**UNIVERSITY OF ALABAMA AT BIRMINGHAM**

**SCHOOL OF MEDICINE FACULTY**

**PERSONAL INFORMATION**

Name: Shama Ahmad, Ph.D.

Citizenship: USA

Foreign Language(s): Hindi and Urdu

Home Address: 5179 Sapphire Ridge, Hoover, AL

Cell Phone: (303) 883-0233

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**RANK/TITLE Associate Professor**

Department: Department of Anesthesiology and Perioperative Medicine

University of Alabama at Birmingham

Business Address: 901 19th St. South, BMR II, 322

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**EDUCATION:**

***Institution* *Year* *Degree***

Lucknow University 1988 M.S.

Lucknow, India Biochemistry

Institute of Biotechnology, A.M. 1992 M.Phil.

University, Aligarh, India (Biotechnology)

Institute of Biotechnology, A.M. 1994 Ph.D.

University, Aligarh, India (Biotechnology)

**POSTDOCTORAL TRAINING:**

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***Institution Year Position***

National Jewish Health, Denver, CO. 1998–2005 Research Associate

J.N. Medical College, A.M. University, 1995–1995 Research Associate

Aligarh, India.

**HOSPITAL AND OTHER (NON-ACADEMIC) APPOINTMENTS:**

***Year Rank/Title Institution***

11/25/14 - Present Scientist Gregory Fleming James Fleming Cystic Fibrosis

Research Center, University of Alabama at

Birmingham, Birmingham AL.

03/10/16 - Present Faculty Graduate School, University of Alabama at Birmingham,

Birmingham AL.

**ACADEMIC POSITIONS**

***Year Rank/Title Institution***

10/01/14–Present Associate Professor Dept. of Anesthesiology & Perioperative Medicine, University of Alabama at Birmingham, Birmingham, AL

06/01/12–09/30/14 Assistant Professor Dept. of Pediatrics, University of Colorado,

Denver, CO, USA.

10/01/13–09/30/14 Problem based learning School of Medicine, University of Sub Facilitator Colorado, Denver, CO, USA.

04/15/07–05/31/12 Assistant Professor Dept. of Pediatrics, National Jewish Health

Denver, CO, USA.

04/15/05–04/14/07 Instructor Dept. of Pediatrics, National Jewish Health

Denver, CO, USA.

08/01/98–04/14/05 Research Associate Dept. of Pediatrics, National Jewish Health,

Denver, CO, USA.

11/17/95–12/08/97 Lecturer Dept. of Biochemistry, Faculty of Life Sciences,

A.M. University, Aligarh, India

10/05/95–11/16/95 Research Associate Dept. of Biochemistry, Faculty of Medicine, J.N.

Medical College, A.M. University, Aligarh, India.

**AWARDS/HONORS:**

1. K12 Scholar, Colorado Clinical and Translational Science Institute, University of Denver, Denver, CO. USA, 2008–2011.
2. Robert J Suslow Fellow at National Jewish Health, Denver CO. USA, 2000–2001.
3. Senior Research Fellow of University Grants Commission of India at Institute of Biotechnology, A.M. University, Aligarh, India, 1991–1995.
4. Junior Research Fellow of University Grants Commission of India at Institute of Biotechnology, A. M. University, Aligarh, India. 1989–1991
5. Session Chair: (April 2009): “Understanding conflicts of interest” Speaker: Ann Adams, Northwestern University ACRT Annual conference held at Washington D.C.
6. Session Chair: (March 2018): Session Title: Respiratory Toxicology: *In Vitro* Studies  
   Session Date: Monday, March 12, 2018, Society of Toxicology annual meeting held at San Antonio.
7. Session Chair: (December 2018): Technical Session III , International Conference on Future Diagnostic, Therapeutic and Theranostics Modalities held at the Interdisciplinary Biotechnology Unit, Aligarh University, Aligarh India.
8. Session Chair: (May 2019): Mini Symposium entitled “Chemical threats and injury: mechanisms and treatment” at the annual meeting of American thoracic Society held in Dallas.

**PROFESSIONAL AFFILIATIONS/SOCIETIES:**

Member, Society of Toxicology, USA

Member, Society of Clinical and Translational Science, USA

Member, American Physiological Society, USA

Member, Society of Free Radical Biology and Medicine, USA

Member, American Thoracic Society, USA

Member, American Heart Association, USA

Member, Advisory Group: NIEHS, National Toxicology Program (NTP), National Institute of Health.

**PEER REVIEWER GROUP (S)/GRANT STUDY SECTION(S)**

2020 Project Review, National Toxicology Program (NTP), NIEHS.

2020 Grant Review, Univ. of Lexington at Kentucky, P30 CIEHS, NIEHS.

2019 Grant Review, NIH/NIAID U19 study section

2019 T32 Grant Review, UAB Pathology Department

2017 Grant Review, Pre-ALI panel, CDMRP, DOD.

2017 Grant Review, NIH, SBIR

2016 Grant Review, NIH, SBIR

2016 Grant Review, Kentucky Science and Engineering Foundation (KSEF)

2013 Grant Review, NIH, CCTSI Kl2

2013 Grant Review, Romanian National Council for Scientific Research

2012 Grant Review, Romanian National Council for Scientific Research

2011 Abstract review, Society of Free Radical Biology and Medicine meeting 2011

2010 Junior Awards Committee, Society of Free Radical Biology and Medicine 2010

2010 Abstract review, Society of Free Radical Biology and Medicine meeting 2010

2009 Scholar subcommittee for planning of 2009 ACRT/CTSA annual meeting held at Washington D.C.

2009 Abstract review, Society of Free Radical Biology and Medicine meeting 2009

2008 Abstract review, Society of Free Radical Biology and Medicine meeting 2008

**PROFESSIONAL/UNIVERSITY ACTIVITIES**

* Co-Chair- Terrorism and Inhalation Disaster (TID) Section, American Thoracic Society (ATS).
* Program Committee delegate, EOPH/TID, American Thoracic Society (ATS), USA.
* Nominating Committee member- Terrorism and Inhalation Disaster (TID), ATS, USA
* Faculty Candidate Selection Committee, (2010), Department of Pediatrics, National Jewish Health, Denver, CO.
* Librarian Candidates Selection Committee (2015), University of Alabama at Birmingham, Birmingham, AL.
* RACD Candidates Selection Committee (2016), Department of Anesthesiology and Perioperative Medicine, University of Alabama at Birmingham, Birmingham, AL.
* Faculty Candidates Selection Committee (2017), Department of Anesthesiology and Perioperative Medicine, University of Alabama at Birmingham, AL.
* Faculty Candidates Selection Committee (2019), Department of Anesthesiology and Perioperative Medicine, University of Alabama at Birmingham, AL.
* 2018- Present Host Summer Science Institute. Center for Community Outreach Development

(CORD) *Mentored*: Yekia Simpson (2018) and Jasmine Morgan (2019).

* Scientific Judge in the Postdoctoral Research Day poster presentation held at the University of Colorado Denver on March 2, 2012.
* Scientific Judge in the MSA Capstone poster presentation of Medical Student Graduates

held at the University of Colorado Denver on March 6, 2014.

* Judge in Graduate Student Research Exchange poster competition, October 29, 2015
* Judge in Medical Student Research day poster presentation, November 13, 2017.
* Judge at the Graduate Biomedical Sciences symposia, August 2019
* Research mentor for students, fellows and faculty (Listed below in the teaching section).

**Mentoring activities:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Trainee** | **Training Period** | **Position** | **Project(s)** | **Current position** |
| **Present** |  |  |  |  |
| Juan Xavier Masjoan-Juncos MD | 2017-present | Post-doctoral Fellow | Inhaled toxic gas-induced cardiopulmonary injury |  |
| Shazia Shakil MD | 2018-present | Research Specialist | Inhaled toxic gas-induced cardiopulmonary injury |  |
| Shajer Manzoor, PhD | 2018- | Postdoctoral fellow | Chemical-induced lung injury |  |
| Nithya Mariappan, PhD | 2015- | Postdoctoral fellow | Chemical-induced lung injury |  |
| Iram Zafar, MS | 2014- | Research Associate | Chemical-induced lung injury |  |
| Aamir Ahmad | 2019- | Research Associate | Chemical-induced lung injury | Faculty, Hammad Foundation Qatar |
| **Past** |  |  |  |  |
| Chih-Chang Wei, PhD | 2017-2020 | Research Associate | Chemical-induced lung injury | Scientist, |
| Mudit Vaid, PhD | 2016-2018 | Postdoctoral fellow | Chemical-induced lung injury | Scientist, |
| Maroof Husain, PhD | 2014- | Instructor | Chemical-induced lung injury | Research Associate, UAB |
| Ruaa Aishah, BS | 2017-2019 | Undergrad Student, UAB | General lab assays | Teaching staff |
| Praveen Kumar Dubey, PhD. | 2016-2017 | Postdoctoral fellow | Chemical-induced lung injury | Postdoctoral fellow, UAB |
| Ashley Turner, MS | 2018-2019 | Graduate Student |  | Postdoctoral fellow, UAB |
| Duah Aishah, BS | 2017-2019 | Undergrad Student, UAB | Chemical-induced lung injury | Undergrad Student, UAB |
| Iprar Bilbeisi, BS | 2019-2020 | Undergrad Student, UAB | General lab assays | Undergrad Student, UAB |
| Menet ElBardawhi | 2017-2018 | Undergrad Student, UAB | General lab assays | Pharmacist |
| Ahmed Zaky MD | 2015-2019 | Faculty | In vivo Cardiotoxicity | Professor |
| Svetlana Komarova | 2015-2016 | Research Assistant | Chemical-induced lung injury | Lab Manager |
| Hina Kausar | 2014-2015 | Research Assistant | Chemical-induced lung injury | Researcher |
| Raymond Rancourt, PhD | 2006-2011 | Postdoctoral fellow | Oxidative stress and pulmonary disease | Asst. Professor, Rutgers University. |
| Mihalis Panagiotidis, PhD | 1999-2004 | Graduate Student | Epithelial Injury by Cigarette Smoke: Sulfur Metabolism | Professor of Health and Nutrition, Heriot-Watt University, Edinburgh |
| Jenai Kailey BS | 2010-2011 | Lab Researcher |  | Professional Research Assistant, UCD |
| Tara Hendry-Hofer MS | 2007-2014 | Senior Professional Research Associate |  | Lab Manager and Registered Nurse at Univ. of Colorado Hospital |
| Abhilasha Jain MS | 2007-2012 | Lab Researcher | Airway epithelial progenitor cells | Lab Manager |

**EDITORIAL BOARD MEMBERSHIPS:**

1. Academic Editor, *PLoS ONE*
2. Special Editor, *PLoS ONE* Stem cells Special issue 2019.
3. Associate Scientific Advisor, *Science Translational Medicine*
4. Editorial Board, *Cardiovascular Regenerative Medicine*
5. Editorial Board, *The Open Toxicology Journal*
6. Editorial Board, *International Journal of Pediatrics*
7. Editorial Board, *ISRN Pulmonology*
8. Guest Editor, Special Issue, *Stem Cell International* “Role of Stem Cells in Aberrant Airway Epithelial Repair after Acute Injury and Pathogenesis of Lung Diseases.”

**Ad hoc reviewer:** Am J Respir. Crit. Care Med; Am J Respir. Cell Mol. Biol., Am J Physiol. Lung Cell Mol. Physiol., Int. J of Biochem. Cell Biol., Am J Epidemiol., BMC Cancer; Biochim. Biophys. Acta; PloS One; Exp. Parasitol.; Int. J Food Sci. and Technol.; Process Biochem.; Med. Sci. Monit.; Immunol. Endocr. Metab. Agents Med Chem.; Part. Fiber Toxicol., Physiological Reviews, Am J Physiol. Regulatory, Int and Comp Physiol.

**MAJOR RESEARCH INTERESTS**

My research efforts focus on a) investigating mechanisms leading to enhanced susceptibility of diseased airway epithelium to environmental toxicants, b) determination of the cellular basis for epithelial susceptibility in normal and diseased airway epithelium and c) development of protective strategies/agents directed against highly toxic and hazardous chemicals, exposure to which causes extensive injury to the lung and heart and leads to massive causalities. I identified unanticipated signaling pathways that are involved in regulation of epithelial survival following exposure to hyperoxia. These pathways integrate important aspects of epithelial injury and repair: 1) the impact of the environment on the epithelium and 2) the intracellular response to this insult. I have also extended these studies to the environmentally relevant oxidant gas, ozone, and consequently demonstrated general applicability of these findings to chronic airway diseases characterized by acute exacerbation. I have demonstrated: 1) ATP signaling as an important component of epithelial protection against hyperoxia-induced injury. 2) A role for CFTR in modulating ATP release and in survival of epithelial cells. 3) That the ER calcium pump SERCA is regulated by CFTR and that it is downregulated in CF.

Investigating the basis of airway stem/progenitor cell surface marker expression is an important aspect of my current research. I have identified novel factors that not only act as a basal cell marker but also provide functional characteristics that enables it to lay its own provisional matrix, that is required for repairing neighboring injured and denuded epithelium. My future research will focus on: 1) Investigating mechanisms leading to increased inherent inflammation in chronic lung diseases with a focus on evaluating the role of environmental factors such as ozone and 2) Development of protective strategies/agents directed against exacerbations in chronic airway diseases such as asthma, COPD and cystic fibrosis. To this end, I will determine the 1) Cellular basis for epithelial (oxidant/ozone susceptibility) including the role of basal/progenitor cells 2) Post-translational modifications of proteins like SERCAs in chronic airway diseases 3) Candidate agents for intervention.

**TEACHING EXPERIENCE**

April 2020 Anesthesiology Basic Science Lecture Series

Feb 2017-2020 Course GBS 751, Instructor in Respiratory Physiology, University of Alabama at Birmingham

3/10/16- Faculty, Graduate School, University of Alabama at Birmingham.

10/1/13 – 9/30/14 Substitute Instructor in Problem Based Learning, University of Colorado Denver, Aurora, CO

11/17/95-12/08/97 Course Director: Biochemistry and Molecular Biology for M.S. students, Department of Biochemistry, Aligarh Muslim University, Aligarh, India.

11/17/95-12/08/97 Course Director: Food Sciences for B.S. students, Department of Biochemistry, Aligarh Muslim University, Aligarh, India.

11/15/92-2/14/93 Instructor in a workshop on “Some recent techniques used in the study of peptides, proteins and enzymes” held at the Interdisciplinary Biotechnology Unit, Aligarh Muslim University, Aligarh, India

**MAJOR LECTURES AND VISITING PROFESSORSHIPS:**

1. Ozone-induced ATP release from airway epithelial cells: Signaling for cell survival. National Jewish Health, May 2005.
2. Differential Expression of Sarco/Endoplasmic Reticulum-Ca2+ATPase (SERCA) Isoforms in Cystic Fibrosis Lung Epithelium. Department of Pediatrics. The Children’s Hospital, Oct. 2006.
3. Differential expression of sarcoplasmic/endoplasmic reticulum Ca2+ATPase (SERCA) isoforms in Cystic Fibrosis. Visiting faculty at Cystic Fibrosis/Pulmonary Research and Treatment Center, The University of North Carolina at Chapel Hill, NC. Jul. 18, 2007.
4. Differential expression of sarcoendoplasmic reticulum ATPases (SERCA) in cystic fibrosis (CF) epithelium. North American CF Conference held at Anaheim CA from Oct. 3–6, 2007.
5. Diminished Expression of Sarcoendoplasmic Reticulum Calcium ATPase (SERCA) in Cystic Fibrosis Airway Epithelium. Lung cell biology research forum, at National Jewish Health Denver, CO. Mar. 31, 2008
6. Bcl-2 suppresses SERCA2 expression in cystic fibrosis airway epithelial cells: Role in oxidant-mediated cell death. Lung epithelium in development and disease, FASEB summer research conference, held at Saxtons Rivers, Vermont from Aug. 3–8, 2008.
7. Bcl-2 suppresses SERCA2 expression in cystic fibrosis airway epithelial cells: Role in oxidant-mediated cell death. National Jewish Health, Denver, CO, Oct. 2008.
8. Mechanisms of ozone-induced toxicity in CF airway epithelial cells. Thomas L Petty Aspen Lung Conference “The Environment and the Lung: Detection, Prevention, and Mechanisms of Disease”. Held at Aspen Jun. 10-13, 2009.
9. Ozone induces differential responses in cystic fibrosis airway epithelial cells. Department of Anatomy, Bern University, Switzerland. Aug. 13, 2009.
10. Ozone induces differential responses in cystic fibrosis airway epithelial cells. K-Club, Oct. 2009.
11. Airway epithelial cell response to oxidative stress in CF: Role of calcium signaling K-club, Feb. 12, 2010.
12. SERCA2 enhancers/activators to treat cystic fibrosis. A presentation for Fitzsimons Bio Business Partners to explore a startup at National Jewish Health, Denver CO, May 10, 2010.
13. Airway epithelial cell response to oxidative stress in CF: Role of calcium signaling. Current work and career planning K-club, Feb. 12, 2010.
14. Airway epithelial cell response to oxidative stress in CF: Role of calcium signaling. Current work and career planning K-club, Feb. 12, 2011.
15. Tissue factor a critical regulator of airway epithelial progenitor cell survival and function” Lung cell biology research forum, National Jewish Health, Denver CO, Jun. 6, 2011.
16. Airway epithelial cell response to oxidative stress in CF: Role of calcium signaling. Current work and career planning K-club, Jul. 10, 2011
17. Tissue factor: a regulator of airway epithelial basal progenitor cells. Pulmonary Heart and Lung Center, PHLC, research forum, University of Colorado, Denver, CO, Feb. 7, 2013.
18. Air flow-dependent modifications of airway epithelial basal/progenitor cell phenotype: Implications in cystic fibrosis disease pathogenesis. School of Mines Group, April 30, 2013.
19. Chlorine-inhalation-induced SERCA2 inactivation and cardiac dysfunction. Department of Anesthesiology, University of Alabama Birmingham. Oct. 10, 2014.
20. Chemical Terrorism: Chlorine Inhalation-Induced Myocardial Depression and Failure. Platform presentation by AZ at BIT’s 7th Annual International Congress of Cardiology-2015 held from Dec. 4-6, 2015.
21. Tissue factor: a regulator of airway basal/progenitor cells. Department of Anesthesiology and Perioperative Medicine, University of Alabama Birmingham. Nov. 16, 2016.
22. Repairing the injured lung; Role of basal cell tissue factor. ASIO general meeting held at Houston Texas, Jan. 15, 2017.
23. Calpain inhibition for reversing inhaled halogen-induced cardiopulmonary injury. Science Translational Medicine, Editors meeting, to be held in Philadelphia on Oct. 15, 2017.
24. Bromine-induced myocardial damage and dysfunction. Anesthesiology Seminar series Feb  27 2018.
25. Bromine-induced myocardial damage and dysfunction. Society of Toxicology Meeting held at San Antonio, Texas on Mar. 13, 2018.
26. Repair of injured lungs through activation of endogenous stem cells. International Conference on Future Diagnostic, Therapeutic and Theranostic Modalities to be held at Institute of Biotechnology, JNMC, AMU Aligarh from Dec 29-31, 2018.
27. Airway re-epithelialization for healing injured lungs after toxic gas inhalation. Department of Anesthesiology and Perioperative Medicine, Sept 23, 2019.
28. Cardiotoxicity of inhaled halogens:Role of circulating factors. Department of Anesthesiology and Perioperative Medicine, and Department of Medicine Grand rounds, June 2019.
29. Electronic Cigarette Nicotine-Mediated Lung Damage: Is it Nicotine or DAMPs or Both. Platform talk. ATS Virtual session A90. August 2020.

***Visiting Professorships:***

07/16/07 – 07/20/07 Visiting Faculty, Cystic Fibrosis/Pulmonary Research and Treatment

Center, The University of North Carolina at Chapel Hill, NC.

08/01/09 – 08/14/09 Visiting Professor, Department of Anatomy, Bern University,

Switzerland

**GRANT SUPPORT (CURRENT AND PAST):**

**Current/Pending:**

1. Airway Stem Cell Activation in the Mitigation of Halogen-Induced Lung Injury

**Principal Investigator:** Shama Ahmad

**Agency:** NIH (NIEHS-CounterACT program)- 1R21ES030525 (7/1/20-6/30/22);

**Direct Cost:** 150,000/year

**Aim:** The major goal of this study is to understand the role of lung stem cells in the pathogenesis of halogen-induced lung injury.

2. Novel therapeutic targets for fluoroacetate-induced toxicities

**Principal Investigator:** Aftab Ahmad **Role**: Co-Investigator

**Agency:** NIH (NIEHS-CounterACT program)- 1R21ES032353 (5/15/20-5/14/22);

**Direct Cost:** 150,000/year

**Aim:** The major goal of this study is to understand the role of factors that mitigate fluoroacetate toxicity.

3. Attenuating pulmonary toxicity of cutaneous exposure to arsenicals.

**Principal Investigators:** Aftab Ahmad PI/Veena Antony, Co-PI, **Role:** Co- Investigator

**Agency** NIEHS/NIH/DHHS U54ES030246-01 09/01/2018–06/30/2023

**Direct Cost**: $722386/year

**Aim:** This study is to investigate mechanisms of acute and delayed pulmonary damage caused by a single cutaneous exposure. These studies will also evaluate therapies that can alleviate pulmonary injury and decrease mortality following exposure to arsenicals.

4. Extracellular RNA as therapeutic target after toxic chemical inhalation

**Principal Investigator:** Aftab Ahmad **Role:** Co- Investigator

**Agency:** NIH (NIEHS-CounterACT program)- U01ES025069 (9/25/2014-5/31/2021);

**Direct Cost:** 357,141/year

**Aim:** The major goal of this study is to understand the role of extracellular RNA in sulfur mustard toxicity. These studies will also evaluate therapies that can alleviate lung injury and decrease mortality following sulfur mustard inhalation.

5. Protease activated receptor (PAR) dependent cardiomyocyte damage due to SARS-CoV2

Spike protein.

**Principal Investigators:** Shama Ahmad & Aftab Ahmad

**Agency:** UAB Anesthesiology RAPID REINVENT Award, 06//01/2020-05/30/2021

**Aim:** This grant will identify mechanisms of SARS-CoV2-induced cardiac damage.

**Pending**

1. Novel Lead Compound Advancement for Mitigating Halogen Induced Mortality and Morbidity

**Principal Investigator:** Shama Ahmad

**Agency:** NIH (NIEHS-CounterACT program)- U01ES033263 (7/1/21-6/30/26);

**Total Direct Cost:** 2,499,999.

**Aim:** The major goal of this study is to optimize the identified lead compounds and test its efficacy

following exposure of animals to halogens.

1. Modeling of SARS-CoV2 infection and effects of comorbidity

**Principal Investigators:** Aftab Ahmad/Shama Ahmad/Kevin Harrod

**Agency:** NIH/NIAID - R01AI161722 (9/01/2020-8/31/2023)

**Total Direct Cost:** 924,700.

**Aim:** The major goal of this study is to develop a rodent model of COVID-19 and understand the role

of comorbid cardiovascular conditions in influencing morbidity and mortality caused by SARS-CoV-2

virus infection.

1. Environmental determinants of COVID-19 disease severity

**Principal Investigator:** Aftab Ahmad; **Role**: Co-Investigator

**Agency:** NIH/NIAID – R21 (7/01/2021-6/30/2023);

**Total Direct Cost:** 275,000.

**Aim:** The major goal of this study is to understand the role of environmental factor in COVID-19.

1. Advancing development of lead compounds for treating sulfur mustard-induced morbidity and mortality

**Principal Investigator:** Aftab Ahmad ; **Role**: Co-Investigator

**Agency:** NIH/NIEHS – U01ES032352 (7/01/2021-6/30/2026);

**Total Direct Cost:** 2,499,995.

**Aim:** The major goal of this study is to optimize the identified lead compounds and test its efficacy

following exposure of animals to sulfur mustard.

**Completed:**

1. Targeting cardiopulmonary calpains to mitigate toxicity of halogen gases.

**Principal Investigators:** Shama Ahmad PI/Louis Dell’Italia, Co-PI

**Agency**: NIEHS/NIH/DHHS U01ES028182-01 08/15/2017–08/14/2020

**Direct Cost**: $406,678/year

**Aim:** The major goal of this study is to understand the role of calpains in bromine-induced cardiac

toxicity. These studies will also evaluate therapies that can alleviate cardiopulmonary injury and

decrease mortality following halogen inhalation.

2. Targeting cardiopulmonary calpains to mitigate toxicity of halogen gases

**Principal Investigators:** Shama Ahmad PI/Louis Dell’Italia, Co-PI

**Agency**: NIEHS/NIH/DHHS U01ES028182-02S1 09/20/2018–07/31/2019

**Direct Cost**: $96,525

**Aim:** The major goal of this study is to understand bromine-induced cardiac toxicity in females.

4. Cialis® reverses halogen induced injury to pregnant animals and their offspring.

**Principal Investigator:** Sadis Matalon **Role:** Co- Investigator, For year one.

**Agency:** NIEHS/NIH/DHHS 1U01ES027697-01 (09/30/16–07/31/21)

**Direct Cost**: $534,295/year

**Aim:** In this study susceptibility of pregnant mice to bromine will be investigated. We will

also investigate the mechanisms involved and identify the optimum way of delivering

Tadalafil to rescue against bromine toxicity.

5. Airway stem cell activation in the mitigation of halogen induced lung injury.

**Principal Investigator:** Shama Ahmad

**Agency** University of Alabama Brimingham, School of Medicine, Bridge fund, 10/01/16–

09/30/17

**Direct Cost**: $75,000/year

6. Restoring injured airways: SERCA2 stabilization, a novel therapeutic strategy.

**Principal Investigator:** Shama Ahmad

**Agency** Children's Hospital of Colorado Pilot Award, 01/01/14–03/12/14

**Direct Cost**: $30,000/year

7. Air flow-dependent modifications of airway epithelial basal/progenitor cell phenotype:

Implications in cystic fibrosis disease pathogenesis

**Principal Investigator:** Shama Ahmad PI/Keith Neeves Co-PI

**Agency** Children's Hospital of Colorado/Colorado School of Mines Pilot Award, 04/01/13–

09/30/14

**Direct Cost**: $20,000/year

8. Airway epithelial cell response to oxidative stress in CF: Role of calcium signaling.

**Principal Investigator:** Shama Ahmad

**Agency**: NIH/NCRR CCTSI K12-KL2RR025779-01-Career development award, 10/01/08-

09/30/11

**Direct Cost**: $83,000/year

9. Cystic fibrosis transmembrane conductance regulator (CFTR) gene transfer to study survival

signaling in CF airway epithelium

**Principal Investigator:** Carl White **Role**: Co-Investigator

**Agency**: Karasik Foundation, 07/01/08-05/30/12

**Direct Cost**: $83,000/year

10. Cell based therapy for lung disease

**Principal Investigator:** Susan Reynolds PI/Carl White Co-PI **Role**: Co-Investigator

**Agency**: NIH 1 RCI HL099461, 09/30/09-08/31/11

**Direct Cost**: $250,000/year

11. Lung epithelial cell survival signaling in ozone in cystic fibrosis and normals

**Principal Investigator:** Carl White **Role**: Co-Investigator

**Agency**: NIH R01, 09/23/05-07/31/10

**Direct Cost**: $213,750/year

12. Mechanisms of ozone toxicity. Ozone Exposure Core.

**Principal Investigator:** Carl White **Role**: Co-Investigator

**Agency**: Environmental Protection Agency, 07/01/06-06/30/07

13. Role of hexokinase in lung adaptation to oxidant stress.

**Principal Investigator:** Carl White **Role**: Co-Investigator

**Agency**: NIH R01, 09/01/98-08/31/03

**Direct Cost**: $250,000/year

14. Critical targets in hyperoxic mitochondrial injury.

**Principal Investigator:** Carl White **Role**: Co-Investigator

**Agency**: NIH U01, 06/01/99-05/31/03

**Direct Cost**: $250,000/year

**BIBLIOGRAPHY/PUBLICATIONS:**

1. Zaky A, Beck AW, Bae S, Sturdivant A, Liwo A, Zdenek N, McAnally N,**Ahmad S**, Meers B, Robbin M, Pittet JF, Tolwani A, Berkowitz D. 2020 [The bio-sonographic index. A novel modality for early detection of acute kidney injury after complex vascular surgery. A protocol for an exploratory prospective study.](https://pubmed.ncbi.nlm.nih.gov/33201924/) PLoS One. Nov 17;15(11):e0241782. doi: 10.1371/journal. pone.0241782. eCollection 2020.
2. Mariappan N, Husain M, Zafar I, Singh V, Smithson KG, Crowe DR, Pittet JF, **Ahmad S**, Ahmad A. (2020) Extracellular nucleic acid scavenging rescues rats from sulfur mustard analog-induced lung injury and mortality. *Arch Toxicol*. 2020 Apr;94(4):1321-1334.
3. **Ahmad S**, Ahmad A. (2020) Treating fungus-induced allergic asthma. Do VDACs have answer! *J Physiol*. 2020 May;598(10):1799-1800.
4. Manzoor S, Mariappan N, Zafar I, Wei CC, Ahmad A, Surolia R, Foote JB, Agarwal A, **Ahmad** **S**, Athar M, Antony VB, Ahmad A. (2020) Cutaneous Lewisite exposure causes acute lung injury. *Ann N Y Acad Sci*. 2020 Apr 24. doi: 10.1111/nyas.14346.
5. Rana T, Ahmad A, Zafar I, Mariappan N, Chandrashekar DS, Hamid T, Husain M, Varambally S, **Ahmad S**, Ahmad A. (2020) Micro-RNA mediated inflammation and coagulation effects in rats exposed to an inhaled analog of sulfur mustard. *Ann N Y Acad Sci*. 2020 Jun 29. doi: 10.1111/nyas.14416.
6. Juncos JXM, Shakil S, Ahmad A, Aishah D, Morgan CJ, Dell'Italia LJ, Ford DA, Ahmad A, **Ahmad S**. (2020) Circulating and tissue biomarkers as predictors of bromine gas inhalation. *Ann N Y Acad Sci*. 2020 Jul 9. doi: 10.1111/nyas.14422.
7. Juncos JXM, Shakil S, Bradley WE, Wei CC, Zafar I, Powell P, Mariappan N, Louch WE, Ford DA, Ahmad A, Dell'Italia LJ, **Ahmad S**. (2020) Chronic cardiac structural damage, diastolic and systolic dysfunction following acute myocardial injury due to bromine exposure in rats. *Arch Toxicol*. Arch Toxicol. 2020 Sep 26. doi: 10.1007/s00204-020-02919-8. Online ahead of print.
8. **Ahmad S**, Ahmad A, Zaky A, Masjoan-Juncos JX, Chih-Chang W, Bradley WE, Zafar I, Powell P, Mariappan N, Vetal N, Louch WE, Ford DA, Matalon S, Dell’Italia LJ. (2019*)* “Bromine-inhalation mimics ischemia-reperfusion cardiomyocyte injury and calpain activation in rats.” *Am J Physiol Heart.* doi: 10.1152/ajpheart.00652. 2017
9. **Ahmad S**, Zafar I, Mariappan N, Hussain M, Eltoum IA, Ahmad A. (2019*)* “Inhaled nicotine causes pulmonary edema and injury.” *Am J Physiol Lung.* doi: 10.1152/ajplung.00564.2017.
10. Ghosh M, **Ahmad S**, Smith RW, White CW, Reynolds SD. (2017*)* “Transplantation of airway epithelial stem/progenitor cells: a future for cell-based therapy.” *Am J Resp Cell Mol Biol.* Jan; 56 (1): 1-10.
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