



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: Dr. Angela Murphy, PhD & Nicki Holt

May 2017 - September 2017

P *Honors & Awards*

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I Dr. Kandy Velazquez, a postdoctoral fellow in Dr. Angela Murphy's lab has been awarded a prestigious NIH K99/R00 grant from NIH/NCCIH entitled "The Effects of Ojeok-san on Neuro-Immune Interactions in Cancer-Induced Pain." This is a five-year pathway-to-independence award in the amount of \$949,501. Dr. Velazquez will be mentored by Dr. Angela Murphy (PMI), Dr. Mitzi Nagarkatti (PMI), Dr. Daping Fan (CBA) and Dr. Richard Johnson (University of Florida).

Dr. Catroppo has been appointed to the Executive Committee, University of South Carolina Beta Chapter, Alpha Omega Alpha (AQA) National Honor Medical Society.

Dr. Swapan Ray was invited, in recognition of his 20 years of service to the State of South Carolina, to join President Harris Pastides in the State Service Awards Ceremony on Monday, May 22, 2017, 2:00 pm, in the Russell House Ballroom.

Maria Hosseinipour, of Dr. Pirisi-Creek's laboratory, successfully defended her Ph.D. dissertation on June 2, 2017.

Dr. Carole Oskeritzian is the recipient of a 1-year continuing renewal of a pilot grant funded from the NIH/NIGMS COBRE grant to Dr. Frank Berger, Director of the USC Colon Cancer Research Center, who serves as PI. Her project is titled "Pilot Project: Mast cell-based non-invasive screening for colorectal cancer." This award is a collaboration with Drs. Marjorette (Marj) Peña (Dept. of Biological Sciences) and Ioulia Chatzistamou (PMI).

Dr. Angela Murphy is the recipient of a pilot project award from the COBRE (Center for Colon Cancer Research) funded by NIH/NIGMS. This work will focus on the role of the microbiome on chemotherapy efficacy and toxicity.

Dr. Swapan Ray is serving on an International Advisory Board of the BroadSpec Project (Nova Scotia, CANADA), providing expertise on the pathology and molecular biology of glioblastoma, which is the most advanced brain cancer, and helping steer organization of clinical trials using novel and repurposed pharmaceuticals, alone or in combination, for its treatment.

Will Becker, graduate student in Dr. Mitzi Nagarkatti's lab, was awarded a travel trainee poster award from the American Association of Immunologists (AAI), as well as a student travel award from USC SOM Graduate School and also from USC Provost Office to present at the Annual Meeting of AAI, Washington D.C., May 12-16, 2017.

Zinah Al-Ghezi, a graduate student in Dr. Mitzi Nagarkatti's lab, was selected for a platform presentation and received the AAI travel award to present at the Annual Meeting of American Association of Immunologists Meeting (AAI), Washington, DC, May 12-16, 2017.

Dr. Brandon Busbee, a postdoctoral fellow in Dr. Mitzi Nagarkatti's lab, was selected for a platform presentation and also an AAI travel award to present at the Annual Meeting of the American Association of Immunologists, (AAI) Washington, DC. May 12-16, 2017.

Dr. Alexa Gandy was awarded an AAI travel grant for her poster submission at the Annual Meeting of the American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.

Kathryn Miranda, a graduate student in Dr. Mitzi Nagarkatti's lab, was selected for a platform presentation and also an AAI travel award at the Annual Meeting of the American Association of Immunologists (AAI), Washington, DC, May 12-16, 2017.

Amira Mohammed, a graduate student in Dr. Mitzi Nagarkatti's lab, was selected to deliver an oral presentation in a block symposium and also was the recipient of an AAI trainee abstract award at the Annual Meeting of the American Association of Immunologists (AAI), Washington, DC, May 12-16, 2017.

Jackie Bader, a graduate student in Dr. Angela Murphy's lab, was selected to present her research in a platform presentation at the Annual Meeting of the American Association of Immunologists (AAI), Washington D.C., May 12-16, 2017.

Dr. Lorenzo Menzel, a postdoc in Dr. Mitzi Nagarkatti's lab, was selected for a presentation and also awarded a NSF trainee travel stipend for the NACI Workshop 2017, Raleigh, NC.

News & Updates

We would like to extend a warm welcome to Dr. Jason Kubinak, Ph.D., the newest member of our Department! Dr. Kubinak joined our department from the University of Texas at Arlington where he had been a tenure-track Assistant Professor. Dr. Kubinak has published several papers in high-impact journals such as *Nature Communications*, *PNAS*, *Nature Reviews in Immunology*, *Science Translational Medicine*, *PLoS Pathogens*, and the like. Dr. Kubinak is currently a recipient of an NIH K22 Early Career Investigator Award. Dr. Kubinak's research interests are in the area of antibody responses and microbiome. Dr. Kubinak's hobbies are craft beer, reptiles, and gardening.



For the Academic Year 2017-2018, Dr. Catroppo continues to serve as Faculty Advisor to the Medical Student Interest Group for Pathology as well as to the Ars Humanitas Et Medicus (Arts and Humanities Medical, AHM) Student Interest Group. He was invited to give the introductory talk to the latter group on 16 August 2017, entitled "Why The Humanities?"

Dr. Swapan Ray served as an International Expert Reviewer for the brain tumor grants submitted to the Flanders Innovation and Entrepreneurship funding program for strategic basic research, Brussel, Belgium, in August 2017.

Dr. Angela Murphy served as a reviewer for the National Cancer Institute Transition to Independence grant applications during June 2017.

The Oskeritzian Lab has welcomed three new members in July and August: Merlyne Jeanty, B. S., Post-baccalaureate Research Education Program (PREP) scholar, will study the contribution of microRNA 34a to mast cell functions. Ross Tanis, M. S., is a rising fourth-year medical student at USC School of Medicine. Ross took a leave of absence from medical school to conduct a human research study on eczema, in collaboration with Palmetto Health-USC Medical Group and Mount Sinai School of Medicine. Chris Carlucci, B. S., is a Masters student who will study the effects of Resveratrol on eczema, in collaboration with Sajish Mathew from the USC School of Pharmacy.

Dr. Lucia Pirisi-Creek served on an NIH study section, NIDCR Award for Sustaining Outstanding Achievement in Research (SOAR) (R35) on June 22, 2017.

Dr. Mitzi Nagarkatti served as a grant reviewer for the NIH Systemic Injury by Environmental Exposures (SIEE) Study Section meeting held on June 27-29, 2017.

Dr. Angela Murphy served as a reviewer for the National Cancer Institute Special Emphasis Panel during June 2017.

Prakash Nagarkatti was invited to deliver a Plenary talk at the American Society of Pharmacognosy (ASP) 2017, in Portland, Oregon. His presentation was titled "Understanding the Epigenetic Pathways of Regulation by Cannabinoids and Their Use as Anti-Inflammatory Agents".

Mitzi Nagarkatti was an invited presenter at the American Society of Pharmacognosy (ASP) 2017, in Portland, Oregon. Her presentation was titled "Indole-3-Carbinol Attenuates Colitis through Alterations in Gut Microbiota and Metabolic Pathways".

Robert Startz gave an oral presentation at the USC Alumni Center on Monday, May 15, 2017. The topic was "Diseases of Famous People 2".

Publications

You Karan D, Tawfik O, Dubey S. Expression analysis of inflammasome sensors and implication of NLRP12 inflammasome in prostate cancer. *Scientific Reports*. 2017 June 29; 7(1): 4378.

Sagar D, Singh NP, Ginwala R, Huang X, Philip R, Nagarkatti M, Nagarkatti P, Neumann K, Ruland J, Andrews AM, Ramirez SH, Khan ZK, Jain P. Antibody blockade of CLEC12A delays EAE onset and attenuates disease severity by impairing myeloid cell CNS infiltration and restoring positive immunity. *Sci Rep*. 2017 Jun 2;7(1):2707.

Mendel L, Diamond G. Potent in vitro and in vivo antifungal activity of a small molecule host defense peptide mimic through a membrane-active mechanism. *Scientific Reports*. 2017 Jun 28;7(1):4353.

Raghava N, Das BC, Ray SK. Neuroprotective effects of estrogen in CNS injuries: insights from animal models. *Neurosci Neuroecon* 2017;6:15-29.

Khathayer F, Ray SK (2017) Anti-tumor effects of HDAC inhibitors: Novel strategies for enhancing anti-tumor efficacy of the HDAC inhibitor SAHA for controlling growth of glioblastoma. In: Horizons in Neuroscience Research, Vol. 35, Nova Science Publishers, New York, NY (In press).

Caslin HL, Taruselli MT, Paranjape A, Kiwanuka K, Haque T, Chumanevich AP, Oskeritzian CA, Ryan JJ. Culture of primary mast cells and basophils from mouse and human tissues. *Methods Mol Biol*. 2017. (In press).

Ndaw VS, Abebayehu D, Spence AJ, Paez PA, Kolawole EM, Taruselli MT, Caslin HL, Chumanevich AP, Paranjape A, Baker B, Barnstein BO, Haque TT, Kiwanuka KN, Oskeritzian CA, Ryan JJ. TGF- β 1 suppresses IL-33-induced mast cell function. *J Immunol*. 2017 Aug 1;199:866-873.

Velázquez KT, Enos RT, Carson MS, Cranford TL, Bader JE, Sougiannis AT, Pritchett C, Fan D, Carson JA, Murphy EA. miR155 deficiency aggravates high-fat-diet induced adipose tissue fibrosis in male mice. *Physiological Reports*. 2017 Sep;5(18).

Bader JE, Enos RT, Velázquez KT, Carson MS, Nagarkatti M, Nagarkatti PS, Chatzistamou I, Davis JM, Carson JA, Robinson C, Murphy EA. Macrophage depletion using clodronate liposomes decreases tumorigenesis and alters gut microbiota in the AOM/DSS mouse model of colon cancer. *Am J Physiol Gastrointestinal Liver Physiol*. 2017. (In Press).

Herath P, Davis JM, Carmichael MD, Murphy EA, Bonilha L, Newman-Norlund R, Rorden C. Cortical substrate of supra-spinal fatigue following exhaustive aerobic exercise is localized to anterior premotor cortex. *Frontiers in Neurology*. 2017. (In Press).

Hetzler KL, Hardee JP, LaVoie HA, Murphy EA, Carson JA. Ovarian Function's Role During Cancer Cachexia Progression in the Female Mouse. *Am J Physiol Endocrinol Metab*. 2017 May 1;312(5):E447-E459.

Bam M, Yang X, Zumbun EE, Ginsberg JP, Leyden Q, Zhang J, Nagarkatti PS, Nagarkatti M. Decreased AGO2 and DCR1 in PBMCs from War Veterans with PTSD leads to diminished miRNA resulting in elevated inflammation. *Transl Psychiatry*. 2017 Aug 29;7(8):e1222.

Chitrala KN, Guan H, Singh NP, Busbee B, Gandy A, Mehrpouya-Bahrami P, Ganewatta MS, Tang C, Chatterjee S, Nagarkatti P, Nagarkatti M. CD44 deletion leading to attenuation of experimental autoimmune encephalomyelitis results from alterations in gut microbiome in mice. *Eur J Immunol*. 2017 Jul;47(7):1188-1199.

Presentations

Dr. Carole Oskeritzian was invited to give a talk entitled “The Impact of Inflammation In Prostate Cancer: Prostate Mapping Revisited” at the VA Research Day, William Jennings Bryan Dorn Veterans Affairs (VA) Medical Center, Columbia, SC, May 17, 2017.

Dr. Carole Oskeritzian was invited to give a talk entitled “Shaping the Mast(er) Cell Functions: Sphingosine-1-Phosphate And Mast Cells In Inflammation And Cancer” at the USC School of Medicine Instrumentation Resource Facility (IRF) Core Facility Symposium, Columbia, SC, June 14-16, 2017.

Abdulla O, Nagarkatti M, and Nagarkatti PS. 2,3,7,8-tetrachlorodibenzo-p-dioxin induced gut dysbiosis modulates delayed type hypersensitivity reaction. Annual Meeting of American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.

Alghetaa HF, Mohammed AK, Nagarkatti PS, and Nagarkatti M. Attenuation of Staphylococcal enterotoxin-B (SEB)-induced lung injury (ALI) by resveratrol results from miR-193a down-regulation and alterations in metabolic profile. Annual Meeting of American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.

Al-Ghezi Z, Al-Ghetaa H, Nagarkatti M, and Nagarkatti PS. Combination of cannabinoids, Δ 9-tetrahydrocannabinol (THC) and cannabidiol (CBD), mitigate experimental autoimmune encephalomyelitis (EAE) by altering the gut microbiome. Annual Meeting of American Association of Immunologists (AAI), Washington, DC, May 12-16, 2017.

Alharris E, Alghetaa H, Busbee PB, Nagarkatti M, and Nagarkatti PS. Resveratrol improves a murine model of asthma through alterations in the gut microbiome. Annual Meeting of American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.

Bader JE, Enos RT, Velázquez KT, Carson MS, Nagarkatti M, Nagarkatti PS, Chatzistamou I, Davis JM, Carson JA, Robinson C, Murphy EA. Macrophage depletion using clodronate liposomes decreases tumorigenesis and alters gut microbiota in the AOM/DSS mouse model of colon cancer. Annual Meeting of American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.

Becker W, Nagarkatti M, and Nagarkatti PS. Marijuana $\Delta 9$ -tetrahydrocannabinol induces unique changes in the murine gut microbiome through induction of myeloid-derived suppressor cells and T helper 17 cells. Annual Meeting of American Association of Immunologists (AAI), Washington D.C., May 12-16, 2017.

Busbee PB, Nagarkatti M, and Nagarkatti PS. Alterations in p53 expression in PMBCs of PTSD patients leads to dysregulation in miRNA biogenesis which promotes an inflammatory Th17 immune cell phenotype. Annual Meeting of American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.

Busbee PB, Nagarkatti M, and Nagarkatti PS. Indole-3-carbinol ameliorates murine colitis symptoms through alterations in gut microbial composition and metabolomic pathways, particularly through decreasing disease-associated *Bacteroides acidifaciens* species. Annual Meeting of American Association of Immunologists, Washington, DC. May 12-16, 2017.

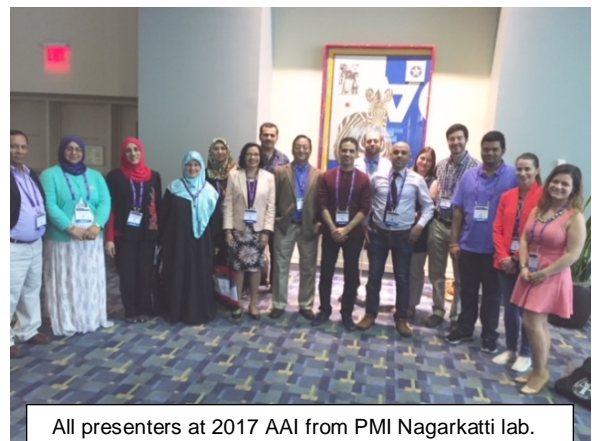
Chitrala KN, Nagarkatti PS, and Nagarkatti M. Prediction, molecular modelling and dynamic simulations of Vascular endothelial growth factor receptor 1 as a potential molecular target for 2,3,7,8-tetrachlorodibenzo-p-dioxin. Annual Meeting of American Association of Immunologists, Washington DC, May 12-16, 2017.

Gandy KA, Nagarkatti M, and Nagarkatti PS. The role of gut microbiota in shaping the immune response in relapse-remitting and chronic-progressive mouse models of multiple sclerosis. Annual Meeting of American Association of Immunologists, Washington, DC. May 12-16, 2017.

Menzel LP, Bigger CH. Opsonic Activity and Immunohistochemical Localization of SeC3, a Complement Component C3-like Protein from *Swiftia exserta*. NACI Workshop 2017, Raleigh, NC.

Miranda K, Nagarkatti PS, Nagarkatti M. Micro-RNA-30 modulates metabolic inflammation by regulating Notch signaling in adipose tissue macrophages. Annual Meeting of American Association of Immunologists, Washington, DC, May 12-16, 2017.

Mohammed AK, Alghetaa HF, Nagarkatti P, Nagarkatti M. Protective effects of $\Delta 9$ -Tetrahydrocannabinol (THC) results from alteration in lung dysbiosis mediated by SEB-induced acute lung injury. Annual Meeting of American Association of Immunologists (AAI), Washington, DC. May 12-16, 2017.



Neamah WH, Nagarkatti M, and Nagarkatti PS. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) induces tolerance by altering the gut microbiome. Annual Meeting of American Association of Immunologists, Washington D.C., May 12-16, 2017.

Singh NP, Miskin AD, Singh UP, Nagarkatti PS, and Nagarkatti M. Activation of cannabinoid receptors alters the expression of miRNAs in Granulocytic Myeloid Derived Suppressor cells (G-MDSCs) and Splenic Resident Granulocytes (SRG) thereby identifying shared and unique pathways of differentiation. Annual Meeting of American Association of Immunologists (AAI), Washington D.C., May 12-16, 2017.

Sultan M, Nagarkatti M, and Nagarkatti PS. Staphylococcus Enterotoxin B mediates Acute Lung Injury through alterations in the composition of microbiome in Gut-Lung Axis. Annual Meeting of American Association of Immunologists (AAI), Washington D.C., May 12-16, 2017.

Bader JE, Enos RT, Velázquez KT, Carson MS, Nagarkatti M, Nagarkatti PS, Chatzistamou I, Davis JM, Carson JA, Robinson C, Murphy EA. Macrophage depletion using clodronate liposomes decreases tumorigenesis and alters gut microbiota in the AOM/DSS mouse model of colon cancer.

Al-Ghezi Z, Al-Ghetaa H, Nagarkatti M, and Nagarkatti PS. Combination of cannabinoids, Δ^9 -tetrahydrocannabinol (THC) and cannabidiol (CBD), mitigate experimental autoimmune encephalomyelitis (EAE) by altering the gut microbiome. Annual Meeting of American Association of Immunologists (AAI), Washington D.C., May 12-16, 2017.

Busbee PB, Nagarkatti M, and Nagarkatti PS. Indole-3-carbinol ameliorates murine colitis symptoms through alterations in gut microbial composition and metabolomic pathways, particularly through decreasing disease-associated *Bacteroides acidifaciens* species. Annual Meeting of American Association of Immunologists (AAI), Washington D.C., May 12-16, 2017.