


# DR. NADEEM AHMED

## HEAD BIOPHARMACEUTICALS AND PROTEOMICS LAB



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 CEMB, University of the Punjab, 87 West Canal Bank Road, Lahore, Pakistan

### OBJECTIVE

To pursue my career as an outstanding Research and Development Scientist in a challenging and dynamic environment and to help establish Biotechnology industry using my skills to the utmost by complementing technical knowledge with practical experience.

### EDUCATION

#### Ph.D. in Molecular Biology

Centre for Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan

In Biopharmaceuticals and Proteomics Lab

Thesis Title: Studies on Cloning and Expression of Human Interleukin-2 Gene

#### M.Phil. Molecular Biology

University of the Punjab, Lahore, Pakistan

#### Master of Science

University of the Punjab, Lahore, Pakistan

#### Bachelor of Science

University of the Punjab, Lahore, Pakistan

### TRAINING

- Attended a training program on **Introduction & awareness training on ISO 9001:2015 Quality Management System** conducted by Vanguard Consulting held at Centre of Excellence in Molecular Biology, University of the Punjab, Lahore.
- Trained at **ICGEB, Italy (Trieste)** for production and modifications of recombinant human therapeutic protein.
- Trained at **Yonsie University, Korea (Proteomics Research Centre)** for protein analysis i.e., 2D PAGE, MALDI TOFF, and NANO HPLC.

### JOB EXPERIENCE

#### Associate Professor

August, 2019 - to date

Centre of Excellence in Molecular Biology, University of the Punjab, Lahore.

- Teach M.Phil./Ph.D. classes at CEMB (Cell Biology, Molecular Bacteriology, Advance course-Bioafety and Biosecurity)
- Supervise M.Phil./Ph.D. scholars in thesis dissertation

#### Assistant Professor

August, 2009 - August, 2019

Centre of Excellence in Molecular Biology, University of the Punjab, Lahore.

#### SRO/Assistant Professor

June, 2007 - August, 2009

Centre of Excellence in Molecular Biology, University of the Punjab, Lahore.

**Research Officer**

Centre for Applied Molecular Biology, University of the Punjab, Lahore.

July, 2000 - June, 2007

**Assistant Research Officer**

Centre for Applied Molecular Biology, University of the Punjab, Lahore.

October, 1997 - July, 2000

**BIOSIMILAR PRODUCTS**

- Interferon/Pegylated Interferon (Produced 200,000/- Injections Indigenous Use)
- G-CSF/Pegylated G-CSF
- Oprelvekin and Proleukin
- Insulin
- Interferon Beta
- Erythropoietin
- Taq Polymerase and PFU Polymerase
- Mmlv and Mmlv H (-)

**STUDENTS SUPERVISED**

<b>Ph.D. Scholar</b>	3 Completed	4 Continue
<b>M.Phil. Scholar</b>	37 Completed	4 Continue

**PROJECTS**

1. Development of albumin fusion technology for potent long lasting consensus interferon (IFN CON-1)
2. Development of human recombinant interleukin-11 (Oprelvekin Biosimilar)
3. Indigenous low-cost production of UltraPure Taq Polymerase/reverse transcriptase and PCR Mix for COVID-19 clinical diagnostic Kit
4. Production of serum albumin in Aloe Vera

**PUBLICATIONS****Research Papers (IF=63.975)**

1. Tanveer, S., Malik, H. A., Shahid, N., Salis, I. B., **Ahmed, N.**, Latif, A., ... & Rao, A. Q. (2023). Production of proinflammatory cytokines by expressing Newcastle disease vaccine candidates in corn. *Journal of King Saud University-Science*, 102537. 3.829
2. Ramzan, N., Abbas, G., Mahmood, K., Aziz, M., Rasul, S., **Ahmed, N.**, ... & Sami Ullah, M. (2022). Concomitant Effect of Quercetin and Its Copper Complex in the Development of Sustained-Release Nanoparticles of Polycaprolactone, Used for the Treatment of Skin Infection. *Molecular Pharmaceutics*. <https://doi.org/10.1021/acs.molpharmaceut.2c00960> 5.364
3. Asif, M., Ben Said, M., Vinueza, R. L., Leon, R., **Ahmad, N.**, Parveen, A., ... & Iqbal, F. (2022). Seasonal Investigation of *Anaplasma marginale* Infection in Pakistani Cattle Reveals Hematological and Biochemical Changes, Multiple Associated Risk Factors and msp5 Gene Conservation. *Pathogens*, 11(11), 1261. 4.531
4. Tahir, S., **Ahmed, N.**, Khan, M. A., Akram, M., Abbas, R., & Malik, K. (2022). Production of Stable Serum Albumin Fused Streptokinase in *Pichia pastoris*. *Pakistan Journal of Zoology*, 1-9. 0.687
5. Shahzadi, I., Islam, M., Saeed, H., Haider, A., Shahzadi, A., Haider, J., **Ahmed, N.**, Ul-Hamid, A., Nabgan, W., Ikram, M., & Rathore, H. A. (2022). Formation of biocompatible MgO/cellulose grafted hydrogel for efficient bactericidal and controlled release of doxorubicin. *International Journal of Biological Macromolecules*, 220, 1277-1286. 8.025
6. Pervaiz, R., Khan, M. A., Raza, F. A., Ahmad, S., Zafar, A. U., **Ahmed, N.**, & Akram, M. (2022). Expression of a mosquito larvicidal gene in chloroplast and nuclear compartments of *Chlamydomonas reinhardtii*. *Journal of Biotechnology*, 360, 182-191. 3.595

7. Sultan, A., Khan, M. A., **Ahmed, N.**, Hassan, M., Bhatti, R., Naeem, H., ... & Shahid, A. A. (2022). Gene Multimerization in Expression Vector: A Potential Strategy for Enhanced Protein Expression in *E. coli*. *Pakistan Journal of Zoology*, 1-8. 0.687
8. Mushtaque, A., Sheikh, A. A., Ghafoor, A., Shehzad, W., & **Ahmad, N.** (2022). Immune Protective Efficacy of Recombinant Outer Membrane Protein H of *Pasteurella multocida* B: 2 Associated with Hemorrhagic Septicemia in Pakistan. *Pakistan Journal of Zoology*, 1-7. 0.687
9. Amin, I., Rafique, S., **Ahmed, N.**, Shahid, M., Afzal, S., Samiullah, T. R., ... & Idrees, M. (2022). Bacterial Expression and Purification of Antigenic Recombinant Protein Encoded by Hepatitis Delta Virus Antigen of Pakistani Isolate. *Pakistan Journal of Zoology*, 54(6), 2969-2972. 0.687
10. **Ahmed, N.**, Afroze, B., Abbas, R., Khan, M. A., Akram, M., Tahir, S., ... & Shahid, A. A. (2021). Method for efficient soluble expression and purification of recombinant human interleukin-15. *Protein Expression and Purification*, 177, 105746. 2.025
11. Khan, A., Mushtaq, M. H., Muhammad, J., Ahmed, B., Khan, E. A., Khan, A., Zakki, S. A., Altaf, E., Haq, I., Saleem, A., Warraich, M. A., **Ahmed, N.**, & Rabaan, A. A. (2021). Global epidemiology of Equine Influenza viruses; "A possible emerging zoonotic threat in future" an extensive systematic review with evidence. *Brazilian journal of biology = Revista brasleira de biologia*, 83, e246591. <https://doi.org/10.1590/1519-6984.246591> 2.025 2.724
12. Naseem, M. U., **Ahmed, N.**, Khan, M. A., Tahir, S., & Zafar, A. U. (2020). Production of potent long-lasting consensus interferon using albumin fusion technology in *Pichia pastoris* expression system. *Protein Expression and Purification*, 166, 105509. 2.724
13. Bajwa, F., **Ahmed, N.**, Khan, M. A., Azam, F., Akram, M., Tahir, S., & Zafar, A. U. (2020). Evaluating the ion exchange chromatography for matrix-assisted PEGylation and purification of consensus interferon. *Biotechnology and Applied Biochemistry*, 67(2), 196-205. 1.653
14. **Ahmed, N.**, Abbas, R., Khan, M. A., Bashir, H., Tahir, S., & Zafar, A. U. (2018). Enhancing recombinant interleukin-6 production yield by fermentation optimization, two-step denaturing, and one-step purification. *Biotechnology and applied biochemistry*, 65(3), 490-496. 6.119
15. Pervaiz, R., Khan, M. A., **Ahmed, N.**, Naeem, H., & Zafar, A. U. (2018). Determination of mosquito Larvicidal potential of *Bacillus thuringiensis* Cry11Ba fusion protein through molecular docking. *Biologia*, 73(10), 1015-1023. 2.337
16. Khan, F., Khan, M. A., **Ahmed, N.**, Khan, M. I., Bashir, H., Tahir, S., & Zafar, A. U. (2018). Molecular characterization of pneumococcal surface protein A (PspA), serotype distribution and antibiotic susceptibility of *Streptococcus pneumoniae* strains isolated from Pakistan. *Infectious diseases and therapy*, 7(2), 277-289. 2.724
17. Khan, M. A., **Ahmed, N.**, Khan, M. I., Zafar, A. U., Tahir, S., Anjum, M. S., ... & Husnain, T. (2017). Bioactivity studies of Huh-7 cells derived human epidermal growth factor expressed in *Pichia pastoris*. *Bioscience, biotechnology, and biochemistry*, 81(6), 1114-1119. 2.724
18. Bashir, H., **Ahmed, N.**, Khan, M. A., Zafar, A. U., Tahir, S., Khan, M. I., ... & Husnain, T. (2016). Simple procedure applying lactose induction and one-step purification for high-yield production of rhCIFN. *Biotechnology and applied biochemistry*, 63(5), 708-714. 2.724
19. Bashir, H., **Ahmed, N.**, Khan, M. A., Zafar, A. U., Tahir, S., Kanwal, H., ... & Husnain, T. (2017). Evaluating the autoinduction expression system and one-step purification for high-level expression and purification of gallbladder-derived rhIL-1Ra. *Biotechnology and applied biochemistry*, 64(1), 20-26. 2.724
20. **Ahmed, N.**, Bashir, H., Zafar, A. U., Khan, M. A., Tahir, S., Khan, F., ... & Husnain, T. (2015). Optimization of conditions for high-level expression and purification of human recombinant consensus interferon (rh-cIFN) and its characterization. *Biotechnology and applied biochemistry*, 62(5), 699-708. 2.742
21. **Ahmed, N.**, Zafar, A. U., Khan, M. A., Tahir, S., Khan, M. I., Bashir, H., ... & Husnain, T. (2014). Matrix-assisted refolding and purification of placenta-derived recombinant human interleukin-6 produced in *Escherichia coli*. *Biotechnology and Applied Biochemistry*, 61(5), 541-548. 3.325
22. Khan, M. A., Khan, F., **Ahmad, N.**, Khan, M. I., Zafar, A. U., & Husnain, T. (2014). Expression line approach to recombinant human epidermal growth factor into the yeast, *Pichia pastoris* from Huh-7 cell line. *Molecular biology reports*, 41(3), 1445-1451.
23. Khan, M. A., Hassan, N., **Ahmad, N.**, Khan, M. I., Zafar, A. U., Khan, F., & Husnain, T. (2014). Studies to analyse the relationship between IFN $\alpha$ 2b gene dosage and its expression, using a *Pichia pastoris*-based expression system. *Yeast*, 31(1), 13-28.
24. Abdul, M. F., Idrees, A. N., Bushra, T., Muhammad, T., Zahida, Q., Mohsin, A. K., **Nadeem, A.**, Haider, M. S., Waheed, A., Muhammad, A. J., & Tayyab, H. (2012). Development and comparative studies of double cross tomato hybrids. *African Journal of Agricultural Research*, 7(37), 5259-5264.
25. Jamal, A., Nasir, I. A., Tabassum, B., Tariq, M., Farooq, A. M., Qamar, Z., Khan, M. A., **Ahmad, N.**, Shafiq, M., Haider, M. S., Javed, M. A., & Hasnain, T. (2012). Molecular characterization of capsid protein gene of potato virus X from Pakistan. *African Journal of Biotechnology*, 11(74), 13854-13857.
26. **Ahmed, N.**, Khan, M. A., Shahid, N., Nasir, I. A., & Zafar, A. U. (2011). One step purification of biological active human interleukin-2 protein produced in yeast (*Pichia Pastoris*). *African Journal of Biotechnology*, 10(67), 15170-15178.

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27. Khan, M. A., **Ahmad, N.**, Zafar, A. U., Nasir, I. A., & Qadir, M. A. (2011). Isolation and screening of alkaline protease producing bacteria and physio-chemical characterization of the enzyme. *African Journal of Biotechnology*, 10(33), 6203-6212.
  28. Sabar, M. F., Yaqub, M., Khan, M. A., **Ahmad, N.**, Ghani, M. U., & Shahid, M. (2010). Synthesis of a new tri-branched PEG-IFN $\alpha$ 2 and its impact on anti-viral bioactivity. *International Journal of Peptide Research and Therapeutics*, 16(4), 239-245.

#### Review Articles (IF=15.468)

1. Bhatti, R., Shakeel, H., Malik, K., Qasim, M., Khan, M. A., **Ahmed, N.**, Jabeen, S. (2022). Inorganic nanoparticles: Toxic effects, mechanisms of cytotoxicity and phytochemical interactions. *Advanced Pharmaceutical Bulletin*, doi: 10.34172/apb.2022.077
2. Hassan, M., Zalkifal, M., Wahab, A., Afzal, S., Rafique, S., Shahid, M., Khan, M. A., **Ahmed, N.**, Idrees M, & Shahid, A. (2021). Novel coronavirus: A review from origin to current status of therapeutic strategies. *Critical Reviews™ in Eukaryotic Gene Expression*, 31(3). 2.156
3. Nadeem, T., Khan, M. A., Ijaz, B., **Ahmed, N.**, Rahman, Z. U., Latif, M. S., ... & Rana, M. A. (2018). Glycosylation of recombinant anticancer therapeutics in different expression systems with emerging technologies. *Cancer research*, 78(11), 2787-2798. 13.312

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## EXPERTISE

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### Technical Skills

- Upstream and Downstream process development for recombinant human therapeutics
- Industrial scale optimization of fermentation process
- Ultrafiltration/Diafiltration technology for Biopharmaceutical formulation
- Laboratory to production scale packing and evaluation of bioprocess column
- Pilot scale production of therapeutic proteins for clinical studies
- Hand on experience in (HPLC, ÄKTA pilot, Fermentation, Uniflux 30, ÄKTA explorer, Constant system cell disrupter)
- Protein characterization according to European and US Pharmacopeia
- Protein modification/conjugation chemistry via natural/non-natural amino acids, PEGylation.
- Monoclonal ScFv process development
- Encapsulation of protein in various nanoparticles such as exosomes
- Mammalian cell culture handling for anticancer potential studies

### Administrative/Management Skills

- Head of Biopharmaceuticals and Proteomics Lab
- Member of Biosafety committee at CEMB
- Member of M.Phil./Ph.D. admission committee at CEMB
- Member of Editorial Board of Journal of Advancements in Life Science
- Member of physical verification of non-consumable items at CEMB
- Chairman of physical verification of house building advance committee at CEMB

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## WORKSHOPS/SEMINAR/CONFERENCES ORGANIZED & PARTICIPATIONS

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- Participated in **International Conference on Plant Biology (ICPMB)** organized and held at Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore on 14<sup>th</sup> & 15<sup>th</sup> December, 2022.
- Participated in the **International Health Symposium** jointly organized by Centre of Excellence in Molecular Biology (CEMB) and Centre for Applied Molecular Biology (CAMB), University of the Punjab, Lahore at Riazudin Auditorium on 17<sup>th</sup> November, 2022.

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- Participated in the **Seminar on Biosafety and Biosecurity** jointly organized by Centre for Applied Molecular Biology (CAMB) and Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore at Riazuddin Auditorium, CEMB on 3<sup>rd</sup> October, 2022.
  - Participated in **4<sup>th</sup> International Symposium on Advances in Molecular Biology of Plants & Health Sciences** held at Centre of Excellence in Molecular Biology, University of the Punjab, Lahore on 23<sup>rd</sup>-24<sup>th</sup> December, 2021.
  - Attended **Cancer Bio-Conference 2020** organized by Cancer Biology Lab, Microbiology and Molecular Genetics, University of the Punjab, Lahore on 13<sup>th</sup>-15<sup>th</sup> February, 2020.
  - Participated in **International Symposium on Stem Cells and Regenerative Medicines** organized by Centre of Excellence in Molecular Biology, University of the Punjab, Lahore held on 15<sup>th</sup> November, 2019.
  - Participated in **International Conference on Recent Innovation in Molecular Sciences** held at University of the Punjab, Lahore on 6<sup>th</sup>-8<sup>th</sup> November, 2019
  - Attended a workshop on **Recombinant DNA Technology for Production of Biological Products** held at University of Veterinary Sciences, Lahore on 30<sup>th</sup> & 31<sup>st</sup> October, 2019.
  - Attended an **International Symposium on Brain, Neurogenesis, and Regenerative Medicines** organized by Centre of Excellence in Molecular Biology, University of the Punjab, Lahore held on 3<sup>rd</sup> October, 2019.
  - Attended **National Workshop on Chromatography** held at University of Veterinary Sciences, Lahore on October, 2017.
  - Organized an **International Symposium on Advances in Molecular Biology of Plants and Health Sciences** organized by Centre of Excellence in Molecular Biology, University of the Punjab, Lahore on 29<sup>th</sup>-31<sup>st</sup> December, 2015.
  - Participated in **Ethical Challenges in Biomedical Research** organized by Department of Microbiology and molecular Genetics, University of the Punjab, Lahore held on 23<sup>rd</sup> May, 2015.
  - Attended **International Symposium on Biotechnology Applications in New Emerging Fields** held on 21<sup>st</sup> & 23<sup>rd</sup> December, 2010 at Allama Iqbal Medical College, Lahore.