MUHAMMED AFAQ SHAKIR
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INTEREST:

- To teach and help students in their respective subjects during learning process and to develop interest for higher education.

- In science, research and teaching go side by side; teaching in class and supervision in lab projects are both important for students' success, and my interest and experiences are in both professions.

EDUCATION:

- Ph. D. Molecular Biology — June 1993
  Toyohashi University of Technology
  Toyohashi 441, Japan

- B. S. (Honors); M.S. Physiology — June 1983
  University of Karachi
  Karachi, Pakistan

Ph. D. DISSERTATION:

Molecular and genetic studies of chemosensory behavior in the nematode *Caenorhabditis elegans.*

PROFESSIONAL TRAINING:

- Adjunct Academy — April 2018
  Houston Community College
  Houston, Texas

- Eagle Online for Canvas — February 2018
  The Institute for Instructional Engagement & Development
  Houston Community College
  Houston, Texas

- First Aid CRP AED Program — August 2018
  American Heart Association Heartsaver
  Houston Community College
  Spring, Texas

POSITIONS HELD:

Adjunct Instructor Biology — Present
Houston Community College
Southwest & Northwest Campus
Stafford, TX 77477

- Teaching Biology and Nutrition courses in classroom, since February 2009 at several campuses of Houston Community College.

Research Associate — April 2016
Department of Biochemistry & Molecular Biology
Baylor College of Medicine
Houston, TX 77030

- Functional analysis of CED-1 protein using deletion constructs of *ced-1* extracellular domain and several point mutations in CED-1 protein.

Assistant Research Scientist — December 2014
Institute of Biosciences and Technology
Texas A & M University
Houston, TX 77030

- Constructed genetic strains and performed RNAi to study tumorigenesis in *C.elegans* vulval development.

Postdoctoral Fellow — August 2012
Department of Neurology
Baylor College of Medicine
Houston, TX 77030

- Identified several interacting molecules involved in signaling mechanism(s) to known Parkinson's disease and Parkinsonism genes. Various domains of Parkin (PARK2), Lrrk2 (PARK8), GIGYF2 (PARK11), and HtrA2 (PARK13) were used in Yeast-Two-Hybrid system for screening interacting molecules.

- Interactions were further tested using yeast system, co-affinity purification assays and cell culture studies.

Postdoctoral Research Fellow — March 2007
Department of Molecular Biosciences
University of Kansas
Lawrence, KS 66045

- Cloned *C.elegans* homolog of homeodomain transcription factors similar to human Six5, a protein implicated in the pathogenesis of type I myotonic dystrophy (DM1), and its role in neuronal migration and axon pathfinding.

- Performed genetic screening for RAC GTPase interacting molecules and identified molecules with functional redundancy in neuronal migration and axon pathfinding in *C. elegans*.

Postdoctoral Scientist — July 2001
Marine Biological Laboratory
Lillie 313, 7MBL Street
Woods Hole, MA 02543

- How are families of interacting molecules incorporated into the endocrine circuit? With this aim, the *C. elegans* homologs of cyctein-knot hormones and their receptors were screened for phenotypic analyses, using RNAi approach.

- Assembled fusion constructs with green fluorescent protein and obtained transgenic lines to study the expression pattern of the cys-knot receptor in male and hermaphrodite *C. elegans*.

Postdoctoral Fellow December 1998
Department of Pathology
Harvard Medical School
Boston, MA 02115

- Using mammalian homologs that had been shown in chromatin remodeling, five histone deacetylase homologs were tested for phenotypes and were found to have functional redundancy in *C. elegans* development.

- Using RNAi approach, I performed screening for molecules involved in transcription regulation, cell growth, differentiation and elongation in *C. elegans*.

PUBLICATIONS:

- Zsolt Farkas, Metka Petric…… **Muhammed Afaq Shakir**……..et al.
  The nucleoside diphosphate kinase NDK-1/NME1 promotes phagocytosis in concert with DYN-1/Dynamin.
  (FASEB Journal – Accepted 2019).

- **Shakir MA**, Jiang K, Struckhoff EC, Demarco RS, Patel FB, Soto MC, Lundquist EA. The Arp2/3 activators WAVE and WASP have distinct genetic interactions with Rac GTPases in *Caenorhabditis elegans* axon guidance. Genetics. 2008; 179: 1957-71.

- **Shakir MA**, Gill JS, Lundquist EA. Interactions of UNC-34 Enabled with Rac GTPases and the NIK kinase MIG-15 in *Caenorhabditis elegans* axon pathfinding and neuronal migration. Genetics. 2006; 172: 893-913.

- Yanowitz JL, **Shakir MA**, Hedgecock E, Hutter H, Fire AZ, Lundquist EA. UNC-39, the *C. elegans* homolog of the human myotonic dystrophy-associated homeodomain protein Six5, regulates cell motility and differentiation. Dev Biol. 2004; 272: 389-402.

- Ali MY, Khan ML, **Shakir MA**, Kobayashi KF, Nishikawa K, Siddiqui SS. Expression and cDNA cloning of klp-12 gene encoding an ortholog of the chicken chromokinesin, mediating chromosome segregation in *Caenorhabditis elegans*. J Biochem Mol Biol. 2000; 33: 138-46.

- Khan ML, Ali MY, Siddiqui ZK, **Shakir MA**, Ohnishi H, Nishikawa K, Siddiqui SS. *C. elegans* KLP-11/OSM-3/KAP-1: orthologs of the sea urchin kinesin-II, and mouse KIF3A/KIFB/KAP3 kinesin complexes. DNA Res. 2000; 7: 121-5.

- **Shakir MA**, Fukushige T, Yasuda H, Miwa J, Siddiqui SS. *C. elegans osm-3* gene mediating osmotic avoidance behaviour encodes a kinesin-like protein. Neuroreport. 1993; 4: 891-4.

- **Shakir MA**, Miwa J, Siddiqui SS. A role of ADF chemosensory neurones in dauer formation behaviour in *C. elegans*. Neuroreport. 1993; 4: 1151-4.

- **Book Chapter:**
  Shakir MA and Lundquist, EA.
  Analysis of Cell Migration in *Caenorhabditis elegans.*
  Developmental Methods and Protocols. Series: Methods in Molecular Biology.
  Volume: 294, pp. 159 -174, 2004.

POSTER PRESENTATIONS:

- **Shakir MA,** Meyers B, Serturk M, Jaiswal M, Liu Q, Bellen H, Moretti P. The E3 ubiquitin-Ligase parkin interacts with the Wnt signaling pathway regulators naked cuticle homologs 1 and 2. BCM Department of Molecular and Human Genetics Annual Retreat, Galveston TX, Jan 9-10, 2014.

- **Shakir MA,** Meyers B, Freckleton D, Sheffield R, Kolosov M, Innocenti B, Sardiello M, Moretti P. GIGYF2 is involved in mRNA surveillance and vesicular transport and is required for normal mouse development. BCM Department of Molecular and Human Genetics Annual Retreat, Galveston TX, Jan 9-10, 2014.

AWARDS / FELLOWSHIP:

- Research Fellowship from DIANA Helis Research Foundation
  (Jan. 2008 – Dec. 2010).
- Research Fellowship from Kansas EPSCoR (NSF).
  (April 2004 - March 2007).
- Postdoctoral Fellowship from JSPS (Japan Society for the Promotion of science).
  (March 1996 - June 1996).
- Pre-doctoral scholarship from Japanese Ministry of Education, Science and Culture (Monbusho).
  (April 1989 - June 1993).