

## **Dr. Nosheen Akhtar**

Associate Professor

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### **Profile**

Dr. Nosheen is an accomplished translational cancer biologist and drug discovery scientist with extensive expertise in natural product-based therapeutics, proteomics, and combination oncology. Her research strongly emphasizes the pharmacological characterization of bioactive compounds, particularly their anticancer and wound healing properties, including mechanisms of action, cytotoxicity, and selective targeting of oncogenic pathways. Using LC-MS/MS proteomics, she investigates drug–target interactions, signaling modulation, and resistance mechanisms to better understand treatment outcomes. She has conducted advanced translational research at the University of Wisconsin–Madison and Queen Mary University of London, integrating proteomics with functional oncology systems. Her work also includes in-vivo evaluation of promising compounds to assess therapeutic potential, efficacy, and biological responses in relevant disease models. Her research further extends into advanced drug delivery systems, including the design and development of nanocarriers to enhance targeted delivery, stability, and therapeutic performance of bioactive compounds. She also explores innovative formulation strategies such as nanoformulations and combination therapies to improve anticancer efficacy while minimizing off-target effects. In parallel, she develops bioactive hydrogels incorporating plant-derived compounds for sustained delivery and regenerative biomedical applications. Her work aims to translate pharmacologically active compounds into safe, effective, and clinically relevant therapeutics solutions.

### **Research Interest**

Natural Product–based Drug Discovery, Anticancer Pharmacology, Proteomics and Signaling pathways, Nanocarrier Drug Delivery Systems

## Selected Publications

Sadiq, Amber, Aroosa Zafar, Iffat Naz, Nadeem Irshad, Ihsan ul Haq, Sohail Ahmed, **Nosheen Akhtar**, and Humaira Fatima. "Synergistic Interaction Between *Alkanna tinctoria* (L.) Tausch and Cefixime Enhances Antibacterial Activity Against Resistant Bacterial Strains." *Current Microbiology* 83, no. 4 (2026): 230.

Rasheed, Ayesha, Syeda Aroosa Mohsin, Yusra Wasti, Mostafa A. Abdel-Maksoud, Abdulaziz Alamri, Ahmed M. Hussein, **Nosheen Akhtar**. "Comparative Appraisal of Wound Healing Potential of *Melia azedarach* L. and its Biogenic Zinc Oxide Nanoparticles: An in vitro and in vivo approach." *Phytomedicine Plus* (2025): 100938.

Khanzada, Beenish, **Nosheen Akhtar**, Bushra Mirza, and Aman Ullah. "Polyphenol assisted nano-reinforced chitosan films with antioxidant and antimicrobial properties." *Food Hydrocolloids* 153 (2024): 110010.

**Akhtar, Nosheen**, Sumra Wajid Abbasi, Samina Rubnawaz, Laila Jafri, and Rehana Rani. "Proteomic profiling the molecular signatures of plectranthoic acid in prostate cancer cells." *Journal of Proteomics* (2021): 104311

Kiani, Bushra Hafeez, Qudsia Ajmal, **Nosheen Akhtar**, Ihsan-ul Haq, Mostafa A. Abdel-Maksoud, Abdul Malik, Mohammed Aufy, and Nazif Ullah. "Biogenic Synthesis of Zinc Oxide Nanoparticles Using *Citrullus colocynthis* for Potential Biomedical Applications." *Plants* 12, no. 2 (2023): 362.

**Akhtar, Nosheen**, Muhammad Waleed Baig, Ihsan-ul Haq, Vinothini Rajeeve, and Pedro Rodriguez Cutillas. "Withanolide Metabolites Inhibit PI3K/AKT and MAPK Pro-Survival Pathways and Induce Apoptosis in Acute Myeloid Leukemia Cells." *Biomedicines* 8, no. 9 (2020): 333.

## Awards/Achievements/Grants

Awarded with NUMS, Technology Innovation Fund; Itr No. 02/ORIC/TIF-230014; Development and standardization of hybrid hydrogel of *Bergenia ciliata* (Haw.) for chronic wounds and burns (Role PI).

Awarded with Project No. 20- 8689 /NRPU/R&D/HEC; entitled "Prognostic Significance of AMPK in Breast Cancer and Therapeutic Effects of a Novel AMPK Activator, Plectranthoic acid; Identification of its molecular targets (Role: PI).

Awarded with HEC Startup Research Grant Program (SRGP): 2219 entitled; "Optically triggered nano drug delivery system: a multifunctional chemo-photothermal platform for hepatocellular carcinoma" (Role: Co-PI).

Awarded with HEC Startup Research Grant Program (SRGP): 1522 entitled; "Association between genetic variants in mTOR gene with increased Risks of breast cancer; as well as impacts". (Role: PI).