

CONTACT  
INFORMATION

**Shahzad A. Pandith**  
Department of Botany  
University of Kashmir  
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District: Baramulla, Kashmir

RESEARCH  
INTERESTS AND  
VISION

I seek to use various ‘omics’ approaches to elucidate and understand the basic biology of plants, important pathways operating in them and their modulation, rate limiting pathway genes, the regulatory factors controlling their constitutive/inducible expression vis-à-vis ecological/environmental factors and/or stress conditions.

ACADEMIC  
APPOINTMENTS

**University of Kashmir**, Srinagar, India  
Department of Botany  
INSPIRE Faculty (Tenure-track)

April 2017 to date

## EDUCATION

**CSIR- Indian Institute of Integrative Medicine (IIIM)**, 2012 to 2016  
Jammu, India

*PhD*— Plant Sciences (Botany)

Degree awarded by **University of Kashmir**, Srinagar, India

*Advisor's*: [Dr. Surrinder K. Lattoo](#) and [Dr. Manzoor A. Shah](#)

*Thesis title*: Molecular cloning, characterization and expression profiling of some strategic genes of polyketide pathway from *Rheum emodi* Wall. ex. Meissn.

**University of Kashmir**, Srinagar, India  
M.Sc. Botany (Division I<sup>st</sup>)

2007 – 2009

**University of Kashmir**, Srinagar, India  
B.Sc. English, Botany, Zoology and Chemistry (Division I<sup>st</sup>)

2004 – 2007

HONORS, AWARDS,  
AND GRANTS  
(NATIONAL)

Awarded the prestigious National Fellowship Award, **Inspire Faculty Award** by the Department of Science and Technology, Govt. of India with a grant for 5 years @₹ 16.6 lac per year

2017-2022

Qualified Agricultural Scientists Recruitment Board– National Eligibility Test (**ASRB-NET**) held by Indian council of Agricultural research (**ICAR**), New Delhi, India

April 2014

Awarded **certificate of excellence** in the quiz on Atmospheric Ocean Science and Technology conducted by Ministry of Earth Science, Govt. of India at the 101<sup>st</sup> Indian Science Congress, Jammu, India

February 2014

Qualified Junior research fellowship (**JRF**) and National Eligibility Test (**NET**) held jointly by Council of Scientific and Industrial Research (**CSIR**) and University Grants Commission (**UGC**), New Delhi, India with a monthly fellowship amount of ₹ 30,000 (1<sup>st</sup> and 2<sup>nd</sup> year) and ₹ 35,000 (3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> year)

June 2010  
(Received fellowship from Jan 2011 to Jan 2016)

MEMBERSHIP OF SCIENTIFIC SOCIETIES	Member Indian Science Congress Association, Kolkata, India	2013
RESEARCH EXPERIENCE	<b>University of Kashmir</b> , Srinagar, India DST-INSPIRE Faculty	April 2017 to date
	<b>CSIR-IIIM</b> , Jammu, India Senior Project Fellow	Mar 2016-Sep 2016
	<b>CSIR-IIIM</b> , Jammu, India Senior Research Fellow	Jan 2013-Jan 2016
	<b>CSIR-IIIM</b> , Jammu, India Junior Research Fellow	Jan 2011-Jan 2013
PEER REVIEWED JOURNAL PUBLICATIONS	<i>Cumulative 2016 impact factor = 35.474</i>	
2018	J-13 <b>Pandith SA*</b> , Dar RA, Lattoo SK, Shah MA, Reshi ZA (2018). <a href="#">Rheum australe, an endangered high value medicinal herb of North Western Himalayas— a review of its botany, ethnomedical uses, phytochemistry and pharmacology.</a> <i>Phytochem Rev</i> ; 17: 573-609. (* <b>Corresponding author</b> ).	
	J-12 Rather GA, <b>Sharma A</b> <sup>†</sup> , <b>Pandith SA</b> <sup>†</sup> , Kaul V, Misra P, Lattoo SK (2018). <a href="#">De novo Transcriptome Analysis Reveals Putative Pathway Genes Involved in Biosynthesis and Regulation of Camptothecin in Nothapodytes nimmoniana (Graham) Mabb.</a> <i>Plant Mol Biol</i> ; 96: 197-215 († <b>Equal authorship</b> ).	
2017	J-11 Wani TA, <b>Pandith SA</b> , Gupta AP, Chandra S, Sharma N, Lattoo SK (2017). <a href="#">Molecular and functional characterization of two isoforms of chalcone synthase and their expression analysis in relation to flavonoid constituents in Grewia asiatica L.</a> <i>Plos One</i> ( <a href="https://doi.org/10.1371/journal.pone.0179155">https://doi.org/10.1371/journal.pone.0179155</a> ).	
	J-10 <b>Pandith SA</b> , Dhar N, Wani TA, Razdan S, Bhat WW, Rana S, Lattoo SK (2017). <a href="#">Production dynamics in relation to ontogenetic development and induction of genetic instability through in vitro approaches in Pelargonium graveolens: A potential essential oil crop of commercial significance.</a> <i>Flavour Fragr J</i> ; 32: 376-387.	
2016	J-9 <b>Pandith SA</b> , Dhar N, Rana S, Bhat WW, Kushwaha M, Gupta AP, Shah MA, Vishwakarma R, Lattoo SK (2016). <a href="#">Functional promiscuity of two divergent paralogs of Type III plant polyketide synthases.</a> <i>Plant Physiol</i> ; 171: 2599-2619.	
	J-8 Wani TA, Rana S, Bhat WW, <b>Pandith SA</b> , Dhar N, Razdan S, Chandra S, Sharma N, Lattoo SK (2016). <a href="#">Efficient in vitro regeneration, analysis of molecular fidelity and Agrobacterium tumefaciens-mediated genetic transformation of Grewia asiatica L.</a> <i>J Plant Biochem Physiol</i> ; 4.	

- J-7 Razdan S, Bhat WW, Dhar N, Rana S, **Pandith SA**, Wani TA, Dhar RS, Vishwakarma R, Lattoo SK (2017). [Molecular characterization of \*DWFI\* from \*Withania somnifera\* \(L.\) Dunal: Its implications in withanolide biosynthesis in response to exogenous elicitations.](#) *J Plant Biochem Biot*; 26: 52-63.
- 2015** J-6 Wani TA, **Pandith SA**, Rana S, Bhat WW, Dhar N, Razdan S, Chandra S, Kitchlu S, Sharma N, Lattoo SK (2015). [Promiscuous breeding behaviour in relation to reproductive success in \*Grewia asiatica\* L. \(Malvaceae\).](#) *Flora*; 211: 62-71.
- 2014** J-5 **Pandith SA**, Hussain A, Bhat WW, Dhar N, Qazi AK, Rana S, Razdan S, Wani TA, Shah MA, Bedi YS, Hamid A, Lattoo SK (2014). [Evaluation of anthraquinones from Himalayan rhubarb \(\*Rheum emodi\* Wall. ex Meissn.\) as antiproliferative agents.](#) *S Afr J Bot*; 95: 1–8.
- J-4 Rana S, Bhat WW, Dhar N, **Pandith SA**, Razdan S, Vishwakarma R, Lattoo SK (2014). [Molecular characterization of two A-type 450s, \*WsCYP98A\* and \*WsCYP76A\* from \*Withania somnifera\* \(L.\) Dunal: expression analysis and withanolide accumulation in response to exogenous elicitations.](#) *BMC Biotechnol*; 14: 1-17.
- J-3 Bhat WW, Rana S, Dhar N, Razdan S, **Pandith SA**, Vishwakarma R, Lattoo SK (2014). [An inducible NADPH-Cytochrome P450 reductase from \*Picrorhiza kurrooa\*- an imperative redox partner of cytochrome P450 enzymes.](#) *Funct Integr Genomic*; 14: 381–399.
- 2013** J-2 **Farooq U<sup>†</sup>**, **Pandith SA<sup>†</sup>**, Saggoo MIS, Lattoo SK (2013). [Altitudinal variability in anthraquinone constituents from novel cytotypes of \*Rumex nepalensis\* Spreng—a high value medicinal herb of North Western Himalayas.](#) *Ind Crop Prod*, 50: 112–117 († Equal authorship).
- J-1 Dhar N, Rana S, Bhat WW, Razdan S, **Pandith SA**, Dhar RS, Khan S, Vaishnavi S, Vishwakarma R, Lattoo SK (2013). [Dynamics of withanolide biosynthesis in relation to temporal expression pattern of metabolic genes in \*Withania somnifera\* \(L.\) Dunal: A comparative study in two morpho-chemovariants.](#) *Mol Biol Rep*; 40: 7007-16.
- CONFERENCES** C-4 **Pandith SA (2015)**. “Induction of *Agrobacterium rhizogenes* mediated hairy roots, comparative metabolic profiling and molecular characterization of polyketide synthases (PKS) from *Rheum emodi* Wall ex. Meissn. as major scaffolds for the generation of “unnatural” product libraries”. In International Conference on “Medicinal Plants: Resource for Affordable New Generation Healthcare” organized by CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow, India. March, 20-22, pp 120.

- C-3 **Pandith SA (2015)**. “*Molecular cloning and characterization of aloesone 14-synthase- A novel type III plant polyketide synthase from Rheum emodi Wall ex. Meisn.*” In 10<sup>th</sup> JK Science Congress, Jammu University, March 16, pp 45-46.
- C-2 **Pandith SA (2014)**. Participated in Indian Science congress held at University of Jammu, J&K, India.
- C-1 **Pandith SA (2013)**. “*Metabolic profiling, efficient in vitro plant regeneration and molecular characterization of type III plant polyketide synthases; aloesone synthase (ReALS) and chalcone synthase (ReCHS) from Rheum emodi Wall Ex. Meisn.*” In annual convention of ABAP and International conference on Plant Biotechnology, Molecular Medicine and Human Health, University of Delhi, New Delhi, India. October 18-20, pp 146-147.

#### MANUSCRIPTS IN PROCESS

- M-2 **Pandith SA et al.**, *Chalcone synthases, the simplest representative of Type III plant polyketide synthases— A review (In preparation)*.
- M-1 **Pandith SA et al.**, *Molecular cloning, promoter isolation and functional characterization of aloesone synthase- a type III plant polyketide synthase from Rheum australe Wall ex. Meisn. (In preparation)*.

#### BOOKS IN PROCESS

- B-3 Dangroo NA, **Pandith SA**, Wani TA, Ashraf N. *Selected threatened medicinal plants of Himalayas— a rich repository of natural products* (2017). (**Springer briefs**).
- B-2 **Pandith SA**, Razdan S, Sharma A, Rather GA, Jeelani SM, Lattoo SK. *Himalayan treasure-trove of some high value medicinal plants: Their significance with incisive DNA bar-codes* (2018). (**Springer briefs**).
- B-1 **Pandith SA et al.**, *The Genus Rheum: Review of traditional uses, phytochemistry and pharmacology (In preparation)*.

#### STUDENT SUPERVISION

Mentoring a student working as ‘Project Fellow’ in the DST sponsored INSPIRE Project. Besides, I have supervised fifteen (15) bachelor and ten (10) master’s students from various disciplines of Biological Sciences for their dissertation work.

#### JOURNAL REVIEWING EXPERIENCE

1. Agriculture and Natural Resources (Elsevier)
2. Indian Journal of Plant Physiology (Springer)

#### PROFESSIONAL COMPETENCES AND SKILLS ACQUIRED

My complete involvement with research since 2011 has enabled me to develop better understanding and insight for the execution of R&D programmes. This endurance has made me competent vis-à-vis functional genomics/transcriptomics/metabolomics approaches to comprehend and execute the finer ideas in realm of metabolic pathway understanding, elucidation and further modulation/engineering with respect to different environmental factors/stress-conditions and the generation of desired products. I have also developed competence for project/paper writing, fund raising and executing the research projects at my own, though with a good team spirit as well.

PROJECTS  
IMPLEMENTED

*Title:* Integrated analysis of metabolome and transcriptome of genus *Rheum* to decipher the biosynthesis of key bio-active constituents of therapeutic significance.

*Funding agency:* Department of Science and Technology, Govt. of India, New Delhi

*Budget/Duration/Role:* 83 lac / 5 years / PI

PROJECTS  
SUBMITTED

(Under stage II  
evaluation)

1. *Title:* Assessment of eco-physiological and genetic basis for evolutionary divergence in *Rheum australe* and *R. webbianum* —two endemic and endangered high value medicinal herbs from North Western Himalaya.

*Call:* Core Research Grant (SERB)

*Funding agency:* DST-Science and Engineering Research Board, Govt. of India, Delhi

*Budget/Duration/Role:* 35 lac / 3 years / PI

2. *Title:* Assessment, documentation and sustainable use of endemic and endangered medicinal *Rheum* species in Kashmir, Ladakh and Lahaul-Spiti to promote community-managed conservation and livelihood improvement of regional mountain communities.

*Call:* Early Career Research (ECR) Award (SERB)

*Funding agency:* DST-Science and Engineering Research Board, Govt. of India, Delhi

*Budget/Duration/Role:* 50 lac / 3 years / PI

## REFEREES

**Dr. Sudhir K. Sopory**

Professor

SERB Distinguished Fellow and  
Emeritus Scientist

Ex-Vice Chancellor, JNU

ICGEB, New Delhi- 110067

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**Dr. Autar Mattoo**

Professor

The USDA Sustainable Agricultural  
Systems Laboratory ARS, BARC-W,  
Beltsville, Maryland, USA

[autar.mattoo@ars.usda.gov](mailto:autar.mattoo@ars.usda.gov)

**Dr. Surrinder K. Lattoo**

Senior Scientist

Plant Biotechnology Division

Indian Institute of Integrative Medicine

Canal Road, Jammu- 180 001

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**Dr. Zafar Ahmad Reshi**

Professor

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**Dr. Manzoor Ahmad Shah**

Associate Professor

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**Dr. Amjad M. Husaini**

Sr. Assistant Professor

Centre for Plant Biotechnology

SKUAST-Kashmir- 190025, India

& Visiting Scientist

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University of Oxford

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