Rajiv Kumar, PhD, MNASc
Principal Scientist,
Associate Professor (AcSIR),
Department of Biotechnology
CSIR- Institute of Himalayan Bioresource Technology
Post Box No. 6, Palampur (HP) 176061, India
Mobile: 9816153466
Off. Phone: 91-1894-230742-306
E-mail: rajiv.kumar@csir.res.in rajiv.rintu@gmail.com

Education

Ph.D. (2008-2014)

Area of research : Plant molecular biology and proteomics
Thesis title : Study of dehydration-responsive phosphoproteome of nuclear fraction in chickpea (*Cicer arietinum* L.)
Supervisor : Dr. Niranjan Chakraborty
Institution : National Institute of Plant Genome Research, New Delhi, India

M.Sc. (2006-2008)

Subject : Biotechnology
Institution : School of Biotechnology, Devi Ahilya Vishwavidyalaya, Indore, India

B. Sc. (2001-2004)

Subject : Zoology (Hons.)
Institution : Pandit Ugam Pandey College, Motihari, Bihar, India

Research career:

8th Aug 2014-15th Dec 2015 : Post-Doctoral research, School of Life Sciences, Jawaharlal Nehru University, New Delhi, India

16th Dec 2015- 15th Dec 2019 : Scientist, CSIR- Institute of Himalayan Bioresource Technology, India

16th Dec 2019- 15th Dec 2023 : Senior Scientist, CSIR-Institute of Himalayan Bioresource Technology, India

16th Dec 2019- Till date : Principal Scientist, CSIR-Institute of Himalayan Bioresource Technology, India

Area of research

1. Adaptation and Stress Biology
2. Proteomics, organelle proteomics and post-translational modification
3. Peptide biology
4. Molecular biology
5. Synthetic biology
6. Metabolomics

Research Projects

1. Deciphering the role of a membrane-localized *Pk*PLAT domain-containing protein in high altitude adaptation and abiotic stress response in *Picrorhiza kurroa*; an industrially important high altitude medicinal plant by DBT; 2026-2029 (**Principal Investigator**)
2. PAN-India multicentric study on NeuroCYSTicercosis (NCC): Unravelling its metabolomics and proteoMICS architecture to enable its diagnosis and understand epilepsy (CYST-OMICS) by ICMR: 2023-2026 (**Principal Investigator**)
3. Exploring the molecular mechanism of plant adaptation along an elevational gradient in *Picrorhiza kurroa* a high altitude medicinal plant through proteomics approach by ECR- SERB, DST: 2018-2021 (**Principal Investigator**).
4. Exploration of RBP-RNA interactions to reveal the post-transcriptional regulatory impact and development of related tools and resource server by DBT- IBSD: 2018-2021 **(CO-PI)**
5. Molecular mechanism underlying Apple scar skin viroid-whitefly interaction by CSIR-NCP: 2018-2020 (**CO-PI**).
6. Integrated Next Gen approaches in health, disease and environmental toxicity (INDEPTH) by CSIR: 2016-2017 (**Principal Investigator)**

Award, Honors, Membership of Societies and Professional Bodies

1. Elected member, National Academy of Sciences India (NASI), 2025
2. Appreciation for the best scientific contribution in CSIR-IHBT, 2022-2023
3. SERB Early Carrier research Award, 2018
4. Associate Professor, Faculty of Biological Sciences, AcSIR
5. Life member of Proteomic Society of India
6. Awarded D.S Kothari Postdoctoral Fellowship; 2014-2017
7. Awarded DBT-RA; 2014-2019; Not availed.
8. Awarded DBT-JRF; 2008-2013
9. Awarded DBT fellowship; 2006-2008 during M.Sc.
10. Qualified NET-LS; 2008
11. Qualified GATE, Percentile: 98.93%, Dec. 2007
12. Qualified JNU CEEB, 2006

Key training attend

1. Attained Karmayogi Master Trainer' programme, 2025
2. Attained EMBO Lab Leadership Course, 2024

Editorial/Reviewer roles

1. Frontiers in Molecular Biosciences
2. Frontiers in Plant Genomics,
3. Frontiers in Molecular Diagnostics and Therapeutics
4. Reviewer of National and International Journals like PLOS Genetics, The Plant Journal Physiologia Plantarum, Journal of Proteomics, Journal of Proteome Research, Scientific report, Plant physiology and Biochemistry, Journal of Biosciences, Journal of Protein and Proteomics

Student guidance

PhD completed : 04

Current PhD student : 04

Post doctoral student : 01

MSc students : 20

Best Poster Award of my research group

1. By Manglesh Kumari in conference entitled **"NEXT GENERATION PROTEOME MINING AND NANO-BIO INTERACTION FRO BETTER PLANT HEALTH"** held on **27-29th December 2021** at Department of botany, University of Delhi, Delhi
2. By **Ashwani Punia** in conference entitled "**International Symposium on Plant Biology and Functional Genomics**" held on **March 13-15, 2024** at School of Life Science, University of Hyderabad
3. By **Monika Chouhan** in conference entitled "**International Symposium on Plant Biology and Functional Genomics**" held on **March 13-15, 2024** at School of Life Science, University of Hyderabad

Publications (Research Articles)

1. Method development for virus-induced gene silencing in *Picrorhiza kurroa,* as an alternative tool for functional genomics. Monika Chouhan, Vishal Saini, Rajesh Kumar Singh, **Rajiv Kumar*** **The Nucleus, 2026, Accepted IF 2.6**
2. An Integrated Approach of Proteomic, Cheminformatic, and In Vitro Drug Screening to Identify Potential Therapeutic Targets of Taenia solium Cysticerci Proteases, Rimanpreet Kaur, Suraj Singh Rawat, Anand K Keshri, Naina Arora, Parul Mehra, Anubha Chaudhary, Swati Sharma, **Rajiv Kumar,** Amit Mishra, and Amit Prasad*, **ACS Omega 2025,** 10, 50, 61231–61246. **https://doi.org/10.1021/acsomega.4c07758. IF. 4.3**
3. Transcriptional landscape illustrates the diversified adaptation of medicinal plants to multifactorial stress combinations linked with high-altitude, Manglesh Kumari, Prakash kumar, Vishal Saini, Rohit Joshi, Ravi Shankar*, **Rajiv Kumar*, Planta, 2025, 261;111 https://doi.org/10.1007/s00425-025-04686-1, IF. 3.6**
4. Taenia solium Cysticerci's Extracellular Vesicles Tame the AKT/mTORC1 Pathway for Alleviating DSS-Induced Colitis in Murine Model, Suraj Rawat Anand Keshari Nauna Arora Rimanpreet Kaur Amit Mishra **Rajiv Kumar** Amit Prasad, **Journal of extracellular vesicles**, **2024 (Accepted) IF. 16**
5. Proteomic and metabolomic insights into seed germination of Ferula assa-foetida, Ashwani Punia, Manglesh Kumari, Monika Chouhan, Vishal Saini, Robin Joshi, Ashok Kumar, **Rajiv Kumar*, Journal of Proteomics**, **2024**, 105176, **IF 3.3** https://doi.org/10.1016/j.jprot.2024.105176.
6. Functional trait correlation network and proteomic analysis reveal multi-factorial adaptation mechanisms to a climatic gradient associated with high-altitude in the Himalayan region, Manglesh Kumari, **Rajiv Kumar***, **Plant Cell and Environment, 2024**;47(5):1556-1574. **doi: 10.1111/pce.14830.**, **IF 7.94**
7. *Taenia solium* excretory secretory proteins (ESPs) suppresses TLR4/AKT mediated ROS formation in human macrophages via hsa-miR-125, Naina Arora,Anand K. Keshri,Rimanpreet Kaur,Suraj S. Rawat, **Rajiv Kumar**, Amit Mishra, Amit Prasad , PLOS NEGLECTED TROPICAL DISEASES, **2023**. doi.org/10.1371/journal.pntd.0011858 **IF 3.8**
8. Recognition of immune reactive proteins as a potential multiepitope vaccine candidate of Taenia solium cysticerci through proteomic approach. Kaur R, Arora N, Rawat SS, Keshri AK, Singh G, **Kumar R,** J **Cell Biochem. 2023 S. doi: 10.1002/jcb.30467. IF 4.8**
9. Unique Metabolic Shift Reveals Potential Mechanism of Cold and Freezing Acclimatization, **Rajiv Kumar*, Journal of Plant Growth Regulations, 2023,** 42(1):1-17. DOI: 10.1007/s00344-023-10961-w **IF 4.169**
10. Identification and quantification of eight alkaloids in Aconitum heterophyllum using UHPLC-DAD-QTOF-IMS: A valuable tool for quality control, Ashwani Punia, Robin Joshi* **Rajiv Kumar***, **Phytochemical Analysis**.**2022;1–14, DOI:10.1002/pca.3164. IF 3.02**
11. Nutritional quality evaluation and proteome profile of forage species of Western Himalaya, **Rajiv Kumar***,Robin Joshi, Raman Kumar, Vidyashankar Srivatsan, Satyakam, Amit Chawla, Vikram Patial, Sanjay Kumar, **Grassland Science**, **2021**, **DOI: 10.1111/grs.12357. IF 1.6**
12. Protein-Cloaked Nanoparticles for Enhanced Cellular Association and Controlled Pathophysiology via Immunosurveillance Escape, Aqib Iqbal Dar, Syed M. S. Abidi, Shiwani Randhawa, Robin Joshi, **Rajiv Kumar**, and Amitabha Acharya*, **ACS Appl. Mater. Interfaces 2021**, **https://doi.org/10.1021/acsami.1c20719. IF 9.2**

13. In-depth assembly of organ and development dissected Picrorhiza kurroa proteome map using mass spectrometry, Manglesh Kumari, Upendra Kumar Pradhan, Robin Joshi, Ashwani Punia, Ravi Shankar & **Rajiv Kumar***, **BMC Plant Biology** 21: 604, **2021**, **https://doi.org/10.1186/s12870-021-03394-8. IF 4.21**
14. Evaluating Peptides of *Picrorhiza kurroa* and Their Inhibitory Potential against ACE, DPP-IV, and Oxidative Stress. Shweta Thakur, Jyoti Chhimwal, Robin Joshi, Manglesh Kumari, Yogendra Padwad*, and **Rajiv Kumar* Journal of Proteome Research, 2021, https://doi.org/10.1021/acs.jproteome.1c00081. IF 4.46**
15. Systemic acquired resistance specific proteome of Arabidopsis thaliana. **Rajiv Kumar**, Pragya Barua, Niranjana Chakraborty & Ashis Kumar Nandi. **Plant cell report**. **2020, doi: 10.1007/s00299-020-02583-3. IF 4.57**
16. Metabolic signatures provide novel insights to *Picrorhiza kurroa* adaptation along the altitude in Himalayan region. Manglesh Kumari, Robin Joshi & **Rajiv Kumar***. **Metabolomics. 2020**; 16:77, **doi: 10.1007/s11306-020-01698-8. IF 4.20**
17. Elevated CO_2 and temperature influence key proteins and metabolites associated with photosynthesis, antioxidant and carbon metabolism in *Picrorhiza kurroa*. **Rajiv Kumar***, Robin Joshi, Manglesh Kumari, Reema Thakur, Dinesh Kumar*, Sanjay Kumar*. **Journal of proteomics. 2020;** 219:103755, **doi: 10.1016/j.jprot.2020.103755. IF 4.04**
18. Regulation of color transition in purple tea (*Camellia sinensis*). Manglesh Kumari, Shweta Thakur, Ajay Kumar, Robin Joshi, Prakash Kumar, Ravi Shankar, **Rajiv Kumar***. **Planta. 2020**; 251:35, **doi: 10.1007/s00425-019-03328-7. IF 4.11**
19. Usnic acid modifies MRSA drug resistance through down-regulation of proteins involved in peptidoglycan and fatty acid biosynthesis. Sneha Sinha, Vivek Kumar Gupta, Parmanand Kumar1, **Rajiv Kumar**, Robin Joshi, Anirban Pal and Mahendra P. Darokar **FEBS Open Bio. 2019**; 9:2025–2040, **doi: 10.1002/2211-5463.12650. IF 2.69**
20. Nuclear phosphoproteome of developing chickpea (*Cicer arietinum* L.) and Protein-Kinase interaction network. **Kumar R,** Kumar A, Subba P, Gayali S, Barua P, Chakraborty S, Chakraborty N. **J Proteomics**. **2014** 13; 105:58-73, **doi: 10.1016/j.jprot.2014.04.002. IF 4.04**
21. Comparative proteomics of dehydration response in the rice nucleus: new insights into the molecular basis of genotype-specific adaptation. Jaiswal DK, Ray D, Choudhary MK, Subba P, Kumar A, Verma J, **Kumar R**, Datta A, Chakraborty S, Chakraborty N. **Proteomics**. **2013**;13(23-24):3478-97, **doi: 10.1002/pmic.201300284. IF 4.0**
22. Characterization of the nuclear proteome of a dehydration-sensitive cultivar of chickpea and comparative proteomic analysis with a tolerant cultivar. Subba P, **Kumar R**, Gayali S, Shekhar S, Parveen S, Pandey A, Datta A, Chakraborty S, Chakraborty N. **Proteomics. 2013,**12-13,1973-92, **doi: 10.1002/pmic.201200380. IF 4.0**
23. Phosphoproteomic Dynamics of Chickpea (*Cicer arietinum* L.) Reveals Shared and Distinct Components of Dehydration Response. Subba P, Barua P, **Kumar R**, Datta A, Soni KK, Chakraborty S, Chakraborty N. **J Proteome Res**. **2013**;12(11):5025-47, **doi: 10.1021/pr400628j. IF 4.46**
24. Analysis of the grass pea proteome and identification of stress-responsive proteins upon exposure to high salinity, low temperature, and abscisic acid treatment. Chattopadhyay A, Subba P, Pandey A, Bhushan D, **Kumar R**, Datta A, Chakraborty S, Chakraborty N. **Photochemistry. 2011**,72,1293-307, **doi: 10.1016/j.phytochem.2011.01.024. IF 4.07**

Review articles

25. Dancing to the tune of the light regime: from perception to secondary metabolite biosynthesis in plants. Ashwani Punia, Satyakam,Vishal Saini, Monika Chouhan, Niranjan Chakraborty, **Rajiv Kumar*, Critical Review in biotechnology, 2026,** 1-21**https://doi.org/10.1080/07388551.2026.2619534 IF. 7.7**
26. Bringing bioactive peptides into drug discovery: Challanges and opportunities for medicinal plants, Shweta Thakur, Ashwani Punia, Satyakam, Vishal Acharya, Brijesh Kumar, Amit Prasad, Sudesh Kumar Yadav, **Rajiv Kumar*, Industrial crops and products, 2024, 222, 119855 https://doi.org/10.1016/j.indcrop.2024.119855 IF. 5.6,**
27. Cold adaptation strategies in plants-An emerging role of epigenetics and antifreeze proteins to engineer cold resilient plant, Satyakam, Gaurav Zinta, Rajesh Kumar Singh, **Rajiv Kumar*, Front Genet. 2022** Aug 25;13:909007**. doi: 10.3389/fgene.2022.909007. IF 4.2**
28. Unveiling Taenia solium kinome profile and its potential for new therapeutic targets. Naina Arora, Anand Raj, Farhan Anjum, Rimanpreet kaur, Suraj Singh Rawat, **Rajiv Kumar**, Shweta Triphati, Gagandeep Singh & Amit Prasad. **Expert review of proteomics. 2020;** 17:85-91, **doi: 10.1080/14789450.2020.1719835. IF 3.94**
29. Neglected Agent Eminent Disease: Linking Human Helminthic Infection, Inflammation, and Malignancy. Naina Arora, Rimanpreet Kaur, Farhan Anjum, Shweta Tripathi, Amit Mishra, **Rajiv Kumar** and Amit Prasad**. Front. Cell. Infect. Microbiol**. **2019**, **https://doi.org/10.3389/fcimb.2019.00402. IF 4.83**

30. Adaptive mechanisms of medicinal plants along altitude gradient: contribution of proteomics. **Kumar, R*.** & Kumari, M. **Biologia Plantarum 2018;** 62(4):630-640**, DOI: 10.1007/s10535-018-0817-0. IF 1.74**

Book Chapter

31. Proteomic Strategies to Uncover Insights into Abiotic Stress Responses. Vishal Saini, Monika Chouhan, Paramdeep kumar, **Rajiv Kumar*Smart Crop Development, Springer Nature, 2026, Accepted**

32. Mass Spectrometry-Based Methods for Plant Metabolite Profiling. Punia A, Satyakam, Kumar R.**Methods Mol Biol. 2026;**2988:103-117**. doi: 10.1007/978-1-0716-4981-7_10.**

33. iTRAQ-Based Proteomic Approach to Study Stress Memory Responses in Plants. Chouhan M, Kumar P, **Kumar R. Methods Mol Biol. 2026;** 2988:93-101. **doi: 10.1007/978-1-0716-4981-7_9.**

34. Insights from proteomics in kidney disease diagnosis and various in vitro and in vivo experimental models.Vikram Patial*, Garima Dadhich, **Rajiv Kumar*, Sustainable Agriculture Reviews book series,** 57, **2022** DOI: 10.1007/978-3-031-07496-7_2

Invited Talk

1. Delivered a lecture on Metabolic signatures provide novel insights to Picrorhiza kurroa adaptation along the altitude in Himalayan region in Proteomic society, India held at ICAR-National Dairy Research Institute Karnal, Haryana, India on 02nd to 4th Dec.2019.
2. Delivered a lecture on "Plant responses and global significance: Elevated CO_2 and temperature effects on *Picrorhiza kurroa".* **Kumar R**, Thakur R, Joshi R, Kumar D, Kumar V. S, Kumar S: International conference of proteomics in health and disease held at school of life science, Bhubaneswar, on 30th November -2nd December 2017.
3. Deliverd an invited tall on "Understanding multifactorial adaptation biology of medicinal plants in the Himalayan region' in Proteomic society, India held at NIPGR, New Delhi from 20-22nd November 2023