


K. NEELAKANTESHWAR PATIL, Ph D

Principal Scientist,

Department of Microbiology and Fermentation Technology

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Education:

Ph.D. 2007 (Biochemistry), Department of Biochemistry, Gulbarga University, Gulbarga, India

M. Phil. 2001 (Biochemistry), Department of Biochemistry, Gulbarga University, Gulbarga, India

M. Sc. 2000 (Biochemistry), Department of Biochemistry, Gulbarga University, Gulbarga, India

B. Sc. 1998 (Chemistry, Botany, Zoology) LVD College, Gulbarga University, Gulbarga, India.

Research Area:

- Food Microbiology, Microbial Protein Biochemistry, and Enzyme Technology
- Molecular Biology, DNA Recombination and Repair in Food Borne Pathogens
- Glucose signaling cascade, Nutraceuticals

Profession Experience:

- **Principal Scientist** (February 15, 2020- Till Date): Department of Microbiology and Fermentation Technology, CSIR-CFTRI, Mysore.
- **Senior Scientist** (February 14, 2014- February 14, 2020): Department of Protein Chemistry and Technology, CSIR-CFTRI, Mysore.
- **Assistant Professor** (August 20, 2013- February 05, 2014): University of Horticultural Sciences, Bagalkot, Karnataka, India
- **CSIR-Research Associate** (July 01, 2011-August 19, 2013): Department of Biochemistry, Indian institute of Science, Bangalore, India.
- **DBT-Post Doctoral Fellow** (July 01, 2006-June 30, 2011): Department of Biochemistry, Indian institute of Science, Bangalore, India.

Publications:

1. Kajal Kiran , Patil, **K. N.** *(2023) Gallic acid inhibits the *Staphylococcus aureus* RecA protein functions: Role in countering the antibiotic resistance in bacteria, *Journal of Applied Microbiology*, (Accepted)
2. Kajal Kiran , Patil, **K. N.** *(2023) Characterization of *Staphylococcus aureus* RecX protein: Molecular insights into negative regulation of RecA protein and implications in HR processes, *The Journal of Biochemistry*, mvad039, <https://doi.org/10.1093/jb/mvad039>
3. Kiran, K., & **Patil, K. N.*** (2022). Expression and Characterization of the *Staphylococcus aureus* RecA protein: A mapping of canonical functions. *Protein Expression and Purification*, 189, 105967.

4. Singh, S. S. B, & **Patil, K. N.*** (2022). trans-Ferulic acid attenuates hyperglycemia-induced oxidative stress and modulates glucose metabolism by activating AMPK signaling pathway in vitro. *Journal of Food Biochemistry*, 46(2), e14038.
5. Ojha, D., & **Patil, K. N.*** (2020). Molecular and functional characterization of the *Listeria monocytogenes* RecA protein: insights into the homologous recombination process. *The International Journal of Biochemistry & Cell Biology*, 119, 105642.
6. Ojha, D., Greeshma, M. V., & **Patil, K. N.*** (2019). Expression, purification and biochemical characterization of *Listeria monocytogenes* single stranded DNA binding protein 1. *Protein Expression and Purification*, 161, 63-69.
7. Ojha, D., & **Patil, K. N.*** (2019). p-Coumaric acid inhibits the *Listeria monocytogenes* RecA protein functions and SOS response: an antimicrobial target. *Biochemical and Biophysical Research Communications*, 517(4), 655-661.
8. Chandran, A. V., Prabu, J. R., Nautiyal, A., **Patil, K. N.**, Muniyappa, K., & Vijayan, M. (2015). Structural studies on *Mycobacterium tuberculosis* RecA: molecular plasticity and interspecies variability. *Journal of Biosciences*, 40(1), 13-30.
9. Le, S., Chen, H., Zhang, X., Chen, J., **Patil, K. N.**, Muniyappa, K., & Yan, J. (2014). Mechanical force antagonizes the inhibitory effects of RecX on RecA filament formation in *Mycobacterium tuberculosis*. *Nucleic acids Research*, 42(19), 11992-11999.
10. Nautiyal, A., **Patil, K. N.**, & Muniyappa, K. (2014). Suramin is a potent and selective inhibitor of *Mycobacterium tuberculosis* RecA protein and the SOS response: RecA as a potential target for antibacterial drug discovery. *Journal of Antimicrobial Chemotherapy*, 69(7), 1834-1843.
11. **Patil, K. N.**, Singh, P., & Muniyappa, K. (2011). DNA binding, coprotease, and strand exchange activities of mycobacterial RecA proteins: implications for functional diversity among RecA nucleoprotein filaments. *Biochemistry*, 50(2), 300-311.
12. **Patil, K. N.**, Singh, P., Harsha, S., & Muniyappa, K. (2011). *Mycobacterium leprae* RecA is structurally analogous but functionally distinct from *Mycobacterium tuberculosis* RecA protein. *Biochimica et Biophysica Acta (BBA)-Proteins and Proteomics*, 1814(12), 1802-1811.
13. Sharadamma, N., Khan, K., Kumar, S., **Patil, K. N.**, Hasnain, S. E., & Muniyappa, K. (2011). Synergy between the N-terminal and C-terminal domains of *Mycobacterium tuberculosis* HupB is essential for high-affinity binding, DNA supercoiling and inhibition of RecA-promoted strand exchange. *The FEBS Journal*, 278(18), 3447-3462.
14. Singh, P., **Patil, K. N.**, Khanduja, J. S., Kumar, P. S., Williams, A., Rossi, F., & Muniyappa, K. (2010). *Mycobacterium tuberculosis* UvrD1 and UvrA proteins suppress DNA strand exchange promoted by cognate and noncognate RecA proteins. *Biochemistry*, 49(23), 4872-4883.
15. Veeranagouda, Y., Vijaykumar, M. H., **Patil, N. K.**, Nayak, A. S., & Karegoudar, T. B. (2006). Degradation of 1-butanol by solvent-tolerant *Enterobacter* sp. VKGH12. *International biodeterioration & biodegradation*, 57(3), 186-189.

16. **Patil, N. K.**, Veeranagouda, Y., Vijaykumar, M. H., Nayak, S. A., & Karegoudar, T. B. (2006). Enhanced and potential degradation of o-phthalate by *Bacillus* sp. immobilized cells in alginate and polyurethane. *International biodeterioration & biodegradation*, 57(2), 82-87.
17. **Patil, N. K.**, Kundapur, R., Shouche, Y. S., & Karegoudar, T. B. (2006). Degradation of a plasticizer, di-n-butylphthalate by *Delftia* sp. TBKNP-05. *Current microbiology*, 52(3), 225-230.
18. **Patil, N. K.**, & Karegoudar, T. B. (2005). Parametric studies on batch degradation of a plasticizer di-n-butylphthalate by immobilized *Bacillus* sp. *World Journal of Microbiology and Biotechnology*, 21(8), 1493-1498.
19. **Patil, N. K.**, Sharanagouda, U., Niazi, J. H., & Karegoudar, T. B. (2004). Stable degradation of catechol by *Pseudomonas* sp. strain NGK1 encapsulated in alginate and polyurethane foam. *Indian Journal of Biotechnology* 3, 568-572
20. Veeranagouda, Y., **Patil, K. N.**, & Karegoudar, T. B. (2004). A method for screening of bacteria capable of degrading dimethylformamide. *Current Science*, 87(12), 1652-1654.
21. **Patil, N. K.**, Sharanagouda, U., Niazi, J. H., Kim, C. K., & Karegoudar, T. B. (2003). Degradation of salicylic acid by free and immobilized cells of *Pseudomonas* sp. strain NGK1. *Journal of Microbiology and Biotechnology*, 13(1), 29-34.

Projects:

- DST-SERB Early Career Research Award (2016) for total grand of 45 lakh.

Research Team:

Graduate Student / Ph. D Scholar
<p>Sangeetha S. B. Singh M. Sc., in Biochemistry, Kuvempu University, Shimoga, Karnataka. <i>Recipient of DST-INSPIRE Fellowship.</i> Joined in August 2016 under AcSIR program. -Sangeetha is deciphering the role of dietary molecule (s) from natural sources in AMPK cascade especially in amelioration of hyperglycemia.</p>
<p>Preetha C S M. Sc., in Zoology, Mahathma Gandhi University, Kottayam, Kerala. <i>Recipient of UGC-JRF Fellowship.</i> Joined in August 2019 under AcSIR program. -Preetha is interested in annotating nucleotide excision repair (UvrABC endonuclease protein complex) pathway in <i>Listeria monocytogenes</i>.</p>
<p>Deeksha Sugunan M. Sc., in Zoology, Mahathma Gandhi University, Kottayam, Kerala. <i>Recipient of CSIR-JRF Fellowship.</i> Joined in January 2020 under AcSIR program. -Deeksha focuses on double strand breaks and characterizing RuvABC resolvase complex in homologous recombination pathway in <i>Listeria monocytogenes</i>.</p>

Jangid Priyanka

M. Sc. In Biotechnology, SRTM University, Nanded, Maharashtra.

Recipient of UGC-JRF Fellowship. Joined in August 2021 under AcSIR program.

-Priyanka is analyzing therapeutic effects of functional components from natural/food sources to combat hyperglycemic condition.

Laboratory/Research Alumni**Ph D:**

- **Debika Ojha:** Post-Doctoral Fellow, Dept. of Biological Sciences, University of Southern California, Los Angeles, USA
- **Kajal Kiran:** Dept. of Microbiology and Fermentation Technology, CSIR-CFTRI, Mysore

Project Associate:

- Greeshma M V
- Fouzia Amreen
- Shree Raksha S

M. Sc. / B. Tech., Project Trainee (s):

Anusha N.; D. Pavani.; Rama Sundari Devi R.; Mohammed Shaz M.P.; Nasreen Vaseem.; Irshad Khan.; Jaishree.; Pratyusha Dhal.; Praxal Shah.; Shivendra Chauhan.; Sruthi Sundaresan.; Anbarasi S.; Bhavana M.; Arzoo Rathore.; Asma Baiga.; Roopa Gowda.; Sowmiya R.; Sherin Reshma.; Sana Maksud Patel.; Aditi Jamwante.; Pragati Minj.; Shreya Das.

Affiliation to academics/ bodies:

Member, Association of Food Scientists & Technologists (AFSTI), India.
Member, Society of Biological Chemists (SBC), India
Member, Indian National Science Association (INSA), Kolkata, India
Member, Association of Microbiologists of India (AMI), India
Member, Proteomics Society of India (PSI), India

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Interested shall write above.