

ANMOL KULSHRESTHA

Drug Discovery | Medical Microbiology | Protein Purification
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PROFESSIONAL SUMMARY:

Ph.D. in Biotechnology with interdisciplinary expertise in **antimicrobial drug discovery**, **microfluidic platform engineering**, **protein purification**, and **microbial biofilm biology**. Designed and validated microfluidic biofilm monitoring platform enabling real-time impedance-based analysis under dynamic flow conditions. Generated **7 SCI publications** and **4 granted patents** in antimicrobial screening platforms. Delivered high-quality scientific outputs through data analytics, strategic experimental design, generating research solutions aligned with therapeutic and diagnostic innovation pipelines.

CORE COMPETENCEIS:

- Protein Purification
- Antimicrobial Drug Discovery
- Assay Development
- Structure-Based Drug Design (Molecular Docking & MD Simulations)
- Microfluidic Device Engineering
- Biofilm Model Development (Mono & Polymicrobial Systems)
- Preclinical *in-Vitro* & *in-Vivo* Validation & Mechanistic Studies
- Experimental Strategy & Data-Driven Decision Making
- Scientific Communication & Regulatory-Ready Documentation

PROFESSIONAL EXPERIENCE:

Doctoral Researcher

National Institute of Technology, Raipur | 2021 – 2026

- Conducted drug discovery-oriented screening of natural compounds against polymicrobial biofilm associated infection under physiologically relevant and under flow conditions
- Purified virulence-associated proteins using chromatographic techniques and functional validation assays.
- Applied computational drug discovery tools (molecular docking, ADMET profiling, MD simulations) to prioritize compounds for experimental validation.
- Acquired patents for therapeutic screening platforms based on microbiology and bioengineering.
- Prepared research reports and manuscripts aligned with journal quality standards.
- Authored and reviewed peer-reviewed research manuscripts and technical reports and projects.

EDUCATION:

Degree	Subject	Affiliation	Year	Result
Ph. D.	Biotechnology	National Institute of Technology, Raipur	2026	-
M. Tech	Biotechnology	School of Biomolecular Engineering and Biotechnology - Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal	2019	8.42 CGPA (Hons.)
B. Tech	Biotechnology	Dr. A. P. J. Abdul Kalam Technical University, Lucknow	2017	77.8%

TECHNICAL SKILLS:

Protein Purification

- Protein purification using FPLC and HPLC-based chromatographic separation techniques

Analytical & Spectroscopic Techniques

- High-Performance Liquid Chromatography (HPLC)
- Fast Protein Liquid Chromatography (FPLC) - AKTA go™
- UV spectrophotometry
- Potentiostat (Electrochemistry)
- Gas Chromatography–Mass Spectrometry (GC–MS)
- Fourier Transform Infrared Spectroscopy (FTIR)

Drug Discovery & Computational Biology

- Schrödinger Suite (molecular docking, Glide, MM-GBSA workflows)
- ADMET prediction and virtual screening

Microfluidics & Engineering Tools

- Microfluidic device design and fabrication
- COMSOL Multiphysics (fluid dynamics simulation and modeling)
- AutoCAD (design drafting)
- Plasma bonding and PDMS-based device assembly
- 3D printing for rapid prototyping

Microbiology & Translational Research

- Isolation, cultivation, and quantitative analysis of mono- and polymicrobial biofilms using classical microbiological methods (serial dilution, CFU enumeration, plating assays) and advanced antibiofilm/virulence assessment techniques (MBIC, crystal violet assay, protease activity assays, and flow-based biofilm modeling).
- Development of mono and polymicrobial biofilm setup in Static and flow-based infection models
- Antimicrobial and antibiofilm susceptibility testing
- Electrochemical biosensing and impedance spectroscopy

Molecular Biology techniques

- Nucleic Acid isolation (DNA/RNA)
- RT-PCR
- SDS-PAGE

Research & Professional Competencies

- Experimental design and statistical data analysis
- Scientific writing and technical documentation
- Patent drafting and technology translation
- Cross-disciplinary collaboration and project execution

Scientific communications published in SCI journal with first author: 7

**List can be made available upon request*

PATENTS:

- ✓ Real-time Microchannel Optopotentiometric Biofilm System – Inventors: **Anmol Kulshrestha, Pratima Gupta & Anuj Rohatgi**; Grant Date: March 2023; Indian Patent (Design No. - 376815-001).
- ✓ Real-time Microchannel Potentiometric Biofilm System – Inventors: **Anmol Kulshrestha & Pratima Gupta**; Grant Date: April 2023; Indian Patent (Design No. - 384592-001).
- ✓ Real-time Biofilm Infection Simulator System – Inventors: Anuj Rohatgi, **Pratima Gupta & Anmol Kulshrestha**; Grant Date: May 2024; Indian Patent (Patent No. - 538157).
- ✓ Microfluidic Lab-on-Chip Device for Biofilm Growth Measurement and Method of Fabricating the Same – Inventors: **Anmol Kulshrestha & Pratima Gupta**; Grant Date: August 2025; Indian Patent (Patent No. - 569700).

Declaration: I hereby declare that the information provided above is true to the best of my knowledge.

Anmol Kulshrestha