
Pushpender Kumar Sharma, Ph.D.

Assistant professor

Department of Biotechnology

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Academic Profile:

- **Post Doctoral work (July 2010-July 2012)** Indian Institute of Sciences Education and Research Mohali
- **Doctoral Work (Feb 2005-July 2010)** Panjab University, Chandigarh,
- **M.Sc. Biotechnology**, from Guru Jambheshwar University Hisar, Haryana, India, in **2001**.
- **B.Sc. Biotechnology**, from Himachal Pradesh University, Shimla, in **1999**

Area of Research interests;

- Metagenomics, Metatranscriptomics, Protein folding and misfolding, rDNA technology and Protein Biochemistry, Biocatalysts engineering,

Awards/Honours:

- Awarded fast track project [2013-2016] submitted under Young Scientist Scheme, awarded by Science and Engineering Research Board New Delhi. (Total cost 22 lacks INR)
- Awarded a Post doctoral fellowship by Department of Biotechnology commences from IISc Bangalore (Govt. of INDIA) [July 2010-July 2012]
- Awarded a Senior Research Fellowship, by Council of Scientific and Industrial Research (INDIA) [2008- July 2010]
- Selected in the Editorial Board of International Journal of Applied and Natural Sciences (IJANS) published by International academy of science Engineering and Technology (2012)
- Selected in the Editorial Board of the Journal of Molecular Biology Research, an International double blind peer reviewed journal, published by the Canadian Science and Education (2013).

Invited reviewers for National and International Peer reviewed Journals:

African journal of Biotechnology (Academic publisher group); Process Biochemistry, (ELSEVIERS); Issues in Biological Sciences and Pharmaceutical Research; "Biotechnology Progress" published by John Wiley and Sons", Molecular simulation published by Taylor and Francis. Journal of Biomolecular Structure and Dynamics published by Taylor and Francis, Archieve of Microbiology (Springer), Applied Biochemistry and Biotechnology (Springer). International Journal of Biological Macromolecules (ELSEVIERS), Journal of Molecular catalysis B (ELSEVIERS), Protein and peptide design (Benthem publication)

Conference/ Work shop/ invited talks/life membership:

- Invited to contribute a Talk in the International conference and exhibition on Biochemical & Molecular Engineering to be held in Hilton San Antonio Airport USA from October 07-09, 2013, organized by OMICS group of conferences.
- Contributed invited talk in the National Symposium organized by the Department of Biotechnology, LPU, Jalandhar on **Metagenomics (2012)**

- Life membership for the **Society of Biological Chemists** (India) (Registration number 2675).
- Presented a poster in 80th SBCI conference held at Lucknow “**Mechanism of B2-microglobulin aggregation leading to amyloid fibril formation** (year 2012)
- Presented a poster in SBCI 82nd conference held at Hyderabad year (2014)
- Abstract published in Journal of proteomic and bioinformatics published by OMICS group
- Delivered an extension lecture titled “**Insights into understanding array of Protein Structure and function**” (2014)
- Delivered a lecture as key note speaker on topic titled “**Understanding and Delineating the Mechanism of β_2 -Microglobulin Aggregation Leading to Amyloid Fibril Formation** at Maharaja Agarsen University Baddi (2015)

Work Experience:

1. Teaching experience of four years at **GGDSD College Baijnath Kangra H.P. 2001-2005**
2. Teaching experience of one year at **Govt. College Mohali, Phase-6 Punjab, 2007-2008.**
3. Postdoctoral work at IISER Mohali on protein folding and misfolding **July 2010-July 2012**
4. Assistant Professor at Department of Biotechnology at SGGSWU **from July 2012 to till date**

Article Published:

1. **Sharma, P.K.**, Capalash N, and Kaur J (2007) An improved method for single step purification of metagenomic DNA” *Molecular Biotechnology*. 36: 61-63.
2. **Sharma P.K.**, Singh K., Singh R., Capalash N., Ali A., Mohamad O., and Kaur J (2012)“Characterization of thermostable lipase showing loss of secondary structure at ambient temperature” *Molecular Biology Reports* 39 (3) 2795-2804
3. **Sharma PK.** Kumar R, Kumar R, Mohammad O, Singh R, Kaur J (2012) “Engineering of a metagenome derived lipase towards thermal tolerance: effect of asparagine to lysine mutation on the protein surface” *Gene*,10;491(2):264-71.
4. Dalal V, Bhattacharya M, Narang D, **Sharma PK.** Mukhopadhyay S (2012) Nanoscale Fluorescence Imaging of Single Amyloid Fibrils (*JPC Letters ACS publication* 3:1783–1787)
5. Goomber S, **Sharma PK**[†], Sharma M, Singh R, Kaur J (2012) Enhancing Thermostability of the Biocatalysts beyond their Natural Function via Protein Engineering ([†]equal Contribution& corresponding author) *International Journal for Biotechnology and Molecular Biology Research* 3(3), pp. 24-29
6. **Sharma PK**, Kumar R, Garg P, Kaur J (2013) Insights into controlling role of substitution mutation, E315G on thermostability of a lipase cloned from metagenome of hot spring soil. (*3 Biotech* DOI 10.1007/s13205-013-0142-4)
7. Narang D, **Sharma PK**, Mukhopadhyay S (2013) Dynamics and dimension of an amyloidogenic disordered state of human b2-microglobulin (*Joint first author*) (*Eur Biophys J*) Vol. 42 :10: 767-776.
8. **Sharma PK.** Kaur J (2012) Studying Altered Biochemical Properties of a WT Lipase by Mutating a Polar Amino Acid to Non Polar on the Protein Surface *J. Microbiol. Biotech. Res.*, 2 (4):580-585
9. Goomber S, **Sharma PK.** Singh R, Kaur J (2012) “Rational mutagenesis of a mesophilic *Bacillus* lipase towards thermal stability: Studying role of pro82Lys and Leu143Pro mutations in protein function” *J. Microbiol. Biotech. Res* 2 (5):820-827.
10. **Sharma P.K.**, Kaur J. (2013) A point mutation at the vicinity of active site of a lipase enhances the protein thermostability of a mutant several fold “*J Proteomics Bioinform*, 6:7 <http://dx.doi.org/10.4172/0974-276X.S1.069>

11. Kaur G, Sharma R, Singh K, **Sharma PK*** "Delineating Bacterial Community Structure of Polluted Soil Samples collected from Cancer Prone Belt of The Punjab, India" (2015) *3 Biotech* DOI: [10.1007/s13205-014-0270-5](https://doi.org/10.1007/s13205-014-0270-5)
12. Mily Bhattacharya Neha Jain Priyanka Dogra Vijit Dalal Dominic Narang **Pushpender K. Sharma** Soumyadyuti Samai Samrat Mukhopadhyay, (2014) Nanoscale Assembly of Proteins into Amyloid Oligomers, Pores and Fibrils *Biophysical Journal (Cell Press)* DOI: <http://dx.doi.org/10.1016/j.bpj.2013.11.3781>
13. **Sharma PK**, Jha A.K, Kaur J* (2006) "Prediction of Protein Thermostability in Thermozyms and Improvement of Natural Diversity" *SAJOSPS*, 96-98
14. **Sharma PK** , Vinodh G., Kaur J (2012) Common Methods Employed In Directed Evolution And Their Application In Modification Of Industrially Relevant Enzyme Lipase (accepted in *Res. J. Pharm. Biol. Chem. Sci.* 3 : 3 : 1 8 3 - 1 9 1
15. **Sharma PK**, Sharma M, Kaur J (2012) Metagenomic Approach to Explore Microbial Diversity and Genetic Potential of Uncultured Microorganisms from Different Environment Niches. *Res. J. Pharm. Biol. Chem. Sci.* 3:2: 948-956.
16. Kumar, R Nisha C, Ranvir S, **Sharma PK**, Kaur J (2015) Engineering of A Lipase towards Thermostability: Studies on Additive Effect of the two Thermo-Stabilising Mutations at Protein Surface, *Adv Genet Eng* 2015, 4:2 <http://dx.doi.org/10.4172/2169-0111.1000126>
17. Gagandeep Kaur, Amninder Singh¹, Rohit Sharma², Vinay Sharma¹, Swati Verma³ **Pushpender K. Sharma (2015)** Cloning, Expression, Purification and Characterization of *Bacillus licheniformis* lipase isolated from hot spring soil of Himachal Pradesh, India (**Accepted in 3 Biotech will appear online in January 2016**)
18. *De novo* metatranscriptomic analysis of soil ecosystems from organic versus pesticide sprayed agricultural lands revealed significant level of variation among structural and functional abundance" (under preparation)
19. Gene Targeted Metagenomics to Explore the Functional Diversity of Triacylglycerol Hydrolases from Cold Desert. (Under preparation)

Patent:

Title: Engineering of the Metagenome Derived Lipase; Jagdeep Kaur, Pushpender Kumar Sharma, Ranvir Singh Patent Number: 1279/DEL/2010 A (1279/DEL/2010) Filed on 2010-06-02 Publication date: 2012-03-02.

Book Published:

Title: METAGENOMIC LIPASE by Pushpender Sharma, ISBN-13: **978-3-659-29539-3**1036592953969783659295393 (Publisher LAP LAMBERT Academic Publishing).