

Nasar Khan



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SUMMARY

I am a molecular microbiologist with experience in development of nanobodies, mesenchymal stem cell culture and molecular biology. I possess excellent skills in research techniques like cellular isolation, expansion, molecular cloning, PCR, Immunofluorescence, exosomes/protein purification, and flow cytometry. I worked with confocal laser scanning microscope, CelCradle bioreactor, ÄKTA purifiers and tangential flow filtration. I have good hands-on on the bioinformatics tools for *In Silico* projects primer designing, transcript analysis and annotation. I am a discipline-driven and organized individual who loves to work in a collaborative environment. I have experience in project management and coaching in research. I am a scientific curious, down-to-earth, dedicated, and highly motivated person who is eager to face challenges on daily basis.

EDUCATION

- Ph.D. in Nanoscience, Aarhus University, Denmark. Sep 2017 - Aug 2020.
 - Specialties: Molecular Microbiology, Synthetic Biology
- MS in Molecular Biology and Genetics, Izmir Institute of Technology, Turkey. Sep 2015 - Jun 2017
 - Specialty: Cell Biology
 - Highest Distinction, Cumulative GPA of 4.00 on a scale of 4.00
- Bachelor in Microbiology, Kohat University of Science and Technology, Pakistan. Sep 2010 - Jul 2014
 - Specialty: Medical Microbiology
 - Gold Medalist, Cumulative GPA of 4.00 on a scale of 4.00

PROFESSIONAL CERTIFICATION

- Stem Cell Training from International society for stem cell application (ISSCA), USA. 2022.
- Good Clinical Practices from National Institute of Health (NIH), USA. 2022.
- Diploma in Pathology (MLT) from KPK Medical Faculty, Peshawar, Pakistan. 2010.
- Diploma in Information Technology from Technical Board Peshawar, Pakistan. 2010.

WORK EXPERIENCE

Mar 2022- Present: Assistant Professor, Department of Microbiology, Kohsar University Murree, Pakistan

- Working on the establishment of the department along with other departmental colleagues.

Aug 2021 – Mar 2022: Chief Scientific Officer, R3 Stem Cell International, Islamabad, Pakistan.

- Established a BSL-3 lab for tissue processing and stem cell culture.
- Optimized the culture and characterization of mesenchymal stem cells from umbilical cord.
- Developed SOPs for exosomes production, purification and characterization from stem cells.

Sep 2020 – Dec 2020: Postdoctoral Fellow, Interdisciplinary Nanoscience Center, Aarhus, Denmark.

- Engineered multiple plasmids with affinity tags for recombinant protein production.
- Optimized the downstream parameters for antibodies production.
- Characterized the stability, kinetics, and binding affinity of various antibodies.

Sep 2017 - Aug 2020: Doctoral Fellow, Interdisciplinary Nanoscience Center, Aarhus, Denmark.

- Analysed the fundamental interactions of host ligand (fibronectin) with the *Staphylococcus epidermidis* receptor (EMBP) in the context of medical implants infections.
- Optimized the stability and kinetics of *S. epidermidis* receptor (Embp) for binding with its ligand.
- Engineered *S. epidermidis* strain for the receptor (Embp) knockout and overexpression.
- Integrated the SNAP-tag and GFP to Embp in the genome of *S. epidermidis*.
- Developed fluorophore-conjugated antibodies as an imaging tool for human fibrinogen and fibronectin.
- Generated 3 VHH DNA libraries from the llama genome and packed them in a phagemid vector.
- Designed bioassays of phage display and ELISA for the screening antibodies libraries.
- Troubleshoot the purification of TEV protease for increasing its yield.
- Upgraded the expression and purification protocols of multiple bacterial receptors and nanobodies.
- Recovered and refolded five different proteins from inclusion bodies.
- Supervised 3 Master's and 2 Bachelor's students during their research projects.

Jul - Oct 2018: Visiting Research Fellow, Universitätsklinikum Eppendorf (UKE), Hamburg, Germany.

- Cloned and purified multiple variants of protein using liquid chromatography (IMAC, HIC, IEX, SEC).
- Engineered the antibodies sequences for fluorophore conjugation and purification.
- Analyzed Mass Spectrometry data of purified antibodies

Sep 2015 - Jun 17: Research Assistant, Izmir Institute of Technology (IYTE), Izmir, Turkey

- Generated multiple vectors with a variety of tags (6XHis, GST and MBP) for purification of enzymes.
- Investigated the mechanism of action of polyether antibiotics on cancer cells.
- Analysed the regulation of multiple proteins using Western blot and immunoprecipitation

Sep 2012 – Jul 2014: Project Student, Kohat University of Science and Technology, Pakistan

- Sequenced the 5' UTR of Hepatitis C Virus (HCV) for the development of genotyping assay.
- Isolated and characterized lipase producing bacteria from salt and coal mines of Pakistan.
- Analyzed the epidemiological data of HCV genotypes in Pakistan.

PROFESSIONAL SKILLS

Technical Skills

- Mammalian/Microbial cell culture
- Protein purification
- Nanobodies production
- PCR/ELISA
- Immunofluorescence
- Molecular cloning
- Biofilm assays
- Flow cytometry
- Western blot
- Protein-protein interaction

Bioinformatics Skills

- Experience in basic bioinformatics like sequence analysis, genome assembly, annotation, genomic comparison, and protein profiling.
- Designed various *In Silico* projects for mutagenesis, gene knockout, and protein engineering.
- Hands-on bioinformatic tools like CLC workbench, spades, NEB Builder, Primer3Plus, ExpASy, Clustal Omega, SnapGene, UniProt/Swiss-Prot, ClustalX, and MEGA.
- Learning Python for machine learning (Beginner).

COMMUNICATION

- Effective listener and speaker who can effectively convey information both orally and verbally.
 - Urdu (Native)
 - Turkish (Intermediate)
 - English (Proficient)
 - Arabic (Beginner)

GRANTS AND SCHOLARSHIPS

- Conference travel grant by the society of applied microbiology (SFAM), London, UK. 2019
- Doctoral fellowship by the graduate school of science in Aarhus University, Denmark. 2017-20
- SCELSE summer course in Nanyang Technological University, Singapore. 2018
- Turkish government scholarship for master's studies in Turkey. 2014-17
- Student of the university award in academics by World Red Cross, Kohat University, Pakistan. 2013
- Merit scholarship during bachelor studies by Kohat University of Science and Technology. 2010-14

CONFERENCES

- **Talk:** Eurobiofilms 3rd to 7th Sep 2019 at Glasgow, Scotland
- **Poster:** FEMS congress 6th to 11th Jul 2019, Glasgow, Scotland
- **Talk:** DMS congress 12th Nov 2018, Copenhagen, Denmark
- **Talk:** SCELSE summer course 20th Jun 2018, Singapore
- **Poster:** The 7th Thesinge biofilm conference 2nd Oct 2018, Groningen, The Netherlands
- **Poster:** Biofilm 8 conference 27th to 29th May 2018, Aarhus, Denmark

TEACHING EXPERIENCE

Being a research and teaching assistant in Aarhus University, Denmark. I gain teaching experience by being engaged in different academic courses at Bachelor and Master level.

- Molecular processes in the cell, Master course, Fall 2017 and 2018.
- Molecular Microbiology, Master course, Spring 2018 and 2019.
- General Biology, Bachelor course, Spring 2019.
- 2X Nano-exercises, Bachelor course, Spring 2018-20.

RESEARCH SUPERVISION

- Supervised 3 Master's students during their thesis at Aarhus University, Denmark.
 - Giulia Bertacchi - 2019
 - Maiken Petersen - 2020
 - Cecilie Bach - 2020
- Supervised 2 Bachelor's students during their projects at Aarhus University, Denmark.
 - Morten Hulbæk Fog in spring 2018 and Nicolaj Toft Jyde in 2019.

PUBLICATIONS

2022

- **Khan, N.**, et al. *S. epidermidis* attaches selectively to fibrillated fibronectin through Velcro-like interaction. *eLife* (Accepted).

2020

- Husnu, A., Petersen, M., Berardinis, A., **Khan, N.**, et al. LisR/K two-component system is responsible for adhesion and antibiotic resistance in *Listeria Monocytogenes*. *Frontiers in Microbiology*. 12:618174.
- Yang, C., Husnu, A., Peng, Z., Shoujun, Z., Yong, X., Lixiang, C., **Khan, N.**, et al. 2020. Carbon dots-fed *Shewanella oneidensis* MR-1 for bioelectricity enhancement. *Nature Communication*. 11:1379.

2019

- Akbar, N., Shahid, N. K., Otavio, C. M., Lena, F. S., **Khan, N.**, et al. 2019. Novel nonsense IL-12R β 1 mutation associated with recurrent tuberculosis. *Immunologic research*. 67: 408–415.
- **Khan, N.**, et al. 2019. Polyethers isolated from the marine actinobacterium *Streptomyces cacaoi* inhibit autophagy and induce apoptosis in cancer cells. *Chemico-Biological Interactions*. 307: 167-78.

2017

- **Khan, N.**, et al. 2017. Prevalence of Hepatitis B Viral Infection in Punjab Province of Pakistan. *Pakistan Journal of Zoology*, 49 (4): 1511-13.

LEISURE

- Playing Cricket
- Hiking
- Bowling
- Photography

REFERENCES

- Please contact me if you need any reference letter.