

Shazi Shakil, PhD

Lecturer of Biology,

Department of Biological Sciences,

Nils K. Nelson Bioscience Innovation Building,

Purdue University Northwest

Hammond, IN 46323

Email: shakil1@purdue.edu

Phone: (219) 785-5577; Office: NILS 340E

LinkedIn: <https://www.linkedin.com/in/shazi-shakil-0784693a2>

ORCID: <https://orcid.org/0000-0003-4075-9153>

Google Scholar:

<https://scholar.google.co.in/citations?user=gURcbbgAAAAJ&hl=en>

PROFESSIONAL SUMMARY

Biotechnology Professor and life sciences educator with 15+ years of experience in higher education. Expertise in Microbiology, Cell & Molecular Biology, Biochemistry, Biotechnology, Basic Bioinformatics, and related life science disciplines. Proven record of securing externally funded research, delivering undergraduate and graduate instruction, mentoring students, and fostering interdisciplinary collaborations. Strong interests in biology education, student-centered teaching as well as research mentoring, and interdisciplinary research in biological sciences, microbiology, biotechnology, antimicrobial resistance, and computational drug design. Experienced in teaching diverse student populations and committed to integrating real-world scientific research and evidence-based applications into life sciences education.

- 15+ years in higher education
- Experience teaching undergraduate and graduate-level biology courses
- Mentored 17+ students across undergraduate to PhD levels
- Secured multiple grants/competitive research funding (as PI/Co-PI)

- Author of **109+** peer-reviewed publications with **7,000+ citations (h-index: 37, i-10 index: 79)** as per Google Scholar citations (Accessed on Sep 28, 2026)

ACADEMIC APPOINTMENTS (Prior to joining PNW as Lecturer of Biology in Aug 2026)

Professor of Biotechnology (Microbiology & Drug Design)

King Abdulaziz University, Saudi Arabia | 2022–June 2026

Associate Professor

King Abdulaziz University | 2017–2022

Assistant Professor

King Abdulaziz University | 2015–2017

Assistant Professor

Integral University, India | 2012–2015

Assistant Professor

King Abdulaziz University | 2011–2012

Research Fellow (DBT Fellow)

Aligarh Muslim University, India | 2006–2010

TEACHING INTERESTS

- Microbiology, Cell & Molecular Biology, Biochemistry
- Biotechnology, Immunology and Basic Bioinformatics
- Related Life Sciences courses
- Undergraduate and graduate research mentoring and interdisciplinary, evidence-based biology education

RESEARCH INTERESTS

- Established track record of integrating **wet-lab microbiology with computational drug design approaches**, particularly targeting **CTX-M-type ESBL-producing bacteria**.

- Efficacy enhancement of ineffective antibiotics
- Antibiotics and antimicrobial resistance, with emphasis on real-world and public health relevance
- Structure-based drug discovery integrating molecular docking, molecular dynamics simulations, and high-throughput virtual screening for identification and optimization of anti-infective lead compounds.
- Focus on bridging computational drug discovery, resistance biology, and translational nano-enabled therapeutics to address the global crisis of antibiotic resistance.
- Broad experience in drug design across diverse targets, including anticancer therapeutics, Alzheimer's disease (AChE inhibitors), and drug repurposing.
- Biological Sciences, Cell Biology, Microbiology, Biochemistry and Molecular Biology education, including student-centered and applied learning approaches
- Integration of interdisciplinary research experiences into teaching curricula

STUDENT MENTORSHIP

- Mentored 17+ students across PhD, master's, and undergraduate levels
- Guided student research projects in Biological Sciences, Microbiology and Biotechnology
- Supported student success through regular classroom teaching, advising, research training, and career guidance
- Several students co-authored peer-reviewed publications under my supervision, Article PubMed IDs are:-

26997253; 25561890 (and additional articles); 24059300, 25561885, 24059302, 25205498, 24695379, 25611730, 26886763, 24059299, 24059296, 24059296, 24695379, 27697060, 27697060, 25402624, 25402624, 30287889.

RESEARCH FUNDING (COMPETITIVE GRANTS)

(Full list of funded grants available upon request)

KEY ACHIEVEMENTS

1. Identified a putative anticancer lead molecule, “SHAZ-i,” via computational screening (PMID: 31679235) [View →](#)
2. Coined the research term “Enzoinformatics” (PMID: 29122685) [View →](#)
3. Established “Thumb Rule for Antibiotic Design”, a drug design concept against resistant bacteria (PMID: 36224195) [View →](#)
4. Developed a novel nanoformulation that restored efficacy of the antibiotic Ceftibuten against resistant pathogens (work involved cross-talk among computational drug design, microbiology, and nanotechnology; BioNanoSci. 2025) [View →](#)
5. Reported the first genomic blaCTX-M resistance gene identified in India (PMID: 21742580) [View →](#)
6. Demonstrated the first in vitro and in silico evidence supporting glimepiride repurposing as an acetylcholinesterase inhibitor for Alzheimer's disease-diabetes dual therapy. [View →](#)
7. Recipient of national research fellowships: DBT, CSIR-NET, GATE; multiple institutional research awards
8. 109 scientific publications with 7,000+ citations [View →](#)
9. Published **an easy click-by-click molecular docking protocol** for the benefit of students. [View →](#)

PROFESSIONAL SERVICE

- Reviewer for 30+ international scientific journals (including high impact ACS journals)
- Editorial contributions to peer-reviewed journals

EDUCATION

PhD, Biotechnology (Specialization: **Microbiology & Drug Design**) — 2010

MSc, Biotechnology (Dissertation focus: **Antibiotic resistance in bacteria**) — 2006

BSc, Biochemistry — 2004

(WES evaluated for U.S. equivalency)

PUBLICATIONS

- **Total: 109**

- **Highly cited paper** (>1000 citations): ESBL antibiotic resistance review

(Full publication list available via Google Scholar or upon request)

SELECTED PUBLICATIONS (Representative of Research Focus)

1. **Shakil S***, Rizvi, S.M.D., Rehan, M. et al. A Novel Synergized Nanoformulation Revives the Activity of Ineffective Ceftibuten Antibiotic: Synthesis, Characterization, In Vitro Validation and Molecular Interactions Study. *BioNanoSci.* 15, 378 (2025). <https://doi.org/10.1007/s12668-025-02000-7>
2. **Shakil S***, Rizvi SMD, Greig NH. Molecular interaction of a putative inhibitor with bacterial SHV, an enzyme associated with antibiotic resistance. *R Soc Open Sci.* 2023 Feb 8;10(2):221458.
3. **Shakil S***, Rizvi SMD, Greig NH. In depth molecular interaction analyses of the complex of a proposed CTXM-inhibitor bound to the bacterial enzyme. *J Biomol Struct Dyn.* 2023 Oct-Nov;41(17):8362-8372.
4. **Shakil S***, Rizvi SMD, Greig NH. High Throughput Virtual Screening and Molecular Dynamics Simulation for Identifying a Putative Inhibitor of Bacterial CTX-M-15. *Antibiotics (Basel).* 2021 Apr 21;10(5):474. doi: 10.3390/antibiotics10050474. PMID: 33919115; PMCID: PMC8143117.
5. **Shakil S***. Molecular interaction of investigational ligands with human brain acetylcholinesterase. *J Cell Biochem.* 2019 Jul;120(7):11820-11830. doi: 10.1002/jcb.28461. PMID: 30746750.
6. **Shakil S***, Abuzinadah MF. Putative Anti-Cancer Drug Candidate Targeting the 'PLK-1-Polo-Box Domain' by High Throughput Virtual Screening: A Computational Drug Design Study. *Crit Rev Eukaryot Gene Expr.* 2019;29(3):251-261. PMID: 31679235.
7. Yasir M, Ajlan AM, **Shakil S**, et al. Molecular characterization, antimicrobial resistance and clinico- bioinformatics approaches to address the problem of extended-spectrum β - lactamase-producing *Escherichia coli* in western Saudi Arabia. *Sci Rep.* 2018

Oct 4;8(1):14847.

8. Shaikh S, Rizvi SMD, **Shakil S***, Hussain T, Alshammari TM, Ahmad W, Tabrez S, Al-Qahtani MH, Abuzenadah AM. Synthesis and Characterization of Cefotaxime Conjugated Gold Nanoparticles and Their Use to Target Drug- Resistant CTX-M-Producing Bacterial Pathogens. J Cell Biochem. 2017 Sep;118(9):2802-2808. doi: 10.1002/jcb.25929. Epub 2017 Apr 27. PMID: 28181300.
9. Shaikh S, Rizvi SM, Anis R, **Shakil S***. Prevalence of CTX-M resistance marker and integrons among Escherichia coli and Klebsiella pneumoniae isolates of clinical origin. Lett Appl Microbiol. 2016 May;62(5):419-27. doi: 10.1111/lam.12567. PMID: 26997253.
10. Shaikh S, Fatima J, **Shakil S***, Rizvi SM, Kamal MA. Antibiotic resistance and extended spectrum beta-lactamases: Types, epidemiology and treatment. Saudi J Biol Sci. 2015 Jan;22(1):90-101. PMCID: PMC4281622. [**Popular Article; cited over 1000 times**]
11. Rizvi SM, **Shakil S***, Haneef M. **A simple click by click protocol to perform docking: AutoDock 4.2 made easy for non-bioinformaticians.** EXCLI J. 2013 Sep 23;12:831-57. PMID: 26648810; PMCID: PMC4669947. [**Popular Article; cited over 500 times**].
12. Akram M, **Shakil S**, Khan AU. Prevalence of integrons, blaCTX-M and blaTEM resistance markers among ESBL-producing uropathogenic Escherichia coli isolates: first report of genomic blaCTX-M from India. J Chemother. 2011 Jun;23(3):131-4.
13. **Shakil S**, Akram M, Ali SM, Khan AU. Acquisition of extended-spectrum beta- lactamase producing Escherichia coli strains in male and female infants admitted to a neonatal intensive care unit: molecular epidemiology and analysis of risk factors. J Med Microbiol. 2010 Aug;59(Pt 8):948-954.
14. **Shakil S**, Danishuddin M, Khan AU. Doripenem versus bacteria: an emerging battleground. J Chemother. 2009 Nov;21(5):482-92. doi: 10.1179/joc.2009.21.5.482. PMID: 19933038.
15. **Shakil S**, Khan R, Zarrilli R, Khan AU. Aminoglycosides versus bacteria--a description of the action, resistance mechanism, and nosocomial battleground. J Biomed Sci. 2008 Jan;15(1):5-14. PMID: 17657587. [**Popular Article; cited over 300 times**].