

# Samar Hassen, PhD

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## EDUCATION

- 2012 Ph.D., Applied Bioscience, University of Arkansas at Little Rock  
Dissertation Title: “*Studies on DNA Mismatch Repair Proteins as Biomarkers for Hereditary Non-Polyposis Colorectal Cancer*”
- 2010 M.Sc., Applied Bioscience, University of Arkansas at Little Rock
- 2002 B.S., Microbiology, Al-Mustansiriyah University, Baghdad, Iraq

## SUMMARY

- More than 5 years of managing research project as well as method validation in clinical lab setting
- Assay optimizations
- Ability to work with multi-functional team
- Successfully trained graduate, undergraduate and lab technician laboratory technique

## PROFESSIONAL EXPERIENCE

### January 2020- Present Research Scientist

Arkana Laboratories 10810 Executive Center Dr #100, Little Rock, Arkansas

- Molecular biology work (DNA isolation and plasmid propagation )
- Proteomic work ( Immunoprecipitation, western blotting, and preparation of mass spectrometry samples)
- Tissue culture
- Histology ( Cutting frozen and FFPE tissue, IF staining)
- Serology

### June 2018- December 2019 Histotech

Arkana Laboratories 10810 Executive Center Dr #100, Little Rock, Arkansas

- Perform routine histology, which includes specimen grossing, embedding, microtome, IF staining, and IHC.
- Perform molecular testing (APOL1 genotyping assay).

**January 2013-March 2017 Medical Laboratory Scientist and General Supervisor**

Physicians Laboratory of America (PLA), 10 Corporate Hill Drive, Little Rock, Arkansas

- Responsible for sample processing
- Preparation of quality control (QC) in the area of LC-MS/MS
- Writing SOPs, optimized and validate protocols for qualitative Analysis of urine samples with Global Easy RA Instrument, Seimens Clinitek, and Seimens V-Twin
- Performing proficiency testing obtained from CAP (College of American Pathologist) for clinical laboratories as part of CLIA requirement
- Test reporting
- Chemistry analyzer maintenance
- Daily and monthly QC reports
- Participate in routine validity testing and urine toxicology drug screening
- Train and orients new lab technicians

**September 2014 -March 2015 Clinical Laboratory Scientist**

Mocek Spine Clinic, 9101 Kanis Rd #400, Little Rock, Arkansas

- Testing urine specimens for medication monitoring purposes using the clinic specific panel on Easy RA Chemistry analyzer
- Chemistry Analyzer maintenance

**August 2012-December 2012 Teaching Assistant,**

Biology Department, University of Arkansas at Little Rock (UALR)

- Anatomy and Physiology II lab teaching
- ABO blood typing
- Homework and final exam grading

**August 2007-August 2012 Graduate Research Assistant,**

Graduate Institute of Technology (GIT), University of Arkansas at Little Rock, Little Rock, Arkansas

- Study the role of DNA mismatch repair proteins in apoptosis and its involvement in non-polyposis colorectal cancer (HNPCC)
- Development of pre-screening method to screen patients at high risk for Lynch syndrome.
- Screen patients at high risk for HPNCC as part of my dissertation study

**2003- July 2006 Lab Instructor,**

Biology Department, Al-Mustansiriyah University, Baghdad, Iraq.

- Teaching Microbiology course for undergraduate students
- Teaching Food Microbiology Lab for undergraduate students
- Homework and final exam grading

**July 2002-July 2003**

**Microbiology Technician,**

Biology Department, Al-Mustansiriyah University, Baghdad, Iraq.

- Microbiology lab: assisting researchers with media prep and microbial culture
- Maintain records and lab inventory
- Homework grading

## **CLINICAL EXPERIENCE**

- Preparation of quality controls (QC), calibrators and performing validity test on patient's sample
- Writing SOPs (Standard Operating Procedure)
- LCMS operator
- Chemistry Analyzers operator: Global Easy RA, Siemens Clinitek, and Siemens V-Twin
- Sending samples for confirmation to reference labs
- Test results reporting

## **TECHNICAL SKILLS**

### **Cell Biology and Biochemistry**

- Extensive experience with culturing and maintaining mammalian cells
- Isolation of lymphocyte from human blood, growth and maintaining of lymphocyte cultures
- ABO blood typing
- Sub-cellular fractionation
- Biotinylation of antibodies
- Different type of ELISA assay
- Protein assay
- Immunocytochemistry
- Luminex Multiplexing ELISA assay
- Immunoprecipitation and Western blotting

### **Molecular Biology Experience**

- DNA and RNA isolation

## **RESEARCH EXPERIENCE**

### **Research Project**

Studies on mismatch repair proteins as biomarkers for screening of Hereditary Non-Polyposis Colorectal Cancer (HNPCC). In my research project, I was able to characterize by Western blotting and ELISA assay a number of antibodies to detect MLH1 and MSH2 mismatch repair proteins. I found an altered ratio of these proteins in fresh blood lymphocytes from patient at risk for Lynch Syndrome.

I have then advanced this project to develop Luminex bead based sandwich ELISA immunoassay for

enhanced sensitivity that can be commercially useful in clinical setting.

My research also included roles played by DNA mismatch repair proteins in apoptosis. Using different anti-cancer drugs and apoptotic markers, I have been able to study signaling mechanism of apoptosis in a number of cell types. Thus, I have obtained extensive research training as a graduate student in the area of cell biology and biochemistry.

### **RESEARCH INTERESTS**

- Biochemistry, cell biology and Biotechnology
- Signal transduction and intracellular signaling mechanisms
- Signaling mechanisms of programmed cell death (apoptosis)
- Cancer diagnosis and prevention

### **TEACHING INTERESTS**

- Microbiology
- Biochemistry
- Cell Biology
- Immunology

### **EQUIPMENT OPERATION EXPERIENCE**

- Luminex 100x
- LCMS/MS from Agilent Technologies (6460)
- Gel imaging system from BioRad
- Medica EasyRa from Global (Chemical Analyzer)
- Siemens Clinitek
- Siemens V twin
- Cytation 5 (Cell Imaging Multi-Mode Reader) from BioTek

### **COMPUTER SKILLS**

- Microsoft office, Words, PowerPoint, and Excel.
- Data Input using LabDaq system (LIS system).

### **PROFESSIONAL HONORS AND AWARDS**

- Student research exposition 3<sup>rd</sup> place, UALR, 2012
- Student research exposition 3<sup>rd</sup> place, UALR, 2011
- Honorable mention in graduate research exposition, UALR, 2011
- Sigma Xi award for best poster presentation, Harding University, 2009
- Travel award for International Plant Molecular Biology Congress (IPMB) meeting, 2009

### **CERTIFICATES**

- Chemical Screening of Urine by Reagent Strip
- HIPPA Privacy and Security Rules
- The Toxicology Laboratory's Role in Pain Management
- Pharmacology in the Clinical Lab: Therapeutic Drug Monitoring and Pharmacogenomics
- Medical Error Prevention: Patient Safety
- First Aid

## SPECIAL WORKSHOPS

- BioNanoTox meeting, UALR, June 2010
- P3 symposium , Petit Jean, AR, 2010

## MEMBERSHIPS OF PROFESSIONAL ASSOCIATIONS

- Sigma Xi, the Scientific research Society, 2009

## EXTRA CURRICULAR ACTIVITIES

- Teaching Enhancements Affecting Minority Students (TEAMS)
- Community Services
- Science Fair Judging
- Sponsoring and mentoring high school student science fair projects at UALR

## PUBLICATIONS

1. Rakhee Agarwal, **Samar Hassen**, and Nawab Ali. Changes in cellular levels of inositol polyphosphates during apoptosis. *Molecular and Cellular Biochemistry* **2010**
2. Maroof Khan Zafar, Rizan Mohsin, **Samar Hassen**, Rakhee Agarwal, and NawabAli. Detection of Inositol Polyphosphates by Polyacrylamide Gel Electrophoresis (PAGE) Under Apoptotic Conditions in Cultured SW480 cells. *Journal of Arkansas Academy of Science* **2010**
3. Alokita Karmakar, Cornel Iancu, Dana Todea Iancu Meena W. Mahmood, Anindya Ghosh, Yang Xu, Enkeleda Dervishi, Samuel. L. Collom, Mariya Khodakovskaya, Thikra Mustafa, Fumiya Watanabe, Ashley Fejleh, Alexandru R. Biris, Yongbin Zhang, Syed F. Ali, Dan Casciano, **Samar Hassen**, Zeid Zeid, Alexandru. S. Biris. Raman Spectroscopy as a Detection and Analysis Tool for In Vitro Specific Targeting of Pancreatic Cancer Cells by EGF-Conjugated Single-Walled Carbon Nanotubes. *Journal of Applied Toxicology* **2011**
4. **Samar Hassen**, Nawab Ali, Parimal Chowdhury. Molecular Signaling Mechanisms of Apoptosis in Hereditary Non-Polyposis Colorectal Cancer. *World J Gastrointestinal Pathophysiol.* A review article, **2011**
5. **Samar Hassen**, Bruce M. Boman, Nawab Ali, Marcie Parker, Chandra Somerman, Zohra J. Ali-Khan Catts, Akhtar A. Ali , Jeremy Z. Fields. Detection of DNA mismatch repair proteins in fresh human blood lymphocytes – towards a novel method for Hereditary Non-Polyposis Colorectal Cancer (Lynch Syndrome) screening. *Journal of Experimental and Clinical Cancer Research* **2011**
6. **Samar Hassen**, Akhtar A. Ali , Surya P. Kilaparty, Qudes A. Al-Anbaky, Waqar Majeed , Bruce M. Boman, Jeremy Z. Fields and Nawab Ali. Interdependence of DNA mismatch repair proteins MLH1

7. Tiffany N. Caza, **Samar I. Hassen**, and Christopher P. Larsen Renal Manifestations of Common Variable Immunodeficiency. *Kidney360*, **2020**
8. Caza TN, **Hassen S**, Dvanajscak Z, Kuperman M, Edmondson RD, Herzog C, Storey AJ, Arthur JM, Cossey LN, Sharma S, Kenan DJ, Larsen CP. NELL1: A Target Antigen in Malignancy-Associated Membranous Nephropathy. *Kid Int.* 2020; PMID: 32828756

#### **STANDARD OPERATING PROCEDURE (SOP)**

1. **Samar Hassen**. Standard Operating Procedure for Urine Creatinine and Ethanol in Urine by Medica EasyRa. Physician's Laboratories of America, Bio-Ventures, University of Arkansas for medical Sciences **2013**
2. **Samar Hassen**. Standard Operating Procedure for PH in Urine by Medica EasyRa. Physician's Laboratories of America, Bio-Ventures, University of Arkansas for medical Sciences **2013**
3. **Samar Hassen** and Kayla Helmick. Standard Operating Procedure for Validity Tests by Siemens Clinitek, Physician's Laboratories of America **2015**
4. **Samar Hassen** and Kayla Helmick. Standard Operating Procedure for Preliminary drug screening and Validity Tests by Siemens V-Twin, Physician's Laboratories of America **2016**

#### **ABSTRACTS/ POSTERS/ PRESENTATIONS**

1. Rakhee Agarwal, Zakir Hossain, **Samar Hassen**, Hamid Mumtaz and Nawab Ali. Expression and Redistribution of Multiple Inositol Polyphosphate Phosphatase (Minpp) during Apoptosis. *BioNanoTox (BNT), UALR, 2008.* (Abstract and poster)
2. Alokita Karmakar, Meena W. Mahmood, Ashley Fejleh, Philip Fejleh, Yang Xu, Enkeleda Dervishi, **Samar Hassan**, Anindya Ghosh, Samuel.L.Collom, Alexandru.S. Biris. Targeted Killing of Pancreatic Cancer Cells with Epidermal Growth Factor. *MRS ,2009 ,Symposium Meeting, Boston, Massachusetts.*(Abstract and poster)
3. Maroof Khan Zafar, Rizan Mohsin, **Samar Hassen**, Rakhee Agarwal, and Nawab Ali. Detection of Inositol Polyphosphates by Polyacrylamide Gel Electrophoresis (PAGE) Under Apoptotic Conditions in Cultured SW480 Cells. *Arkansas Academy of Science, UALR, 2010.*( Abstract and poster)
4. **Samar Hassen**, Afshan Ali, Jeremy field, Bruce Boman, and Nawab Ali. Detection of mismatch repair proteins MLH1 and MSH2 in fresh blood lymphocyte following PHA stimulation to assess HNPCC. *Graduate research exposition, UALR, 2011.* (Abstract and poster).
5. **Samar Hassen** and Nawab Ali. Role of DNA mismatch repair proteins MLH1 and MSH2 in programmed cell death process (Apoptosis) in colorectal carcinoma cell lines. *Graduate research exposition, UALR, 2012.* (Abstract and poster).
6. Workshop presentation for high school teachers, *BioNanoTox meeting, UALR, June 2010.*