Curriculum Vitae

Rehan Deshmukh, Ph.D.
Research-Track Faculty
Program Coordinator: Integrated MSc Biotechnology
Affiliation: Dept. of Biosciences & Technology,
MIT-World Peace University, Pune India
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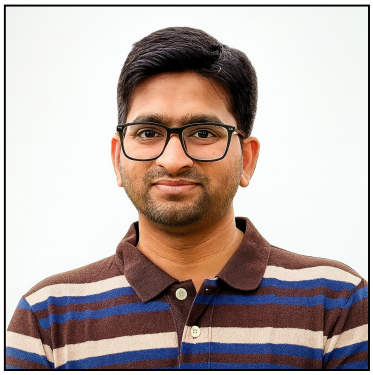
E-mail: rrehandeshmukh@gmail.com
Website: Google Scholar Profile; MIT-WPU Webpage
Guest Editor: Frontiers in Water
Co-founder: Pimiento International LLP
Editorial Board Member, Scientific Reports (SpringerNature)



Professional Summary:

As a dedicated academician and researcher with a Ph.D. in Biosciences and postdoctoral experience in advanced diagnostic technologies, I bring a strong commitment to excellence in teaching, research, and academic service. My career objective is to contribute meaningfully to curriculum development, high-impact teaching, and innovative research in biosensors and biotechnology, while supporting student growth through mentorship and advising. I aim to uphold the highest academic standards, align course design with institutional objectives, and contribute to accreditation processes and interdisciplinary collaboration.

Research Interests:

- Detection of bacteria, DNA, and proteins in water and wastewater
- Surface bio-functionalization for advanced biosensing applications
- Design and synthesis of nanomaterials for sensor development
- Electrochemical and optical detection of biomolecular interactions

Educational Qualification:

- ***PGDC* Data Science and Artificial Intelligence**, IIT Roorkee, India (Pursuing)
- **Ph.D. (Biological Sciences)**, BITS Pilani University, India (2015-2020)
- **M.Sc. in Microbiology**, Pondicherry Central University, India (2011-2013)
- ***B.Sc.* (Chemistry, Microbiology, Zoology)**, Dr. BAM University, India (2007-2010)

Total Research and Teaching Experience after Ph.D.: 5+ Years

PhD Supervision: 2 students

Key Achievements:

- Co-authored 15 publications with over 455+ citations; H-index: 9.
- Guest Editor: Special Issue on Biosensors for Waterborne Pathogens, Frontiers in Water.
- Secured consultancy projects worth INR 4.5 lakhs from the industry.
- Published in high-impact journals such as *Chemical Society Reviews* (IF: 60.615) and *Analyst*, *Bioresource Technology.*
- 2 Patents published on biosensing methods.

Research and Professional Experience

Assistant Professor & Program Coordinator

Department of Biosciences & Technology, MIT-World Peace University, Pune, India
(Aug 2021 – Present)

- Coordinator: Integrated MSc Biotechnology program and mentored over 21 postgraduate students.
- Actively conducting research on biosensor development for health & Environmental monitoring.
- Courses taught: Enzymology, Molecular Biology, Genomics, Biochemistry, and Research Methodology.

Postdoctoral Research Fellow

IIT Madras (2020 – 2021): Developed an optical assay for amplification-free detection of SARS-CoV-2 using fiber-optic U-bent probes.

Ph.D. Researcher

BITS Pilani University, India (2015 – 2020)

- Focused on the development of electrochemical DNA sensors for waterborne pathogen detection.
- Received ICMR Senior Research Fellowship.

Publications: (Citations: 455+; H-Index: 9)

Overview	Total	Web of Science	SCOPUS	SCI	Highest Impact Factor
Publications	15	15	15	12	60.615
Book Chapters	3	-	1	-	
Patent	2	-	-	-	

1. Verma, V., Kiran, M.G., Janbaz, R. and **Deshmukh, R***. (2025), Hybrid Nanointerfaces Empower Electrochemical DNA Biosensors for *Escherichia Coli* Detection. Analysis & Sensing 202500084. https://doi.org/10.1002/anse.202500084. **IF. 3.4**
2. H.B. Elizabeth, P. Das, S. Apte, A. Mavani, G. Therese, **Rehan Deshmukh**, and A. Puzari. "Synthesis, in Vitro Antibacterial, Antioxidant, and Anti-Inflammatory Studies of p-Substituted Aniline-Based Diadducts: A Potential Dendritic Core." *ChemistrySelect* 10, no. 25 (2025): e01435. https://doi.org/10.1002/slct.202501435. **IF 2.0**
3. A Comprehensive Mini-review on COVID-19 Pathogenesis on Perspectives of Cytokine Storm and Recent Developments in Anti-Covid Nucleotide Analogues. **Deshmukh Rehan,** Roy Utpal. *Journal of Pure and applied microbiology*. 2023;17(1):1-11. https://doi.org/10.22207/JPAM.17.1.12
4. The Effect of Comorbidity on the Survival Rates of COVID-19 Using Quantum Machine Learning. In: Sharma, N., Goje, A., Chakrabarti, A., Bruckstein, A.M. (eds) Data Management, Analytics, and Innovation. Shahapure, A., Banerjee, A., **Deshmukh,**

Rehan*. (2023). ICDMAI 2023. *Lecture Notes in Networks and Systems*. vol 662. Springer, Singapore. https://doi.org/10.1007/978-981-99-1414-2_57.

5. A Novel Electrochemical Genosensor for Specific Detection of *xanQ* Gene in *Escherichia coli* Strains in Water. **Deshmukh Rehan**, Roy Utpal, Bhand Sunil. *Current Analytical Chemistry*. 2022;18(7). https://dx.doi.org/10.2174/1573411018666220126094751. **IF 2.374.**
6. Attomolar analyte sensing techniques (AttoSens): A review on a decade of progress on chemical and biosensing nanoplatforms. Usha S P, Manoharan H, **Deshmukh Rehan,** Álvarez-Diduk R, Calucho E, Sai V V R, & Merkoçi A. *Chemical Society Reviews*. 50**,** 13012-13089 (2021). https://doi.org/10.1039/D1CS00137J. **IF 60.615**. ISSN: 0306-0012 (print) 1460-4744 (web) Date of publication 21 Oct 2021.
7. The BCIG-SMAC medium and PMA-qPCR for differential detection of viable *Escherichia coli* in potable water. **Deshmukh Rehan**, Bhand S, and Roy U. *Iranian Journal of Microbiology*. (2021). 13 (5), 624-631. https://doi.org/10.18502/ijm.v13i5.7427.
8. Ultrastructural Changes of Methicillin-Resistant *Staphylococcus aureus* (MRSA) by a Novel Cyclic Peptide ASP-1 from *Bacillus subtilis*: A Preliminary Insight into its Mechanism of Action. **Deshmukh Rehan**, Chalasani A G, Chattopadhyay D, and Roy U. *Revista Argentina de Microbiología*. (2021). 53(4):281-286 https://doi.org/10.1016/j.ram.2020.11.006. **IF 2.029.**
9. A capacitive DNA sensor for sensitive detection of *Escherichia coli* O157:H7 in potable water: Fabrication and analytical performance. **Deshmukh Rehan**, Prusty K A, Bhand S, and Roy U. *Analyst.* (2020). **145:**2267-2278. **DOI:** https://doi.org/10.1039/C9AN02291K**. IF 5.227.**
10. A novel method for rapid and sensitive detection of viable *Escherichia coli* cells using UV-induced PMA-coupled quantitative PCR**. Deshmukh Rehan**, Bhand S, and Roy U. *Brazilian Journal of Microbiology.* (2020). **51**:773–778. **DOI**: https://doi.org/10.1007/s42770-019-00161-8. **IF 2.214**.
11. A novel molecular quantitative method for rapid and sensitive detection of *Escherichia coli* from roof-harvested rainwater. **Deshmukh Rehan**, Bhand S, and Roy U. *Analytical Methods.* (2019). **11**: 3155–3167. **DOI**: https://10.1039/c9ay00587k (*cover page article of the journal's issue*). **IF 3.532.**
12. Xylooligosaccharides production by crude microbial enzymes from agricultural waste without prior treatment and their potential application as nutraceuticals. Jagtap S, **Deshmukh Rehan**, Menon S, and Das S. *Bioresource Technology.* (2017). **245:**283-288. **DOI**: https://10.1016/j.biortech.2017.08.174. **IF 11.889.**
13. Recent developments in detection and enumeration of waterborne bacteria: A Retrospective Minireview. **Deshmukh Rehan**, Joshi K, Bhand S, and Roy U. *MicrobiologyOpen.* (2016). **5(6):**901–922. **DOI:** https://10.1002/mbo3.383. (*top 10 most cited paper on journal's home page*). **IF 3.9.**
14. Purification, biochemical characterization and structural modelling of alkali-stable β-1,4-xylan xylanohydrolase from *Aspergillus fumigatus* R1 isolated from soil**. Deshmukh**

Rehan, Jagtap S, Mandal M K, and Mandal S K. *BMC Biotechnology.* (2016). **16:**11. **DOI:** https://10.1186/s12896-016-0242-4**. IF 2.563.**

Book Chapter(s):

1. Pankti Dhumal, Srashti Bajpai, Nachiket Garge, Agrima Bhatt, Fatema Rampurwala, Nishat Sulaimani, Shikha Gaikwad, Utpal Roy, Manasi Mishra, **Rehan Deshmukh***. Antimicrobial Resistance and Virulence of *Escherichia coli* in the Purview of Public Health Monitoring. *IntechOpen*. https://10.5772/intechopen.108299.
2. **Deshmukh Rehan**, Utpal Roy. Molecular Diagnostic Platforms for Detection of *Escherichia coli. Escherichia coli*. *IntechOpen*. https://10.5772/intechopen.101554.
3. **Deshmukh Rehan,** Sharmili Jagtap. Bioprospecting of Extremophiles for Industrial Enzymes. Bioprospecting of Microbial Diversity. p471-482. Elsevier, USA. https://10.1016/B978-0-323-90958-7.00012-1.

Patent(s):

1. **Deshmukh Rehan,** Bhavna Choudhary, Yashaswi Baloria and Vanshika Verma. A method for monitoring glucose in sweat. Indian patent application number **202521079011** published on 05/09/2025.
2. **Deshmukh Rehan**, Bhand S, and Roy U. Polynucleotide sequence for the detection of *Escherichia coli*. Indian patent application number **202011046287** published on 29/04/2022. **Under Review**

Research Project(s) and Consultancy:

- **Great Indian Start Up Challenge MIT WPU**
  Secured 26th Rank.

- **Principal Investigator**: Development of an impedimetric device for *E. coli* detection in water (MIT WPU Seed Grant) for Rs 1.0 Lacs. (December 2021-November 2022).

- **Scientific Consultant**:
  - Molecular Device Technology Pvt Ltd., Bangalore (INR 3.0 lakhs). Jan 2025
  - Ajza Redtrading LLP, Mumbai (INR 1.5 lakhs). April 2024

Teaching Experience: 4+ Years

Aug 2021-Till now: Assistant Professor at MIT-World Peace University Pune, India

Course(s) taught:

- SOB5003A Enzymology *(MSc Biotechnology)*
- SOB5006A Genomics and Genetic engineering *(MSc Biotechnology)*
- Microbial Genetics and Gene Manipulation *(MSc Industrial Microbiology)*
- BIO2004B Fundamentals of Molecular Biology *(Integrated MSc Biotechnology)*
- BIO2009B Recombinant DNA Technology (Integrated MSc Biotechnology)
- Biochemistry *(B.Tech. Bioengineering)*
- SOB5004A Biotechnology lab 1 *(MSc Biotechnology)*
- SOB5008A Biotechnology Lab 2 *(MSc Biotechnology)*
- BIO2006B Integrated Laboratory-1 *(Integrated MSc Biotechnology)*
- BIO2013B Integrated Laboratory-2 *(Integrated MSc Biotechnology)*

- BIO1002B Biology for Engineers
- Research Methodology *(MSc Biotechnology)*
- Biomimetics and Nanobiotechnology
- Bioanalytical Sciences *(Ph.D.)*
- Gene Manipulation and Genomics *(TY B.Tech. Bioengineering)*

International Conference(s):

1. **Poster.** Vanshika Verma, Irfan Sayyed, Rehan Deshmukh. Plasmonic Biosensor for Urine analysis. Biosensor Congress. 19th-22nd June 2025. Lisbon, Portugal.
2. **Virtual Poster. Deshmukh Rehan**, Sunil Bhand and Utpal Roy. A label-free electrochemical DNA biosensor for sensitive detection of *Escherichia coli* O157:H7 in potable water based on *z3276* genetic marker. RSC Tokyo International Conference 2020 (RSC-TIC2020): Optical Biosensing and Devices. 15th-16th December 2020. Tokyo, Japan.
3. **Poster. Deshmukh Rehan**, Sunil Bhand and Utpal Roy, "A novel molecular quantitative method for sensitive detection of *Escherichia coli* from roof-harvested rainwater" presented at 5th International Conference on Translational Research: "Recent Trends in Pre-translational to Translational Research" at the National Centre for Cell Science, Pune, India. 7th-9th November 2019
4. **Poster. Deshmukh Rehan**, Sunil Bhand and Utpal Roy, "Differential Detection and Identification of Viable *Escherichia coli* strains Using Propidium Monoazide-Based Multiplex Real-Time PCR". Poster presented at international symposium on "Microbes for Sustainable Development: Scope & Applications" (MSDSA-2017) organised by Association of Microbiologists of India, Lucknow, India. 16th-19th November 2017.
5. **Poster. Deshmukh Rehan**, Madan Kumar Mandal, Suraj Kumar Mandal, Saikiran Nadimishetty, Sharmili Jagtap, "Purification and Biochemical Characterization β-1,4-xylan xylanohydrolase from *Aspergillus fumigatus* R1 isolated from soil"**.** Poster presented at International Conference on Advances in Biotechnology & Bioinformatics (ICABB) & X Convention of The Biotech Research Society, Dr. DY Patil Institute of Biotechnology and Bioinformatics, Pune, India. 15th-18th October 2013.

National Conference(s):

- **Poster. Deshmukh Rehan**, Faiz Sayyed, Aditi Bhattacharya, "Managing Metals with Microbes", poster presented at UGC-sponsored state-level conference, Devgiri college, Aurangabad, India. 19th August 2010. Best Poster award

Invited Lecture(s):

- Pathogen detection: A perspective of traditional methods and biosensors. Recent trends in Biosciences, Centurion University Odhisa. 6th March, 2021.

Workshop(s) Participated:

- **Hands on training for Advanced molecular Biology Techniques** (Next generation sequencing held at Greenarray Genomics, Pune. Feb 2023.
- **DST-BIRAC workshop:** Bio-Entrepreneurship, Grant-Writing & Intellectual Property Management, organized at BITS, Pilani Goa Campus. 18th-19th Feb 2016.

Administrative Role (s)

- Program Coordinator Integrated MSc Biotechnology
- NAAC criteria 7 coordinator (Departmental level)

PG/UG Students Guidance: 50+

- Janvi Mistry (MSc Biotechnology)
- Akhilesh Shinde (MSc Biotechnology)
- Fatema Rampurwala (MSc Biotechnology)
- Nishat Sulaimani (MSc Biotechnology)
- Agrima Bhatt (MSc Biotechnology)
- Chaitanya Channe (MSc Biotechnology)
- Sanvi Ghosh (MSc Biotechnology)
- Arthi Salunke (MSc Biotechnology)
- Pankti Dhumal (MSc Biotechnology)
- Nachiket Garge (MSc Biotechnology)
- Srashti Bajpai (MSc Biotechnology)
- Chinmayee Sethe (MSc Biotechnology)

Award(s):

- Winner award in HackMIT Idea Hackathon held in Jan 2024.
- Runner-up award in HackMIT Idea Hackathon held in Jan 2024.
- Runner-up award in HackMIT Idea Hackathon held in Oct-Nov 2022.
- Senior Research Fellowship (SRF) awarded in the year 2018 by Indian Council of Medical Research (ICMR), India (Award number: 5/3/8/62/ITR-F/2018-ITR).

Reviewer for International Journals:

PlosOne Journal; *Natural Product Research* (Springer Nature); *SDRP Journal of Food Science and Technology*, *Microbial Cell Factories* (Elsevier); *Scientific Reports* (Springer Nature); *Archives in Microbiology* (Springer Nature), *MicrobiologyOpen* (Wiley), *ChemMedChem*.

Potential Referee(s):

Sr. No	Name	E-mail	Phone	Affiliation
1	Prof. Utpal Roy (**Ph.D. Supervisor**)	utpalroy@gmail.com	+91-832-2580303	Professor, BITS Pilani University, India
2	Prof. Shareif Deshmukh	sharief d@ksu.edu.sa	00966-11-4675650	Professor, King Saud University, Kingdom of Saudi Arabia.
3	Dr. Arun Prusty	prustyarun@gmail.com	+91-8328890937	Scientist R&D, Bigtec labs Bangalore, India

Declaration: I hereby certify that the information furnished above is correct to the best of my knowledge.

Date: Dec 2025.

Place: Pune, India

Rehan Deshmukh, Ph.D.