dehradun. (2014-15)

- Attended **Workshop** on “Advances in Biotechnology and its Applications in Conservation Biology” organized by Dept. of Biotechnology, Dolphin (PG) Institute of Biomedical and Natural Sciences, Dehradun in collaboration with Wildlife Institute of India and Zoological Survey of India, Dehradun. (2014-15)
- Participated in **Himalayan Young Researchers Meet-II** organized by GBPIHED and Indian Himalayas Climate Adaptation Programme (IHCAP), Swiss Agency for Development & Cooperation (SDC), from 15-17 September 2015.
- Participated in the **National Workshop** on “Forest Resources and Plant Biodiversity” under National Mission for Sustaining the Himalayan Ecosystem (NMSHE) organized by GBPNIHESD from 16-18 November 2016.
- Participated in **National Workshop** on “Status and Conservation of Medicinal and Aromatic Plants in India” on 21 February 2019 organized by Department of Botany, Chaudhary Charan Singh University, Meerut-250004.
- Participated in **National Seminar** on “Recent Trends in Interdisciplinary Research” on 31 January, 2020 organized by IQAC, Multanil Modi College, Modinagar, Ghaziabad, India (affiliated to CCS University, Meerut) in collaboration with University Grants Commission.
- Participated in IPR Awareness **Workshop** organized Department of Mechanical Engineering, Meerut Institute of Engineering and Technology (MIET) on 14th March, 2020 under the aegis of Council of Science and Technology, Lucknow, Govt. of Uttar Pradesh, India.
- Participated in **Workshop** on “IPR and Patents for Researchers and Academia Excellence” organized by RIMT University, India in Collaboration with Ennoble IP on 17th May, 2020.
- Participated in **International Conference** on Intellectual Property: Global Value Chains for Indian SMEs organized by Centre for Intellectual Property Research, Promotion and Facilitation (CIPRPF) on 19th May, 2020
- Contributed as **Training Co-ordinator** in Organizing One-day Faculty Development Programme entitled “Strengthening Skills in Applied Biosciences” on 12th January, 2019 organized by Meerut Institute of Engineering and Technology (MIET), in collaboration with Education Department (Madhyamik Shiksha Parishad), Meerut, India.
- Contributed as **Training Co-ordinator (member)** in Organizing One-day Faculty Development Programme entitled “Skill Upgradation in Biosciences” on 12th February, 2020 organized by Meerut Institute of Engineering and Technology (MIET), India.

Research Activities:

My doctoral research constituted “Biotechnological and ecological approaches for conservation of

Paris polyphylla Smith, an important medicinal herb of the Indian Himalayan Region. Being source of many high value drugs, increasing global demands of plant based products, habitat fragmentation, over exploitation of natural resources, changing climatic conditions and other factors have resulted in degradation of various medicinal plants worldwide. Conservation of plants has emerged as one of the priority agenda of research and development as many species are facing the threat of extinction. In vitro culture method is a powerful and reliable tool for propagation, conservation and management of commercially important plant species. Keeping this on priority, one of the medicinal plant named *P. polyphylla* Smith var. *polyphylla* was selected with focus on development of multiplication/propagation (biotechnological/conventional) protocol, identification of promising population, suitable harvesting time with respect to the phytochemical constituents of *P. polyphylla*, biochemical diversity among different population were analysed and for wider health benefits, polyphenols, a diverse and unique group of phytochemicals present in various plants, fruits and vegetables was optimized for extraction. Adoption of biotechnological (vegetative and in vitro technique) approaches for *P. polyphylla*, offered a wide scope for rapid multiplication of elite clones to provide the much-needed planting material for cultivation, and achieving the overall goal of conservation (Article under communication). Several statistical tools are available that are used in optimization of extraction process. One such method used was, response surface methodology (RSM). For subsequent polyphenolic optimization, five polyphenolic compounds (catechin, gallic acid, chlorogenic acid, 4-hydroxybenzoic acid and caffeic acid) were quantified using HPLC (Tariq et al. 2018). This investigation surely adds more knowledge to its metabolic profile, functional value, antioxidant potential and can be effectively utilized for the development of functional foods and has great potential as nutraceutical product formulation and as food supplement.

Organizational Activities:

Professional Societies

- **Life Member** of International Association of Engineers (Membership No. 252924)
- Community Member of American Chemical Society (Membership No. 32383157)

Other Professional Accomplishments:

- Participated in 7 Development Programmes organized by Ministry of Human Resource Development, Govt. of India
- Completed 11 online certification courses from Coursera and IIRS, Dehradun, India

Declaration

I, hereby declare that the above information provided by me is correct to the best of my knowledge. If required, I shall be able to produce relevant documents.

Date: 19th February, 2023

Dr. Mohd. Tariq