

Chowdhury S. Abdullah, Ph.D.

The University of Texas at Tyler, 3900 University Blvd, Tyler, TX 75799, USA

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EDUCATION

Doctor of Philosophy in Pharmaceutical Sciences

South Dakota State University

May 2016

Brookings, SD, USA

Master of Pharmacy in Clinical Pharmacy and Pharmacology

University of Dhaka

August 2012

Dhaka, Bangladesh

Bachelor of Pharmacy in Pharmaceutical Sciences (with Honours)

University of Dhaka

November 2009

Dhaka, Bangladesh

RESEARCH EXPERIENCE

Assistant Professor (Tenure Track)

Department of Pharmaceutical Sciences, The University of Texas at Tyler

October 2024 -

Tyler, TX, USA

- **Research Areas:** Obesity, cardiometabolic syndrome, diabetes, chemotherapy-associated cardiomyopathies, aging-related skeletal muscle pathophysiology, metabolic-associated fatty liver disease (MAFLD), macrophage biology in myocardial ischemia/reperfusion injury.
- I aim to establish a highly productive and externally funded laboratory at UT Tyler in the research areas of cellular metabolism, physiological exercise performance, and cardiovascular diseases.

Instructor - Research

Department of Pathology, LSU Health Sciences Center – Shreveport

July 2023 – September 2024

Shreveport, LA, USA

- **Research Areas:** Obesity, cardiometabolic syndrome, diabetes, chemotherapy-associated cardiomyopathies, aging-related skeletal muscle pathophysiology, metabolic-associated fatty liver disease (MAFLD), macrophage biology in myocardial ischemia/reperfusion injury.
- Worked on own hypotheses and data-driven independent research project to identify novel molecular mechanisms to activate mitochondrial fatty acid oxidation and regulate mitochondrial unfolded protein response to prevent lipid-overload-induced skeletal muscle defects and cardiac dysfunctions.
- Investigated novel mechanistic molecular effectors to identify macrophage mechanisms regulating macrophage functional plasticity.
- **Teaching:** I taught pathology courses to MD program medical and Ph.D. students, employing **interactive** and **team-based** learning strategies.
- **Teamwork & Leadership:** Mentored postdoctoral fellows, graduate students, and undergraduate students; planned, coordinated, and directed team-based experiments execution; maintained 20 genetic mice lines breeding; and served as lab manager.
- **Accomplishments:** Acquired **two intramural grants** from LSU Health - Shreveport, i.e., **Malcolm Feist Postdoctoral Fellow Transition Award** (\$120,000, 2023-2025); **Center for Cardiovascular Diseases and Sciences (CCDS) Grant-In-Aid** (\$40,000, 2024-2025).

Postdoctoral Fellow

Department of Pathology, LSU Health Sciences Center - Shreveport

May 2016 – June 2023

Shreveport, LA, USA

- **Research Areas:** Obesity, cardiometabolic syndrome, genetic mutation, drug abuse, chemotherapy-associated cardiomyopathies, aging-related skeletal muscle pathophysiology, metabolic-associated fatty liver disease (MAFLD), macrophage biology in myocardial ischemia/reperfusion injury.
- Taught graduate **Physiology** and **Pathology** courses and employed **interactive** and **team-based** learning strategies for students pursuing graduate degrees in **Allied Health Professions**.
- Determined novel molecular functions of Sigmar1 and Atg7 in regulating mitochondrial substrate metabolism, oxidative respiration, ultrastructure, dynamics, and mitophagy through **genetic**, **pharmacological**, **biochemical**, **histopathological**, and **immunological** approaches to prevent cardiovascular pathologies by utilizing *ex vivo*, *in vitro*, and *in vivo* disease models.

- *Teamwork & Leadership:* Mentored postdoctoral fellows, graduate students, and lab technicians; planned, coordinated, and directed team-based experiments execution; maintained 20 genetic mice lines breeding; and served as lab manager.
- *Accomplishments:* **Published 20 research articles**; developed, wrote, and acquired two postdoctoral fellowship grants (\$315,352, 2017-2021); awarded **two outstanding postdoctoral trainee awards** (2021, 2022); received four young investigator travel awards, selected for oral presentations at American Heart Association (2019) and American Physiology Society conferences (2021).

Graduate Research & Teaching Assistant

August 2012 – April 2016

Department of Pharmaceutical Sciences, South Dakota State University

Brookings, SD, USA

- *Research Areas:* T lymphocyte biology in Diabetic Cardiomyopathy
- Discovered inhibition of T lymphocyte activation and trafficking are cardioprotective in *in-vivo* diabetic cardiomyopathy through **pharmacological, genetic, and bioanalytical** approaches.
- Served as a **graduate teaching assistant** for **PharmD Pharmacology** courses.
- *Leadership as Department Lab Manager:* Trained Ph.D. students in frozen microtomy, microscopy, and Chemidoc imaging systems. Coordinated shared LC/MS/MS, spectrophotometers, microscopes, cryostat, cell culture incubators, biological safety cabinets, autoclaves, and Chemidoc imaging system use.
- *Accomplishments:* Published **three research articles (two as 1st author)**, Rho Chi Pharmaceutical Honor Society Award for academic excellence (2015), certificate of recognition for laboratory management excellence (2016), 1st place poster presentation awards (2013, 2014), AHA BCVS new investigator travel award (2015), and oral presentation at American Heart Association Scientific Sessions (2013).

Product Development Officer

January 2012 – July 2012

ACI Healthcare

Dhaka, Bangladesh

- Developed and validated physical and chemical analytical methods for quality control of finished pharmaceutical products according to BP and USP pharmacopeial standards in a cGMP, GLP, and GDP-compliant pharmaceutical manufacturing facility (now USFDA approved).
- Performed physical and chemical analysis for accelerated stability testing and real-time stability testing assays according to ICH guidelines.

TEACHING EXPERIENCE

Course Instructor

August 2024

LSU Health Sciences Center – Shreveport

Shreveport, LA, USA

- Program: **Doctor of Medicine (MD)**
- Course: Foundational Pathophysiology and Mechanisms of Disease, **MSII**
- Textbook: Robbins and Cotran Pathological Basis of Disease, 10th Edition
- Modules Taught: Pathogenesis of detailed integrated system-wide clinical fluid and hemodynamic disorders, including edema, hyperemia, hemorrhage, hemorrhagic disorders, thrombogenesis, embolism, thromboembolism, infarctions, ischemia, and shock.
- Developed learning objectives, prepared class lectures with clinical case-based examples, provided didactic lectures and conducted peer instruction-based active learning methods to a class of 130+ 2nd Year MD program medical students.

Course Instructor

August 2024

LSU Health Sciences Center – Shreveport

Shreveport, LA, USA

- Program: **Doctor of Philosophy**
- Course: PATH 210: Basic Pathology
- Textbook: Robbins and Cotran Pathological Basis of Disease, 10th Edition
- Modules Taught: Pathogenesis of detailed integrated system-wide clinical fluid and hemodynamic disorders, including edema, hyperemia, hemorrhage, hemorrhagic disorders, thrombogenesis, embolism, thromboembolism, infarctions, ischemia, and shock.
- Developed learning objectives, prepared class lectures with clinical case-based examples, and provided didactic lectures to Ph.D. students.

Course Instructor

LSU Health Sciences Center – Shreveport

May 2019 – Present

Shreveport, LA, USA

- Program: **Allied Health Profession degrees in Master of Physician Assistant Studies, Master of Occupational Therapy, Master of Public Health, and Doctor of Physical Therapy**
- Course: **Allied Health Physiology (Graduate Course)**
- Modules Teach: Body fluid homeostasis, Clinical abnormalities in fluid volume regulation, Edema formation in organ failure, Kidney & Nephron Anatomy, GFR regulation, Renin-Angiotensin in body fluid homeostasis, Urine formation, Renal tubular reabsorption, and secretion, Diuretics.
- Develop learning objectives, prepare class lectures, & exam questions, and provide didactic lectures to a class of 65+ Allied Health professional degree program students in an **integrated system-wide physiology** course.
- Lead follow-up **review class**, explain physiology concepts with clinical case-based scenarios and applications of the topics taught in the lecture to address students' questions, monitor students' engagement, and facilitate students' involvement in peer discussion.
- Overall positive rating as an instructor is over 90%.

Course Instructor

LSU Health Sciences Center – Shreveport

August 2016 – December 2020

Shreveport, LA, USA

- Program: **Master of Physician Assistant Studies**
- Course: **Allied Health Pathology (PYAS 6554) (Graduate Course)**
- Modules Taught: Pathogenesis of detailed integrated system-wide clinical fluid and hemodynamic disorders, including edema, hyperemia, hemorrhage, thrombogenesis, embolism, infarctions, ischemia, and shock.
- Developed learning objectives, prepared class lectures with clinical case-based examples, and provided didactic lectures to a class of 40+ Allied Health Professional degree program students each academic year.
- Conducted post-lecture review class with interactive question-and-answer sessions.
- Average overall positive rating as an instructor was over 90%.

Invited Lecturer

University of Saint Joseph

June 2021

West Hartford, CT, USA

- Program: **Doctor of Pharmacy**
- Lectured Topic: Culture and Health Beliefs in Pharmacy Practice (The Bangladesh Heritage)

Graduate Teaching Assistant

South Dakota State University

August 2012 – April 2016

Brookings, SD, USA

- Program: **Doctor of Pharmacy**
- Courses: PHA 321 Pharmacology, PHA 442 Pharmacology I & PHA 443 Pharmacology II
- Responsibilities: Exam papers printing, exam hall proctoring, addressing students' questions, exam papers evaluation and grading, grades uploading for a class of 60+ P1 and P2 students each academic semester.

RESEARCH GRANTS (INDEPENDENT RESEARCH PROJECTS)

2024-2025

CCDS Grant-In-Aid (\$40,000)

Relinquished

Role: Principal Investigator

Novel regulation of lipid metabolism in obesity

Center for Cardiovascular Diseases and Sciences

LSU Health Sciences Center-Shreveport, Shreveport, LA.

2023-2025

Malcolm Feist Postdoctoral Transition Award (\$120,000)

Relinquished

Role: Principal Investigator

Novel efferocytosis regulatory mechanism in macrophages during myocardial I/R injury

Center for Cardiovascular Diseases and Sciences

LSU Health Sciences Center-Shreveport, Shreveport, LA.

RESEARCH GRANTS (COMPLETED)

- 2020-2021 **American Heart Association Postdoctoral Fellowship** (\$135,352)
Role: Principal Investigator
Sigmar-1 receptor protects diabetic cardiomyopathy by activating adaptive endoplasmic reticulum stress pathway
American Heart Association, Dallas, TX.
- 2017-2019 **Malcolm Feist Postdoctoral Fellowship** (\$180,000)
Role: Principal Investigator
Sigmar1 protects obesity-induced cardiac dysfunction by activating adaptive ER stress response
Center for Cardiovascular Diseases and Sciences
LSU Health Sciences Center-Shreveport, Shreveport, LA.

AWARDS AND HONORS

- 2022 **Emeritus Professor D. Neil Granger Award** as Outstanding Postdoctoral Trainee, LSU Health Sciences Center-Shreveport, Shreveport, LA.
- 2021 **The Michael Bristow Investigator Travel Award**, The 40th International Society for Heart Research (ISHR)-North American Section Annual Conference, Denver, CO.
- 2021 **Outstanding Postdoctoral Award**, American Physiological Society, Cardiovascular Section, Experimental Biology Conference.
- 2019 **1st Place Poster Presentation Award**, Postdoctoral category, Research and Industry Day, LSU Health Sciences Center-Shreveport, Shreveport, LA.
- 2018 **BCVS Abstract Travel Award**, American Heart Association (AHA) Scientific Sessions, Chicago, IL.
- 2018 **BCVS New Investigator Travel Award**, AHA Council on Basic Cardiovascular Sciences (BCVS) Scientific Sessions, San Antonio, TX.
- 2018 **2nd Place Poster Presentation Award**, Graduate Research Day, LSU Health Sciences Center-Shreveport, Shreveport, LA.
- 2017 **Early Career Investigator Travel Award**, ISHR-North American Section Conference, New Orleans, LA.
- 2016 **Certificate of Recognition for Excellence** in Laboratory Instrumentation and Analytical Support, Department of Pharmaceutical Sciences, South Dakota State University, Brookings, SD.
- 2015 **BCVS Abstract Travel Award**, American Heart Association (AHA) Scientific Sessions, Orlando, FL.
- 2015 **National Pharmaceutical Rho Chi Honor Society Award for Outstanding Academic Achievements in Graduate Course Works**, South Dakota State University (SDSU), Brookings, SD.
- 2015 **1st Place Poster Presentation Award**, 24th Annual Pharmacy Research Presentations, SDSU, Brookings, SD.
- 2014 **1st Place Poster Presentation Award**, 23rd Annual Pharmacy Research Presentations, SDSU, Brookings, SD.

PUBLICATIONS

1. Das S, Finney AC, Anand SK, Rohilla S, Liu Y, Pandey N, Ghayeb A, Kumar D, Nunez K, Liu Z, Arias F, Zhao Y, Pearson-Gallion BH, McKinney MP, Richard KSE, Gomez-Vidal JA, **Abdullah CS**, ..., Rom O. Inhibition of hepatic oxalate overproduction ameliorates metabolic-dysfunction-associated steatohepatitis. *Nature Metabolism*. 2024; 6:1939-1962. PMID: 39333384.
 2. Aishwarya R, **Abdullah CS**, Remex NS, Bhuiyan MAN, Lu XH, Dhanesha N, Stokes KY, Orr AW, Kevil CG, Bhuiyan MS. Diastolic dysfunction in Alzheimer's disease model mice is associated with A β -amyloid aggregate formation and mitochondrial dysfunction. *Scientific Reports*. 2024; 14(1):16715. PMID:39030247.
 3. Remex NS, **Abdullah CS**, Aishwarya R, Kolluru GK, Traylor J, Bhuiyan MAN, Kevil CG, Orr AW, Rom O, Pattillo CB, Bhuiyan MS. Deletion of Sigmar1 leads to increased arterial stiffness and altered mitochondrial respiration resulting in vascular dysfunction. *Frontiers in Physiology*. 2024; 15:1386296. PMID:38742156.
 4. Remex NS*, **Abdullah CS***, Aishwarya R, Nitu S, Traylor J, Hartman B, King J, Bhuiyan MAN, Kevil CG, Orr AW, Bhuiyan MS. Sigmar1 null mice develops lung pathological changes associated with pulmonary fibrosis, inflammation, and altered surfactant proteins levels over aging. *Frontiers in Physiology*. 2023; 14:1118770. [*co-1st author with equal contribution] PMID:37051024.
 5. Aishwarya R, **Abdullah CS**, Remex NS, Nitu S, Hartman B, King J, Bhuiyan MAN, Rom O, Miriyala S, Panchatcharam M, Orr AW, Kevil CG, Bhuiyan MS. Pathological sequelae associated with skeletal muscle
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atrophy in G93A*SOD1 mouse model of amyotrophic lateral sclerosis. *Muscles*. 2023; 2(1):51-74.

6. **Abdullah CS**, Remex NS, Aishwarya R, Nitu S, Kolluru GK, Traylor J, Hartman B, King J, Bhuiyan MAN, Hall N, Murnane KS, Goeders NE, Kevil CG, Orr AW, Bhuiyan MS. Mitochondrial dysfunction and autophagy activation are associated with cardiomyopathy developed by extended methamphetamine self-administration in rats. *Redox Biology*. 2022; 58:102523. PMID: 36335762.
7. **Abdullah CS**, Aishwarya R, Alam S, Remex NS, Morshed M, Nitu S, Miriyala S, Panchatcharam M, Hartman B, King J, Bhuiyan MAN, Traylor J, Kevil CG, Orr AW, Bhuiyan MS. The molecular role of Sigmar1 in regulating mitochondrial function through mitochondrial localization in cardiomyocytes. *Mitochondrion*. 2022; 62:159-175. PMID: 34902622.
8. Aishwarya R*, **Abdullah CS***, Remex NS, Alam S, Morshed M, Nitu S, Hartman B, King J, Bhuiyan MAN, Orr AW, Kevil CG, Bhuiyan MS. Molecular characterization of skeletal muscle dysfunction in Sigmar1 knockout mice. *The American Journal of Pathology*. 2022; 192(1):160-177. [***Co-1st author with equal contribution**] PMID: 34710383.
9. Aishwarya R, **Abdullah CS**, Remex NS, Nitu S, Hartman B, King J, Bhuiyan MS. Visualizing subcellular localization of a protein in the heart using quantum dots-mediated immune-labeling followed by transmission electron microscopy. *Journal of Visualized Experiments*. 2022; 187. PMID: 36190289.
10. Kolluru GK, Glawe JD, Pardue S, Kasabali A, Alam S, Rajendran S, Cannon AL, **Abdullah CS**, Traylor JG, Shackelford RE, Woolard MS, Orr AW, Goeders NE, Dominic P, Bhuiyan MS, Kevil CG. Methamphetamine causes cardiovascular dysfunction via cystathionine gamma-lyase and hydrogen sulfide depletion. *Redox Biology*. 2022; 57:102480. PMID: 36167027.
11. Jorgensen AN, **Abdullah CS**, Bhuiyan MS, Watt M, Dominic P, Kolluru GK, Kevil CG, Nam HW. Neurogranin regulates calcium-dependent cardiac hypertrophy. *Experimental and Molecular Pathology*. 2022; 127:104815. PMID: 35870494.
12. **Abdullah CS**, Aishwarya R, Alam S, Morshed M, Remex NS, Nitu S, Kolluru GK, Traylor J, Miriyala S, Panchatcharam M, Hartman B, King J, Bhuiyan MAN, Chandran S, Woolard MD, Yu X, Goeders NE, Dominic P, Arnold CL, Stokes K, Kevil CG, Orr AW, Bhuiyan MS. Methamphetamine induces cardiomyopathy by Sigmar1 inhibition-dependent impairment of mitochondrial dynamics and function. *Communications Biology*. 2020; 3(1):682. PMID: 33203971.
13. **Abdullah CS**, Ray P, Alam S, Kale N, Aishwarya R, Morshed M, Dutta D, Hudziak C, Banerjee SK, Mallik S, Banerjee S, Bhuiyan MS, Quadir M. Chemical architecture of block copolymers differentially abrogate cardiotoxicity and maintain the anticancer efficacy of Doxorubicin. *Molecular Pharmaceutics*. 2020; 17(12):4676-4690. PMID: 33151075.
14. Alam S, **Abdullah CS**, Aishwarya R, Morshed M, Nitu SS, Miriyala S, Panchatcharam M, Kevil CG, Orr AW, Bhuiyan MS. Dysfunctional mitochondrial dynamic and oxidative phosphorylation precedes cardiac dysfunction in R120G- α B-Crystallin-induced Desmin-Related Cardiomyopathy. *Journal of the American Heart Association*. 2020; 9(23): e017195. PMID: 33208022.
15. Aishwarya R, Alam S, **Abdullah CS**, Morshed M, Nitu SS, Panchatcharam M, Miriyala S, Kevil CG, Bhuiyan MS. Pleiotropic effects of mdivi-1 in altering mitochondrial dynamics, respiration, and autophagy in cardiomyocytes. *Redox Biology*. 2020; 36:101660. PMID: 32750667.
16. Cherian VT, Alfaidi M, Jorgensen AN, Alam MA, **Abdullah CS**, Kolluru GK, Bhuiyan MS, Kevil CG, Orr AW, Nam HW. Neurogranin regulates eNOS function and endothelial activation. *Redox Biology*. 2020; 34:101487. PMID: 32173345.
17. **Abdullah CS**, Alam S, Aishwarya R, Miriyala S, Bhuiyan MAN, Panchatcharam M, Pattillo CB, Orr AW, Sadoshima J, Hill JA, Bhuiyan MS. Doxorubicin-induced cardiomyopathy associated with inhibition of autophagic degradation process and defects in mitochondrial respiration. *Scientific Reports*. 2019; 9(1): 2002. PMID: 30765730. **Top 100 downloaded articles in Cell and Molecular Biology in Scientific Reports (2019)**
18. **Abdullah CS**, Alam S, Aishwarya R, Miriyala S, Panchatcharam M, Bhuiyan MAN, Peretik JM, Orr AW, James J, Osinska H, Robbins J, Lorenz JN, Bhuiyan MS. Cardiac dysfunction in the Sigma 1 receptor knockout mouse associated with impaired mitochondrial dynamics and bioenergetics. *Journal of the American Heart Association*. 2018; 7(20): e009775. PMID: 30371279.
19. Alam S*, **Abdullah CS***, Aishwarya R, Miriyala S, Panchatcharam M, Peretik JM, Orr AW, James J, Robbins J, Bhuiyan MS. Aberrant mitochondrial fission is maladaptive in desmin mutation-induced cardiac proteotoxicity. *Journal of the American Heart Association*. 2018; 7:e009289. [***Co-1st author**] PMID: 29987122.
20. **Abdullah CS**, Jin ZQ. Targeted deletion of T cell S1P receptor 1 renders mouse heart vulnerable to fibrosis in normoglycemia but reduces myocardial fibrosis under hyperglycemia. *The FASEB Journal*. 2018; 32(10):5426-5435.

21. Alam S*, **Abdullah CS***, Aishwarya R, Orr AW, Traylor J, Miriyala S, Panchatcharam M, Pattillo CB, Bhuiyan MS. Sigmar1 regulates endoplasmic reticulum stress-induced C/EBP-homologous protein expression in cardiomyocytes. *Bioscience Reports*. 2017; 37(4). [***Co-1st author with equal contribution**] PMID: 28667101.
22. **Abdullah CS**, Li Z, Wang X, Jin ZQ. Depletion of T lymphocytes ameliorates cardiac fibrosis in streptozotocin-induced diabetic cardiomyopathy. *International Immunopharmacology*. 2016, 39:251-264. PMID: 27494688.
23. Li Z, **Abdullah CS**, Jin ZQ. Inhibition of protein kinase C- θ preserves cardiac function and reduces fibrosis in Streptozotocin-induced diabetic cardiomyopathy. *British Journal of Pharmacology*. 2014; 171:2913-2924. PMID: 24641494.
24. Haque MA, **Abdullah CS**, et al. Evaluation of anti-diarrheal and anti-diabetic activities of the stem, barks, and leaves of the plant *Vernonia cinerea* (Family: Asteraceae). *Journal of Applied Pharmaceutical Science*. 2013; 3(1):69-72. DOI: 10.7324/JAPS.2013.30113.
25. Haque MA, **Abdullah CS**, et al. Evaluation of the anti-oxidant and anti-cholinesterase activities of the stem, barks, and leaves of the plant *Vernonia cinerea* (Family: Asteraceae). *Journal of Applied Pharmaceutical Science*. 2012; 5:174-176. DOI: 10.7324/JAPS.2012.2543.

BOOK CHAPTER

1. **Abdullah CS**, Aishwarya R, Morshed M, Remex NS, Miriyala S, Panchatcharam M, Bhuiyan MS. (2022). Monitoring mitochondrial morphology and respiration in Doxorubicin-Induced Cardiomyopathy. In: Tomar, N. (eds) *Mitochondria. Methods in Molecular Biology*, Vol 2497. Humana, New York, NY. PMID: 35771444.

REVIEW ARTICLES

1. Alam S, **Abdullah CS**, Aishwarya R, Morshed M, Bhuiyan MS. Molecular perspectives of mitochondrial adaptations and their role in cardiac proteostasis. *Frontiers in Physiology*. 2020; 11:1054. PMID: 32982788.
2. Aishwarya R, **Abdullah CS**, Morshed M, Remex NS, Bhuiyan MS. Sigmar1's molecular, cellular, and biological functions in regulating cellular pathophysiology. *Frontiers in Physiology*. 2021; 12:705575. PMID: 34305655.

Ph.D. THESIS

Abdullah CS. Role of T Lymphocytes Trafficking in Diabetic Cardiomyopathy (2016). *Electronic Theses and Dissertations*. 965. <https://openprairie.sdstate.edu/etd/965>

PATENT APPLICATION PUBLICATION

Bhuiyan S, Kevil C, Orr AW, **Abdullah CS**, Aishwarya R. Therapeutics and methods of treatment of angiotensin-converting enzyme 2 associated conditions. December 9, 2021. US2021/0379016 A1.

LIST OF PUBLICATIONS

<https://www.ncbi.nlm.nih.gov/myncbi/chowdhury.abdullah.1/bibliography/public/>
<https://scholar.google.com/citations?user=d2J4XFEAAAJ&hl=en>

NATIONAL ORAL RESEARCH PRESENTATIONS

1. *Sigmar1's subcellular localization and function in the heart*. American Physiology Society Cardiovascular Section Session, Experimental Biology Conference 2021.
2. *Methamphetamine-induced Cardiomyopathy Associated With Mitochondrial Dysfunction, Cardiac Fibrosis, and Hypertrophy*. Aging and Cardiovascular Risk session at American Heart Association Basic Cardiovascular Sciences Scientific Session 2019, Boston, MA.
3. *Depletion of T Lymphocytes Exerts Cardioprotection and Antifibrotic Effect in Streptozotocin-Induced Type 1 Diabetic Mice*. Fibroblast Modulation in Cardiac Remodeling session at American Heart Association Scientific Sessions 2013, Dallas, TX.

1. **Abdullah CS**, Li Z, Jin ZQ. Depletion of T Lymphocytes Exerts Cardioprotection and Antifibrotic Effect in Streptozotocin-Induced Type 1 Diabetic Mice. *Circulation*. 2013; 128(suppl 22): A19116. **Oral Presentation, Session: Fibroblast Modulation in Cardiac Remodeling**, American Heart Association Scientific Sessions, 2013, Dallas, TX.
2. **Abdullah CS**, Jin ZQ. Fingolimod exacerbates cardiac fibrosis and myocardial dysfunction in diabetic Rag-1-deficient mice. *Diabetes*. 2015; 64: A127-A128. American Diabetes Association Scientific Sessions, 2015, Boston, MA.
3. **Abdullah CS**, Wang X, Jin ZQ. Genetic Depletion of T cell S1P Receptor 1 Exhibits Improved Cardiac Function and Less Fibrosis in Streptozotocin-Induced Type 1 Diabetic Mice. *The FASEB Journal*. 2015; 29(suppl 1):942.10. Experimental Biology Meeting, 2015, Boston, MA.
4. **Abdullah CS**, Jin ZQ. Reconstitution of CD4 T Cells Causes Cardiac Fibrosis and Myocardial Dysfunction in T Cell Specific S1P Receptor 1 Deficient Diabetic Mice. *Circulation*. 2015; 132(suppl 3): A16615. **BCVS Abstract Travel Grant**, American Heart Association Scientific Sessions, 2015, Orlando, FL.
5. **Abdullah CS et al.** Molecular function of Sigma-1 receptor in obesity-induced metabolic dysfunction. *Journal of Molecular and Cellular Cardiology*. 2017; 112:149. **Early Career Investigator Travel Grant**, International Society of Heart Research – North American Section Meeting, 2017, New Orleans, LA.
6. **Abdullah CS et al.** Loss of Sigmar1 Leads to Impaired Mitochondrial Respiration, Altered Mitochondrial Dynamics and Development of Cardiac Contractile Dysfunction. *Circulation Research*. 2018; 123(suppl 1): A406. **BCVS New Investigator Travel Award**, AHA BCVS Scientific Sessions, 2018, San Antonio, TX.
7. **Abdullah CS et al.** Autophagy Impairment is Associated With Defects in Mitochondrial Bioenergetics in Doxorubicin Cardiomyopathy. *Circulation Research*. 2018; 123(suppl 1): A273. AHA BCVS Scientific Sessions, 2018, San Antonio, TX.
8. **Abdullah CS et al.** Cardiomyocyte Specific Atg7 Overexpression Preserves Cardiac Functional Decline and Mitochondrial Dysfunction in Acute Doxorubicin-Induced Cardiotoxicity. *Circulation*. 2018; 138(suppl 1): A16529. **BCVS Abstract Travel Grant, AHA Scientific Sessions, 2018, Chicago, IL.**
9. **Abdullah CS et al.** Atg7-dependent activation of mitochondrial autophagy in cardiomyocytes. *Circulation Research*. 2019; 125(suppl): A160. AHA BCVS Scientific Sessions, 2019, Boston, MA.
10. **Abdullah CS et al.** Methamphetamine-induced Cardiomyopathy Associated With Mitochondrial Dysfunction, Cardiac Fibrosis, and Hypertrophy. *Circulation Research*. 2019; 125(suppl 1):A120-A120. **Oral Presentation, Session: Aging and Cardiovascular Risk, BCVS Scientific Sessions, 2019, Boston, MA.** This research was widely circulated in:
 - a. News Title: **How Does Meth Trigger Heart Disease? New Research Offers Clues**; U.S. News; Online Link: https://www.usnews.com/news/health-news/articles/2019-08-01/how-does-meth-trigger-heart-disease-new-research-offers-clues?src=usn_fb&fbclid=IwAR37ptmm4eTZ2EwFtnVn65fRj6lxpb6zaOAMlrxDFQy92rQThH01HeimJM
 - b. News Title: **Autopsies reveal how meth hurts the heart**; EurekAlert; Online Link: https://www.eurekalert.org/pub_releases/2019-08/aha-arh072419.php?fbclid=IwAR1FWHXX5sc3hspE2hzOsFE_NAIsBEXkedtxlZ08sifEaerjx9ofRYqxMI#.XUpNO-U7txc.facebook
 - c. News Title: **Meth triggers buildup of collagen in heart muscle**; HealthDay News; Online Link: https://www.upi.com/Health_News/2019/08/01/Meth-triggers-buildup-of-collagen-in-heart-muscle/2391564682479/?spt=su
 - d. News Title: **How meth use causes irreversible damage to the heart**; Earth.Com; Online Link: https://www.earth.com/news/meth-damages-heart/?fbclid=IwAR3Dw4TILh_Aloe2Thabv8LajttYRzyyGro0JHvQYFxp12R_agE9LT_H_o#.XUSWW-dlgZI.facebook
11. **Abdullah CS et al.** Sigmar1's subcellular localization and function in the heart. *The FASEB Journal*. 2021; 35. **Oral Presentation**, Experimental Biology Meeting, 2021.
12. **Abdullah CS et al.** Mitochondrial membrane protein Sigmar1 regulates mitochondrial ultrastructure and respiratory functions in the heart. *Circulation Research*. 2022; 131(Suppl_1): AP3040. AHA BCVS Scientific Sessions, 2019, Chicago, IL.

1. Journal of Cardiovascular Pharmacology (Impact Factor: 2.094) – 23 articles
2. Journal of the American Heart Association (Impact Factor: 5.501) – 13 articles
3. Circulation (Impact Factor: 23.6) – 8 articles
4. Journal of Pharmacological Sciences (Impact Factor: 3.226) – 4 articles
5. Circulation: Heart Failure (Impact Factor: 6.033) – 2 articles
6. Redox Biology (Impact Factor: 11.8) – 1 article
7. Arteriosclerosis, Thrombosis, and Vascular Biology (Impact Factor: 8.311) – 1 article
8. Circulation: Cardiovascular Imaging (Impact Factor: 5.691) – 1 article
9. Biomedicine and Pharmacotherapy (Impact Factor: 6.529) – 1 article

GRANT REVIEW ACTIVITY

2020-2021 Served as Peer Reviewer in American Heart Association Basic Science Predoctoral and Postdoctoral Fellowships grant review

POSTER PRESENTATION JUDGE

2024 Judge for Predoctoral and Postdoctoral Trainees Poster Presentation, 3rd Annual Malcolm Feist Cardiovascular Research Symposium, LSU Health Sciences Center – Shreveport, Shreveport, LA.

RESEARCH SKILLS

Pre-clinical *in vivo* Studies: *Progressive 11+ years of experience*

- Intravenous (IV), Retroorbital (RO), Intraperitoneal (IP), and Subcutaneous (SC) injections into mice
- Blood collection through eye bleeding, tail vein, and terminal cardiac puncture
- Physiologic metabolic tests, i.e., glucose, pyruvate, alanine, glucagon, and insulin tolerance tests in mice
- Exercise tolerance tests in mice on **OxyletPro** treadmill
- Mice grip strength test on **Chatillon force** sensor to measure exercise endurance
- Mice survival surgery to induce myocardial ischemia/reperfusion (I/R) injury

Institutional Animal Care and Use Committee (IACUC): *Progressive 11+ years of experience*

- 10+ years of experience in conducting research according to approved IACUC protocols
- Proficient in developing and writing IACUC protocols to initiate new research projects

Mitochondrial Biology: *Progressive 7+ years of experience*

- Mitochondrial morphometric analysis in electron microscope images
- Respiratory complex I, II, III, and IV, citrate synthase and pyruvate dehydrogenase activity assays
- Blue Native-PAGE electrophoresis to determine mitochondrial respiratory supercomplexes stability and stoichiometry

Mitochondrial Respiration Assays: *Progressive 5+ years of experience*

- Mitochondrial bioenergetic stress test on primary cardiomyocytes, endothelial cells, and isolated mitochondria from heart, muscle, brain, and liver on **Agilent Seahorse XFe24** extracellular flux analyzer
- High-resolution mitochondrial respirometry assays on aortic rings, primary cardiomyocytes, isolated mitochondria from the heart, brain, and liver using **Oroboros-O2K respirometer**

Cardiovascular Echocardiography: *Progressive 7+ years of experience*

- Non-invasive transthoracic echocardiography using **Vevo 3100**
- B-mode, M-mode, tissue, and pulse-wave Doppler ultrasound imaging of heart diastolic and systolic indices
- Cardiac global synchronicity and strain analysis using B-mode long-axis recordings
- Pulsed wave velocity measurement on the abdominal aorta to assess arterial stiffness
- Echo image analysis in **VevoLAB**

Two-dimensional (2D) Primary Cardiomyocytes Culture and Experiments: *Progressive 7+ years of experience*

- Isolation and culture of primary neonatal rat ventricular cardiomyocytes (NRVMs)
- Real-time mitochondrial bioenergetics and respirometry studies in NRVMs using Agilent Seahorse & Oroboros as functional end-point of cardiotoxic lipid overload, chemotherapy, psychostimulants, and genetic mutations
- Cell viability index measurement using LDH release assay
- Primary adult rat and mice ventricular cardiomyocytes isolation, multiplex immunofluorescence staining & imaging

Microscopy: *Progressive 11+ years of experience*

- **Brightfield microscopy** imaging using **Leica EZ4, Zeiss Axio Imager A1, Olympus BX40** microscopes
- **Fluorescence super-resolution microscopy** using **Nikon A1R** and **Leica TCS SP5** confocal microscopes

Quantitative Image Analysis: *Progressive 11+ years of experience*

- RGB thresholding-based collagen/fibrotic area measurement, myofibers cross-sectional and mitochondrial areas measurement, mitochondrial network deconvolution, fluorescent intensity measurement, cell/nucleus counting in **NIH ImageJ**
- Semi-automated pH-sensitive GFP-LC3, tf-LC3, mito-keima labeled autophagosomes, autolysosomes and mitophagy counting, IHC-DAB positive staining intensity measurement, mitochondrial diameter, length, and aspect ratio measurement in **Nikon NIS Elements**
- Mander's and Pearson's Colocalization coefficient measurement between fluorochromes in **OXFORD Imaris**

Histopathology: *Progressive 10+ years of experience*

- Human (heart, liver, lungs), mouse (brain, heart, liver, lungs, kidney, spleen, pancreas, WAT, BAT, diaphragm, quadriceps, gastrocnemius, soleus, EDL, tibialis anterior), and rat (brain, heart, liver, lungs, kidney, spleen, pancreas, WAT, BAT, diaphragm, quadriceps, gastrocnemius, soleus, EDL, tibialis anterior) necropsy, organs perfusion fixation, **dissection**, tissues isolation, processing using automated **Epredia STP 120 Spin** Tissue Processor and paraffin embedding on **Tissue-Tek Paraffin embedding station**
- Paraffin-embedded tissue sections cutting and slide preparation on **Leica RM2255 microtome**
- Frozen tissue sections cutting and slide preparation using **Leica CM1850 cryostat**

Histochemistry: *Progressive 10+ years of experience*

- H&E, Masson's Trichrome, Picrosirius Red Staining, Oil Red O, and Wheat Germ Agglutinin (WGA) staining

Immunohistochemistry (IHC) & Immunocytochemistry (ICC): *Progressive 11+ years of experience*

- IHC-DAB staining
- Multiplex immunofluorescence (IF) staining on tissue sections and cells
- Multiplex IF (mosaic staining) to detect myofiber types in skeletal muscles
- Oligonucleotides-based specific protein-protein interactions detection using **In situ Proximity Ligation Assay**

Intracellular Organelle Staining & Imaging: *Progressive 5+ years of experience*

- Mitochondria, ER, and lysosomes staining using MitoTracker Red CMXRos, MitoTracker Green, ER-Tracker Blue-White DPX, and LysoTracker Deep Red in live cells and imaging in confocal microscope

Live Cells Imaging: *1 year of experience*

- Ionomycin-induced calcium release imaging in live cells using **Nikon** fluorescence microscope

Macrophages Biology: *Progressive 4+ years of experience*

- **Isolation, culture, and differentiation of primary bone marrow-derived macrophages**
- Flow cytometry (CD11b, F4/80, CD68, MerTK, CD206) to characterize primary macrophages phenotypes
- Macrophages M1 (LPS+IFN- γ) and M2 (IL-4) polarization assays and biochemical characterization
- pHrodo Green Zymosan labeled **phagosomes maturation** assay in macrophages
- PKH26 and PKH67-labeled apoptotic Jurkat cells continual efferocytosis assay in primary macrophages

Flow Cytometry: *3 years of experience*

- Immune cell phenotyping through constructing multi-panel fluorophores in splenocytes and blood using **BD FACSCalibur** flow cytometer coupled with CellQuest Pro software

LC/MS/MS: *3 years of experience*

- Experienced in developing and validating **HPLC protocol** to detect and quantify chemical substances
- Measured bioactive lipid species in serum using Agilent 1100 series HPLC coupled with Finnigan TSQ Quantum Ultra triple quadrupole mass spectrometer

Biochemical Assays: *Progressive 10+ years of experience*

- SDS-PAGE using **Bio-Rad** gel system on human, mouse, and rat organ samples
- SYBR Green and TaqMan probe-based mRNA expression quantitation using Bio-Rad CFX96 Real-Time PCRs
- Blood biochemical assays, i.e., Cholesterol, CE, Triglycerides, AST, ALT, and free fatty acids

Molecular Techniques: *Progressive 6+ years of experience*

- Adeno-associated virus (AAV) vector-mediated gene (mito-Keima, PCSK9) delivery in mice
- *E. coli* transformation, expression plasmid expansion, and purification
- Plasmid, adenovirus and siRNA targeted gene gain-of-function and loss-of-function studies in primary cardiomyocytes

Primary Cells Isolation and Culture: *Progressive 6+ years of experience*

- Neonatal rat cardiac ventricular cardiomyocytes
- Adult rat and mice cardiac ventricular cardiomyocytes
- Mice bone marrow-derived macrophage differentiation and culture
- Hepatocyte isolation using Miltenyi Biotech gentleMACS dissociator

Mammalian Cell Culture: *Progressive 6+ years of experience*

- M1 and M2 polarization and continual efferocytosis in macrophages
- Genetic manipulations in HEK293T cells
- Differentiation assay in C2C12 Cells
- UV-irradiated apoptosis induction in Jurkat Clone E6-1 cells

Data Analysis: *Progressive 6+ years of experience*

- Statistical analysis and graph preparation on **GraphPad Prism** and **Kyplot**
- Experienced in protocols, manuscripts, and grants writing using citation manager **EndNote**

RNA-Seq and Metabolomics Data Analysis: *Progressive 2+ years of experience*

- DEGs analysis and visualization of RNA-sequencing datasets using VolcanoR, Metascape
- Metabolomics data analysis and KEGG pathway enrichment analysis using MetaboAnalyst

Lab Managerial Experience: *Progressive 6+ years of experience*

- Lab reagents and supplies inventory record and maintenance, reagents and supplies ordering and procurement serves as liaison with the accounting department
- Genetic mice lines (about 20) breeding colony management
- Served as department instrument use and maintenance manager during Ph.D.

PROFESSIONAL MEMBERSHIPS

2013-Present	Professional Member, American Heart Association (AHA)
2017-2021	Member, International Society for Heart Research (ISHR)-NAS
2021-2022	Member, American Physiological Society

RESEARCH TRAINEES

TRAINEE NAME	ACADEMIC LEVEL/DESIGNATION	TECHNIQUES TRAINED
Shafiul Alam, Ph.D. 2016-2020	Postdoctoral Fellow	● Mice handling and IP injection ● Mice whole body formalin perfusion fixation, tissue processing, paraffin embedding, and sectioning ● Cryo-sectioning ● Mitochondrial respirometry on Oroboros O2K Chamber ● Histology, IHC & immunofluorescence staining ● Stereo, bright field & confocal microscopy
Mahboob Morshed, Ph.D. 2019-2021	Postdoctoral Fellow	● Mice handling and IP injection ● Mice whole-body formalin perfusion fixation, tissue processing, paraffin embedding, and sectioning ● Cryo-sectioning ● Mice euthanize, tissue dissection, and organ harvesting ● Mitochondria isolation ● Histology, IHC & immunofluorescence staining ● Stereo, bright filed & confocal microscopy

TRAINEE NAME	ACADEMIC LEVEL/DESIGNATION	TECHNIQUES TRAINED
Richa Aishwarya, Ph.D. 2016-Present	Ph.D. Student/Postdoctoral Fellow	• Mice handling, IP, SC and IV injection • Formalin perfusion fixation, tissue processing, paraffin embedding and sectioning • Cryo-sectioning • Western blotting • qPCR • Histology, IHC, Immunofluorescence staining • Microscopy • Mitochondrial respirometry on Oroboros O2K Chamber • GTT and ITT assays on mice • Mice euthanization, tissue dissections and mitochondria isolation mice • Microscopy image analysis on ImageJ, Imaris and NIS Elements • Echo ultrasound image analysis in VevoLab
Naznin Sultana Remex 2020-Present	Ph.D. Student	• Mice handling and IP injection • Mice whole body formalin perfusion fixation, tissue processing, paraffin embedding and sectioning • Western blotting • qPCR • Histology staining • IHC & IF staining • Bright field microscopy • Mitochondrial respirometry on Oroboros O2K Chamber • GTT and ITT assays on mice • Mice euthanize, tissue dissections, and mitochondria isolation • Echo image analysis in VevoLab
Ashton Jorgensen 2020	Ph.D. Student (from collaborator Dr. Hugh Nam's Lab)	• Mice whole-body formalin perfusion fixation, heart tissue processing, and stereomicroscopy • Trichrome, Sirius Red, and WGA staining on heart sections • Image analysis on NIH ImageJ
Cyrine Ben Dhou 2022	Postdoc (from collaborator Dr. A. Wayne Orr's Lab)	• Western blotting
Mallory Von Lotten 2019	Undergraduate Student	• Western blotting • Cell culture
Shakera Ramisha 2021	Undergraduate Student	• Western blotting • Mice tail snips digestion to extract genomic DNA, PCR, and agarose gel electrophoresis
Khubaib Islam 2021	Undergraduate Student	• Western blotting
Sadia Nitu 2019-2023	Lab Tech	• Western blotting • Mice tail snips digestion to extract genomic DNA, PCR, and agarose gel electrophoresis • Cell culture
Oluwakemi Igiehon 2023	Ph.D. student (from collaborator Dr. Matthew Woolard's Lab)	• Immunofluorescence staining • Fluorescence image analysis for mitochondrial network using NIH ImageJ and Nikon NIS Elements software
Christian Cordero-Marin 2023	Undergraduate Student	• Data statistical analysis and visualization
David Durotoye 2024	Undergraduate Student	• Macrophage culture • mRNA isolation, qPCR, and data analysis • Atherosclerosis research • Poster preparation and presentation