

# The PMI Times

Department of Pathology, Microbiology & Immunology  
University of South Carolina ~ School of Medicine  
The Communication Source for PMI Faculty, Staff & Students  
Department Chair: Dr. Mitzi Nagarkatti, PhD  
Editors: Mitzi Nagarkatti, PhD, Angela Murphy, PhD & Nicki Holt



January - April 2021

## *P* Honors & Awards

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Dr. Prakash Nagarkatti is UofSC Principal Investigator on a 10-year Department of Defense grant for \$3.8 billion provided to Battelle Savannah River Alliance for the management of Savannah River National Laboratory along with Clemson University, University of Georgia and South Carolina State University.

Dr. Prakash Nagarkatti, University of South Carolina Vice President for Research, has been elected Chair of the EPSCoR/IDeA Foundation (EIF) Board of Directors. The EPSCoR (Established Program to Stimulate Competitive Research) and the IDeA (Institutional Development Award Program) Programs are funded by NSF and NIH respectively. Dr. Prakash Nagarkatti is a Principal Investigator (P.I.) on both NSF EPSCoR and NIH IDeA-funded Centers. The EIF Executive Director, Jessica Molesworth said "... I can't wait to see how Dr. Nagarkatti pushes our organization forward and helps us to reach more people in EPSCoR and IDeA jurisdictions to enhance innovation in every corner of the US."

Dr. Prakash Nagarkatti was elected Chair of the National NSF EPSCoR Program Directors/Principal Investigators (PD/PI) Council. He will be hosting a PD/PI meeting of EPSCoR Track-1 jurisdictions in May 2021.

Dr. Prakash Nagarkatti was invited by Dr. Loretta Moore, Director of NSF EPSCoR to lead a session on Jurisdictional and Institutional Strategies for COVID-19 on May 19<sup>th</sup>, 2021.

Dr. Prakash Nagarkatti was invited to the Society for Birth Defects Research and Prevention 2021 Virtual 61st Annual Meeting to give a talk on the effect of prenatal exposure to cannabinoids on the immune response in fetal and post-natal life.

Dr. Mitzi Nagarkatti, Chair of the Department of Pathology, Microbiology and Immunology, has been elected President of the national Association of Medical School Microbiology and Immunology Chairs. There are over 130 Medical Schools with departments such as ours in the United States.

Dr. Mitzi Nagarkatti has been named Fellow of the American Academy of Microbiology, an honorific leadership group from across the globe selected through a highly rigorous, peer-review process based on scientific achievements and original contributions to advanced microbiology.

Dr. Mitzi Nagarkatti has also been named Fellow of the National Academy of Inventors (NAI). The NAI fellows are academic inventors who have demonstrated a spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society. This class of fellows will be inducted at the 10th Annual Meeting of the National Academy of Inventors to be held June in Tampa, Florida.

Dr. Mitzi Nagarkatti was invited to present their research titled "MicroRNA-92 Expression in CD133<sup>+</sup> Melanoma Stem Cells Regulates Immunosuppression in the Tumor Microenvironment via Integrin-Dependent Activation of TGFβ" by Chris Shidal, Narendra Singh, Prakash Nagarkatti and Mitzi Nagarkatti published in Cancer Research 79:3622-3636, 2019. This paper was the winner of the Drug Discovery Toxicology Specialty Section (DDTSS) Paper of the Year award at the Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12-26, 2021.

Dr. Philip Brandon Busbee received the American Association of Immunologist (AAI) Early Career Faculty Award for the 2021 AAI Virtual meeting to be held May 10-15, 2021.

Chandani Mitchell (Graduate student in Dr. Busbee's lab) was awarded the American Association of Immunologist (AAI) Trainee Abstract Award and was selected for a Platform Presentation at the 2021 AAI virtual meeting to be held from May 10-15, 2021.

Brandon VanderVeen (Murphy lab) was granted an I-Corps™ supplement from the NIH/NCCIH in the amount of \$52,000. The goal of the I-Corps program is to assist with the commercialization planning of SBIR/STTR applications.

Dr. Alex Rutkovsky, Nagarkatti lab, was awarded the 2021 SOT Carcinogenesis SS Postdoctoral Researcher and Young Investigator Award at the Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021. Rutkovsky, A., Neamah, W., Abdullah, O., Nagarkatti, P. and Nagarkatti, M., Resveratrol inhibits TCDD-mediated induction of myeloid-derived suppressor cells and their functions.

Alkeiver Cannon (Graduate Student from the Nagarkatti lab) received the SOT Biotechnology Specialty Section Student Achievement Award at the 2021 Annual Society of Toxicology (SOT) meeting, March 12-26, 2021. Cannon, A., Wilson, K., Miranda, K., Nagarkatti, P.S., and Nagarkatti, M. Single Cell RNA Sequencing Reveals Downregulation of lncRNA Gm42031 Expression After Treatment with AhR Ligands in Concanavalin-Induced T Cell-Mediated Liver Injury.



Dr. Kiesha Wilson from the Nagarkatti lab, was awarded the Toxicologist of African Origin (TAO) Special Interest Group Postdoctoral Fellow Travel Award of Society of Toxicology, Virtual, March 15-19, 2021. Wilson, K., Sultan, M., Cannon, A., Nagarkatti, P.S., and Nagarkatti, M. Treatment of SEB Induced ARDS with CBD Ameliorates Fatal Inflammatory Response.

Dr. Philip Brandon Busbee was awarded a 2021 USC ASPIRE grant for his project titled "Investigating the link between Bacteroides acidifaciens and colitis". He was awarded \$15,000 from 07/01/2012-09/30/2022 to conduct research aimed at studying how a certain gram-negative bacteria (Bacteroides acidifaciens) might be contributing to or promoting colitis disease and severity.

Angela Murphy and team (Co-PIs: Kandy Velazquez - PMI, Wayne Carver - CBA, Ciaran Fairman - Exercise Science, Peisheng Xu – Pharmacy) were awarded an ASPIRE II grant from the VPR office. The grant is titled 'Ameliorating Side-Effects of Chemotherapy to Improve Treatment Tolerance and Quality of Life' and the funding amount is \$99,507.

Angela Murphy serves as a Co-PI of a recently funded ASPIRE II grant titled 'Racial and Rural Disparities among Early-onset Breast Cancer Survivors' and for \$99,978. Dr. Susan Steck (epidemiology) is the lead PI.

Mitchell Nesmith (Murphy lab) was awarded a Magellan Scholar grant from the Office of the VPR titled 'The Effects of Emodin on Chemotherapy-Induced Skeletal Muscle Atrophy'. Mitchell will be mentored by Drs. Angela Murphy and Brandon VanderVeen.

Dr. Kiesha Wilson (Postdoc from Nagarkatti lab) was awarded 2<sup>nd</sup> place Postdoctoral Scholar Poster Award at UofSC Discover Day, which was held virtually this year April 23, 2021.

Michal Claire Williams (Undergraduate student in Dr. Busbee's lab) was awarded the Undergraduate Student Award at UofSC Discover Day, which was held virtually this year on April 23, 2021.

Matthew Noneman (Undergraduate student in Dr. Velazquez's lab) was awarded the Undergraduate Student Award at UofSC Discover Day, which was held virtually this year on April 23, 2021.

Michael Keller (Undergraduate student in Dr. Chatzistamou's lab) was awarded the Undergraduate Student Award at UofSC Discover Day, which was held virtually this year on April 23, 2021.

Congratulations to our PMI Department Biomedical Sciences doctoral students for successfully defending and participating in the graduation exercises, May 7, 2021:

- Osama A. Abdulla, Ph.D.
- Firas H. Khathayer, Ph.D.
- Ahmed D. Mohammed, Ph.D.



Dr. Catroppo was recognized for his 10 years of service to the University of South Carolina.

The MD classes of 2021, 2022, and 2023 have voted for the Teacher of the Year Awards. PMI Department is honored to have our faculty nominated.

Nominees for M2 Teacher of the Year

- Dr. James Catroppo
- Dr. Alexa Gandy

Nominees for M2 Pearls of Wisdom Speakers

- Dr. James Catroppo

Dr. Carole Oskeritzian was invited to join a discussion panel at the 10th EMBRN International Mast Cell and Basophil Meeting held virtually on January 11.

Dr. Carole Oskeritzian served as a judge for oral presentations at the 36th Annual W. Morgan Newton Research Symposium, March 12, UofSC School of Medicine, Columbia, SC.

Madison R. Ryan, Capstone and Magellan Scholar, Oskeritzian Lab, was the Second Place Undergraduate Platform Award Winner, Cell & Molecular Biology Session, at the 2021 South Carolina Academy of Science (SCAS) Annual Meeting, held virtually on April 17, for her oral presentation entitled "Regulatory role of micro-RNA-34a on human mast cell inflammatory gene expression". Congratulations, Maddy!

Dr. Carole Oskeritzian served as moderator for oral presentations in the Physiology and Health sessions at the 2021 Virtual South Carolina Junior Academy of Science on April 17.

Dr. Carole Oskeritzian was the inaugural recipient of the Graduate Teaching Appreciation Award that recognizes excellence in teaching. This award was presented by the UofSC Biomedical Science Graduate Students Association on April 19.

Dr. Carole Oskeritzian served as a co-judge with Dean Hall for Medical Scholars virtual poster presentations at Discover UofSC, April 23.

Dr. Carole Oskeritzian was elected to join the South Carolina Academy of Science Leadership Team to serve as a SCAS Councilor for a three-year term.

Dr. Carole Oskeritzian was selected as a 2021 recipient of the Distinguished Research Service Award presented by the Office of the UofSC Vice President for Research.

Dr. Reilly Enos was awarded a pilot project from the USC COBRE Center for Targeted Therapeutics.

Yvone Shametaj (Velázquez lab) was awarded the South Carolina Honors College Science Undergraduate Research Fellowship (SURF) Grant to study the role of TNF receptors on cancer-induced visceral pain on April 13, 2021.

Kandy T. Velázquez (PPN) and Kenneth Walsh (PPN) received an ASPIRE I from the Office of the VPR to study the "Molecular Signaling and Anti-Nociceptive Actions of Minor Cannabinoids".

Dr. Swapan Ray's medical student Matthew Taylor (who has formerly finished his Masters' degree working in Dr. Ray's laboratory) has recently been matched into Brown University, which is one of the Ivy League Institutions in the United States, for his residency in Internal Medicine.

Dr. Swapan Ray is the research mentor of Amanda Manea, a Sophomore in UofSC Honors College, who has recently been awarded a Magellan Scholar grant for conducting her undergraduate research on the project 'Inhibition of autophagy and telomerase for induction of apoptosis in human glioblastoma' in Dr. Ray's laboratory.

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## **News & Updates**

USA Today featured Dr. Prakash Nagarkatti in the Health News update by Karen Weintraub and Elizabeth Weise, January 18, 2021 titled, "COVID-19 vaccine rollout hasn't worked, but change is coming." <https://www.usatoday.com/in-depth/news/health/2021/01/18/experts-slam-chaotic-covid-vaccination-rollout-look-forward-biden/4168188001/>

Dr. Prakash Nagarkatti was featured in a WYFF article titled: "Delta-8-THC may prove tricky for police as popularity grows" by Renee Wunderlich on 3/24/21. <https://www.wyff4.com/article/delta-8-thc-may-proove-tricky-for-police-as-popularity-grows/35930182>

Dr. Prakash Nagarkatti was featured by Julie Calhoun in a WBTW article titled: "Palmetto Pot War: A look at the science behind medical marijuana and obstacles researchers face" on 2/25/21. <https://www.wbtw.com/palmettopotwar/palmetto-pot-war-a-look-at-the-science-behind-medical-marijuana-and-obstacles-researchers-face/>

Dr. Prakash Nagarkatti was featured in UofSC Today, Feb 10, 2021. He serves as the UofSC Principal Investigator on a 10-year grant obtained from the Dept. of Energy for \$3.8 billion towards Savannah River National Laboratory (SRNL) management. UofSC is partnering with 4 other universities in the region forming Battelle Savannah River Alliance (BSRA) aimed at conducting research innovation and workforce development at the SRNL.

[https://www.sc.edu/uofsc/posts/2021/02/uofsc\\_savannah\\_river\\_national\\_laboratory.php?utm\\_source=%40UofSC+Today&utm\\_cam](https://www.sc.edu/uofsc/posts/2021/02/uofsc_savannah_river_national_laboratory.php?utm_source=%40UofSC+Today&utm_cam)

paign=bf82338cb8-UOFSC\_TODAY\_2021\_02\_12&utm\_medium=email&utm\_term=0\_fb5e576816-bf82338cb8-53288033#.YCP5nGhKIUI

Dr. Prakash Nagarkatti was featured in an article by Adam Mintzer March 22, 2021, titled, "What is Delta 8? The hemp product giving people a 'light' high in SC". He spoke on Live 5 News to present the information and research.  
<https://www.live5news.com/2021/03/22/what-is-delta-cbd-product-giving-people-light-high-sc/>

Dr. Prakash was featured on WIS TV, as follow up for his article by Adam Mintzer, March 22, 2021, "What is Delta 8? The legal hemp product giving people a 'light high' in SC". [https://www.wistv.com/2021/03/22/what-is-delta-cbd-product-giving-people-light-high-sc-2/?utm\\_source=%40UofSC+Today&utm\\_campaign=ba0aea69b0-UOFSC\\_TODAY\\_2021\\_03\\_24&utm\\_medium=email&utm\\_term=0\\_fb5e576816-ba0aea69b0-53288033](https://www.wistv.com/2021/03/22/what-is-delta-cbd-product-giving-people-light-high-sc-2/?utm_source=%40UofSC+Today&utm_campaign=ba0aea69b0-UOFSC_TODAY_2021_03_24&utm_medium=email&utm_term=0_fb5e576816-ba0aea69b0-53288033)

Dr. Mitzi Nagarkatti reviewed grants for the NIH Systemic Injury by Environmental Exposure (SIEE) Study Section on March 18-19, 2021.

Dr. Angela Murphy served as a reviewer for NIH/NCI Transition to Independence awards on February 24-25, 2021.

Dr. Angela Murphy has been invited to serve on the Editorial Board of the Sport and Exercise Nutrition section of Frontiers in Sports and Active Living and Frontiers in Nutrition.

Dr. Archana Saxena has joined the laboratory of Dr. Philip Brandon Busbee as a Postdoctoral Fellow. She received her Ph.D. from Jawaharlal Nehru University, New Delhi, India. Welcome to the Pathology, Microbiology, and Immunology Department, Dr. Saxena!

Shanieka Staley (Lab Technician in Dr. Busbee's lab) was accepted into the Fall 2021 Ph.D. Integrated Biomedical Sciences Program here at the University of South Carolina. Congratulations Shanieka!

A warm welcome to Dr. Taylor Carter joining the Nagarkatti lab as a Postdoctoral Fellow. Taylor is well experienced with the University of South Carolina having received both his B.S. and Ph.D. at the UofSC. His research interests include bacteriology, immunology, and molecular pathways. The role of the microbiome in various disease models is the intersection of these interests and the focal point of his current research.

Dr. Ioulia Chatzistamou was invited as a facilitator at the Capstone Workshop, "Residents as Teachers", session 11:00-12:30 pm, April 29th, 2021. The workshop was organized and hosted by Dr. Donna Ray, Clinical Assistant Professor of Internal Medicine, Geriatrics, Director, Faculty Development, OCPDSA UofSC School of Medicine and Prisma Health and was contacted virtually via the Bb Collaborate Ultra platform.

Drs. Prakash Nagarkatti and Dr. Mitzi Nagarkatti hosted the 2021 Annual Meeting NIH Center for Dietary Supplements and Inflammation, Phase 2, COBRE Virtual External Advisory Committee Meeting Wednesday, March 3, 2021. The presenters from PMI were:

- Dr. Philip Brandon Busbee, Target Faculty: Role and regulation of the AhR-IL22 axis in I3C-mediated protection against colitis.
- Dr. Jason L. Kubinak, Target Faculty: Does Mucosal Antibody-Deficiency Abolish Bile-Acid-Induced Tolerization of Macrophages in the Small Intestine?
- Dr. Traci Testerman, Target Faculty: Roles of Enterohepatic Helicobacter species in mouse colitis models and detection in humans.
- Dr. Carole Oskeritzian, Pilot Project: Regulatory Roles of Resveratrol in Skin Inflammation.
- Dr. Reilly Enos, Pilot Project: The Impact of Estrogen Receptor Activation on Metabolic Processes in Mice.

Dr. Catroppo attended the following webinars:

- Attended Association for Medical Education in Europe (AMEE) webinar "Medical Student Leaders and Educators Allyship: Building An Enhanced Learning Environment"
- Attended Aquifer webinar "Integrating Basic Science and Clinical Education: Why It's Important and Tools to Support You"
- Attended University of South Carolina Center for Teaching Excellence (CTE) webinar workshop "Writing Good Multiple-Choice Questions"
- Attended University of South Carolina Center for Teaching Excellence (CTE) webinar workshop "How I Taught a Large Synchronous Course Using Blackboard Collaborate"
- Attended University of South Carolina Center for Teaching Excellence (CTE) webinar workshop "How to Make Your Teaching More Engaging"

The UofSC SOM Pathology Medical Student Interest Group (MSIG), under the auspices of the Intersociety Council for Pathology Information (ICPI), held Webex "lunch" meetings on:

- 25 February 2021  
"Show Me the Money: Business Aspects of a Career in Pathology" Live talk from the M2 Classroom by Dr. Robert Startz
- 15 April 2021  
"A Day in the Life of a Forensic Pathologist" Live talk from the M2 Classroom by Dr. Carol McMahon.  
\$5 and \$10 gift cards were offered to student attendees at each of these meetings, and SWAG promotional logo pens from the ASCP for Medical Laboratory Professionals Week were distributed at the April meeting.

Dr. Carole Oskeritzian served as a grant reviewer for UofSC SOMC 2021 Transformative Research Seed Grant Initiative, March 1.

Dr. Carole Oskeritzian served as a grant reviewer for applications to the DBT/Wellcome Trust India Alliance Fellowships, March 15.

Dr. Carole Oskeritzian was invited to serve as a grant reviewer for the NIH/NIAMS Mechanistic Ancillary Studies to Ongoing Clinical Projects, held virtually on March 26.

Dr. Carole Oskeritzian served as a grant reviewer for the 2021 South Carolina IDeA Networks of Biomedical Research Excellence (SC INBRE) Developmental Research Projects, April 30.

Dr. Reilly Enos's lab has added PhD Students Christian Unger and Trey Hope.

Kandy T. Velázquez served as a reviewer for the *Nutrients* journal on March 30, 2021.

Kandy T. Velázquez served as a member on the UofSC School of Medicine Climate Task Force.

Kandy T. Velázquez served as a member on the UofSC School of Medicine Strategic Planning Steering Committee.

Congratulations to Emma Patton (Velázquez lab) for obtaining her B.S. degree on May 8, 2021 from the Biology Department at UofSC.

Dr. Robert Startz was appointment to the inaugural board for the College of Science and Math at North Dakota State University.

Dr. Swapan Ray acted as an International Reviewer for the grants submitted to the Motor Neurone Disease Association, Francis Crick House, 6 Summerhouse Road, Northampton, NN3 6BJ, UK.

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## **Publications**

Dopkins N, Becker W, Miranda K, Walla M, Nagarkatti P, Nagarkatti M. Tryptamine Attenuates Experimental Multiple Sclerosis Through Activation of Aryl Hydrocarbon Receptor. *Front Pharmacol.* 2021 Jan 25;11:619265.

Shang Z, Ferris ZE, Sweeney D, Chase AB, Yuan C, Hui Y, Hou L, Older EA, Xue D, Tang X, Zhang W, Nagarkatti P, Nagarkatti M, Testerman TL, Jensen PR, Li J. Grincamycins P-T: Rearranged Angucyclines from the Marine Sediment-Derived *Streptomyces* sp. CNZ-748 Inhibit Cell Lines of the Rare Cancer *Pseudomyxoma Peritonei*. *J Nat Prod.* 2021 Apr 26.

Chitrala KN, Nagarkatti P, Nagarkatti M. Computational analysis of deleterious single nucleotide polymorphisms in catechol O-Methyltransferase conferring risk to post-traumatic stress disorder. *J Psychiatr Res.* 2021 Mar 31;138:207-218.

Wisniewski PJ, Nagarkatti M, Nagarkatti PS. Regulation of Intestinal Stem Cell Stemness by the Aryl Hydrocarbon Receptor and Its Ligands. *Front Immunol.* 2021 Mar 10;12:638725.

Alghetaa H, Mohammed A, Zhou J, Singh N, Nagarkatti M, Nagarkatti P. Resveratrol-mediated attenuation of superantigen-driven acute respiratory distress syndrome is mediated by microbiota in the lungs and gut. *Pharmacol Res.* 2021 May;167:105548.

Abdulla OA, Neamah W, Sultan M, Chatterjee S, Singh N, Nagarkatti M, Nagarkatti P. AhR Ligands Differentially Regulate miRNA-132 Which Targets HMGB1 and to Control the Differentiation of Tregs and Th-17 Cells During Delayed-Type Hypersensitivity Response. *Front Immunol.* 2021 Feb 19;12:635903.

Kauroo S, Govinden-Soulange J, Ranghoo-Sanmukhiya VM, Miranda K, Cotham WE, Walla MD, Nagarkatti M, Nagarkatti P. Extracts of select endemic plants from the Republic of Mauritius exhibiting anti-cancer and immunomodulatory properties. *Sci Rep.* 2021 Feb 19;11(1):4272.

Sougiannis AT, Enos RT, VanderVeen BN, Velazquez KT, Kelly B, McDonald S, Cotham W, Chatzistamou I, Nagarkatti M, Fan D, Murphy EA. Safety of natural anthraquinone emodin: an assessment in mice. *BMC Pharmacol Toxicol*. 2021 Jan 28;22(1):9.

Soltanmohammadi E, Farmaki E, Zhang Y, Naderi A, Kaza V, Chatzistamou I, Kiaris H. Coordination in the unfolded protein response during aging in outbred deer mice *Exp. Gerontol*. 144:111191, 2021.

Soltanmohammadi E, Zhang Y, Chatzistamou I, Kiaris H. Resilience, plasticity and robustness in gene expression during aging in the brain of outbred deer mice. *BMC Genomics*. Apr 21;22(1):291, 2021.

Naik H, Sonju JJ, Singh S, Chatzistamou I, Shrestha L, Gauthier T, Jois S. Lipidated Peptidomimetic Ligand-Functionalized HER2 targeted liposome as Nano-Carrier designed for Doxorubicin delivery in cancer therapy. *Pharmaceuticals (Basel)*. Mar 6;14(3):221, 2021.

Sougiannis AT, Enos RT, VanderVeen BN, Velazquez KT, Kelly B, McDonald S, Cotham W, Chatzistamou I, Nagarkatti M, Fan D, Murphy EA. Safety of Natural Anthraquinone Emodin: An Assessment in Mice. *BMC Pharmacology & Toxicology*. 2021 Jan 28;22(1):9.

Sougiannis AT, VanderVeen BN, Davis JM, Fan D, Murphy EA. Understanding chemotherapy-induced intestinal mucositis and strategies to improve gut resilience. *Am J Physiol Gastrointestinal Liver Physiol*. 2021 May 1;320(5):G712-G719.

Pourhoseini S, Enos RT, Murphy EA, Bo Cai, Lead JR. Characterization, bio-uptake and toxicity of polymer-coated silver nanoparticles and their interaction with human peripheral blood mononuclear cells. *Beilstein Journal of Nanotechnology*. 2021, 12, 282-294.

Bernhart JA, Turner-McGrievy B, Eustis S, Wilson M, Hutto B, Wilcox S, Frongillo E, Murphy EA. Sensor-measured physical activity and cardiovascular disease risk in African Americans in the NEW Soul study. *Lifestyle Medicine*. In Press.

Chompunud Na Ayudhya C, Amponnawarat A, Roy S, Oskeritzian CA, Ali H. MRGPRX2 activation by rocuronium: Insights from studies with human skin mast cells and missense variants. *Cells*. 2021 Jan 15;10(1):156.

Aladhami AK, Unger CA, Ennis SL, Altomare D, Ji H, Hope M, Velázquez KT, and Enos RT. Macrophage tumor necrosis factor- $\alpha$  deletion does not protect against obesity-associated metabolic dysfunction (2021). *FASEB*. (In Press).

Al-Sammarraie N, Ray SK (2021) Bone morphogenic protein signaling in spinal cord injury. *Neuroimmunol Neuroinflammation* 2021; 8:53-63.

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## Presentations

Dr. Mitzi Nagarkatti was invited to present her research at Medical University of South Carolina (MUSC), at the Dept. of Microbiology and Immunology Seminar Series Friday, April 23, 2021. Her presentation title was "Epigenetic Regulation of Immune Dysfunction in Post-Traumatic Stress Disorder Patients".

Mitchell, C., Staley S., Wilson, K., Rutkovsky, A., Wisniewski, P.J, Dopkins, N., Nagarkatti, M., Nagarkatti, P., and Busbee, P.B.. AhR expression on both Rorc-specific immune cells and Vil1-expressing colonic epithelial cells are essential for I3C-mediated protection against colitis. American Association of Immunologists (AAI), Virtual meeting, May 10-15, 2021.

Mitchell, C., Staley S., Wilson, K., Rutkovsky, A., Wisniewski, P.J, Dopkins, N., Nagarkatt, M., Nagarkatti, P., and Busbee, P.B. AhR expression on Vil1-expressing colonic epithelial cells is essential for I3C-mediated protection against colitis. UofSC Discover, Virtual meeting, April 23, 2021.

Williams, M.C., Staley S., Wilson, K., Rutkovsky, A., Wisniewski, P.J, Dopkins, N., Nagarkatt, M., Nagarkatti, P., and Busbee, P.B. AhR expression on Rorc-expressing immune cells is essential for I3C-mediated protection against colitis. UofSC Discover, Virtual meeting, April 23, 2021.

Dr. Mitzi Nagarkatti was invited to give a talk at One Medimmune Way on April 15, 2021. Her presentation title was "Epigenome and Immune Response in PTSD Patients."

Rutkovsky, A., Neamah, W., Abdullah, O., Nagarkatti, P. and Nagarkatti, M., Resveratrol inhibits TCDD-mediated induction of myeloid-derived suppressor cells and their functions. Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021. **2021 SOT Carcinogenesis SS Postdoctoral Researcher and Young Investigator Award.**



Wilson, K., Sultan, M., Cannon, A., Nagarkatti, P.S., and Nagarkatti, M. A single-cell atlas of the lung mononuclear cell response in Staphylococcus Enterotoxin B-induced Acute Respiratory Distress Syndrome. IMMUNOLOGY2021. Virtual. May 10-15. 2021.

Wilson, K., Sultan, M., Cannon, A., Nagarkatti, P.S., and Nagarkatti, M. Treatment of SEB Induced ARDS with CBD Ameliorates Fatal Inflammatory Response. Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021.

**Toxicologists of African Origin SIG TAO Graduate Student and Postdoctoral Fellow Travel Award.**

Holloman B., Nagarkatti P., Nagarkatti M. Single Cell Profile of LPS-Induced Acute Respiratory Distress Syndrome Shows an Increase of Reg3g, Scgb1a1, and Scgb3a Expression with I3C Treatment. Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021.

Rutkovsky, A., Neamah, W., Abdullah, O., Nagarkatti, P. and Nagarkatti, M., Resveratrol inhibits TCDD-mediated induction of myeloid-derived suppressor cells and their functions. UofSC Discover Day, Virtual meeting, April 23, 2021.

Abdulla O.A., Wilson K., Nagarkatti M., Nagarkatti P. Using single cell RNA sequencing to understand the nature of myeloid-derived suppressor cells in healthy and tumor bearing mice. Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021. **Osama was selected by the Carcinogenesis Specialty Section Officers to receive the Dharm V. Singh Carcinogenesis Graduate Student Endowment Award.**

Abdulla O.A., Wilson K., Nagarkatti M., Nagarkatti P. Using single cell RNA sequencing to understand the nature of myeloid-derived suppressor cells in healthy and tumor bearing mice. UofSC Discover Day, Virtual meeting, April 23, 2021.

Dopkins N., Wilson K., Miranda K., Holloman B., Nagarkatti P., Nagarkatti M. Cannabidiol Treatment in Experimental Autoimmune Encephalomyelitis Inhibits Production of the Pro-Inflammatory Cytokine IL-1 $\beta$ . Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021.

Dopkins N., Wilson K., Miranda K., Holloman B., Nagarkatti P., Nagarkatti M. Cannabidiol Treatment in Experimental Autoimmune Encephalomyelitis Inhibits Production of the Pro-Inflammatory Cytokine IL-1 $\beta$ . 2021 31st virtual Annual ICRS Symposium on the Cannabinoids (ICRS) June 21 - 24, 2021.

Dopkins N., Wilson K., Miranda K., Holloman B., Nagarkatti P., Nagarkatti M. Cannabidiol Treatment in Experimental Autoimmune Encephalomyelitis Inhibits Production of the Pro-Inflammatory Cytokine IL-1 $\beta$ . UofSC Discover Day, Virtual meeting, April 23, 2021.

Sultan M., Wilson K., Nagarkatti P., Nagarkatti M. Single cell RNA sequencing identifies multiple genes related to T regulatory cells induced in Cannabinoid treated Staphylococcus Enterotoxin B (SEB) mediated Acute Respiratory Distress Syndrome (ARDS). Virtual 2021 Society of Toxicology (SOT) Annual Meeting and ToxExpo, March 12–26, 2021.

Sultan M., Nagarkatti P., Nagarkatti M. Butyrate mediates the amelioration of Staphylococcal Enterotoxin B-induced Acute Respiratory Distress Syndrome (ARDS) by decreasing the expression of class I and class II Histone Deacetylases (HDACs). American Association of Immunologists (AAI), Virtual meeting, May 10-15, 2021.

Sultan M., Wilson K., Nagarkatti P., Nagarkatti M. Single cell RNA sequencing identifies multiple genes related to T regulatory cells induced in Cannabinoid treated Staphylococcus Enterotoxin B (SEB) mediated Acute Respiratory Distress Syndrome (ARDS). UofSC Discover Day, Virtual meeting, April 23, 2021.

Cannon, A., Wilson K., Miranda K., Nagarkatti P., Nagarkatti M. Single Cell RNA Sequencing Reveals Downregulation of lncRNA Gm42031 Expression After Treatment with AhR Ligands in Concanavalin-Induced T Cell-Mediated Liver Injury. UofSC Discover Day, Virtual meeting, April 23, 2021.

Cannon, A., Wilson, K., Miranda, K., Nagarkatti, P.S., and Nagarkatti, M. Single Cell RNA Sequencing Reveals Downregulation of lncRNA Gm42031 Expression After Treatment with AhR Ligands in Concanavalin-Induced T Cell-Mediated Liver Injury. Society of Toxicology, March 12-26, 2021. **Received SOT Biotechnology SS Student Achievement Award**

Cannon, A., Wilson, K., Miranda, K., Nagarkatti, P.S., and Nagarkatti, M. Single Cell RNA Sequencing Reveals Downregulation of lncRNA Gm42031 Expression After Treatment with AhR Ligands in Concanavalin-Induced T Cell-Mediated Liver Injury. American Association of Immunologists (AAI), Virtual meeting, May 10-15, 2021. **Selected for platform presentation.**

VanderVeen BN, McDonald SJ, Sougiannis AT, Madero SS, Nesmith MM, Fan D, Murphy EA. Emodin as a complementary dietary therapy targeting chemotherapy-induced wasting. Poster Presentation. Discover Day USC 2021. Virtual due to COVID 19.

McDonald SJ, Enos RT, VanderVeen BN, Sougiannis AT, Velazquez KT, Fan D, Murphy EA. Long-term emodin administered in the diet reduces tumor number in transgenic breast cancer mouse models. Poster Presentation. Discover Day USC 2021, Virtual due to COVID-19.

Busbee PB. Role and regulation of the AhR-IL22 axis in I3C-mediated protection against colitis. 2021 Annual CAM/COBRE Center External Advisory Committee Virtual Meeting, March 3, 2021.

Oskeritzian CA. Invited seminar. "How I got here: Following my path". UofSC SOM, Greenville, SC, January 25.

Oskeritzian CA. Regulatory roles of resveratrol in skin inflammation. Oral presentation at the 2021 Annual CAM/COBRE Center External Advisory Committee Virtual Meeting, March 3, 2021.

Ryan, MR, Oskeritzian CA. Regulatory role of micro-RNA-34a on human mast cell inflammatory gene expression. Oral presentation at the 2021 Virtual Meeting of the South Carolina Academy of Science, April 17, 2021.

Ryan, MR, Oskeritzian CA. Regulatory role of micro-RNA-34a on human mast cell inflammatory gene expression. iPoster presentation at the 2021 Discover UofSC Virtual Meeting, April 23, 2021.

Aladhami A, Unger CA, Hope III MC, and Enos RT. Inducible Overexpression of Skeletal Muscle Estrogen receptor alpha mitigates the obese phenotype in estrogen deficient high-fat-diet fed mice. 2021 Discover UofSC Virtual Meeting, April 23, 2021.

Enos, R. The Impact of Estrogen Receptor Activation on Metabolic Processes in Mice. Oral presentation at the 2021 Annual CAM/COBRE Center External Advisory Committee Virtual Meeting, March 3, 2021.

Kubinak, J. Does Mucosal Antibody-Deficiency Abolish Bile-Acid-Induced Tolerization of Macrophages in the Small Intestine? Oral presentation at the 2021 Annual CAM/COBRE Center External Advisory Committee Virtual Meeting, March 3, 2021.

Testerman, T. Roles of Enterohepatic Helicobacter species in mouse colitis models and detection in humans. Oral presentation at the 2021 Annual CAM/COBRE Center External Advisory Committee Virtual Meeting, March 3, 2021.

Patton E., Cunningham P., Sumal A., Martínez-Muñiz, G., Chatzistamou I., Velázquez KT. The effects of Ojeok-san on pain-like behaviors in a mouse model of colitis. 2021 Discover UofSC Virtual Meeting, April 23, 2021.

Martínez-Muñiz G., Cunningham P., Sumal A., Shams N., Noneman M., Patton E., Velázquez, KT. The role of interleukin-4 in the mediation of visceral pain produced by colorectal cancer. 2021 Discover UofSC Virtual Meeting, April 23, 2021.

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Shametaj Y., Shams N., Patton E., Cunningham P., Martínez Muniz G., Velázquez KT. Involvement of Macrophage-Produced Tumor Necrosis Factor alpha on Tumor Burden in a Mouse Model of Colorectal Cancer. 2021 Discover UofSC Virtual Meeting, April 23, 2021.

Cunningham P., Martínez-Muñiz G., Patton E., Sumal A., Velázquez KT. Skeletal muscle macrophage dysfunction in cancer cachectic mice. 2021 Discover UofSC Virtual Meeting, April 23, 2021.

Manea A, Al-Sammarraie N, Ray SK (2021) Combination of autophagy and telomerase inhibitors for controlling growth of human glioblastoma T98G cells. Virtual poster presentation in the annual Discover UofSC on Friday, April 23, 2021. 2021 Discover UofSC abstract book p. 125-126.

Khathayer F, Ray SK (2021) Evaluation of therapeutic efficacy of combination of 4HPR and SAHA in inhibition of growth of human glioblastoma T98G cells in zebrafish xenograft model. Virtual poster presentation in the annual Discover UofSC on Friday, April 23, 2021. 2021 Discover UofSC abstract book p. 286.

Al-Sammarraie N, Ray SK (2021) Blocking bone morphogenetic protein signaling for protection of neurons and astroglia in co-culture model of spinal cord injury. Virtual poster presentation in the annual Discover UofSC on Friday, April 23, 2021. 2021 Discover UofSC abstract book p. 339.