

**Tanveer Bilal Pirzadah**

Ph.D

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<https://loop.frontiersin.org/people/334305/overview>  
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**RESEARCH INTERESTS**

Plant-Heavy Metal Dynamic Interactions; Proteomics; Metabolomics; Nano-Bioformulations; Biofuels

**EDUCATIONAL PROFILE**

**2013-2017** Ph.D (BioResources); Department of BioResources, University of Kashmir, Hazratbal, Srinagar-India

- **Thesis title**-Biochemical Basis of Stress Tolerance in *Fagopyrum* species Grown in Kashmir.

**2011-2012** M. Phil (Biotechnology) Rank First; School of Biotechnology and Biosciences, Lovely Professional University, Phagwara, Punjab-India

- **Dissertation title**-Characterization of Different Mutant Lines of *Trichoderma* species for Cellulase and Hemi-cellulase Production.

**2009-2011** M. Sc (BioResources) Rank First; Department of BioResources, University of Kashmir, Hazratbal, Srinagar-India

- **Major Papers:** Bioenergy and Biofuels, Microbial Technology, Bioprospection, BioResources Management, Animal cell and Tissue Technology, Bioinformatics

**2005-2008** B. Sc Rank Second; University of Kashmir, Hazratbal, Srinagar-India

- **Major Papers:** Industrial Fish and Fisheries, Zoology and Chemistry

## RESEARCH EXPERIENCE

- Plant Stress Physiology (Proteomics and Metabolomics)
- Phytoremediation and Phytomining
- Biofuels (Characterization; Bioethanol Production)

## TEACHING EXPERIENCE

**April 2018 to Present**

**Assistant Professor (Adhoc)-Amar Singh College, Cluster University Srinagar (J&K)-India**

- Courses Teaching at the BSc Level: Fundamentals of Bioresources; Plant Bioresources; Microbial Bioresources; Animal Bioresources; Bioresources Technology; Bioindustries; Bioresource Management; Biomedicine and Biocosmetics; Bioenergy and Biofuels.

## SCIENTIFIC SKILLS

- Proteomics: Extraction of proteins; 1<sup>st</sup> and 2<sup>nd</sup> dimensional run on Immobilised pH Gradient (IPG) strips (on IEF Cell, protein focusing) and SD-PAGE, respectively followed by image analyses of Coomassie and silver stained gels, protein spot identification, tryptic digestion of proteins, data interpretation using advanced bioinformatic tools, ultimately leading to identification of stress responsive proteins.
- More than three years' experience of experimental designing and working with growth and stress Physio-chemistry of plants (*Fagopyrum species*) under abiotic stress such as, Lead, Aluminium and Mercury employing hydroponics or sand culturing.
- Hand-on experience in DNA isolation, Screening and Isolation of cellulolytic microorganisms, UV and Chemical Mutagenesis, Submerged and Solid state Fermentation.
- Expertise in secondary metabolite extraction from different plant parts; quantification of secondary metabolites employing GC-MS.
- Biochemical Assays (DNA Damage, changes in activities superoxide dismutase, ascorbate peroxidase, glutathione reductase, catalase, proteases, nitrate reductase; and phytochemical assays such as soluble protein, proline, lipids, chloroplastic pigments, ascorbate, glutathione, MDA, H<sub>2</sub>O<sub>2</sub>, sulphur, lead, Aluminium, mercury, cadmium, etc. contents in different plant tissues)
- Expertise in operating computers using windows MS-Office (all versions), Internet explorer, PDQuest, protein, nucleic acid and microbial colony size estimating and R<sub>f</sub> value determining software (UVI Tech).

## AWARDS

### April-2017

- Won first prize in Poster Presentation in National Conference on Biotechnology and Environment, organized by Department of Biotechnology, Jamia Millia Islamia, New-Delhi and National Environmental Science Academy (NESA), New-Delhi on 10-11th April 2017

### August-2016

- Merit Scholarship during Ph.D from the Department of Bioresources, University of Kashmir, Srinagar, India

## PUBLICATIONS

### Research Articles

**Pirzadah TB**, Malik B, Tahir I, Hakeem KR, Rehman RU. (2019). Aluminium stress modulates the osmolytes and enzyme defense system in *Fagopyrum* species. Ecotoxicology and Environmental Safety (Under Review).

**Pirzadah TB**, Malik B, Tahir I, Hakeem KR, Rehman RU. (2019). Lead Toxicity Alters the activities of Antioxidant enzymes and Modulate the Biomarkers in Tartary Buckwheat Plants. Protoplasma (Submitted).

Malik B, **Pirzadah TB**, Tahir I, Rehman RU. (2019). Growth and physiological responses in chicory towards mercury induced in vitro oxidative stress. Plant Physiology Reports. <http://doi.org/10.1007/s40502-019-00442-2>

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2019). Buckwheat Journey to Functional Food Sector. Current Nutrition & Food Science 14: 1.

**Pirzadah TB**, Malik B, Tahir I, Qureshi MI, Rehman RU. (2018). Characterization of mercury-induced stress biomarkers in *Fagopyrum tataricum* plants, International Journal of Phytoremediation, 20 (3): 225-236.

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2018). Antioxidant potential and Ionomeric analysis of two buckwheat species from Kashmir region. Pharmacognosy Journal. 10(6) Suppl: s83-s88.

**Pirzadah TB**, Malik B, Tahir I, Qureshi MI, Rehman RU. (2017). Metabolite Fingerprinting and Antioxidant Potential of Tartary Buckwheat- an Underutilized Pseudocereal crop from Kashmir Region. Free Radicals and Antioxidants. 7(1): 95-106.

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2017) Metabolite profiling of tartary buckwheat-an underutilized nutraceutical crop of Kashmir Himalaya. *Journal of Phytology*. 8: 49-54.

Malik B, **Pirzadah TB**, Tahir I, Rehman RU. (2017). Chemo-profiling, Antioxidant potential and Ionic analysis of *Cichorium intybus* L. *Pharmacognosy Journal* 9 (6): 917-928.

Malik B, **Pirzadah TB**, Abdin MZ, Rehman RU. (2017). Somatic embryogenesis pattern and embryoid formation in chicory (*Cichorium intybus* L.). *International Journal of Agricultural Technology*. 13 (1): 91-104.

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2016). Vivipary in *Fagopyrum esculentum*. *Folia Biologica ET Geologica*. 57 (2): 5-59.

Malik B, **Pirzadah TB**, Tahir I, Abdin MZ, Rehman RU. (2016). Phytochemical studies on *Cichorium intybus* L. (chicory) from Kashmir Himalaya using GC-MS. *Journal of Pharmacy Research*. 10 (11): 715-726.

**Bilal T**, Malik B, Rehman RU, Kumar M. (2015). Influence of various parameters on cellulase and xylanase production by different strains of *Trichoderma species*. *Austin Journal of Analytical Chemistry and Pharmaceutical Science*. 2 (1): 1034.

**Pirzadah T**, Garg S, Singh J, Vyas A, Kumar M, Gaur N, Bala M, Rehman R, Varma A, Kumar V, Kumar M. (2014). Characterization of Actinomycetes and *Trichoderma* spp. for cellulase production utilizing crude substrates by response surface methodology. *BMC SpringerPlus*, 3:622.

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2013). Buckwheat: An introspective and future perspective with reference to Kashmir Himalayas. *Proc. 12<sup>th</sup> Intl. Symp. Laško, Slovenia*. pp. 212-215. (Proceedings of International Symposium 21-25 Aug. 2013).

## Review Articles

**Pirzadah TB**, Malik B, Rehman RU, Hakeem KR. (2019). Impact of Heavy Metal Stress on Plants and the Role of various Defense Elements. *Ecotoxicology* (submitted).

**Pirzadah TB**, Malik B, Dar FA, Hakeem KR. (2019). Engineering Plants for Heavy Metal Stress Tolerance in the Light of Omics Era. *Biometal* (submitted)

**Pirzadah TB**, Malik B, Hakeem KR. (2018). Metagenomic analysis of uncultured microorganisms and their enzymatic attributes. *Journal of Microbiological Methods*. 155: 65-69.

## BOOK CHAPTERS

### International

**Pirzadah TB**, Malik B, Maqbool T, Rehman RU. (2019). Development of Nano-bioformulations of nutrients for sustainable agriculture. In: Nanobiotechnology in Bioformulations. Eds. Ram Prasad, Vivek Kumar, Manoj Kumar. Springer International. [http://doi.org/10.1007/978-3-030-17061-5\\_16](http://doi.org/10.1007/978-3-030-17061-5_16)

**Pirzadah TB**, Malik B, Rehman RU. (2019). Integration of ‘Omics’ Approaches to Unravel the Heavy Metal Tolerance in Plants. Springer International. (accepted) DOI: 10.1007/978-3-030-02634-9.

Dar FA, **Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2018). Molecular genetics of buckwheat and its role in crop improvement. In: Zhou M, Kreft I, Tang Y, Suvorova G (ed) Buckwheat germplasm in the world, 1st edn. Elsevier Publications USA, pp 271-286.

**Pirzadah TB**, Malik B, Kumar M, Rehman RU. (2017). Cellulases: Industrial workhorse in bioenergy sector. In: Kalia V, Saini A, (eds) Metabolic Engineering for Bioactive Compounds International. Springer, Singapore, pp 143-153.

Malik B, **Pirzadah TB**, Kumar M, Rehman RU. (2017). Biosynthesis of Nanoparticles and their application in pharmaceutical industry. In: Prasad R, Kumar V, Kumar M. (eds) Nanotechnology. Springer, Singapore, pp 235-252.

Malik B, **Pirzadah TB**, Tahir I, Murtaza I, Rehman RU. (2017). Phenomics Science: An integrated inter-disciplinary approach for crop improvement. In: Zargar SM, Vandna R (eds) Plant Omics and Crop Breeding Apple. Academic Press Inc. 9 Spinnaker Way Waretown, NJ 08758 USA, pp 1-30.

Farooq S, Rehman RU, **Pirzadah TB**, Malik B, Dar FA, Tahir I. (2016). Cultivation, Agronomic practices and growth performance of Buckwheat. In: Zhou M, Kreft I, Woo SH, Chrungoo N, Wieslander G (eds) Molecular Breeding and Nutritional Aspects of Buckwheat. Elsevier USA, pp 299-319.

Kumar M, Bhadrecha P, **Pirzadah TB**, Malik B, Rehman RU, Prasad R, Pachouri UC. (2015). Power Reservoirs of Jumble based Biomass in Asia. In: Hakeem K, Jawaaid M, Alothman OY (eds) Agricultural biomass based potential material. Springer Switzerland, pp 455-470.

Malik B, **Pirzadah TB**, Islam ST, Tahir I, Kumar M, Rehman RU. (2015). Biomass pellet technology: A green approach for sustainable development. In: Hakeem K, Jawaaid M, Alothman OY (eds) Agricultural biomass based potential material. Springer Switzerland, pp 403-433.

**Pirzadah TB**, Malik B, Tahir I, Kumar M, Rehman M. (2015). Phytoremediation: An eco-friendly green technology for pollution prevention, control and remediation. In: Hakeem KR, Sabir M, Ozturk MA, Mermut AR (eds) Soil remediation and plants Elsevier London, pp 107-122.

Malik B, **Pirzadah TB**, Tahir I, Rehman RU. (2015). Recent trends and approaches in phytoremediation. Publisher: Soil remediation and plants. In: Hakeem KR, Sabir M, Ozturk MA, Mermut AR (eds) Soil remediation and plants Elsevier London, pp 131-146.

**Pirzadah TB**, Malik B, Kumar M, Rehman RU. (2014). Lignocellulosic biomass: As future alternative for bioethanol production. In: Hakeem KR, Jawaid M, Rashid U (eds) Biomass and Bioenergy. Springer USA, pp 15-163.

**Pirzadah TB**, Malik B, Rehman RU, Hakeem KR, Quershi MI. (2014). Signaling in response to cold stress. In: Hakeem KR, Rehman RU, Tahir I (eds) Plant Signalling: Understand molecular cross talk. Springer India, pp 193-226.

Malik B, **Pirzadah TB**, Tahir I, Reiaz ul Rehman, Hakeem KR, Abdin MZ. (2014). Plant signaling: response to reactive oxygen species. In: Hakeem KR, Rehman RU, Tahir I (eds) Plant Signalling: Understand molecular cross talk. Springer India, pp 1-38.

## NATIONAL

**Bilal T**, Kaur N, Kumar V, Prasad R, Varma A, Malik M, Rehman RU, Kumar M. (2016). Heavy Metal Resistance Bacterial Strains from Agricultural Polluted Sites of Northern India. In: Saini AK, Saini RV, Sharma, DK, Kalia VC (eds) Integrative Biology Book Series Strategies for Metabolic Engineering in Bioactive compounds and Processes, Kalyani Publishers, India, pp 62-73.

## BOOK PUBLISHED

Pirzadah TB, Hakeem KR. (2019). Nano Biotechnology in Agriculture: *An approach towards sustainability*. Springer Switzerland.

## INTERNATIONAL CONFERENCES

**Bilal T**, Malik B, Rehman RU. (2018). Physiological and Biochemical responses of Tartary Buckwheat seedlings upon Mercury-Induced oxidative stress. International Conference On Recent Developments in Science, Humanities & Management (ICRDSHM-18)" (April 17-18, 2018), organized by Amar Singh College, Cluster University Srinagar.

**Bilal T**, Malik B, Rehman RU. (2018). Chemo-profiling Analysis and Distributional Map Patterns of *Cichorium intybus* L. (Chicory) from Kashmir Himalaya. International Conference on Recent Developments in Science, Humanities & Management (ICRDSHM-18)" (April 17-18, 2018), organized by Amar Singh College, Cluster University Srinagar.

**Bilal T**, Malik B, Rehman RU. (2018). Biochemical Scanning and Morpho-Physiological Dissection of Component Mechanism in *Fagopyrum* species in Response to Aluminium Stress. International conference on Agribusiness in Emerging Economics organized by TERI school of Advanced Studies, New-Delhi. 03-04 Jan. 2018.

**Bilal T**, Malik B, Tahir I, Rehman RU. (2016). Chemo-Profiling and Nutritional Analysis of Buckwheat (*Fagopyrum tataricum* Gaertn) from Kashmir Himalaya. 2<sup>nd</sup> International Symposium on New processes and Applications for Plant and Microbial Products. India Habitat Center, New Delhi, India 1st & 2nd March, 2016, ISBN: 978-81-7993-589-7.

Malik B, **Pirzadah TB**, Tahir I, Rehman RU. (2016). Phytochemical screening and GC-MS Profiling of Chicory (*Cichorium intybus* L.). 2<sup>ND</sup> International Symposium on New processes and Applications for Plant and Microbial Products. India Habitat Center, New Delhi, India 1st & 2nd March, 2016, ISBN: 978-81-7993-589-7.

**Bilal T**. (2014). International conference on Building Learning in Sustainability Science (BLISS-2014) organized by Teri University, New Delhi India, 10-14 March 2014.

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2013). Buckwheat: An introspective and future perspective with reference to Kashmir Himalayas. Poster presentation on 12<sup>th</sup> International symposium on Buckwheat, Slovenia.

## NATIONAL CONFERENCES

**Tanveer**. (2018). Certificate of Achievement for participating in National Workshop of “Protein Sequencing Techniques” on 23<sup>rd</sup> Jan. 2018. Organized by Biotechnika Info Labs Ltd, New-Delhi.

**Tanveer**. (2018). Certificate of Achievement for participating in National Workshop of "Developmental Biology - Gametogenesis and Fertilization" on 10<sup>th</sup> Feb. 2018, Organized by Biotechnika Info Labs Ltd, New Delhi.

**Bilal T**, Malik B, Rehman RU. (2017). Lead induced phytotoxicity and oxidative stress in buckwheat (*Fagopyrum kashmirianum*) plants. National Conference on Biotechnology and Environment, organized by Department of Biotechnology, Jamia Millia Islamia, New-Delhi and National Environmental Science Academy (NESA), New-Delhi on 10-11th April 2017.

Dar FA, **Pirzadah TB**, Tahir I, Rehman RU. (2017). Aluminium toxicity induces lipid peroxidation and alters the activities of antioxidant enzymes in *Fagopyrum kashmirianum*. National Conference on Biotechnology and Environment, organized by Department of Biotechnology, Jamia Millia Islamia, New-Delhi and National Environmental Science Academy (NESA), New-Delhi on 10-11th April 2017.

**Pirzadah T**. (2015). Participated in “Two day lecture series on Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA)”, 03-04 June, 2015- Organized by Department of Environmental Science, University of Kashmir, Srinagar

**Bilal T**, Malik B, Tahir I, Rehman RU. (2015). Buckwheat: an Underutilized Crop for Food Security and Measures to Cope with Climate Change. Oral presentation on Regional Science Congress & 11<sup>Th</sup> JK Science Congress” organized by University of Kashmir, 12 -14 Oct. 2015.

**Pirzadah TB**, Malik B, Kumar M, Tahir I, Rehman RU. (2015). Metagenomics: Window To The Microbial World. Poster presentation on National symposium on Biodiversity, Biology



and Bioprospecting organized by the Department of Botany University of Kashmir on 1-2

Malik B, **Pirzadah TB**, Kumar M, Tahir I, Rehman RU. (2015). Phenomics science: An inter-disiplinary approach for crop improvement. Poster presentation on National symposium on Biodiversity, Biology and Bioprospecting organized by the Department of Botany University of Kashmir on 1-2 April, 2015

Malik B, Soni G, **Bilal T**, Tahir I, Rehman RU. (2015). Agro-Climatic Influence on the Antioxidant Potential of *Mentha*. Oral presentation on Regional Science Congress & 11<sup>Th</sup> JK Science Congress” organized by University of Kashmir, 12 -14 Oct. 2015.

**Pirzadah TB**. (2014). Three day Science Academies Lecture Workshop on “Himalayan Biodiversity and Bioresources: Mapping, Utilization and conservation” organized by Department of Botany, University of Kashmir, Srinagar from May 8-10. Jointly sponsored by Indian Academy of Sciences (Bangalore), Indian National Science Academy (New Delhi) and National Academy of Sciences (Allahabad).

**Pirzadah TB**, Malik B, Rehman RU, Kumar M. (2013). Cellulosic Bioethanol-as future fuel. Poster presentation on “International Day for Biological diversity” Organized by Department of Botany, University of Kashmir, 22<sup>nd</sup> May, 2013.

**Pirzadah TB**, Malik B, Tahir I, Rehman RU. (2013). Mangrove characteristics in *Fagopyrum esculentum* a member of Polygonaceae family. Poster presentation on National conference on “Status and conservation of biodiversity in India with special reference to Himalaya” organized by Centre of Research for Development (CORD) & P.G. Department Of Environmental Science, University of Kashmir, 4-5 Oct. 2013.

**Pirzadah TB**, Malik B, Kumar M, Rehman RU. (2013). *Trichoderma* species for production of cellulases for the biofuel industry. Oral presentation on Regional Science Congress & 9<sup>Th</sup> JK Science Congress” organized by University of Kashmir, 1<sup>st</sup> -3<sup>rd</sup> Oct. 2013.

Malik B, **Pirzadah TB**, Rehman RU. (2013). *Cichorium intybus* L. (Chicory): A potential perennial Bioresource. Poster presentation on “International Day for Biological diversity” Organized by Department of Botany, University of Kashmir, 22<sup>nd</sup> May, 2013.

Malik B, **Pirzadah TB**, Tahir I, Rehman RU. (2013). *Cichorium intybus* L. (Chicory): An untapped Bioresource with reference to Jammu and Kashmir. Poster presentation on National conference on “Status and conservation of biodiversity in India with special reference to Himalaya” organized by Centre of Research for Development (CORD) & P.G. Department Of Environmental Science, University of Kashmir, 4-5 Oct. 2013.

Rehman RU, **Pirzadah TB**, Malik B, Tahir I. (2013). Buckwheat: A case study in Gurez Valley. Oral presentation on Regional Science Congress & 9<sup>Th</sup> JK Science Congress” organized by University of Kashmir, 1<sup>st</sup> -3<sup>rd</sup> Oct. 2013.

Malik, **Pirzadah TB**, Tahir I, Rehman RU. (2013). Biotechnological approaches for the improvement of chicory (*Cichorium intybus* L.). Oral presentation on Regional Science Congress & 9<sup>Th</sup> JK Science Congress” organized by University of Kashmir, 1<sup>st</sup> -3<sup>rd</sup> Oct. 2013.



## EDITORIAL WORK/BOOK

### Peer-Reviewer for the following journals

- African Journal of Biotechnology
- African Journal of Microbiology

### Member of Editorial Board

- Journal of Plant Stress Physiology (Online ISSN: 2455-0477)  
<http://updatepublishing.com/journal/index.php/jpsp/editorial-board>
- Reviewer Journal of Plant Sciences. ISSN: 2331-0723 (Print);  
ISSN: 2331-0731 (Online)

## MEMBERSHIPS OF SCIENTIFIC ORGANIZATIONS

- Associate Member of World Academy of Sciences.  
<http://www.worldacademyofsciences.com/members.html>
- Member of Board of Studies (2013-Till date): Department of Bio-Resources
- Bentham Ambassador for Bentham Sciences

## REFERENCES

### Dr. Reiaz Ul Rehman

#### Ph.D. Supervisor

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**Tanveer Bilal Pirzadah**