Samar Hassen, PhD

samari.hassen@gmail.com

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 10 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.
- GCLP certified
- No Visa sponsorship required, eligible to work in the United State (Green Card Holder).

PROFESSIONAL EXPERIENCE

Oct 2023-Present **Molecular Research Scientist**
Arkana Laboratories 10810 Executive Center Dr #100, Little Rock, Arkansas
Molecular Department: Clinical/Research

- ApoL1 genotype clinical assay.
- Vertex ApoL1 genotype screening project.
- Maze829-801-clinical trial ApoL1 genotype screening project.
- Maze829-201-clinical trial ApoL1 genotype to assess the safety, tolerability of MZE drug.
- Method optimization for Phase II Mass Spec project, Development of a Precision Medicine-based Diagnostic Tool for Membranous Nephropathy.
- LCMD sample prep for multiple research projects.

Nov 2021-Oct 2023 **Molecular Lab Scientist**
Arkana Laboratories 10810 Executive Center Dr #100, Little Rock, Arkansas
Molecular Department: Clinical/Research

- ApoL1 genotype assay using QuantStudio5 by Applied bio-system.
- SARS-Cov-2 RT-PCR assay using Qiaquant 96 plex by Qiagen.
- Develop and validate new assay for copy number variation for ApoL1 gene using Qiagen digital PCR.
- Participate in the validation of new assay for kidney transplant rejection using nanostring n counter prep-station and digital analyzer - project collaboration with CareDx.

- Perform ApoL1 genotype assay for Phase I AstraZeneca clinical trial to assess the safety, tolerability and pharmacokinetics of AZD2373.

June 2019- Nov 2021 Serology Research Scientist
Arkana Laboratories 10810 Executive Center Dr #100, Little Rock, Arkansas

- Discover new antigens in membranous nephropathy and develop serum-based assays for membranous lupus nephritis and membranous glomerulopathy.
- Participate in the validation of new membranous antigens classifier by protein G-pull down and laser capture microdissections.

June 2018- June 2019 Histology and Molecular Biology Testing personnel
Arkana Laboratories 10810 Executive Center Dr #100, Little Rock, Arkansas

- Perform routine histology, which includes specimen grossing, embedding, microtome, IF and IHC staining.
- Perform APOL1 genotyping assay using blood, FFPE, and Frozen tissue.

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

- Chemistry Analyzers operator: Global Easy RA, Siemens Clinitek, and Siemens V-Twin.
- ApoL1 genotyping.
- Covid Testing.
- Writing SOPs.

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.
- Protein G pull down.

Molecular Biology Experience

- DNA extraction from blood, FFPE, fresh frozen tissue, and buccal swab.
- RNA extraction from FFPE tissue.
- SNPs Genotyping.
- CNV assay.
- Western blotting.
- Gene expression assay by nCounter, NanoString.

RESEARCH EXPERIENCE

Research Projects

1. 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.
2. Discover new antigen and develop serum- based assays for membranous lupus nephritis. This will help to better characterize this renal disease and will lead to new clinical assay for non-invasive monitoring. This research project involved cell culture, western blotting, immunoprecipitations, LCMD, ELISA, and immunofluorescence assay (IFA).
3. Classifying membranous nephropathy by mass spectrometry. This research project involved purification of immune complexes from kidney biopsy tissue to support the mass spectrometry efforts to identify novel antigen types in MN patients.

RESEARCH INTERESTS

- Cell biology and Biotechnology.
- Cancer diagnosis and prevention.
- Kidney diseases.

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.
- Viia7 by Applied bio-system.
- Quant studio 5 by Thermofisher scientific.
- LCMD microscopy by Leica.
- Qiacuity one, 5 plex by Qiagen.

COMPUTER SKILLS

- Microsoft office, Words, PowerPoint, and Excel.

PROFESSIONAL HONORS AND AWARDS

- Student research exposition 3 rd place, UALR, 2012.
- Student research exposition 3 rd 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 Nawab Ali. 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 Gastrointesinal 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 and MSH2 in apoptosis in human colorectal carcinoma cell line. Journal of cell biology and biochemistry **2016**. PMID: 26728996.

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 International, **2020**

9. Tiffany Caza, **Samar Hassen**, Michael Kuperman, Shree Sharma, Zeljko Dvanajscak, John Arthur, Rick Edmondson, Aaron Storey, Christian Herzog, Daniel Kenan, Christopher Larsen. NCAM1: A Novel Autoantigen in Membranous Lupus Nephritis. Kidney international, **2021**

10. Tiffany N. Caza, **Samar I. Hassen**, Daniel Kenan, Aaron Storey, John Arthur, Christian Herzog, Rick Edmondson, Laurence Beck Jr. , Christopher P. Larsen. Transforming growth factor receptor beta 3 (TGFBR3)-associated membranous nephropathy. Kidney international, **2021**

11. Rebecca M. May , Clarissa Cassol , Andrew Hannoudi , Christopher P. Larsen , Edgar Lerma , Randy S. Haun , Juarez R. Braga , **Samar I. Hassen** , Jon Wilson , Christine VanBeek , Mahesha Vankalakunti , Lilli Barnum , Patrick D. Walker , T. David Bourne , Nidia C. Messias , Josephine M. Ambruzs , Christie L. Boils , Shree S. Sharma , L. Nicholas Cossey , Pravir V. Baxi , Matthew Palmer , Jonathan Zuckerman , Vighnesh Walavalkar, Anatoly Urisman, Alexander Gallan, Laith F. Al-Rabadi, Roger Rodby , Valerie Luyckx,, Gustavo Espino, Srivilliputtur Santhana-Krishnan, Brent Alper,, Son G. Lam, Ghadeer N. Hannoudi, Dwight Matthew, Mark Belz, Gary Singer, Srikanth Kunaparaju, Deborah Price, Saurabh Chawla, Chetana Rondla, Mazen A. Abdalla, Marcus L. Britton, Subir Paul, Uday Ranjit, Prasad Bichu, Sean R. Williamson, Yuvraj Sharma, Ariana Gaspert, Philipp Grosse, Ian Meyer, Brahm Vasudev, Mohamad El Kassem, Juan Carlos Q. Velez, and Tiffany N. Caza. A multi-center retrospective cohort study defines the spectrum of kidney pathology in Coronavirus Q2Q38 2019 Disease (COVID-19). Kidney international, **2021**.

12. Tiffany N. Caza, Aaron Storey, **Samar I. Hassen**, Christian Herzog, Rick Edmondson, John Arthur, Daniel J. Kenan, Christopher P. Larsen. Seven Novel Putative Antigens in Membranous Nephropathy and Membranous Lupus Nephritis Identified by Mass Spectrometry. Kidney international **2023**.

13. Hao Zhang , Randy S. Haun , Francois Collin , Clarissa Cassol , Johnathan O. H. Napier , Jon Wilson , Samar Hassen , Kerime Ararat , Christie Boils , Nidia Messias , Tiffany N. Caza , L. Nicholas Cossey , Shree Sharma , Josephine M. Ambruzs, Nikhil Agrawal , Grigoriy Shekhtman , Wenlan Tian , Titte Srinivas , Kunbin Qu , Robert N. Woodward , Christopher P. Larsen , Steven Stone , and Shana M. Coley. Development and Validation of a Multi-Class Model Defining Molecular Archetypes of Kidney Transplant Rejection: A Large Cohort Study of the Banff Human Organ Transplant Gene Expression Panel. Laboratory investigation, **2023**.

14. Laith F. Al-Rabadi, Aaron Storey, Christopher P. Larsen, **Samar I. Hassen**, Monica Patricia Revelo, Ravi Shankar Singh, Eszter Lazar-Molnar, Dharmendra Jain, Abdelrahman Ibrahim, Frank Darras, Rania Salam, Ala Al-Rabadi, Naruemon Wikan, Vanessa Redecke, Hans Haecker, Laurence H. Beck, Tiffany N. Caza. De novo membranous nephropathy in renal allografts is associated with FAT1. Kidney International Reports, **2025**.

15. Tiffany N. Caza, Brock A. Arivett, **Samar I. Hassen**, Laith F. Al-Rabadi, Suguru Takayama, Abdelrahman Ibrahim, Christopher P. Larsen, Dorin Bogdan Borza. Detection and Characterization of NELL1 Autoantibodies in NELL1 Positive Membranous Nephropathy. Kidney International **2025**.

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. Caza T, **Hassen S**, Herzog C, Storey A, Edmondson R, Arthur J, Kenan D, Larsen C. Minor antigens in membranous nephropathy identified by mass spectrometry. American Society of Nephrology annual scientific meeting, November **2022**.

7. Storey AJ**, Hassen S**, Herzog C, Arthur JM, Edmondson RD, Caza TN, Larsen CP. Classifying membranous nephropathy by mass spectrometry. American Society for Mass Spectrometry annual scientific meeting, June **2023**.

8. Tiffany Caza, **Samar Hassen**, Meryl Waldman, Nicole Andeen, Christopher Larsen. Membranous-like glomerulopathy with masked IgG kappa deposits: A clinicopathologic analysis of 247 patients. American Society of Nephrology annual scientific meeting, November **2023**.

9. Aaron J Storey , **Samar Hassen** , Christian Herzog , John M Arthur , Rick D Edmondson , Tiffany N Caza , Chris P Larsen. Classifying Membranous Nephropathy Using Mass Spectrometry. MSACL, **2024**.

10. Tiffany N. Caza, Brock A. Arivett, **Samar I. Hassen**, Christopher P. Larsen, Dorin Bogdan Borza. Detection and Characterization of NELL1 Autoantibodies in NELL1 Positive Membranous Nephropathy. American Society of Nephrology annual scientific meeting, October **2024**.

FUNDED GRANTS

1. Development of specific peptide reagents for serologic monitoring of Exostosin autoantibodies in membranous lupus nephritis. 1R43AR081720-01. 7/1/2022-6/30/2023. Chris Larsen, Tiffany Caza, **Samar Hassen**, Daniel Kenan.

2. Development of a Precision Medicine-based Diagnostic Tool for Membranous Nephropathy. 1R44DK130702-02. 9/15/2022 - 5/31/2025. Chris Larsen, Aaron Storey, Edmondson RD, Tiffany Caza, **Samar Hassen**, Daniel Kenan.