

Arti Shukla
Curriculum Vitae

Position: Professor
Department of Pathology and Laboratory Medicine

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EDUCATION

Year	Institution	Degree	Area of Degree
1989	Banares Hindu University	PhD	Biochemistry
1985	Banares Hindu University	MS	Biochemistry
1982	Banares Hindu University	BS	Chemistry & Biology

LICENSES AND CERTIFICATION: None

APPOINTMENTS HELD:

Years	Institution	Academic Title	Department
July 2020-present	University of Vermont Larner College of Medicine	Professor	Department of Pathology
July 2020-present	University of Vermont Larner College of Medicine	Professor (Secondary)	Department of Medicine
July 2011-2020	University of Vermont Larner College of Medicine	Associate Professor	Department of Pathology
August 2014 - 2020	University of Vermont Larner College of Medicine	Associate Professor (secondary)	Department of Medicine
December 2001- June 2011	University of Vermont Larner College of Medicine	Assistant Professor	Department of Pathology

October 1997- September 1999	University of Vermont Larner College of Medicine	Visiting Scientist	Departments of Pathology & Biochemistry
1991-1997	Central Drug Research Institute, Lucknow, India	Scientist	Department of Pharmacology
December 1988– November 1990	University of Michigan, Ann Arbor, MI	Post-doctoral Research Associate	Mental Health Research Institute
1985-1988	Institute of Medical Sciences, Banares Hindu University, Varanasi, India.	CSIR-Junior & CSIR- Senior Research Fellow	Department of Pediatrics

AWARDS AND HONORS

Year	Name of Award
1985-1988	Junior and Senior Research Fellowship from Council of Scientific and Industrial Research, India
1987	Young Scientist Award from Nutrition Society of India
1991-1993	Pool Scientist Award from Council of Scientific and Industrial Research (CSIR), India
1996	Jyotsnamayee-Raghunath Award from Indian Academy of Neurosciences
1996	Unvas Award from Indian Pharmacological Society
2000	Best poster award in International Conference on Environmental and Occupational Lung Disease, hosted by Industrial Toxicology Research Centre, 29 October-2 November in Lucknow, India.
2004	Best poster award from Vermont Cancer Center
2005	Travel award from GeneSifter
2005	Co-chaired a scientific session in Mechanisms of Action of Inhaled Fibers, Particles and Nanoparticles in Lung and Cardiovascular Disease, held at EPA Conference Center, Research Triangle Park, NC from 26-28 Oct.
2008-2017	Received multiple (9) awards from internal sources (UVMCC, LCCRO, VGN, Surgery department, COM, UVM REACH)
2009-2012	Awarded Mesothelioma Applied Research Foundation grant to study role of ERK5 in mesothelioma

- 2016 The Department of Defense, Peer Reviewed Cancer Research Program (PRCRP) staff has highlighted our research in the 2016 PRCRP pages of the Congressionally Directed Medical Research Programs' Annual Report (page 65). <http://cdmrp.army.mil/aboutus>
- 2016 Chaired, Technical Challenges in Particle Toxicology session on September 26 at 11th International Particle Toxicology Conference in Singapore
- 2017 Co-organized NIEHS workshop, Asbestos health effects on July 31, 2017 at Davis Center, UVM. Gave a talk in biomarker session and participated in the panel discussion. Moderated asbestos cancer outcome session.
- 2018 Findings of our paper in the FASEB J (March 2018) were highlighted in:
- a. Press release https://www.eurekalert.org/pub_releases/2018-03/foas-fjn031218.php
 - b. ATI news report <http://allthatsinteresting.com/asbestos-detection>
 - c. College of medicine http://www.med.uvm.edu/com/news/2018/03/27/shukla_research_highlights_how_asbestos_causes_lung_disease_mesothelioma
 - d. NIEHS papers of the month
 - e. Asbestos.com
 - f. NIEHS papers of the year 2018
- We were selected as one of 25 (out of 2,900) studies to be highlighted as paper of the year by NIEHS!
<https://factor.niehs.nih.gov/2019/1/feature/2-feature-papers-of-the-year/index.htm>
- 2018-2019 External Advisory Committee, Penn SRP Center and Training Program, Perelman School of Medicine, University of Pennsylvania.
- 2018 Our research funded by the U.S. Department of Defense Peer Reviewed Cancer Research Program (PRCRP) was highlighted on the Congressionally Directed Medical Research Programs (CDMRP) website
http://cdmrp.army.mil/prcrp/research_highlights/18shukla_highlight
<https://go.usa.gov/xUzwz>
- 2018 My research/lab profiled on Asbestos.com under research centers
<https://www.asbestos.com/treatment/research-centers/shukla-lab-uvm/>
- 2019 Better Together Award for team work on IPF
- 2019 Quoted in VTDigger article on social services group's asbestos violation, "NEK social services group paid fines for asbestos, other violations", regarding the link between asbestos and lung disease.
- 2019 Michael Hasson Lectureship for mesothelioma, OSHU, Portland, Oregon.
- 2020 Served on Toxic Substances Control Act (TSCA) Science Advisory Committee on Chemicals (SACC) meeting to peer review EPA's draft risk evaluation of Asbestos.
- 2021 Society of American Asian Scientists in Cancer Research (SAASCR), Outstanding Achievement Award for seminal contributions to the field of

cancer research, 2021. Presented in AACR Annual Meeting May 17, 2021, virtual meeting.

https://www.indiawest.com/news/global_indian/eight-indian-american-scientists-honored-by-saacr-for-cancer-research/article_0f0cd756-c374-11eb-ae9d-e34b69801398.html

<https://www.indiapost.com/indian-american-scientists-awarded-for-cancer-research-discoveries-by-saacr/>

KEYWORDS/AREA OF INTERESTS

Environmental lung diseases, environmental cancers, asbestos, carbon nanotubes, lung cancer, mesothelioma, exosomes, biomarkers, inflammasomes, inflammation, microbiome, lung fibrosis, pleural fibrosis, mesothelial cells, signaling molecules (ERKs, CREB, PKCs), massively parallel sequencing, proteomics, miRNAs, nano-particles, cancer therapy, mesothelial to fibroblastic transition, xenograft and allograft mouse models for mesothelioma.

- Obtained 4 extramural grants (MARF, NIH RO1&R21, DoD) as PI within 8 years and numerous (9) internal grants to support my research. Established and successfully running independent research program on mesothelioma.
- Published 46 research papers, 11 reviews, 1 editorial, 1 commentary, 1 encyclopedia chapter and 9 book chapters in high impact factor peer reviewed journals in last 19 years. My complete list of publication has 102 articles and Google scholar citation is 5879 (h-index 43).
- Highly recognized nationally and internationally in the field as depicted by speaker invitations (eg. Gordon Conference and Mike Hasson lecture from Portland Oregon), External Advisory Committee (Penn, SRPCTP) as well as grant reviewer/chair invitations from NIH, Department of Defense (DoD) and various European agencies. Won numerous awards.
- Trained undergraduates, master and PhD students and post-doctoral associates.
- Successfully directed Pathology Master Program for 2 years.
- Inducted into COM Teaching Academy as a charter member due to my dedication to education and mentoring.
- Co-organized NIEHS workshop.
- Served on Toxic Substances Control Act (TSCA) Science Advisory Committee on Chemicals (SACC) meeting to peer review EPA's draft risk evaluation of Asbestos.

[PDF] [TSCA Scientific Advisory Committee on Chemicals](#)

PROFESSIONAL SERVICE

DEPARTMENTAL SERVICE

Years	Department	Committee	Role
2017- Present	Pathology and laboratory Medicine	Pathology Communications committee	Member

2016-2019	Pathology and laboratory Medicine	Pathology Grand Round planning committee	Member
2014-2015	Pathology and laboratory Medicine	Reappointment, Promotion and Tenure (RPT) committee	Member
2014-Present	Pathology and laboratory Medicine	Advancing Knowledge Council	Member
2013-Present	Pathology and laboratory Medicine	Redox Biology and Pathology (RBP) group	Member
2013-2015	Pathology and laboratory Medicine	Pathology Master Program	Director. In addition to running the program, my responsibilities also involved overseeing the progress/problem of each student enrolled (total 4 under my directorship). I met with them occasionally or as per their requirements to get an update of their progress. If required, I contacted their advisors to get an update.
2010-2013	Pathology and laboratory Medicine	Environmental Pathology Training Grant Program	I was mentor/faculty in the program. I taught and mentored students. I was also steering committee member of the program and coordinator for the environmental pathology and carcinogenesis seminar series
2012	Pathology and laboratory Medicine	Evaluation of Chair candidates	Involved in the process of evaluation of Chair candidates for the department
2010-2013	Pathology and laboratory Medicine	Evaluation of Postdoctoral candidates for the Environmental Pathology Training program	I regularly interviewed and evaluated postdoctoral candidates for the Environmental Pathology Training program

COLLEGE SERVICES

Years	College	Committee	Role
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2021-	University of Vermont Larner College of Medicine	Mentoring committee, Teaching Academy	Member
2021-	University of Vermont Larner College of Medicine	Writer's workshop Teaching Academy	Reviewer
2015-2018	University of Vermont Larner College of Medicine	CMB (Cellular, Molecular and Biological Sciences) Faculty Membership Committee	Chair As a chair of the CMB Faculty Membership Committee I organized the review process for membership application from new members seeking to attain CMB membership and application renewal from existing members (every 3 years)
2015-2018	University of Vermont Larner College of Medicine	CMB Steering committee	Member
2014-Present	University of Vermont Larner College of Medicine (UVMCC)	American Cancer Society (ACS)- Institutional Grant review committee	Member Grant reviewer for applications for submission to ACS and mentor junior faculty
2012-2015	University of Vermont Larner College of Medicine	COM Faculty Standards Committee	Member, evaluated applications for reappointments, promotion and tenure. Committee met in winter and spring. Depending upon the number of applications it took 4-5 meetings of 2 hour each for both seasons to complete the process.
2012-2018	University of Vermont Larner College of Medicine	CMB Faculty Membership Committee	Member, evaluated applications from new CMB membership candidates as well as renewal applications from existing members
2012-Present	University of Vermont Larner College of Medicine	Cellular, Molecular and Biomedical (CMB) faculty	Faculty of CMB mentoring students of this program. In addition, I attend CMB seminars and evaluate them on a regular basis. I am also actively involved in the recruitment interviews and qualifying exams of the students. Reviewed papers for Alpert award (2016)
2013	University of Vermont Larner	Interview/Evaluation of Faculty candidates	Evaluated/interviewed two candidates for VCC Translational lab

College of Medicine
(UVMCC)

2013	University of Vermont Lerner College of Medicine	Interview/Evaluation of Faculty candidates	Interviewed/evaluated a faculty candidate for Hematology-Oncology division
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UNIVERSITY SERVICES

Years	University	Committee	Role
2014- Present	University of Vermont	Indian Student Association (ISA), UVM	Faculty Advisor for Indian Student Association (ISA), UVM.
2012- 2015	University of Vermont	Undergraduate Research Advisory committee	I evaluated grant applications (Fall, Spring and Summer) from undergraduate students sponsored by the Honor College, UVM
2012	University of Vermont	Dean's (The Extension) evaluation committee	This review/reappointment process involved extensive work for three months. The process included committee meetings, open houses and interview with interested individuals and compilation of reports.
2006- Present	University of Vermont	University of Vermont Cancer Center (UVMCC)	Full member: Attend meetings, present my work at meetings or journal clubs, write grants, participate in outreach program, take part in interviewing faculty candidates and translational lab candidates. Review grant applications for UVMCC and ACS.

SERVICES AT NATIONAL & INTERNATIONAL LEVELS

Years	Organization	Committee	Role
2018- 2019	Perelman School of Medicine, UPenn.	External Advisory Board	member for Penn Superfund Research Program Center and Training Program
2017	NIH	NIEHS Asbestos health effect workshop	Co-organizer

2009	NIH	Grant review	Phase 1 Reviewer for RC1-NIH grants (ZRG1 OTC-K). Reviewed 3 grants.
2009	Louisiana Board of Regents	Grant review	Reviewed Pilot funding grant
2010	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited pre-proposal reviewer of Investigator Initiated Research Awards (IIRA)
2010	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited Reviewer for Concept awards
2010	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited Reviewer for grants in IIRA and Technology/Therapeutic development (TTD) categories, Mesothelioma Panel, September 29-October 1
2012	Health Research Board, Dublin, Ireland	Clinical and Applied Biomedical Research	Invited reviewer for Clinical and Applied Biomedical Research grants
2012	British Lung Foundation, UK	Burrow Hill Research Grant	Invited reviewer for Burrow Hill Research Grant applications
2012	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited Reviewer of IIRA Pre-Proposals in the area of Nanomedicine for Drug Delivery Science
2012	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited Reviewer of grant applications in the area of Nanomedicine for Drug Delivery Science
2012	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited Reviewer, PRMRP, DoD Investigator Initiated research Award/Technology Therapeutic Development Award mechanism for Nanomedicine for Drug Delivery Sciences topic area via Teleconferencing session September 17-18. (I declined to participate due to conflict with hosting UVM/COM, Environmental Pathology and Carcinogenesis seminar series speaker that day)

2012	UVM/COM	VCC/LCCRO	Ad hoc reviewer of VCC/LCCRO grant application
2012	European Science Foundation (ESF)	Junior PI grant review mechanisms	Invited reviewer of grants under Junior PI grant review mechanism
2012	US Department of Defense (DOD)	Kidney cancer and mesothelioma panel	Invited to serve as a scientist reviewer (panel member) for kidney cancer and mesothelioma panel (CDMRP, DoD) Nov 2012. (Declined due to time conflict)
2012	NIH	Early Career Reviewer (ECR) program at the Center for Scientific Review (CSR)	Accepted for participation in the Early Career Reviewer (ECR) program at the Center for Scientific Review (CSR), NIH
2013	Health Effects Institute (HEI), Boston, MA	Final Report	Final Report reviewer
2013	NIH	NCI peer review panel	Invited to participate in NCI peer review panel, March 28-29
2013	Medical Research Council, UK	Grant review	Invited reviewer for Medical Research Council, UK grant
2013	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited reviewer for grants submitted in the area of Discovery Award-Technology
2014	National Science Center, Poland	Grant review	Invited reviewer for National Science Center, Poland
2014	US Department of Defense (DOD)	Lung Cancer Research Program (LCRP)	Peer review panel of the 2014 Lung Cancer Research Program (LCRP), Nov 12-14, 2014.
2015	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited reviewer for the Pre-application Acute Lung Injury-2 (PRE-ALI-2) peer review panel of the 2015, June-July, 2015
2015	US Department of Defense (DOD)	Congressionally Directed Medical Research Programs (CDMRP) and Peer Reviewed Cancer Research Program (PRCRP), Idea Award with Special Focus	Invited on site reviewer for Cellular and Molecular Biology (CMB) peer review panel of the 2015 Lung Cancer Research Program (LCRP), Nov 8-10, 2015.

		Award (IdeaA-SF) and the Career Development Award (CDA)	
2016	NIH	K08/K23 Grant mechanism of NIEHS	Invited reviewer for National Institute of Environmental Health Science K08/K23 Grant Applications. March 2016
2016	Kom op tegen Kanker (stand up to cancer) Koningsstraat 217 - 1210 Brussel	Biomedical Commission	Invited reviewer for the Biomedical Commission of Kom op tegen Kanker (stand up to cancer)
2016	CDC/NIOSH	National Mesothelioma Virtual Bank (NMVB)	Invited reviewer for CDC/NIOSH , National Mesothelioma Virtual Bank (NMVB) renewal application. May 2016
2016	UVM/COM	VCC/LCCRO	Invited reviewer for UVMCC/LCCRO grant applications, May 2016
2016	US Department of Defense (DOD)	Lung Cancer Research Program (LCRP)	Invited reviewer, Cell Biology (CON-CB) peer review panel of the 2016 Lung Cancer Research Program (LCRP), September-October 2016
2016	US Department of Defense (DOD)	Peer Review Cancer Research Program (PRCRP)	Member, Mesothelioma (MESO) peer review panel, October-November 2016
2016	UVM/COM	VCC/LCCRO	Invited reviewer for UVMCC/LCCRO application, October-November 2016
2017	UVM/COM	VCC/LCCRO	Invited reviewer for UVMCC/LCCRO application, March 2017.
2017	MRC Toxicology Unit, University of Leicester, UK	Review of scientific programmes (Past and Future Plans)	Invited to review scientific programme (Past and future plans) of the MRC Toxicology Unit, University of Leicester, UK
2017	US Department of Defense (DOD)	Lung Cancer Research Program (LCRP)	Invited reviewer Cell Biology (CON-CB) peer review panel, September-October 2017

2017	US Department of Defense (DOD)	Lung Cancer Research Program (LCRP)	Invited to Chair Meso-panel, PRCRP, Department of Defense, November 2017. (Declined due to unavailability)
2018	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited reviewer Pre-Metals Toxicology (pre-MT) peer review panel, June-July 2018
2018	Wellcome Trust/ DBT India Alliance	Fellowship mechanism	Invited to review the Welcome Trust/DBT India Alliance fellowship application.
2018	US Department of Defense (DOD)	Lung Cancer Research Program (LCRP)	Invited reviewer and ad hoc chair for Cell Biology (CB) peer review panel of the 2018 Lung Cancer Research Program (LCRP), October 2018
2019	UVM	Vermont Genetics Network (VGN) grant	Invited reviewer for Vermont Genetics Network (VGN), UVM.
2019	US Department of Defense (DOD)	Peer Reviewed Medical Research Program (PRMRP)	Invited reviewer for Pre-Metal Toxicology pre-(MT) peer review panel of the 2019 Peer Review Medical Research Program (PRMRP), April, 2019
2019	NIH	NIEHS Superfund Review	Invited reviewer for P42 Superfund Review Meeting, NIEHS, NIH. June-July 2019
2019	US Department of Defense (DOD)	Lung Cancer Concept Awards (CDRMP)	Invited reviewer, September-October 2019
2019	US Department of Defense (DOD)	Lung Cancer(IITR)	Invited reviewer, lung cancer panel October 2019
2020	NIH/NIMHD	Specialized Centers of Excellence on Environmental Health Disparities Research P50	Invited review panel member, March 10-12
2020	US-Israel Binational Science Foundation	Annual BSF competition for research grants	Invited reviewer
2020	Vermont Genetics Network	Research grant	Invited reviewer
2020	Environmental Protection Agency(EPA)	Toxic Substance Control Act, Science	Invited reviewer for EPA's draft risk evaluation of Asbestos.

2020	US Department of Defense (DoD)	Advisory Committee on Chemicals (SACC) Lung Cancer Concept Awards (CDRMP)	Invited reviewer, July, 2020
2020	US Department of Defense (DoD)	Lung Cancer Research Program	Chair, September 2020
2020	US Department of Defense (DoD)	Peer Reviewed Cancer Research Program-Meso	Invited reviewer Nov 2020
2021	NIH/NIEHS	R01 US-India Collaborative Environmental Health Research Program (all BCC)	Invited reviewer March 10/11, 2021
2021	British Lung Foundation	Peer review of research grant proposal	Invited reviewer April 23, 2021

SERVICE TO PROFESSIONAL ORGANIZATIONS

Years	Society
2006-2018	Society for Free Radical Biology and Medicine (SFRBM): Active member, Review papers for the society journal (FRBM). Serve as a volunteer judge (FY2010, 2011, 2012, 2013, 2014, 2015) to evaluate abstracts for oral presentation for Society of Free Radical Biology and Medicine.
2006-2020	American Association for Cancer Research (AACR): Active member, Attend and present my work to the annual society meeting. Sponsor abstracts and/or membership applications for new members or non-members
2014-2016	Reviewed abstracts for 2014 International Mesothelioma Interest Group (iMig) meeting in South Africa. Invited member of scientific abstract review committee iMig . Reviewed abstract for 2016 in UK.

SERVICE TO PROFESSIONAL PUBLICATIONS

Years	Journal/Publication/Editorial board member
2010-2016	American Journal of Respiratory Cell and Molecular Biology (ATS Journal): Editorial board member, Reviewed for the journal

- 2014-present Air and Water Born Diseases (OMICs group): Editorial board member, write editorial or research paper for the journal.
- 2012-present American Medical Journal (Science Publication): Editorial board member, write for the journal and review submitted articles, handle articles by assigning to different reviewers and provide final recommendations for the publication
- 2012-present Journal of Cancer Research and Therapy: Editorial board member, handle manuscripts for the journal. Assign reviewers, collect their comment to create an editorial report and provide my decision to the journal staff to communicate with authors.

Reviewed papers for over 40 different journals (listed below).

American J Pathology; American Journal of Physiology - Lung Cellular and Molecular Physiology; American Journal of Respiratory Cell and Molecular Biology; American Medical Journal; Biologicals; BMC-Cancer; BMC-Genomics; British J Cancer; Cancer Cell International; Cancer Letters; Cancer Research (AACR), Carcinogenesis, Cell Biology and Toxicology; Cellular and Molecular Biology Letters; Clinical Cancer Research (AACR); Environmental Pollution; Free Radical Biology and Medicine; Inhalation Toxicology; International Journal of Cancer; International Journal of Nanomedicine; In Vitro Cellular and Developmental Biology-Animal; Journal of Cellular Biochemistry; Journal of Ovarian Research; Journal of Toxicology and Environmental Health; JCI Insight; Life Sciences; Lung; Lung Cancer; Molecular Cancer, Molecular Cancer Therapeutics (AACR); Nutrition Reviews; Nature Communications; OncoTargets and Therapy; Oncotargets; Particle & Fibre Toxicology; PLoS one; Respiratory Physiology and Neurobiology; Respiratory Research; The Annals of Respiratory Medicine; The International Journal of Biochemistry & Cell Biology; Toxicology Letters, Translational Research

PUBLIC SERVICE

Years	Service Role
2013-2014	I gave lab tour to Colchester high school student as a part of VCC community Outreach Program, April 1, 2013, tour to Johnson State High School students, June 25, 2013, and tour to Harwood high school, May 2, 2014. The purpose was to teach community about environmental cancers.
2013	Microarray data generated by my group were used to educate people at Johnson State College, Department of Environmental and Health Sciences Community Seminar Series (4:00-5:15 206 Bentley Hall). Presented by Mr. Timothy Hunter 2013 .
2018	Participated in UVM Summer Academy program, Panel: Basic Science and Genomic Discussion. Discussed my research with high school students. July 11, 2018 10:30-12.

SUMMARY OF SERVICE ACTIVITIES

Served on many committees of University, College and Department (including COM Faculty Standards Committee) in last many years and still serving on some (AKC-Departmental; ACS review committee-UVMCC etc.). At national and international level, I serve (d) as editorial board member for 4 journals, reviewed papers for over 40 different journals, reviewed grants for NIH, DoD and various European agencies. For many years I served as member of AACR and FRBM societies and helped with sponsoring and judging abstracts for the meetings.

TEACHING

Year	Course Title	R	E	Hours	Number of Learners	Learner Level
2006	Path 305 Molecular Mechanisms of Environmental Diseases		x	4		Graduate/post graduate
2008	Path 305 Molecular Mechanisms of Environmental Diseases		x	4	8	Graduate/post graduate
2010	Path 305 Molecular Mechanisms of Environmental Diseases		x	4	13	Graduate/post graduate
2011	Path 395 Readings in Environmental Pathology		x	4	3	Graduate/post graduate
2012	Path 305 Molecular Mechanisms of Environmental Diseases		x	4	12	Graduate/post graduate
2016	CLBI 295 Cellular and Molecular Pulmonology		x	6	7	Graduate/post graduate
2021	Path 307 Molecular Pathology			1.5	2	Graduate

2015-2025

Member-UVMCOM Teaching Academy

Mentoring:

A big chunk of my time is devoted to mentoring students. The mentoring ranges from helping them gain laboratory experience, discussing ideas and troubleshooting to getting MS or PhD degrees. The students I mentored in the last many years and those mentoring presently are listed below:

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

Dates	Name	Program School	Role	Current Position
2007-2012	Sherrill A. Lathrop, PhD student at UVM	Environmental Pathology/CMB	Co-mentor	Working at FDA

2008-2013	Kheng Newick, PhD student	Cellular Molecular & Biological Sciences	Co-mentor	
2009-2012	Timothy N. Perkins,	Pathology Master Program	Co-mentor	
2009-2012	Mutlay Sayan,	Pre-med student at UVM	Co-mentor	Residency program
2010-2016 2012-2016 2012-2012 2010-2011	Joyce Thompson Graduate/PhD student Rotation student Exchange student from Ghana	Cellular Molecular & Biomedical Sciences	Mentor	Post-doctoral associate at the University of Michigan Cancer Center, Ann Arbor, MI
2010-2012	Elizabeth Claire Yasewicz,	Undergraduate pre-med student, UVM	Faculty Apprentice Advisor	
2012-2014	Catherine Westbom,	Pathology Master Program	Mentor	Second year medical student at UVM.
2012-2014	Sonali Herath, MS student	Pathology Master Program	Co-mentor	Physician's Assistant program at Duke University.
2011-2016	Alden Clemments	Graduate student Chemistry Department, UVM	Co-mentor	
2013-2014	Anurag Shukla	Medical student at UVM	Mentor	Anesthesiologist with US Anesthesia Associates, Denver, CO
2015-2019	Phillip Munson,	Graduate student Cellular Molecular & Biological Sciences	Mentor	Post doc associate at MGH, Boston, MA.

DISSERTATION/THESIS COMMITTEE MEMBERSHIP

2014-present	Michelle DiPinto, PhD candidate , Chemistry Department, Advisor, Dr. Christopher Landry.
2014-2017	Peibin WO, MS candidate, CMB , Advisor Dr. Karen Lounsbury. Chair of the committee.
2012-2014	Sonali Herath, MS candidate , Pathology Department. Advisor-Dr. Brooke Mossman.
2009-2016	Alden Clemments, PhD student , Chemistry Department, Advisor-Dr. Christopher Landry.

- 2009-2012 **Timothy Perkins, Master student**, Department of Pathology, UVM, Advisor, Dr Brooke Mossman.
- 2007-2012 **Sherrill Lathrop, PhD student**, Department of Pathology, UVM. Advisor, Dr. Brooke Mossman.
- 2008-2009 **Maggie Sager, Undergraduate Research** (Honor College Thesis), College of Medicine, UVM. Advisor, Joseph D. Schmoker.
Chair of the committee.
- 2008 **Ms Pandima Devi, Ph.D. (Thesis examiner)** A PhD thesis from the University of Madras, Guindy Campus, Chennai, TN, India. Advisor, Dr. V. Kannan.

POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

Dates	Name	Program School	Role	Current Position
2007-2010	Jedd M. Hillegass, PhD	Pathology & Laboratory Medicine Department	Co-mentor	Toxicologist at BMS New Brunswick, NJ .
2007-2011	Jeremy L. Steinbacher, PhD	Chemistry Department	Co-mentor	Assistant Professor at the University of Buffalo, NY
2011-2013 & Nov 2016	Jill M. Miller, MD	FAHC & Pathology & Laboratory Medicine Department	Mentor	Attending Physician at Montana hospital
2012-2013	Sameer Kaiser, MD, a research resident	Surgery Department	Co-mentor	

OTHER VISITING FACULTY SUPERVISED

Years	Names	University/College
2011-2013	Julia Zhao, MD	Professor, Guangxi Medical University, China

OTHER STUDENTS MENTORED

Dates	Name	Program School	Role	Current Position
2007-2007	Sarah Flickinger	High school graduate	Mentor	
2007-2007	Sarah Sullivan	Undergraduate at UVM	Mentor	
2008-2008	Priyam Vijai Patel	Undergraduate at UVM	Mentor	
2010-2013	Christopher Cason	Undergraduate at UVM	Mentor	Graduated from Dental School at Boston University and presently in a residency program, Texas.
2013-2015	Alan Leonard Leggett	Undergraduate student at UVM	Mentor	PhD student at the Brown University
2014-2014	Helen Kogan	A high school senior from NY	Mentor	Presently in Barnard College.
2015-2016	Sara Friedman	undergraduate student at UVM	Mentor	First year medical student in UVM medical school
2015-2016	Santhoshini Premsankar	Middle school Essex, VT	Mentor	High school
2016-2019	Niveditha Badrinarayanan	undergraduate student at Honors College, UVM	Mentor	Starting UVM med school 2019 Fall
2016-2017	Emma Walde,	Post-bac student at UVM pre-med program	Mentor	
2017-2017	Anushree Bajpai	B. Tech student from VIT, India under their Semester Abroad Program	Mentor	MS student at NEU, Boston
2018-2018	Elizabeth Hall	Undergraduate at UV	Mentor	Undergraduate at UV
2018-2018	Rachelle Schwanen	BS student from Netherland under semester abroad program	Mentor	Netherland

2019-present	Brennan Huff	undergraduate student at UVM	Mentor
2020 (July-August)	Ellie Hall	Summer student	Mentor

Summary of Teaching Activities

Taught small classes of graduate students and postdocs in Environmental Pathology Program (2006-2012), recently (2016) in CMB and Path Master program (2021). Mentored numerous high school students, undergraduates, graduate and post-doctoral associates in last 19 years. Successfully directed pathology Master program for 2 years. Two master students, 2 PhD students, one postdoctoral associate and number of undergraduate students graduated/trained from my lab in last 6 years. My excellent teaching and mentoring record led to my induction in LCOM Teaching Academy in 2015.

RESEARCH AND SCHOLARLY ACTIVITIES

Research support (Grants)

Current

1 R21 ES028857-01A1 Shukla (PI) 07/01/18-06/30/2020
NIH/NIEHS (06/30/2021, NCE)
Unfolded Protein Responses in Carbon Nanotube-Induced Mesothelial Cell Fibrosis and Mesothelioma.

The goal of this study is to evaluate the role of unfolded protein response (UPR) in multi-walled CNT (MWCNT) or single-walled CNT (SWCNT)-induced mesothelial cell fibrosis and MM development. Successful completion of this project will reveal novel mechanisms associated with fiber-induced mesothelial cell pathogenesis, and will further inform the hazards associated with MWCNT exposure in advancing the discovery of new therapies.

Role: PI
Direct Costs Year 1: \$125,000
Total Period: 2 years

Completed

LCOM Bridge funding Shukla (PI) 04/2017-05/2019
Role of CD4+T cells in asbestos-induced mesothelial to fibroblastic transition (MFT)

The goal of this study was to understand how activation of inflammasomes in CD4+T cells generate Th2 response and regulate mesothelial cells fibrosis initiation in response to asbestos.

Role: PI

Direct Costs Year 1: \$50,000
Total Period: 2 years

R35 HL135828 Janssen-Heininger (PI) 1/01/2017 – 12/31/2023
NIH/NHLBI

S-glutathionylation chemistry in fibrotic lung remodeling

The goal of this study is to understand the importance of the process of S-glutathionylation in patients with asthma or pulmonary fibrosis, and in mouse models of these diseases. The goal is to understand how this process of S-glutathionylation works, and whether the enzymes that regulate this process can be a target for more specific drugs. We believe that these questions are important for translation into clinical practice as we already have data with compounds that can be used clinically.

Role: Co-I
Direct Costs Year 1: \$600,000
Total Period: 7 years

Paredox Therapeutics LLC Heintz (PI) 07/01/2017-06/30/2019

Exploiting Mitochondrial Oxidants as a Therapeutic Target in Malignant Mesothelioma

The goal of this study is to explore mechanisms for inactivating the peroxiredoxin 3 antioxidant network in tumor cell mitochondria as a therapeutic approach for treating malignant mesothelioma.

Role: Co-I
Direct Costs Year 1: \$484,040
Total Period: 3 years

UVM REACH Shukla (PI) 5/2017-10/2018

Exosomal micro RNA for early diagnosis of mesothelioma

The goal of this study was to profile the exosomal miRNAs from mesothelioma tumor cells.

Role: PI
Total cost: \$30,000
Total Period: 18 Months

R01 ES021110 Shukla (PI) 01/2012-9/2016
NIH/NIEHS April 2018-NCE

Inflammasomes in Pathogenesis of Mesothelioma

The goal of this study was to understand the role(s) of inflammasome in development of mesothelioma and to exploit the inflammasomes as therapeutic target for mesothelioma treatment.

Role: PI
Direct cost year 1: \$225,000
Total Period: 5 years+18 months NCE

Total cost \$25,000
Total Period 12 months

UVMCC/LCCRO

07/2016-06/2017

The goal of this study was to understand if asbestos instillation in lungs disturbs the lung and gut microbiome resulting in systemic inflammation related changes and pathogenesis (fibrosis) of lung.

Role: PI
Total cost \$65,000
Total Period 1 year

09/2014-08/2017

W81XWH-13-PRCRP- Shukla (PI)
IA, Department of
Defense (DoD)

Exosomes in development and therapy of mesothelioma

The goal of this study was to understand how exosomes can transmit signals from lung cells to mesothelium to cause mesothelioma development. Another goal was to identify exosomal biomarkers of asbestos exposure and/or mesothelioma for early diagnosis of this cancer.

Role: PI
Direct cost year 1 \$150,000

R13 NIEHS workshop on novel research findings on asbestos health effects. 7/31/2017
MPI

Total Period 2 years+12 months NCE

Department of Surgery Research James (PI)

9/1/15-11/1/16

Lake Champlain Cancer Research Organization Bioinformatics funding Shukla

The goal of this study was to design decorated silica microparticles to target melanoma cells on the spleen.

Splice variants identification in asbestos exposed mesothelial cells
The goal of this study is to identify splice variants in response to asbestos exposure to mesothelial cells.

Role: PI

Lake Champlain Cancer Research Organization Shukla (PI)

09/01/2013 - 08/31/2014

Preclinical evaluation of ERK5 inhibitors for malignant mesothelioma growth suppression

The goal of this project is to assess effects of specific ERK5 inhibitor, XMD8-92 on in vitro and in vivo MM tumor growth.

Role: PI
Total cost \$50,000
Total Period 1 year

Vermont Cancer Center/Lake Champlain Cancer Research Organization (VCC/LCCRO) Shukla (PI) 01/01/12 - 12/31/12

Massive Parallel Sequencing in Human Primary Mesothelial Cells in Response to Crocidolite Asbestos Exposure

The goal of this project is to identify differential susceptibility of pleural and peritoneal mesothelial cells to asbestos

Role: PI
Total cost \$20,000
Total Period 1 year

Mesothelioma Applied Research Foundation (MARF) Shukla (PI) 1/1/10-6/30/12

Bifunctionalized APMS Particles to Target ERK5 in Malignant Mesothelioma Treatment

The Major goal of this project was to develop combination therapy for mesothelioma utilizing APMS particles loaded with ERK5 inhibitor and chemotherapeutic drugs.

Role: PI
Total cost \$100,000
Total Period 2 years+1 year NCE

Vermont Cancer Center/Lake Champlain Cancer Research Organization Shukla (PI) 09/01/08-08/31/09

Role of MAPK Phosphatases in Malignant Mesothelioma

The major goal of this project is to identify MAPK phosphatases (negative regulator of MAPK signaling) as target for MM treatment using in vitro models

Role: PI
Total cost \$50,000
Total Period 1 year

INBRE-NIH P20RR016462-086071-VGN Shukla (PI) 08/15/2008-05/31/2009

CREB-Target Genes in Malignant Mesothelioma

The major goal of this project is to identify CREB-regulated genes in human MM cells as compared to mesothelial cells.

Role: PI
Total cost \$5000
Total Period 1 year

P01 HL046703 Mann PD; Bovill (PL) Project 6 09/01/2007-07/31/2012
NIH/NHLBI

Surface Dependent Reactions in Thrombosis and Thrombolysis (Project 6: Genomic Approach to Gene-Gene Interaction in Thrombophilia)

We have identified Cell Adhesion Molecule-1 (CADM1) as a novel venous thrombosis risk gene that interacts with protein C deficiency in large French-Canadian kindred. The laboratory is presently focused on investigating the phenotypic role of this gene in thrombogenesis. CADM1 appears to play a synergistic role with activated protein C in modulating endothelial barrier function.

Role: Co-I
Total Period 5 years

P01 CA11407 Carbone PD; Mossman (PL) 09/01/2006-08/31/2011
NIH/NCI

Pathogenesis of Mesothelioma (Project 2: ERK Pathways in Pathogenesis and Chemoresistance of Mesothelioma)

This inter-institutional (Cancer Research Center of Hawaii, UVM, Fox Chase Cancer Center, New York University and University of Chicago) P01 grant consists of experimental and epidemiologic studies on mechanisms of SV40 and asbestos-associated mesothelioma. Dr. Mossman's project will explore the possibly divergent effects of ERKs1/2 and ERK5 in SV40-asbestos cocarcinogenesis and tumor growth using human mesothelioma cells and a nude mouse xenograft model.

Role: Co-I
Total Period 5 years

1P01 HL6767004-01 Mossman (PD and PL) 6/1/2001-4/30/2007
NIH/NCI

Signaling in Epithelial Injury, Proliferation and fibrosis. Project 3: "Protein kinase C and MAPK in epithelial Responses"

The major goal of this project was to study role of PKCs in asbestos-induced fibrosis.

Role: Co-I
Total Period 5 years

Not funded

R21 **Shukla (PI)** 7/1/2020-6/30/2022
NIH/NHLBI
GLUTATHIONE, ER REDOX STRESS, PHOSPHOLIPID OXIDATION AND PULMONARY FIBROSIS

The major goal of this project is to understand the role of oxidized phospholipids (GPX4 deficiency) in modifying surfactant protein, ER stress and pulmonary fibrosis

Role: PI

Total cost \$429,000

NIFA- **Shukla (Co-PI), (PI Debra Neher)** 7/1/20-6/30/25
USDASustainable
Agriculture Systems
Program 2019-08275
Emerging agricultural contaminants: Using microbiomes to characterize impacts on agricultural sustainability, resilience and wellbeing
Role Co-PI
Total cost \$9,922,057

Pending

RO1 **Shukla (PI)** 8/1/2021-7/31/2024
NIH/NIEHS, ViCTER grant
Airborne per and polyfluoroalkyle substances (PFAS) exposures and lung diseases

Role PI

Total Cost \$ 1,848,029

NCI-SBIR, white paper submitted

Patents and Publications:

Patents:

1. A process for preparation of 3-(2-morpholin-4-yl) ethyl) amino-1-hex-ene-one-hydroxy-(1-[2-morpholin-4-yl) ethyl] pyrrolidin-2-yl)-1-aryl-1-oxo-ethyl-dene from 1-aryl-6-hex-2-ene-1-one-3-hydroxy as a therapeutic agent. Patent application No. 2711/DEL/98. **Granted** 3/16/04, no. 190787.
2. A process for preparation of 1-aryl-3-aminoalkyl (N,N-disubstituted) amino-hex-2-ene-1-one-6-hydroxy as a therapeutic agent. Patent application No. 2714/DEL/98. **Granted** 3/15/04, no. 190789
3. A process for preparation of 1-aryl-3-amino/aminoalkyl (N,N-disubstituted) amino-hex-2-ene-1-one-6-hydroxy as a therapeutic agent. Patent application No. 2715/DEL/98. **Granted** 4/12/04, no. 191084.
4. An International Patent for wound healing activity of Compound 93/637.

Publications

Total number of publications: 102 (Original Peer-reviewed Research Articles= 76, Reviews= 15, Editorial=1, Book chapters & Monographs=8, Encyclopedia=1, Commentary=1). *Senior author=37.

Peer-Reviewed Original Research Publications: (Google scholar citation 5879; hi-index 43)

I have published 76 peer-reviewed original research papers. I am first author on 31 papers and the corresponding author on 37 papers.

My Bibliography: <https://www.ncbi.nlm.nih.gov/myncbi/arti.shukla.1/bibliography/public/>

*The publications below in which **Arti Shukla is a corresponding author are marked with an asterisk (*)**.

Research papers

1. **Shukla A**, Agarwal KN, Chansuria JPN, Taneja V. Effect of latent iron deficiency on 5-hydroxytryptamine metabolism in rat brain. **Journal of Neurochemistry** 52, 730-735 (1989). (Impact factor 3.99) (Performed all experiments, analyzed data and wrote the manuscript).
2. ***Shukla A**, Agarwal KN, Shukla GS. Latent iron deficiency alters γ -aminobutyric acid and glutamate metabolism in rat brain. **Experientia** 45, 343-345 (1989). New name **Cellular and Molecular Life Sciences**. Impact factor 6.09.(Performed experiments, analyzed data and wrote the manuscript, corresponding author)
3. **Shukla A**, Agarwal KN, Shukla GS. Effect of latent iron deficiency on metal levels of rat brain regions. **Biological Trace Element Research** 22, 141-152 (1989).Impact factor 1.13 (Performed experiments, analyzed data and wrote the manuscript).
4. ***Shukla A**, Agarwal KN, Shukla GS. Rat brain catecholamines in latent iron deficiency. **Nutrition Research** 9,1177-1186 (1989). Impact factor, 1.2. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
5. ***Shukla A**, Agarwal KN, Shukla GS. Effect of latent iron deficiency on the levels of iron, calcium, zinc, copper, manganese, cadmium and lead in liver, kidney, and spleen of growing rats. **Experientia**, 46, 751-752 (1990). New name **Cellular and Molecular Life Sciences**. Impact factor 6.09. (Performed experiments, analyzed data and wrote the manuscript, corresponding author)
6. Radin NS, **Shukla A**, Shukla GS, Sano A. Heat stable protein that stimulates acid α -glucosidase. **Biochemical Journal** 264, 845-849 (1989). Impact factor, 5.16. (Performed experiments).
7. **Shukla A** and Radin NS. Metabolism of D-(³H)D-PDMP, an inhibitor of glucosylceramide synthesis, and the synergistic action of an inhibitor of microsomal monooxygenase. **Journal of Lipid Research**, 32, 713-722 (1991). Impact factor, 4.92. (Performed all experiments and analyzed data).

8. Shukla GS, **Shukla A**, Radin NS. Gangliosides inhibit glucosylceramide synthase: a possible role in ganglioside therapy. **Journal of Neurochemistry** 56, 2125-2132 (1991). (Impact factor 3.99). (Performed experiments).
9. Shukla GS, **Shukla A**, Inokuchi JI, Radin NS. Rapid kidney changes resulting from glycosphingolipid depletion by treatment with glucosyltransferase inhibitor. **Biochem Biophys Acta**, 1083, 101-108 (1991). Impact factor 4.36. (Performed experiments)
10. **Shukla A**, Shukla GS and Radin NS. Control of kidney size by sex hormones: possible involvement of glucosylceramide. **American Journal of Physiology** 262, F24-F29 (1992). Impact factor 3.73. (Performed experiments and analyzed data).
11. ***Shukla A**, Shukla R, Dikshit M, Srimal RC. Alterations in free radical scavenging mechanisms following blood-brain barrier disruption. **Free Radical Biology & Medicine** 15 (1), 97-100 (1993). Impact factor 6.08. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
12. ***Shukla A**, Dikshit M, Srimal RC. Status of bioantioxidants in brain microvessels of monkey and rat. **Free Radical Research** 22 (4), 303-308 (1995). Impact factor 2.22. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
13. ***Shukla A**, Dikshit M, Srimal RC. Involvement of nitric oxide in regulation of blood-brain barrier permeability in inactivated bacterium-treated rat. **Neuro-Report** 6(12), 1629-1632, (1995). Impact factor 1.81. (Performed experiments, analyzed data and wrote the manuscript, corresponding author)
14. ***Shukla A**, Dikshit M, Srimal RC. Nitric oxide dependent blood-brain barrier permeability alteration in the rat brain. **Experientia** 52, 136-140, (1996). New name, **Cellular and Molecular Life Sciences**. Impact factor 6.496. (Performed experiments, analyzed data and wrote the manuscript, corresponding author)
15. **Shukla A**, Dikshit M, Srimal RC. Cadmium induced alterations in blood-brain barrier permeability and its possible correlation with decreased microvessel antioxidant potential in rat. **Human and Experimental Toxicology** 15, 400-405, (1996). Impact factor 2.06 (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
16. Rasik AM, **Shukla A**, Patnaik GK, Kulshrestha DK, Srivastwa S, Dhawan BN. Wound healing activity of Euphorbia neriifolia. **Indian Journal of Pharmacology** 28, 07-109, (1996). (Performed experiments and wrote the manuscript)
17. ***Shukla A**, Rasik AM, Patnaik GK. Depletion of reduced glutathione, vitamin E and antioxidant defense enzymes in a healing cutaneous wound. **Free Radical Research** 26, 93-101 (1997). Impact factor 2.77. (Performed experiments and wrote the manuscript, corresponding author).
18. Kundu B, Singh G, Jain GK, **Shukla A**, Srivastava N and Patnaik GK. Wound healing activity of some novel analogues related to growth hormone releasing hexapeptide. **Protein and Peptide Letters** 5, 83-86 (1998). Impact factor 1.76. (Performed experiments).
19. **Shukla A**, Srivastava R, Dube MP, Srivastava BS. Molecular mechanism in healing of normal and delayed type of wounds: Role of new or over-expressed proteins. **Biochemical**

- Biophysical Research Communication** 244, 434-439 (1998). Impact factor 2.985. (Performed experiments and analyzed data).
20. ***Shukla A**, Rasik AM and Shanker R. Nitric oxide inhibits wound collagen synthesis. **Molecular and Cellular Biochemistry** 200, 27-33 (1999). Impact factor 2.795. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
 21. ***Shukla A**, Rasik AM, Jain GK, Shanker R, Kulshreshtha DK, Dhawan BN. In vitro and in vivo wound healing activity of asiaticoside isolated from *Centella asiatica*. **J. Ethnopharmacology** 65, 1-11 (1999). Impact factor 3.520. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
 22. ***Shukla A**, Rasik AM, Dhawan BN. Asiaticoside-induced elevation of antioxidant levels in healing wounds. **Phytotherapy Research** 13, 50-54 (1999). Impact factor 3.880. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
 23. Rasik AM, Raghubir R, Gupta A, **Shukla A**, Dube MP, Srivastava S, Jain HK and Kulshreshtha DK. Healing potential of *Calotropis procera* on dermal wounds in guinea pigs. **J. Ethnopharmacology** 68, 261-266 (1999). Impact factor 3.520. (Performed experiments).
 24. *Rasik AM, **Shukla A**. Antioxidant status in delayed healing type of wounds. **International Journal of Experimental Pathology** 81, 257-263 (2000). Impact factor 2.04. (Designed all experiments and wrote the manuscript, corresponding author).
 25. Hart BA, Lee CH, Shukla GS, **Shukla A**, Osier M, Eneman JD, Chiu JF. Characterization of cadmium-induced apoptosis in rat lung epithelial cells: evidence for the participation of oxidant stress. **Toxicology** 133, 43-58 (1999). Impact factor 3.24. (Performed experiments and analyzed data).
 26. Shukla GS, **Shukla A**, Potts RJ, Ozier M, Hart BA, Chiu JF. Cadmium-mediated oxidative stress in alveolar epithelial cells induces the expression of gamma-glutamylcysteine synthetase catalytic subunit and glutathione S-transferase alpha and pai isoforms: Potential role of activator Protein-1. **Cell Biol & Toxicol** 16, 347-362 (2000). Impact factor 2.338. (Performed experiments and analyzed data).
 27. **Arti Shukla**, C. Timblin, K. BeruBe, T. Gordon, W. McKinney, K. Driscoll, P. Vacek and B. T. Mossman. Airborne particulate matter causes expression of nuclear factor-kB-related genes after inhalation. **Am J Respir Cell Mol Biol** 23, 182-187 (2000). Impact factor 5.373. (Performed experiments and analyzed data).
 28. B. T. Mossman, A. Hubbard, **Arti Shukla** and C. R. Timblin. Role of mitogen-activated protein kinases, early response protooncogenes, and activator protein-1 in cell signaling by asbestos. **Inhal Toxicol** 12 (suppl. 3), 307-316 (2000). Impact factor 3.20. (Performed experiments and analyzed data).
 29. **Arti Shukla**, C.R. Timblin, A. Hubbard, J. Bravman and Brooke T. Mossman. Silica-induced activation of c-jun-NH₂-terminal amino kinases, protracted expression of the activator protein-1 protooncogene, fra-1, and S-phase alterations are mediated via oxidative stress. **Cancer Res** 61 (5), 1791-1795 (2001). Impact factor 9.727. (Performed experiments and analyzed data).

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32. **Arti Shukla**, M. Jung, M. Stern, N. K. Fukagawa, D.J. Taatjes, D. Sawyer, B. Van Houten and B.T. Mossman. Asbestos induces mitochondrial DNA damage and dysfunction linked to the development of apoptosis. **Am J Physiol (Lung Cell Mol. Physiol)** 285, L1018-25, (**2003**). Impact factor 4.04. (Performed experiments, analyzed data and wrote the manuscript).
33. M. Li, B. T. Mossman, E. Kolpa, C. R. Timblin, **Arti Shukla**, D. J. Taatjes and N. K. Fukagawa. Age-related differences in MAP kinase activity in VSMC in response to glucose or TNF-alpha. **J Cell Physiol.** 197, 418-425 (**2003**). Impact factor 4.59. (Intellectual input in designing experiments).
34. **Arti Shukla**, M. Stern, K. M. Lounsbury, T. Flanders and B.T. Mossman. Asbestos-induced apoptosis is protein kinase C delta dependent. **Am J Resp Cell Mol Biol**, 29,198-205 (**2003**). Impact factor 5.373. (Performed experiments, analyzed data and helped in writing the manuscript).
35. **Arti Shukla**, Pamela Vacek and Brooke T. Mossman. Dose response relationships in expression of biomarkers of cell proliferation in In vitro assays and inhalation experiments. **Nonlin. Biol. Toxicol Med**, 2, 117-128, **2004**. (Performed experiments).
36. **Arti Shukla**, Trisha Flanders, Karen M. Lounsbury and Brooke T. Mossman. Gamma-glutamylcysteine synthetase and glutathione regulate asbestos-induced expression of activator protein-1 family members and activity. **Cancer Research**, 64, 7780-7786, **2004**. Impact factor 9.727. (Performed experiments, analyzed data and wrote the manuscript).
37. Christy Barlow, **Arti Shukla**, Brooke T Mossman and Karen M. Lounsbury. Oxidant-mediated cAMP response element binding protein activation. Calcium regulation and role in apoptosis of lung epithelial cells. **Am J Resp. Cell Mol Biol**, 34, 7-14, **2006**. Impact factor 5.373. (Intellectual input in designing and performing experiments).
38. **Arti Shukla**, Trisha F. Barrett, Keiichi I. Nakayama, Keiko Nakayama, Brooke T. Mossman and Karen M. Lounsbury. Transcriptional upregulation of MMPs 12 and 13 by asbestos occurs via a PKC δ -dependent pathway in murine lung. **FASEB J**, 20, 1-10, **2006**. Impact factor 4.966. (Performed experiments, analyzed data and wrote the manuscript).
39. **Arti Shukla**, Karen M. Lounsbury, Trisha F. Barrett, Joanna J. Gell, Mercedes Rincon, Kelly J. Butnor, Douglas J. Taatjes, Gerald S. Davis, Pamela Vacek, Keiichi I. Nakayama, Keiko Nakayama, Chad Steele and Brooke T. Mossman. Asbestos-induced peribronchiolar cell proliferation, cytokine production, and fibrosis are attenuated in lungs of protein kinase C δ (PKC δ) knockout mice. **Am J Pathol**, 170, 140-151, **2007**. Impact factor 5.67. (Performed experiments, analyzed data and wrote the manuscript).

40. Astrid Haegens, Trisha F. Barrett, Joanna Gell, **Arti Shukla**, Maximilian MacPherson, Pamela Vacek, Mathew E. Poynter, Kelly J. Butnor, Yvonne M. Janssen-Heininger, Chad Steele and Brooke T. Mossman. Airway epithelial NFkB activation modulates asbestos-induced inflammation and mucin production in vivo. **J Immunol**, 178 (3): 1800-1808 **2007**. Impact factor 5.65. (Designed Ribonuclease protection Assay construct).
41. Christy A. Barlow, Trisha F. Barrett, **Arti Shukla**, Brooke T. Mossman and Karen M. Lounsbury. Asbestos-mediated CREB phosphorylation is regulated by protein kinase A and Extracellular regulated kinases ½. **Am. J. Physiol. Lung Cell Mol. Physiol**, 292: L1361-L1369, **2007**. Impact factor 4.04. (Intellectual input).
42. ***Arti Shukla**, Maximilian MacPherson, Jedd Hillegass, Maria Ramos-Nino, Vlada Alexeeva, Pamela Vacek, Jeffrey Bond, Harvey Pass, Chad Steele and Brooke T Mossman. Alterations in gene expression in human mesothelial cells correlate with mineral pathogenecity. **Am J Respir Cell Mol Biol**, 41, 114-123, **2009**. Impact factor 5.373 (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
43. Buder-Hoffmann SA, **Shukla A**, Barrett TF, MacPherson MB, Lounsbury KM, and Mossman BT: A PKC delta-dependent PKD pathway modulates ERK1/2 and JNK1/2 phosphorylation and Bim-associated apoptosis by asbestos. **Am J Pathol** 174:449-459, **2009**. Impact factor 5.67. (Intellectual input).
44. ***Arti Shukla**, Marcus W. Bosenberg, Maximilian B MacPherson, Kelly J Butnor, Nicholas H Heintz, Harvey I. Pass, Michele Carbone, Joseph R. Testa and Brooke T. Mossman. Activated CREB is overexpressed in human mesotheliomas and inhibits apoptosis. **Am J Pathol**. 175: 2197-2206, **2009**. Impact factor 5.67. (Performed experiments, analyzed data and wrote the manuscript, corresponding author).
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46. Hillegass, J.M., **Shukla, A**, Lathrop, S.A, MacPherson, M.B, Stacie L Beuschel, Kelly J Butnor, Joseph R. Testa, Harvey I. Pass, Michele Carbone, Chad Steele and Brooke T. Mossman. Inflammation precedes the development of human malignant mesotheliomas in a SCID mouse xenograft model. **Annals of the New York Academy of Sciences**, 1203, 7-14, **2010**. Impact factor 4.364. (Intellectual input).
47. Jedd M. Hillegass, **Arti Shukla**, Maximilian B. MacPherson, Sherrill A. Lathrop, Vlada Alexeeva, Timothy N. Perkins, Albert van der Vliet, Pamela Vacek, Mickey E.Gunter, and Brooke T. Mossman. Mechanisms of oxidative stress and alterations in gene expression by Libby Six-Mix in human mesothelial cells. **Particle and Fiber Toxicology**. **2010** Sep 11;7: 26. Impact factor 9.18. (Designed experiments, analyzed data, intellectual input).
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49. ***Arti Shukla**, Jedd M. Hillegass, Maximilian B. MacPherson, Stacie L. Beuschel, Pamela M. Vacek, Kelly J. Butnor, Harvey I. Pass, Michele Carbone, Joseph R. Testa, Nicholas H. Heintz and Brooke T. Mossman. ERK2 is essential for the growth of human epithelioid malignant mesotheliomas. **Int J Cancer**. 129, 1075-86, **2011** Impact factor 6.198. (Designed and performed experiments, analyzed data and wrote the manuscript, corresponding author). NIHMSID # 257610
50. ***Arti Shukla**, Jedd M. Hillegass, Maximilian B. MacPherson, Stacie L. Beuschel, Pamela M. Vacek, Harvey I. Pass, Michele Carbone, Joseph R. Testa, and Brooke T. Mossman. Blocking of ERK1 and ERK2 sensitizes human mesothelioma cells to doxorubicin. **Mol Can**. 9, 314, **2010**. Impact factor 15.31. PMID: PMC3016286. (Designed and performed experiments, analyzed data and wrote the manuscript, corresponding author).
51. **Shukla A**, Barrett TF, MacPherson MB, Hillegass JM, Fukagawa NK, Swain WA, O'Byrne KJ, Testa JR, Pass, HI, Faux SP, and Mossman BT: An ERK2 survival pathway mediates resistance of human mesothelioma cells to asbestos-induced injury. **Am J Respir Cell Mol Biol**, **2011 Mar 31** PMID: PMC3262687. Impact factor: 5.373. (contributed and analyzed data and intellectual input).
52. Perkins TN, **Shukla A**, Peeters PM, Steinbacher JL, Landry CC, Lathrop SA, Steele C, Reynaert NL, Wouters EFM, and Mossman BT: Differences in gene expression and cytokine production by crystalline vs. amorphous silica in human lung epithelial cells. <http://www.particleandfibretoxicology.com/content/9/1/6> **Part Fibre Toxicol** 9:6, **2012** PMID: PMC3337246. Impact factor 9.18 (Analyzed data, intellectual input).
53. Newick K, Cunniff B, Preston K, Held P, Arbiser J, Pass H, Mossman BT, **Shukla A**, and Heintz N: Peroxiredoxin 3 is a redox-dependent target of thiostrepton in malignant mesothelioma cells. **PLoS One** 7:e39404, **2012** PMID: PMC3382597
Impact factor (2012): 3.73 (Provided material and intellectual input).
54. Macura SL, Hillegass JM, Steinbacher JL, MacPherson MB, **Shukla A**, Beuschel SL, Perkins TN, Butnor KJ, Lathrop MJ, Sayan M, Hekmatyar K, Taatjes DJ, Kauppinen RA, Landry CC, and Mossman BT: A multifunctional mesothelin antibody-tagged microparticle targets human mesotheliomas. **J Histochem Cytochem** 60(9):658-674, **2012** PMID: PMC3524557. Impact factor (2012): 2.25 (Intellectual input).
55. ***Shukla A**, Miller JM, Cason C, Sayan M, MacPherson MB, Beuschel SL, Hillegass JM, Vacek PM, Pass HI, and Mossman BT: Extracellular signal regulated kinase 5: a potential therapeutic target for malignant mesotheliomas. **Clin Cancer Res** 19:2071-2083, **2013** PMID: PMC3630261. Impact factor: 10.107 (Conceived the idea, performed experiments, analyzed data, interpreted results, and wrote the manuscript. Corresponding author).
56. Macura SL, Steinbacher JL, MacPherson MB, Lathrop MJ, Sayan M, Hillegass JM, Beuschel SL, Perkins TN, Spiess PC, van der Vliet A, Butnor KJ, **Shukla A**, Wadsworth M, Landry CC, and Mossman BT: Microspheres targeted with a mesothelin antibody and loaded with Doxorubicin reduce tumor volume of human mesotheliomas in xenografts. **BMC Cancer** 13, 400, **2013**. Impact factor (2012): 3.33

PMCID: PMC3846908. (Designed experiments and intellectual input)

57. *Hillegass JM, Miller JM, MacPherson MB, Catherine Westbom, Sayan M, Thompson JK, Macura SL, Perkins TN, Beuschel SL, Alexeeva V, Pass HI, Steele C, Mossman BT, and **Shukla A**: Asbestos and erionite prime and activate the NLRP3 inflammasome that stimulates autocrine cytokine release in human mesothelial cells. **Particle and Fiber Toxicology**, 10, 39, **2013**. PMID: PMC3751315.
Impact factor (2012): 9.18. (Conceived the idea, performed experiments, analyzed data, interpreted results, and wrote the manuscript. Corresponding author).
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Role: conceived the idea, planned experiments, supervised experiments, interpreted data, reviewed the manuscript and was corresponding author.
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33. **Arti Shukla**, Joanna Gell, Trisha F Barrett, Maximillian MacPherson, Kelly Butnor, Sally Huber, Mercedes Rincon, Gerald Devis, Karen Lounsbury and Brooke Mossman. Decreased asbestos-induced pulmonary fibrosis in PKC delta knockout mice, a possible result of altered inflammatory profiles. Presented in Experimental Biology meeting 2005, held in San Diego, California from April 2-6, 2005. **Abstract published in The FASEB journal 19, A491, 2005. (National)**

34. Christy Ann Barlow, **Arti Shukla**, Brooke T. Mossman and Karen Lounsbury. Oxidant induction of CREB phosphorylation through calcium and ERK1/2 signaling in lung epithelial cells. Presented in Experimental Biology meeting 2005, held in San Diego, California from April 2-6, 2005. **Abstract published in The FASEB journal 19, A1507, 2005. (National)**
35. **Arti Shukla**, Joanna Gell, Trisha Barrett, Maximilian MacPherson, Kelly Butnor, Sally Huber, Mercedes Rincon, Gerald Davis, Karen Lounsbury and Brooke T. Mossman. The development of asbestos-associated pulmonary fibrosis is inhibited in protein kinase C delta knockout mice, a possible result of altered inflammatory profiles. Presented in 8th International meeting of Mechanisms of Action of Inhaled Fibers, Particles and Nanoparticles in Lung and Cardiovascular Disease, 2005, held in EPA Conference Center, Research Triangle Park, North Carolina from October 26-28, 2005. **(National)**
36. Christy A. Barlow, **Arti Shukla**, Brooke T. Mossman and Karen M. Lounsbury. Asbestos-mediated CREB phosphorylation is regulated by PKA independently of oxidants in lung epithelial cells. Presented in 8th International meeting of Mechanisms of Action of Inhaled Fibers, Particles and Nanoparticles in Lung and Cardiovascular Disease, 2005, held in EPA Conference Center, Research Triangle Park, North Carolina from October 26-28, 2005. **(National)**
37. Sylky Buder-Hoffmann, **Arti Shukla**, Trisha F. Barrett, Karen Lounsbury and Brooke T. Mossman. Asbestos-mediated activation of protein kinase D is protein kinase C delta dependent. Presented in 8th International meeting of Mechanisms of Action of Inhaled Fibers, Particles and Nanoparticles in Lung and Cardiovascular Disease, 2005, held in EPA Conference Center, Research Triangle Park, North Carolina from October 26-28, 2005. **(National)**
38. **Arti Shukla**, Trisha F. Barrett, Karen M. Lounsbury and Brooke T. Mossman. Matrix metalloproteinases regulation by asbestos in murine lung: Role of protein kinase C delta. Presented in Experimental Biology 2006 meeting, held at San Francisco, CA, April 2006. **Abstract published in The FASEB Journal, March 6, 20, 2006. (National)**
39. **Arti Shukla**, Trisha F. Barrett, Christy A. Barlow, Karen M. Lounsbury and Brooke T. Mossman. Cyclic AMP response binding protein regulation by asbestos. Presented at Platform session in mini symposia at Experimental Biology 2007 meeting held at Washington Convention Center, Washington, DC from April 28-May 2. **Abstract published in The FASEB journal, 21 (6), 2007. (National)**
40. **Arti Shukla**, Maximilian MacPherson and Brooke T. Mossman. Extracellular signal regulated kinases (ERK1/2) play an important role in migration, invasion and chemoresistance of human mesothelioma. Presented at AACR annual meeting, 2008, held at San Diego Convention center, San Diego, CA, 12-16 April 2008. **Abstract published in the proceedings of the meeting. (National)**
41. Hillegass J., **Arti Shukla** et al. Gene profiling of libby amphibole asbestos compared to crocidolite asbestos in human mesothelial cells. Presented at Society of Toxicology, March 2008. **(National)**
42. Juanita Vernooij, Nadja Drummen, Astrid Haegens, **Arti Shukla** et al. Stability of reference genes in five C57/Bl6 models of lung inflammation. Presented at European Respiratory Society Annual Congress 2008. **(International)**

43. **Arti Shukla** A positive correlation between mineral toxicity/pathogenicity and altered gene expression in human mesothelial cells. Presented at The 9th International Conference on Particles: Risks and Opportunities, 2-5 September 2008, Cape Town, South Africa. **(International)**
44. Hillegass J., **Arti Shukla**, Cheng K., Lathrop S., Brown A., Macpherson M., Landry C. and Mossman B.T. Use of amorphous silica nanoporous (APMS) beads for the targeted uptake and treatment of malignant mesothelioma. Presented at The 9th International Conference on Particles: Risks and Opportunities, 2-5 September 2008, Cape Town, South Africa. **(International)**
45. Hillegass J., **Arti Shukla**, MacPherson M., Alexeeva V., van der Vliet A., Gunter M. and Mossman B. T. Comparative analysis of gene expression profiles in LP9/TERT-1 human peritoneal mesothelial cells exposed to libby amphibole asbestos or crocidolite asbestos. Presented at The 9th International Conference on Particles: Risks and Opportunities, 2-5 September 2008, Cape Town, South Africa. **(International)**
46. **Arti Shukla**, Jedd Hillegass, Maximilian MacPherson, Stacie Beuchel and Brooke T. Mossman. Extracellular signal regulated kinase 2 (ERK2) plays a critical role in mesothelioma tumor growth. Presented at the 100th international AACR meeting, 18-22 April 2009, Denver, Colorado. **Abstract published in the proceedings of the meeting in Cancer Research. (National)**
47. Jeremy Steinbacher, Kai Cheng, Sherill Lathrop, **Arti Shukla**, Jedd Hillegass, Risto Kauppinen, Brooke Mossman and Christopher Landry. Mesoporous silica microparticles for biomedical applications: delivery of therapeutic agents and MRI contrast agents. Presented in Gordon Conference, June 2009. **(National)**
48. **Arti Shukla**. CREB-target genes in malignant mesothelioma. Vermont Genetics Network, Annual retreat, August 12, 2009, Doubletree Hotel, South Burlington, VT. **(Local)**
49. Jeremy L. Steinbacher, Sherill A. Lathrop, Kai Cheng, **Arti Shukla**, Jedd Hillegass, Brooke Mossman and Christopher C Landry. Nanoporous silica: surface modification strategies and use in biomedical applications, ACS 2009. **(National)**
50. **Arti Shukla**, Jedd Hillegass, Maximilian MacPherson, Stacie Beuschel, Sherill Lathrop, Nicholas Heintz and Brooke Mossman. Cell signaling and inflammatory pathways in asbestos-related diseases. OXI/Nitro stress, NY, Oct 2009. **(National)**
51. Hillegass J., **Arti Shukla**, Maximilian MacPherson, Stacie Beuschel, Sherill Lathrop, Chad Steele and Brooke Mossman. Identification of cytokines and growth factors associated with exposure of mesothelial cells to asbestos and progression of mesothelioma growth in mice. Society of Toxicology, March 2010. **(National)**
52. **Arti Shukla**, Jedd M Hillegass, Maximilian B. MacPherson, Stacie L. Beuschel, Nicholas Heintz, Pamela Vacek, Harvey Pass, Michele Carbone, Joseph R Testa, Brooke T Mossman. Inhibition of ERK1/2 can sensitize human malignant mesothelioma cells and tumors to doxorubicin. Presented at 101th, AACR meeting, 17-21 April 2010 at Washington DC. **Abstract 347; Cancer Research 2011, 70, 347-347. (National)**

53. **Arti Shukla**, Jedd Hillegass, Stacie Beuschel, Maximilian MacPherson, Harvey I Pass and Brooke T Mossman. Extracellular signal regulated kinase 5 (ERK5) in malignant mesothelioma. Presented at International MARF symposium, June 10-12, 2010, Washington DC. **(National)**
54. **Arti Shukla**, Jedd Hillegass, Stacie Beuschel, Maximilian MacPherson, Harvey I Pass and Brooke T Mossman. CREB inhibition attenuates malignant mesothelioma tumor growth and drug resistance. AACR 2011, April 2-6, Orlando, Florida. **Published in proceedings of the meeting. (National)**
55. **Shukla A**, Hillegass JM, Beuschel SL, MacPherson MB, Pass HI, and Mossman BT: Extracellular signal regulated kinase 5 (ERK5) in malignant mesothelioma. Mesothelioma Applied Research Foundation (MARF), International Symposium on Malignant Mesothelioma 2010, Washington DC, June 10-12, 2010 **(National)**
56. **Shukla A**: Targeting signaling pathways to treat mesothelioma. Environmental Pathology and Carcinogenesis Seminar series, University of Vermont College of Medicine UVM, March 14, 2011 **(local)**
57. **Shukla A**: CREB inhibition attenuates malignant mesothelioma tumor growth and drug resistance. American Association for Cancer Research (AACR), Orlando, FL (abstract published in meeting proceedings, Cancer Research), April 2-6, 2011 **(National)**
58. **Shukla A**: ERK5: A potential target for mesothelioma therapy. Presented in International symposium on malignant mesothelioma. Mesothelioma Applied Research Foundation (MARF), International Symposium on Malignant Mesothelioma 2011, Washington, DC, June 25, 2011. **(National)**
59. Newick K, Cunniff B, Held P, **Shukla A**, Pass H, Butnor K, Kundu K, Murthy N, Mossman B, and Heintz N: Targeting redox homeostasis in malignant mesothelioma. FRBM 51:s127, 2011. **Abstract published in FRBM. (National)**
60. **Shukla A**, Miller JM, Hillegass JM, MacPherson MB, Beuschel SL, Pass HI, and Mossman BT: Role of NLRP3 inflammasome in the development and drug resistance of malignant mesothelioma. Presented at AACR annual meeting in Chicago, March 31-April 4, 2012; **Abstract published in *Cancer Res* 72(Suppl 8), 5461, 2012. (National)**
61. **Shukla A**: NLRP3 inflammasome plays a significant role in the development and drug resistance of malignant mesothelioma. Oral Presentation at 11th International Conference of the International Mesothelioma Interest Group (iMig). **Abstract published in meeting proceedings**, September 11-14, 2012. **(National)**.
62. Mossman BT and **Shukla A**: ERK Signaling and Mesothelioma: Oral Presentation at 11th International Conference of the International Mesothelioma Interest Group (iMig). **Abstract published in meeting proceedings**, September 11-14, 2012 **(National)**
63. Miller JM, Macpherson MB, Beuschel SL, Sayan M, Mossman BT and **Shukla A**: Curcumin kills malignant mesothelioma cells by pyroptosis. Poster Presentation at 11th International Conference of the International Mesothelioma Interest Group (iMig). **Abstract published in meeting proceedings**, September 11-14, 2012. **(National)**

64. **Shukla A**: Current Concepts of Causation of Mesothelioma by Amphibole Asbestos and Erionite; (abstract published in GSA Abstracts), vol. 45 no. 1), Oral presentation in Geologic Society of America, Northeastern Section Meeting, Bretton Woods, NH, March 18-20, 2013. **(National)**
65. **Shukla A et al.**: ERK5 in pathogenesis of mesothelioma. Presented at AACR Annual Meeting (abstract # 4315, published in Cancer Research, 2013, 73, 4315-4315), Washington, DC, April 6-10, 2013. **(National)**
66. **Shukla A**: Mesothelioma and Inflammasomes: Is there a connection? Vermont Lung Center, UVM, April 30, 2013. **(Local)**
67. Brooke Mossman, Sonali Herath, Eric Taylor, Steven Lower, Julie Dragon, Jeff Bond, Ann Wylie and **Arti Shukla**: New data on how asbestos fibers interact with cells to trigger extracellular signal-regulated protein kinase, i.e. ERK, pathways critical to toxicity and diseases. Presented in 10th International Meeting on Particle Toxicology in Dusseldorf, Germany (abstract published in the proceedings). June 2013. **(International)**.
68. Joyce Thompson and **Arti Shukla**: Asbestos-induced inflammasome regulation by TXNIP. Presented in an inflammasome conference at Boston University, June 24-25, 2013. **(National)**
69. **Arti Shukla**, Mesothelioma, a brief research review, VCC/MMM presentation, September 23, 2013. **(local)**
70. **Arti Shukla**, Differential susceptibility of pleural and peritoneal mesothelial cells to asbestos exposure as assessed by Massive Parallel Sequencing, December 2, 2013. **(Local)**
71. **Arti Shukla**, Mesothelioma/lung cancer, VCC Journal club, Jan 3, 2014. **(Local)**
72. **Arti Shukla**, Manipulating inflammasomes for mesothelioma treatment, presented in mesothelioma symposium, Honolulu, Hawaii, Feb 21-22, 2014 **(National)**.
73. **Arti Shukla**, Role of inflammasomes in malignant mesotheliomas. Presented in the Society of Toxicology workshop entitled- New Concerns and New Science Addressing Environmental Asbestos Exposures, Phoenix, Arizona, March 23-27, 2014 **(National)**.
74. **Arti Shukla**, Modulation of NLRP3 by chemotherapeutics: Potential application in mesothelioma treatment. American Association of Cancer Research, 2014, April 5-9, San Diego CA. Abstract 3183: **Abstract published in Cancer Research, 2014, 74, 3183. (National)**.
75. **Arti Shukla**, Pharmacology seminar, September 18, 2015 **(Invited, local)**.
76. Tim Hunter¹, Meghann Palermo¹, Heather Driscoll², Scott Tighe¹, Julie Dragon¹, Jeff Bond¹, **Arti Shukla**¹, Mahesh Vangala², James Vincent. Expression profiling smackdown: Human Transcriptome Array HTA 2.0 vs. RNA-Seq. Presented in, New Mexico, March 2014. **Abstract published in Journal of Biomolecular Techniques, 2014; 25, s20-s21 (National)**.

77. Julie Dragon, Joyce Thompson, Maximilian MacPherson and **Arti Shukla**. Differential susceptibility of pleural and peritoneal mesothelial cells to asbestos. Beyond the Genome: Cancer genomics, 8-10 Oct, Harvard Medical School. (**National**)
78. **Arti Shukla**, Joyce Thompson, Alan Leggett, Anurag Shukla, Maximilian MacPherson and Stacie Beuschel. ERK5 inhibitor XMD8-92 for malignant mesothelioma treatment: a preclinical study. American Association of Cancer Research, 2015, April 18-22, doi: 10.1158/1538-7445.AM2015-38 Cancer Res August 1, **2015** 75; 38 Abstract 38. (**National**)
79. Joyce K. Thompson, Maximilian B. MacPherson, Stacie L. Beuschel, and **Arti Shukla**. Inflammasomes: fanning the flames of malignant mesothelioma initiation. American Association of Cancer Research, 2015, April 18-2. **Abstract published in Cancer Research** August 1, **2015** 75; 3164, doi: 10.1158/1538-7445.AM2015-3164.
80. Phillip Munson, Joyce Thompson, Maximilian MacPherson, Hector Peinado and **Arti Shukla**. Circulating Biomarkers World Congress 2016, March 21-22, Boston. Exosomes, Circulating Nucleic Acids, Circulating Proteins, CTCs and Liquid Biopsies.
81. **Arti Shukla**, Phillip Munson, Joyce Thompson, Julie Dragon, Maximilian MacPherson and Hector Peinado. Unique pleural vs. peritoneal mesothelioma exosomal signature: does mesothelial cell susceptibility to asbestos matter? American Association of Cancer Research, 2016, April 16-20. Abstract 3892: **Abstract published in Cancer Research** 07/2016; 76 (14 Supplement). DOI: 10.1158/1538-7445. AM2016-3892
82. Joyce Thompson, Jill Miller, Maximilian MacPherson and **Arti Shukla**. The role of TFPI2 and FGF2 in asbestos-induced mesothelial to fibroblastic transition. American Association of Cancer Research, 2016, April 16-20. Abstract 4046, **Abstract published in Cancer Research** 07/2016; 76 (14 Supplement). DOI: 10.1158/1538-7445. AM2016-3892
83. Yuwaraj Kadariya, Craig Menges, Jacqueline Talarchek, Kathy Q. Cai, Andres J. Klein-Szanto, Ralph A. Pietrofesa, Melpo Christofidou-Solomidou, Mitchell Cheung, Brooke T. Mossman, **Arti Shukla**, and Joseph R. Testa. The NALP3 inflammasome and IL-1B signaling link asbestos-induced inflammation with the development of malignant mesothelioma. American Association of Cancer Research, 2016, April 16-20. Abstract 842. **Abstract published in Cancer Research** 07/2016; 76(14 Supplement). DOI:10.1158/1538-7445. AM2016-842
84. Phillip Munson, Nicholas Farina and **Arti Shukla**. Exosomal miRNA: A new approach to mesothelioma biomarkers. UVMCC Clinical and Translational Symposium, April 29, 2016.
85. Phillip Munson, Elizabeth M. Hall, Nicholas H. Farina, Harvey I. Pass and **Arti Shukla**. Mesothelioma exosomes as potential new cancer therapy. Presented at American Association of Cancer Research, 2019, April. Published in, Cancer Res 2019;79 (13 Suppl): Abstract no. 2743.

INVITED PRESENTATIONS

Local/Regional

Years	Host Organization “Title of Talk”	City, State
2011	Environmental Pathology and Carcinogenesis seminar at the University of Vermont College of Medicine “Targeting signaling pathways to treat mesothelioma”	Burlington, VT
2013	Geologic Society of America, Northeastern Section Meeting “Current Concepts of Causation of Mesothelioma by Amphibole Asbestos and Erionite”	Bretton Woods, NH
2013	Vermont Lung Center, The University of Vermont College of Medicine “Mesothelioma and Inflammasomes: Is there a connection?”	Burlington, VT
2013	Vermont Cancer Center, Molecular Mechanism Meeting, The University of Vermont College of Medicine “Mesothelioma, a brief research review”	Burlington, VT
2013	Environmental Pathology and Carcinogenesis Seminar, The University of Vermont College of Medicine “Differential susceptibility of pleural and peritoneal mesothelial cells to asbestos exposure as assessed by Massive Parallel Sequencing”	Burlington, VT
2013	Vermont Cancer Center Journal Club, The University of Vermont College of Medicine “Mesothelioma/lung cancer”	Burlington, VT
2015	Department of Pharmacology Seminar, The University of Vermont College of Medicine “Malignant mesothelioma: development to therapy”	Burlington, VT
2015	UVM Cancer Center Grand Rounds, The University of Vermont College of Medicine “Potential new targets for malignant mesothelioma therapy”	Burlington, VT
2015	Pathology Grand Rounds, The University of Vermont College of Medicine “Mesothelioma: Biology to therapy”	Burlington, VT
2015	Department of Biochemistry Seminar, The University of Vermont College of Medicine “Mesothelioma development and therapy: Where do inflammasomes fit in”	Burlington, VT

National

Years	Host Organization "Title of Talk"	City, State
2002	9 th Annual Meeting of the Oxygen Society "PKC delta selectively regulates asbestos-induced fra-1 transcription"	San Antonio, TX
2014	Mesothelioma Symposium, University of Hawaii Cancer Center "Manipulating inflammasomes for mesothelioma treatment"	Honolulu, HI
2014	Society of Toxicology Workshop-New Concerns and New Science Addressing Environmental Asbestos Exposures "Role of inflammasomes in malignant mesotheliomas"	Phoenix, AZ
2015	University of Rochester Environmental Health Science Center's Seminar Series "Inflammasomes in Asbestos-Induced Mesothelial Cell Pathogenesis"	Rochester, NY
2015	Department of Pharmaceutical Sciences, University of West Virginia "Inflammasomes in development and therapy of mesothelioma"	Morgantown, WV
2015	Molecular Toxicology Gordon Conference "Inflammasomes in fiber-induced mesothelial to fibroblastic transition (MFT)"	Andover, NH
2015	Center of Excellence in Environmental Toxicology/Super Fund Program, University of Pennsylvania "Mesothelial cell pathogenesis by asbestos: Role of inflammasomes"	Philadelphia, PA
2017	Mesothelioma Applied Research Foundation (MARF) "Inflammasomes in mesothelioma: Is ERK5 a connecting link?"	Bethesda, MA
2017	NIEHS Workshop on Health Effects of Asbestos "Exosomal protein content: possible biomarkers of asbestos exposure"	Burlington, VT
2017	ENACT: Emerging Nanotechnology Applications for Cancer Therapy, The University of Oklahoma Health Sciences Center "Exosomes in mesothelioma biology"	Oklahoma City, OK
2019	Annual Mike Hasson Lectureship, Oregon Health Science University "Exosomes and Mesothelioma. Is there a hope?"	Portland, OR
2020 Oct	Monticello II Conference (to be rescheduled due to Corona) (postponed due to COVID-19)	Charlottesville, Virginia

International

Years	Host Organization “Title of Talk”	City, Country
2003	International Conference on Chrysotile Asbestos-Cement products “Health issues in use of chrysotile in manufacture of chrysotile cement sheets”	New Delhi, India
2008	The 9 th International Conference on Particles: Risks and Opportunities “A positive correlation between mineral toxicity/pathogenicity and altered gene expression in human mesothelial cells”	Cape Town, South Africa
2010	Mesothelioma Applied Research Foundation (MARF), International Symposium on Malignant Mesothelioma 2010 “Extracellular signal regulated kinase 5 (ERK5) in malignant mesothelioma”	Washington, DC
2011	Mesothelioma Applied Research Foundation (MARF), International Symposium on Malignant Mesothelioma 2011 “ERK5: A potential target for mesothelioma therapy”	Washington, DC
2012	11 th International Conference of the International Mesothelioma Interest Group (iMig) “NLRP3 inflammasome plays a significant role in the development and drug resistance of malignant mesothelioma”	Boston, MA
2016	11 th International Particle Toxicology Conference “Targeting FGF2/TFPI2 signaling as a potential key to unlocking asbestos-induced mesothelial to fibroblastic transition”	Singapore
2016	11 th International Particle Toxicology Conference “Asbestos and carbon nanotube-induced mesothelial cell pathogenesis involves inflammasome activation via unfolded protein response”	Singapore
2017	7 th International Symposium on Malignant Pleural Mesothelioma, UCLA Luskin Center “Inflammasome Modulation by Chemotherapeutics in Mesothelioma: Is This a New Possibility?”	Los Angeles, CA

Summary of Scholarly Activities

Obtained 4 extramural (MARF, 2 NIH, DoD) and 9 intramural grants and established a successful independent research program. Highly recognized by mesothelioma/lung cancer program, as evident by grant review and chair invitations from DoD, NIH and European agencies. Also nationally/internationally recognized in the field and often invited to give talk and/or chair the session in prestigious meetings including Gordon Research Conference/ Mike Hasson lectureship. Published total 102 articles in high impact factor journals/total citations 5879. My exosome research was highlighted by DoD in their annual report, 2016 and again in 2018. On July 31, 2017, I co-organized, NIEHS asbestos health-effect, workshop. Total 85 research presentations from my work were made in different societies (AACR, ATS, FRBM etc.), out of these, 63 were presented in last 19 years. Many of these abstracts were published in society-related journals.