

NISHA JANGIR

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ACADEMIC RECORD AND WORK EXPERIENCE

SUMMARY

- Experienced researcher in biocatalysis, enzyme immobilization and protein engineering
- Improved enantioselectivity of a lyase enzyme
- Immobilized and characterized a lyase enzyme
- Special interest in gaining knowledge in field of biocatalysis
- Strong inclination for publishing and thriving towards academic excellence

July, 2015 – July 2019

Ph.D. (Biochemistry), Department of Biochemistry, **University of Hyderabad**, Telangana, India.

Title of the thesis: *Baliospermum montanum* hydroxynitrile lyase catalyzed stereoselective synthesis of chiral cyanohydrins

Summary: The major objective of the work was to synthesize optically pure cyanohydrins by enantioselective C-C bond formation using *Baliospermum montanum* hydroxynitrile lyase. We were able to show improved enantioselectivity of enzyme towards synthesis of chiral cyanohydrins in biphasic system as well as after immobilization. We were also studied the stability of enzyme under different reaction parameters. We first time able to show the enhance enantioselectivity of enzyme with addition of polyols.

August 2012 – Feb 2015

Ph.D. Department of Biological science, **Birla Institute of Technology & Science (B.I.T.S.) Pilani**, India.

I enrolled as a Ph.D. scholar in B.I.T.S. Pilani. I was the first Ph.D. student of my supervisor (Dr. Santosh Kumar Padhi) so I started my work with a project entitled “Screening, isolation, biochemical characterization and optimization of culture conditions for novel Lipases from bacterial soil samples”. I managed my lab with my supervisor from scratch. I helped my supervisor in purchasing lab equipments and chemicals. I have assisted a complete 3 year DST-SERB FAST TRACK project entitled “Engineering *Baliospermum montanum* hydroxynitrile lyase for potential synthetic and industrial applications” during my Ph.D. tenure. Apart from this project I was also involved in other projects of lab such as “Exploring regional plant hydroxynitrile lyases as potential stereoselective biocatalysts”. I discontinued my Ph.D. degree from B.I.T.S. Pilani on March 2015 as my Ph.D. supervisor joined University of Hyderabad on 21st January 2015.

July 2009- June 2011: M.Sc. in Biotechnology, Rajasthan University, Jaipur, India with 74.61%

I carried out M.Sc. dissertation on “Candida Infection in Urine, Blood, Sputum and Pus Cells” under supervision of Dr. Sunita Gupta, in Department of Microbiology, Piramal Diagnostic Services Pvt. Ltd. Jaipur, India.

July 2006- June 2009: B.Sc. in Biotechnology, Botany and Chemistry, Rajasthan University, Jaipur, India with 78.81%

July 2004- June 2005: Intermediate (Botany, Zoology, Physics and Chemistry), Board of Secondary Education, Rajasthan, India with 81.54%

July 2002-June 2003: Class X (Science, Sanskrit, Mathematics, Social Science, Hindi and English), Board of Secondary education, Rajasthan, India with 90.33%

SKILLS AND ACTIVITIES

Technical Skills

Biocatalysis/ Biotransformation

Molecular Biology: Isolation and purification of nucleic acid and proteins, electrophoresis of nucleic acid & proteins, PCR, cloning, Protein engineering (SDM and SSM), Primer designing

Microbiology: Bacterial culture techniques

Analytical techniques: All type of chromatography, Protein purification and characterization, Enzyme assays, Spectrophotometer and NMR

Enzyme immobilization

Basic bioinformatics tools

Languages

English, Hindi, Rajasthani

Organizational activities

*Member of accommodation committee (volunteer) for “National Workshop on Molecular Techniques: Cell to DNA” (MTCD-2014) organized by Department of Biological Sciences, BITS Pilani, Pilani Campus during April 10-12, 2014.

*Member of registration committee for “BioQuest 2015” organized by School of Life Sciences, University of Hyderabad, during September 23-24, 2015.

*Member of registration committee for “Nano3Bio” and “ICCSS conference” organized by Department of Plant Sciences, University of Hyderabad during September 20-21, 2017.

*Volunteer in DAAD programme “Hyderabad: Rediscover Germany-Higher education and Beyond” held during September 8, 2018 at University of Hyderabad.

AWARDS

- I qualified Graduate Aptitude Test in Engineering (GATE) in Life Science in 2012
- I also qualified Council of Scientific and Industrial Research- National Eligibility Test-Lectureship (CSIR-NET-LS) in June 2013 with Rank of 25th.

SUPERVISORY AND TEACHING EXPERIENCE

- Supervised 12 graduate and post-graduate students for various short-term research projects aimed to develop their research skills during Ph.D.
- Course Instructor for Biology Experimentation Laboratory and Instrumentation, Measurement and Analytical Techniques (IMA) course during Ph.D. tenure at B.I.T.S. Pilani (August 2012 to December 2014).

PERSONAL

Born: January 26, 1989; Nationality: Indian; Married

I love to learn new techniques in science and explore new areas in science. When not thinking of Academia and research influencing me, I take a very good break with family and friends making a consummate weekend to cherish. I also love to make sketches & drawings and listen music in free time.

PUBLICATIONS

- **Nisha Jangir**, Dheeraj Sangoji and Santosh Kumar Padhi. *Baliospermum montanum* hydroxynitrile lyase catalyzed synthesis of chiral cyanohydrins in a biphasic solvent. *Biocatal Agric Biotechnol.* 2018, 16, 229-236.
- **Nisha Jangir**, Santosh Kumar Padhi. Immobilized *Baliospermum montanum* hydroxynitrile lyase catalyzed synthesis of chiral cyanohydrins. *Bioorg. Chem.*, 2019, 84, 32-40.

- **Nisha Jangir**, Preeti Kumar, **Santosh Kumar Padhi**, A Study on Increasing Enzymatic Stability and Activity of *Baliospermum montanum* Hydroxynitrile lyase in Biocatalysis. *Process Biochem.*, **2020**, *88*, 78-89.

CONFERENCES

- Attended Workshop on Analytical Instruments for Chemical & Environmental Engineering (WAICEE-2013) held during March 22-23, 2013 at Birla Institute of Technology & Science, Pilani (BITS, Pilani), Rajasthan.
- **Nisha Jangir**, Mukund Patil, Prameela Jha, Prabhat N. Jha, and Santosh K. Padhi “Screening, Isolation, Biochemical Characterization and Optimization of culture Conditions for Novel Lipases from Bacterial Soil Samples” Indo-Mexico Workshop BIOTECHNOLOGY :Beyond Borders, October 7-9, 2013, CSIR-National Chemical Laboratory, Pune.
- Asha Jakhar, **Nisha Jangir**, Santosh Kumar Padhi “Exploring regional plant hydroxynitrile lyases as potential stereoselective biocatalysts” International Conference and XI convention of The Biotech Research Society, India on Emerging Trends in Biotechnology (ICETB-2014), November 6-9, 2014, Jawaharlal Nehru University, New Delhi.
- **Nisha Jangir**, Sheetal Uikey, and Santosh Kumar Padhi, Biocatalytic studies of an immobilized Hydroxynitrile lyase' - Presented in “BioQuest 2015” School of Life Sciences, University of Hyderabad, Hyderabad, India from September 23-24, 2015.
- Asha Jakhar, **Nisha Jangir**, Mohammed Ahmad, and Santosh Kumar Padhi, Screening and purification of new Hydroxynitrile lyases from a cyanogenic glycoside containing plants' - Presented in “BioQuest 2015” School of Life Sciences, University of Hyderabad, Hyderabad, India from September, 23-24, 2015.
- Participated in AS-UoH Joint workshop on Frontiers in Life Sciences organized during September 16-17, 2016 at University of Hyderabad.
- T. Revathi, **Nisha Jangir**, and Santosh Kumar Padhi, “Cross linked enzyme aggregates of Hydroxynitrile lyase and its biocatalytic studies” - Presented in “**BioQuest 2016**” School of Life Sciences, University of Hyderabad, Hyderabad, India from October 20– 21, 2016.
- K. Mohammad, **Nisha Jangir**, and Santosh Kumar Padhi, “Biocatalytic studies of an immobilized Hydroxynitrile lyase”-Presented in “BioQuest 2016” School of Life Sciences, University of Hyderabad, Hyderabad, India from October 20–21, 2016.
- **Nisha Jangir**, Ashwini Khaladkar, Dheeraj Sangoji, and Santosh Kumar Padhi, “Hydroxynitrile lyase catalyzed enantioselective synthesis of 2-hydroxy-2-(4-phenoxyphenyl) acetonitrile” - Presented in “BioQuest 2017” School of Life Sciences, University of Hyderabad, Hyderabad, India from October 12–13, 2017.
- **Nisha Jangir** and Santosh Kumar Padhi “Immobilized *Baliospermum montanum* hydroxynitrile lyase catalyzed synthesis of chiral cyanohydrins”- Presented in “International Conference on Life Science Research & its Interface with Engineering and Allied Sciences 2018 (LSRIEAS-2018)” BITS Pilani, Pilani, Rajasthan, India from November, 1– 3, 2018.