

UTTAM CHAND BANERJEE, Ph.D.

Professor and Head

*Department of Pharmaceutical Technology
National Institute of Pharmaceutical Education and Research (NIPER)
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RESEARCH INTEREST

Pharmaceutical Biotechnology, Bioprocess Engineering, Enzymatic Chiral Drug Synthesis, Fermentation and Downstream Processing, Nanobiotechnology

PROFESSIONAL DETAILS

Research Experience	: 33 years
PhD Thesis Guided	: 40
M.Tech/M Pharm Thesis	: 130
Projects Handled	: 15
Publications	: 219
Patents	: 23
Book Chapters	: 12

ACADEMIC QUALIFICATIONS

Ph.D.	<i>Chemical Engineering and Technology, Panjab University, Chandigarh, 1991</i>
M.I.E.	<i>Chemical Engineering, Institution of Engineers, Kolkata, 1986</i>
M.Tech	<i>Biochemical Engineering and Biotechnology, Indian Institute of Technology, Delhi, 1982</i>
B.Tech	<i>Food Technology and Biochemical Engineering, Jadavpur University, Kolkata, 1980</i>
B.Sc.	<i>Chemistry Honours, Visva Bharati University, Shantineketan, 1977</i>

PROFFESIONAL EXPERIENCE

Professor and Head (2003-Till date)	Department of Pharmaceutical Technology, NIPER, SAS Nagar
In Charge, Biotechnology (2011- Till date)	Department of Biotechnology, NIPER, SAS Nagar
Dean (2011-2014)	NIPER, SAS Nagar
Professor and Head (2000-2003)	Department of Biotechnology, NIPER, SAS Nagar
Scientist EII (1997-2000)	Institute of Microbial Technology, Chandigarh
Scientist EI (1990-1997)	Institute of Microbial Technology, Chandigarh
Scientist C (1987-1990)	Institute of Microbial Technology, Chandigarh
Scientist B (1984-1987)	Institute of Microbial Technology, Chandigarh

HONOURS, AWARDS AND FELLOWSHIPS

- **Awarded Top Cited Author for** Journal of Colloid and Interface Science in 2014 – 2015
- **Highly Cited Article of 2011 Award** from American Chemical Society Publications, USA .
- **Innocentive Challenge award** 5589410 - Bitterness in Food Products, 2008.
- **The Punjab Ratan Award** for the recognition of the distinguished services rendered to the people at large, 2005.

- **The Shield for Process Technology by Council of Scientific and industrial Research, New Delhi** for developing an innovative environment friendly process technology for production of **natural streptokinase**, a life-saving thrombolytic drug, and its successful commercialization, 2002.
- **CSIR Technology prize for Biological Sciences and Technology**, for developing a high osmotolerant, ethanol tolerant and genetically modified strain of *Saccharomyces cerevisiae* for the production of **alcohol from molasses**, 1994.
- **Long-term** overseas fellowship for one year three months by the **Department of Biotechnology**, Government of India. Research performed with **Prof. M. Moo-Young** at the Department of Chemical Engineering, University of Waterloo, Canada. Specialization **“Biochemical Engineering and Downstream Processing”**, June 1992 - August 1993.
- **“National Scholarship of India”**, 1977.

VISITS (ABROAD)

- **Bryant University, Smithfield, Rhodes Island, USA** (July 6-11, 2008) for attending the Gordon Research Conference and presented a paper on “Lipase catalyzed enantioselective resolution of (R,S)-1-chloro-3(3,4-difluororophenoxy)-2-propanol a key intermediate of drug Lubeluzole in ionic liquids”
- **Department of Chemical Sciences, Cagliari University, Italy for delivering an invited lecture**, (November 12, 2006) “Role of Biotechnology in the enantioselective synthesis of bioactive compounds”.
- **Shanghai, China to chair a session** and for paper presentation (October 18, 2005) “Highly efficient stereoselective reduction of heteroaryl ketones by a new yeast strain *Candida viswanathii*” **International Symposium on Biocatalysis and Bioprocess Engineering (ISBBE)**.
- **Hague, Netherlands** (September 22 – 26, 2002) for paper presentation “A novel detection technique for determining the nitrile hydrolysing activity using fluorimetry” at the international conference on “High Information Content Screening”, organized by **The Society for Bimolecular Screening**.
- **University of Warsaw, Poland** (October 1998) Department of Chemical Engineering, Technical University, under a collaborative programme (**Indo-Polish Programme**).
- **Research Assistant Professor** (June 1992 – August 1993) under Prof. M. Moo Young, at the Industrial Biotechnology Centre, Department of Chemical Engineering, **University of Waterloo, Ontario, Canada**.
- **Volketswill, Switzerland** (1984) for training in “The optimum utilization of Chemap fermenters”.

CONFERENCE ORGANIZED

Sectional President of New Biology (Including Biochemistry, Biophysics & Molecular Biology and Biotechnology) section, **99th Indian Science Congress**, held in Bhubaneswar, January 3 - 7, 2012.

EDITORIAL COMMITTEE MEMBERS OF NATIONAL/ INTERNATIONAL JOURNALS

1. **Editorial Board Member**, Open Biotechnology Journal, Bentham Science Publishers Ltd.
2. **Editorial Board Member**, Patents in Biotechnology, Bentham Science Publishers Ltd.
3. **Editorial Board Member**, Indian Association of Pharmaceutical Scientists & Technologists
4. **Editorial Board Member**, International Journal of Biosciences and Technology
5. **Editorial Board Member**, Indian Journal of Biotechnology
6. **Editorial Board Member**, Journal of Engineering
7. **Editorial Board Member**, International Journal of Advanced Biotechnology and Bioinformatics
8. **Editorial Board Member**, Bioresources and Bioprocessing, Elsevier
9. **Editorial Board Member**, Applied Nanomedicine, Elsevier

SELECTED PUBLICATIONS

1. Simultaneous stabilization and by-product generation from distillery waste using different methods of treatment, **U. C. Banerjee**, *Journal of Microbial Biotechnology*, 3(1), 64-73, 1988.
2. Biotransformation of rifamycins: Process possibilities, **U. C. Banerjee**, B. Saxena and Y. Chisti, *Biotechnology Advances*, 10: 577-595, 1992. .
3. Characterization of L-asparaginase from *Bacillus* sp. isolated from an intertidal marine alga (*Sargassum* sp.), B.R. Mohapatra, R.K. Sani and **U. C. Banerjee**, *Letters in Applied Microbiology*, 21: 380-383, 1995.
4. Production and properties of L-asparaginase from the fungus *Mucor* sp. associated with a marine sponge (*Spirastrella* sp.) B.R. Mohapatra, M. Bapuji and **U. C. Banerjee**, *Cytobios*, 92: 165-173, 1997.
5. Biodegradation of Triphenylmethane Dyes, W. Azmi, R. K. Sani and **U. C. Banerjee**, *Enzyme and Microbial Technology*, 22: 185-191, 1998.
6. Levanases for control of slime in paper manufacture, A. Chaudhary, L.K. Gupta, J.K. Gupta and **U. C. Banerjee**, *Biotechnology Advances*, 16(5-6): 899-912, 1998.
7. Production, purification and characterization of debittering enzyme naringinase, Munish Puri and **U. C. Banerjee**, *Biotechnology Advances*, 18: 207-217, 2000.
8. Production, purification, characterization and applications of lipases, R. Sharma, Y. Chisti, **U. C. Banerjee**, *Biotechnology Advances*, 19: 627-662, 2001.
9. Streptokinase– a clinically useful thrombolytic agent. A. Banerjee, Y. Chisti and **U. C. Banerjee**, *Biotechnology Advances*, 22: 287-307, 2004.
10. Optimization of process parameters for the production of naringinase by *Aspergillus niger* MTCC 1344, M. Puri, A. Banerjee and **U. C. Banerjee**, *Process Biochemistry*, 40: 195 -201, 2005.
11. Biotransformations for the production of chiral drug (S)-Duloxetine catalyzed by a novel isolate of *Candida tropicalis*. P. Soni and **U. C. Banerjee**, *Applied Microbiology and Biotechnology*, 67: 771-777, 2005.
12. Purification and characterization of an enantioselective carbonyl reductase from a *Candida viswanathii*, P. Soni, H. Kansal and **U. C. Banerjee**, *Process Biochemistry*, 42: 1632-1640, 2007.
13. Production of Carbonyl Reductase by *Geotrichum candidum* in a Laboratory Scale Bioreactor. M. S. Bhattacharyya, A. Singh and **U. C. Banerjee**. *Bioresource Technology*, 99: 8765-8770, 2008.
14. A method for construction, cloning and expression of intron-less gene from unannotated genomic DNA, V. Agrawal, B. Gupta, **U. C. Banerjee** and N. Roy. *Molecular Biotechnology*, 40:17-223, 2008.
15. Enantioselective nitrilase from *Pseudomonas putida*: Cloning, heterologous expression and bioreactor studies, A. Banerjee, S. Dubey, P. Kaul, B. Barse, M. Piotrowski and **U. C. Banerjee**, *Molecular Biotechnology*, 41: 35-41, 2009.
16. Studies on the dephosphorylation of phytic acid in livestock feed using phytase from *Aspergillus niger* van Teighem, P. Vats, B. Bhushan and **U. C. Banerjee**, *Bioresource Technology*, 100: 287-291, 2009.
17. Enhancing the biocatalytic potential of carbonyl reductase of *Candida viswanathii* using aqueous- organic solvent system, H. Kansal and **U. C. Banerjee**, *Bioresource Technology*, 100: 1041-1047, 2009.

18. Stereoselective synthesis of (R)-1-chloro-3(3,4-difluorophenoxy)-2-propanol using lipases from *Pseudomonas aeruginosa* in ionic liquid-containing system. M. Singh, R. S. Singh and **U. C. Banerjee**, *Journal of Molecular Catalysis B: Enzymatic*, 56: 294-299, 2009.
19. Immobilization of intracellular carbonyl reductase from *Geotrichum candidum* for the stereoselective reduction of 1-naphthyl ketone. Mani Shankar Bhattacharyya, Amit Singh and **U. C. Banerjee**, *Bioresource Technology*, 101(6): 1581-6, 2010.
20. Cross-linked enzyme aggregates of recombinant *Pseudomonas putida* nitrilase for enantioselective nitrile hydrolysis. S. Kumar, Utpal Mohan, A. L. Kamble, S. Pawar and **U. C. Banerjee**. *Bioresource Technology*, 101(17): 6856-6858, 2010.
21. Stabilization of lysozyme by benzyl alcohol: Surface tension and thermodynamic parameters. M. K. Goyal, I. Roy, A. Amin, **U. C. Banerjee** and A. K. Bansal, *Journal of Pharmaceutical Sciences*, 99: 4149-4161, 2010.
22. Asymmetric reduction of a ketone by wet and lyophilized cell of *Geotrichum candidum* in organic solvents. M. S. Bhattacharyya, A. Singh and **U. C. Banerjee**, *New Biotechnology*, 29, 359-364, 2011.
23. Synthesis of metallic nanoparticles using plant extracts, A. K. Mittal, Y. Chisti, and **U. C. Banerjee**, *Biotechnology Advances* 31: 346–356, 2013.
24. Biosynthesis of silver nanoparticles: elucidation of prospective mechanism and therapeutic potential, A. K. Mittal, J. Bhaumik, S. Kumar and **U. C. Banerjee**, *Journal of Colloid and Interface Science*, 415(1):39-47,2014.
25. Xylanase Production by *Penicillium citrinum* in Laboratory Scale Stirred Tank Reactor. G. Ghoshal, **U. C. Banerjee**, and U. S. Shivhare. *Chemical & Biochemical Engineering Quarterly*, 28, 399-408, 2014.
26. An investigation of in vivo wound healing activity of biologically synthesized silver nanoparticles A. Kaler, A. K. Mittal, M. Katariya, H. Harde, A. K. Agrawal, S. Jain and **U. C. Banerjee**, *Journal of Nanoparticle Research*, 16:2605, 2014.
27. Applications of phototheranostic nanoagents in photodynamic therapy, J. Bhaumik, A. K. Mittal, A. Banerjee, Y. Chisti, **U. C. Banerjee**, *Nano Research*, 5, 1373-1394, 2015.
28. Lipase catalyzed green synthesis of enantiopure atenolol. B. P. Dwivedee, S. Ghosh, J. Bhaumik, L. Banoth, and **U. C. Banerjee**, *RSC Advances*, 5 (21), 15850-15860, 2015.
29. Switch in site of inhibition: A strategy for structure based discovery of human topoisomerase II catalytic inhibitors, A. T. Baviskar, S. M. Amrutkar, N.Trivedi, V. Chaudhary, A. Nayak, S. K. Guchhait, **U. C. Banerjee**, P. V. Bharatam, C. N. Kundu, *ACS Medicinal Chemistry Letters* 6(4) : 481-485, 2015
30. Bioinspired nanotheranostic agents: synthesis, surface functionalization and antioxidant potential, J. Bhaumik, P. K. Aili, N. S. Thakur, A. Ghanghoria, A. K. Mittal and **U. C. Banerjee**, *ACS Biomaterial Science and Engineering*, 1, 382-389, 2015 .
31. Synthesis and biological evaluation of new 2, 5-dimethylthiophene/furan based N-acetyl pyrazolines as selective topoisomerase II inhibitors, Darpan, Gaurav Joshi, Suyog M. Amrutkar, Ashish T. Baviskar, Harveen Kler, Sandeep Singh, **Uttam C. Banerjee**, Raj Kumar, *RSC Advances*, 6, 14880-14892, 2016.
32. Arginine Dependence of Tumor Cells: Targeting a Chink in Cancer's Armor, Mahesh D. Patil, Jayeeta Bhaumik, Suboj Babykutty, **Uttam Chand Banerjee** and Dai Fukumura, *Nature Oncogene*, 35, 4957-4972, 2016

33. In-silico approach towards lipase mediated chemoenzymatic synthesis of (S)-Ranolazine, as an anti-anginal drug, Ganesh Sawant, Saptarshi Ghosh, Sooram Banesh, Jayeeta Bhaumik and **Uttam Chand Banerjee**, *RSC Advances*, 6, 49150-49157, 2016 .
34. Scaffold-Hopping of Natural Bioactive Aurones: Identification of 2-Arylideneimidazo[1,2-*a*]pyridinones as Potent Topoisomerase II α -inhibiting Anticancer Agents. Garima Priyadarshani, Anmada Nayak, Suyog M. Amrutkar, Sarita Das, Sankar K. Guchhait, Chanakya N. Kundu and **Uttam C. Banerjee**. *ACS Medicinal Chemistry Letters*, 7, 1056–1061, 2016.
35. Dual inhibitors of epidermal growth factor receptor and topoisomerase II α derived from quinoline scaffold. Monika Chauhan, Gaurav Joshi, Archana Kashyap, Suyog M. Amrutkar, **Uttam Chand Banerjee**, Sandeep Singh, Kiran Bhilare, Raj Kumar. *RSC Advances*, 6, 77717-77734, 2016.
36. Production of mycophenolic acid by *Penicillium brevicompactum* using solid state fermentation. Gopal Patel, Mahesh D. Patil, Surbhi Soni, Yusuf Chisti and **Uttam Chand Banerjee**, *Applied Biochemistry and Biotechnology* 182, 97-109, 2017.
37. Ultrasonic disruption of *Pseudomonas putida* for the release of arginine deiminase: Kinetics and predictive models. Mahesh D. Patil, Manoj J. Dev, Sujit Tangadpalliwar, Gopal Patel, Prabha Garg, Yusuf Chisti, **Uttam Chand Banerjee**. *Bioresource Technology* 233, 74-83, 2017.
38. Development of Nanobiocatalysts through the Immobilization of *Pseudomonas fluorescens* lipase for Applications in Efficient Kinetic Resolution of Racemic Compounds. Bharat P. Dwivedee, Jayeeta Bhaumik, Shushil K. Rai, Joydev K. Laha, **Uttam Chand Banerjee**, *Bioresource Technology* 239, 464-471, 2017.
39. Kinetic resolution of (RS)-1-chloro-3-(4-(2-methoxyethyl)phenoxy) propan-2-ol : a metoprolol intermediate and its validation through homology model of *Pseudomonas fluorescens* lipase, Surbhi Soni, Bharat P. Dwivedee, **Uttam Chand Banerjee**, *RSC Advances*, 7 (58), 36566-74, 2017.
40. Development of gold-based phototheranostic nanoagents through bioinspired route and their applications in photodynamic therapy, Thakur, Neeraj; Bhaumik, Jayeeta; Kirar, Seema; Banerjee, Uttam Chand Banerjee, *ACS Sustainable Chemistry & Engineering*, 5 (9), 7950-7960, 2017.
41. Development of gelatin nanoparticle based biodegradable phototheranostic agents: advanced system to treat infectious diseases, S. Kirar, N. S. Thakur, J. K. Laha, J. Bhaumik, **U. C. Banerjee**, *ACS Biomater. Sci. Eng.* 2018, 4, 473-482.
42. Self assembly through sonication: an expeditious and green approach for the synthesis of organic-inorganic hybrid nanopetals and their application as biocatalyst. Bharat P. Dwivedee, Surbhi Soni, Joydev K. Laha, Uttam C. Banerjee *ChemNanoMat* 2018 (DOI:10.1002/cnma.201800110R1)

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