

SABA TASNEEM

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CURRENT POSITION

Research officer cum Lecturer
Centre of Excellence in Molecular Biology,
University of the Punjab, Lahore, Pakistan

RESEARCH PROJECTS

(2021-2023) PI of ongoing Project “Amniotic membrane embedded phytoextract primed stem cells construct for wound healing” worth Rs. 6.94 million under “**National Research Program for Universities (NRPU)** of HEC (project NRPU-14181).

SCHOLARSHIPS / AWARDS

IRSIP (2021) Scholarship award for research in **University of British Columbia, Canada** for the duration of six months (2021) by Higher Education Commission of Pakistan (HEC) under International Research Support Initiative Program (IRSIP).

ACADEMIC RECORD

- 2015-2022** **PhD (Molecular Biology)**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
Thesis title: *Composite of phytoextract and stem cells carrier scaffold for skin regeneration*
- 2010-2012** **M.Phil (Molecular Biology)**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
Thesis title: *Role of insulin growth factor preconditioning of cord blood derived mesenchymal stem cells in protection against hypoxic injury in vitro*
- 1999-2001** **M.Sc (Botany)**
Lahore College for Women, University, Lahore, Pakistan
- 1996-1998** **B.Sc (Botany, Zoology, Chemistry)**
University of the Punjab, Lahore, Pakistan.

FOREIGN LAB RESEARCH EXPERIENCE

Six months (July 2021-January 2022) stem cell research experience at **Department of Oral Biological and Medical Sciences, University of British Columbia, Vancouver, Canada**; funded by Higher Education Commission of Pakistan (HEC) under International Research Support Initiative Program (IRSIP).

One year Research Assistant, Institute for Transplantation Diagnostics and Cell Therapeutics, Medical Center of Heinrich Heine University, Düsseldorf Germany.

Trained for:

- Cord blood banking (processing, freezing, thawing, quality control and management of umbilical cord blood) for future clinical therapy.
- Isolation, culturing, differentiation, characterization, and utilization of cord blood derived Unrestricted somatic stem cells in research.

RESEARCH EXPERIENCE

Stem Cells (2006 – continue)

Stem Cell Therapy for Damaged Organs

- Therapeutic effect of antioxidant phytoextracts on healing of damaged skin
- Therapeutic potential of Adipose derived Stem Cells (ASCs) for the repair of burnt skin
- The paracrine effect of cryopreserved cord blood derived mesenchymal stem cells for healing burnt skin.
- Therapeutic potential of cord blood derived mesenchymal stem cells for the repair of cirrhotic liver.
- Reconstruction of ocular surface of damaged eye using Limbal stem cells and amniotic membrane. Successfully done three patients of limbal stem cell transplantation and we routinely provide amniotic membrane in hospitals for eye and skin defects.

Genetic Diseases (April 2003 – Sep. 2006)

- Genetic and Molecular Characterization of Recessive Hereditary Hearing Impairment in Pakistani Population

POSITIONS HELD IN RESEARCH PROJECTS

- Research officer cum Lecturer CEMB, University of the Punjab from 2008- to date
- PhD Scholer, CEMB, University of the Punjab from 2015-2019

- M.Phil Scholer, CEMB, University of the Punjab from 2010-2012
- Asst. Research officer, CEMB, University of the Punjab from 2003-2008

AREAS OF EXPERTISE

- **Stem Cell Culturing, Maintenance and propagation techniques:**

2D Cell Culture:

- Isolation and culture of mesenchymal stem cells from bone marrow, human and rat adipose, human and rat skin- keratinocytes and fibroblasts, umbilical cord tissue, cord blood and amniotic membrane.
- Cryopreservation of cells and revival of the cryopreserved cells
- Experiment design and drug testing on cells/ stem cells.

3D cell culturing (Organotypic/ Spheroid)

- Formation of spheroids with different cell types, their maintenance, drug testing on spheroids, and downstream assays (microscopy, PCR etc.)

Amniotic membrane preparation:

- Isolation, clearing, preparation and cryopreservation of amniotic membrane from full term placental tissue for clinical use.

Scaffolding

- Preparation of stem cell carrier 3D scaffolds/ construct for drug testing and transplantation in small experimental animals
- Use of biomaterials (natural or synthetic) for preparation of scaffold

Transplantation of stem cells in animal models.

- Preparation of skin injury model, diabetes model and liver fibrosis model in rats
- Transplantation of stem cells with and without scaffold
- Tissue processing of skin and liver samples, Paraffin and Cryo-sectioning.
- Immunohistochemistry, Immunocytochemistry & cell staining (H&E, Masson trichrome, Sirius red etc.).
- Microscopy (fluorescent and light).

- **Biochemical, Biophysical and Molecular Biology Techniques:**

- Fluorescent activated cell sorting (FACS) running and data analysis.
- Bioluminescence In-vivo Imaging
- Use of various image and data analysis software like Image J, Adobe photoshop, GraphPad Prism5
- RNA and DNA extraction from cells and tissues,
- Protein purification, ELISA, Western blotting,
- Immunohistochemistry, Immunocytochemistry, cell staining,
- Polymerase chain reaction (PCR) standard and multiplex, Real Time PCR,
- DNA/ RNA sequencing,
- Gel electrophoresis (SDS-PAGE and Agarose),
- Spectrophotometry, Microtomy and Cryosectioning etc

○ **Genetics and Bioinformatics Techniques:**

- Genotyping and Linkage Analyses,
- Genome wide Scan by STR markers,
- Primer Designing by Primer 3 (for linkage analyses, sequencing, gene expression studies),
- Sequence matching by Chromas,
- Use of various image and data analysis software like Image J, Adobe photoshop, GraphPad Prism5
- Use of different software and web tools like BLAST, Multiple Sequence Alignment Tool (e.g., Clustal W), browsers and databases like Ensemble, NCBI and UCSC genome browser etc.
- Molecular docking

COMPUTER SKILLS

Certified in:

- i) MS office (MS word, MS Excel, MS Access, MS Powerpoint)
- ii) Visual Basic 6.0

LINGUISTIC SKILLS

Mother Language: Urdu

- Proficient in Reading, Writing, Speaking

Official Language: English

- Proficient in Reading, Writing, Speaking

ABSTRACTS

Shaheen N.Khan, Sabiha Nazli, Khushnooda Ramzan, Rehan Sadiq, Jamiil Ahmad, Saba Tasneem, Saeeda Kalsoom & Sheikh Riazuddin. Genetic studies of hereditary hearing impairment. 18th FAOBMB Symposium on Genomics and Proteomics in Health and Agriculture Organized by School of Biological Sciences University of Punjab, Lahore. Pakistan. Nov 20-23, 2005.

SCIENTIFIC SYMPOSIA / MEETINGS/ WORKSHOPS ATTENDED

1. Organizing committee member of **“Awareness Seminar on GM Soybean and Potential of Soybean Cultivation in Pakistan”** (January 23, 2023) held at Centre of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan.
2. Participated in **“International Conference on Plant Molecular Biology (ICPMB)”** (December 14-15, 2022), organized by and held at Centre of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan.
3. Participated in **“International Health Symposium”** (November 17, 2022), jointly organized by Centre of Excellence in Molecular Biology & Centre for Applied

Molecular Biology, University of the Punjab at Riazuddin Auditorium.

4. Participated in “**Pakistan’s 1st International Flow Cytometry Workshop**” (October 17-18, 2022), organized by “Centre for Innovation in Medical Education, Agha Khan University (CIME AKUH)” in association with “International Society for Advancement of Cytometry (ISAC)” held at AKUH Karachi.
5. Participated in “**Pakistan Chemical Expo 2022**” (July 19-20, 2022), organized by Pakistan Chemical Manufacturers Association (PCMA) at Expo Centre Lahore.
6. Successfully completed *five-day training course* on “**Research Capacity Building Program for Principal Investigators**” (May 9-13, 2022) jointly organized by Higher Education Commission (HEC), British Council, Pakistan and Coventry University, UK under Pak-UK Education Gateway at Avari Hotel, Lahore.
7. Participated in “**Hands-on Training Workshop on Structural Bioinformatics Tools**” (February 23-25, 2022), organized by and held at Centre of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan.
8. Organizing committee member of 3rd International Symposium on “**Advanced in Molecular Biology of Plant and Health sciences**” organized by and held at National Centre of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan.
9. Participated in 1st International Symposium on “**Tissue Engineering: Building Linkages (Clinicians, Industry & Scientists)**” (September 25, 2018) organized by Interdisciplinary Research Centre in Biomedical Materials (IRCBM), COMSATS University, Lahore, Pakistan.
10. Participated and presented product (Amniotic Membrane Graft” in “**7th Invention to Innovation Summit 2018**” organized by ORIC, University of the Punjab, Lahore, Pakistan.
11. 6th International Symposium on “**Biomedical Materials: Synergising Partnerships**” (14-16 December, 2017) organized by Interdisciplinary Research Centre in Biomedical Materials (IRCBM) CIIT, Lahore at PC, Lahore.
12. Participated in a webinar on “BioRad S3e cell sorter and cell biological techniques” at CEMB on January 30, 2017 at CEMB, and delivered by Dr. Imad Aoude, Application Specialist Scientist, BioRad
13. Participated in 2nd International Symposium on “**Advances in Molecular Biology of Plants and Health Sciences**” (21-23 November 2017) at CEMB, University of the Punjab.
14. 5th International Symposium on “**Biomedical Materials: Clinical Requirements and Regulatory Affairs**” (14-16 December 2016) at PC, Lahore organized by Interdisciplinary Research Centre in Biomedical Materials (IRCBM), CIIT Lahore.

15. Seminar on **“Phen-Gen combining phenotypes and genotypes to analyze rare disorders”** by Dr. Asif Javed, Research Scientist at Genome Institute of Singapore, (November 2, 2016), organized by CEMB.
16. Participated in **“Dental and Biomaterials Summer Camp”** organized by and held at COMSATS University, Lahore (17-21 August 2015).
17. Conference on **“Therapeutic Applications of Stem Cells”** (5th -6th May, 2016, The University of Lahore, Lahore)
18. Attended **Biosafety workshop** held at CEMB in 2016.
19. Organizing committee member of **“International Symposium on Advances in Molecular Biology of Plants and Health Sciences”** (29th -31st December, 2015) held at CEMB.
20. International symposium on **“Molecular Forensic: Emerging Trends”** held on 29th May, 2014 at Univ. of Health Sciences, Lahore.
21. **“DNA day and NAYS Emerging Ideas”** Conference held at Centre of Excellence in Molecular Biology Lahore on 25th April 2013.
22. Participated in workshop on **“Literature Review & Managing References using EndNote® Software”** (31st March & 01st April, 2011) organized by Institute of Business Administration (IBA) in collaboration with Department of Library and Information Science (DLIS) at IBA.
23. International symposium on **“Biotechnology Applications in New Emerging Fields”** held on December 21-23, 2010 at Allama Iqbal Medical College, Allama Shabir Ahmad Usmani Road, Lahore, Pakistan.
24. International symposium on **“Future Trends in Molecular Biological research & its Application in Agriculture & Health”** March 25-28, 2009. Organized by Centre of Excellence in Molecular Biology and Centre for Applied Molecular Biology, University of the Punjab, Lahore, Pakistan.
25. Workshop on **“Ethical Issues Related to work on Stem Cells”** March 20, 2009. Organized by Centre of Excellence in Molecular Biology and Centre for Applied Molecular Biology, University of the Punjab, Lahore, Pakistan.
26. Satellite Symposium on **“Reprogramming of Somatic Cells for the Therapy of Heart Disorders”** October 9-10, 2007 Hilton Hotel Düsseldorf, Germany. Funded by BMBF Program “Cell-Based Regenerative Medicine”.
27. **4th International Meeting Stem Cell Network North Rhine-Westphalia**, October 8-9, 2007, Düsseldorf, Germany.
28. First Symposium of the BMBF-sponsored Research Alliance on **“Induction of**

Immunologic Tolerance by Mesenchymal Stem Cells” September 12-13, 2007, Graf-Adolf-Platz 15, 40312 Düsseldorf, Germany.

BMBF-Research Alliance:

Professor Walter Däubener, Heinrich Heine University Düsseldorf

Dr. Rainer Henschler, German Red Cross, University Frankfurt

Professor Jochen Seissler, Technical University Munich.

29. **Lahore Bioforum 2006**, jointly organized by twin Centre of Molecular Biology, university of the Punjab, Lahore, Pakistan and PISELLI CONSULTING S.L. Barcelona, Spain. March 13-15, 2006.
30. **BINASIA-Pakistan National Workshop**, Organized by National Centre of Molecular Biology, University of the Punjab, Lahore. March 11-12, 2006.
31. **Pre 18th FAOBMB Symposium & Satellite Workshop on Bioinformatics**, organized by National Center of Excellence in Molecular Biology, University of Punjab, Lahore, Pakistan. Nov 14-19, 2005.
32. A Symposium/ Workshop on the **“Application of Molecular Biological Research in Agriculture and Health”** at National Centre of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan. March 27-31, 2004.

PUBLICATIONS

1. ul Haq, H. S., Ashfaq, R., Mehmood, A., Shahid, W., Azam, G., Azam, M., ... & Riazuddin, S. (2023). Priming with caffeic acid enhances the potential and survival ability of human adipose-derived stem cells to counteract hypoxia. *Regenerative Therapy*, 22, 115-127. IF 3.651.
2. Azam, M., Ghufuran, H., Tasneem, S., Mehmood, A., Malik, K., Yousaf, M. A., ... & Riazuddin, S. (2022). Priming of adipose-derived stem cells with curcumin prior to cryopreservation preserves their functional potency: Towards an ‘Off-the-shelf’therapy for burns. *Cryobiology*. IF 2.728.
3. Butt, H., Mehmood, A., Ali, M., Tasneem, S., Tarar, M. N., & Riazuddin, S. (2019). Vitamin E preconditioning alleviates in vitro thermal stress in cultured human epidermal keratinocytes. *Life sciences*, 239, 116972. IF 6.78.
4. Butt, H., Mehmood, A., Ali, M., Tasneem, S., Anjum, M. S., Tarar, M. N., ... & Riazuddin, S. (2017). Protective role of vitamin E preconditioning of human dermal fibroblasts against thermal stress in vitro. *Life sciences*, 184, 1-9. IF 6.78.
5. Anwar, S., Riazuddin, S., Ahmed, Z. M., Tasneem, S., Khan, S. Y., Griffith, A. J., ... & Riazuddin, S. (2009). SLC26A4 mutation spectrum associated with DFNB4 deafness and Pendred's syndrome in Pakistanis. *Journal of human genetics*, 54(5), 266-270. IF 3.755.

6. Khan, S. Y., Ahmed, Z. M., Shabbir, M. I., Kitajiri, S. I., Kalsoom, S., Tasneem, S., ... & Riazuddin, S. (2007). Mutations of the RDX gene cause nonsyndromic hearing loss at the DFNB24 locus. *Human mutation*, 28(5), 417-423. IF 4.7.
7. Nal, N., Ahmed, Z. M., Erkal, E., Alper, Ö. M., Lüleci, G., Dinc, O., ... & Friedman, T. B. (2007). Mutational spectrum of MYO15A: the large N-terminal extension of myosin XVA is required for hearing. *Human mutation*, 28(10), 1014-1019. IF 4.7.

REFERENCES

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