

The PMI Times

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



MAY 2015 ~ AUGUST 2015
OCTOBER 1, 2015

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News and Updates:

Congratulations to Dr. Mitzi Nagarkatti on her reappointment as Chair of the PMI Department. Dr. Nagarkatti has led our department to a top 15th ranking amongst pathology departments in the United States based on NIH funding. She is the recipient of multiple grants from the NIH as well as the VA. We look forward to continued success under Dr. Nagarkatti's leadership in the years to come.

Dr. Tonya Colpitts joined the department this summer as an Assistant Professor. Dr. Colpitts' research focuses on dengue virus pathogenesis in the mosquito and interactions in both mosquito and mammalian cells. Welcome Dr. Colpitts!

Dr. Farhan Zameer, Assistant Professor in the Dept. of Biotechnology, Microbiology and Biochemistry, University of Mysore, India has joined the Nagarkatti lab for a year supported by a Raman Fellowship for Postdoctoral Research in America for Indian Scholars administered by the University Grand Commission. The fellowship is named after the Nobel Laureate C. V. Raman.

Dr. Prakash Nagarkatti was an invited member of the NIH Center for Scientific Review (CSR) Intra-Integrated Review Groups (IRGs)/Cross-Scientific Review Group (SRG or Study Section) Study to evaluate the relative quality of grant applications across Study Sections within IRGs at CSR.

Dr. Jennifer Nyland participated in a grant review study section for the Ocean Research Consortium, Gulf of Mexico Research Initiative (GoMRI) in Washington, DC at the beginning of July. The grants reviewed focused on the public health impacts of the Deep Water Horizon oil spill.

Dr. Angela Murphy was invited to serve as a reviewer of Nutrition and Obesity Research Center P30 grants for the NIDDK.

Dr. Udai Singh served on the National Institutes of Health (NIH) "Cellular and Molecular Immunology A" Study Section on June 4-5, 2015.

Dr. Lucia Pirisi-Creek completed her training to become a certified Gyrokinesis Level 1 instructor in Miami, May 29-31, 2015. This certification will allow Dr. Pirisi-Creek to begin her studies of the impact of this meditative form of exercise on overall health and on specific physical conditions such as chronic back pain, fibromyalgia, and other musculoskeletal diseases.

Dr. Angela Murphy gave an invited symposium presentation on 'Behavioral Interventions in Cancer' at the American College of Sports Medicine Annual Meeting in San Diego (May 2015).

Dr. Swapan Ray served as an expert international reviewer in August 2015 for the grants submitted to the National Medical Research Council (NMRC). The NMRC is a national funding agency under the Ministry of Health, Singapore.

Dr. Prakash Nagarkatti was invited to participate in the "Innovate to Accelerate" Program aimed at identifying the most compelling areas of science for support via the NIH Common Fund.

Dr. Udai Singh is serving as Editor-in-chief of the journal "Clinical Microbiology: Open access".

Dr. Dev Karan was invited to give a talk at the "Federation of Clinical Cancer Societies, Immunology by the Bay" on June 24-27 in San Diego, CA. The title of his talk was, "Dual Antigen Targeted Immunotherapy for Prostate Cancer: Preclinical Evaluation."

Dr. Udai Singh served on the National Institutes of Health (NIH) ZRG1 Special Emphasis Panel (DKUSN) for SBIR grants on Digestive Disease Study Section on July 8th 2015.

Dr. Angela Murphy served as a reviewer on a Special Emphasis Panel for the NIDDK reviewing grants related to obesity and diabetes.

Dr. Lucia Pirisi-Creek completed the Riley Diversity Leadership Institute (DLI) and graduated in June, 2015 as a Riley DLI Fellow. The DLI, organized by the Riley Institute at Furman University, brings together community leaders, educators and business people for six leadership training sessions with a strong focus on promoting diversity in the workplace and in the community.

Dr. Udai Singh served on the Congressionally Directed Medical Research Program (CDMRP), Department of Defense study section on July 15th 2015, reviewing pre-applications on Interstitial Cystitis.

Dr. Venkatesh Hegde is currently serving on the Editorial Advisory Board for the journal "Nutrition" (Elsevier Publishers).

Dr. Swapan Ray participated as a Member of the NCI Program Project Meeting III (P01) Review Committee, June 9 to 10, 2015, in Washington, DC.

Dr. Udai Singh served on the Congressionally Directed Medical Research Program (CDMRP), Department of Defense Study Section on July 15th 2015, reviewing pre-applications on Inflammatory Bowel Diseases.

Dr. Venkatesh Hegde has two new members working with him in the Nagarkatti lab, Dr. Jingwen Chen, a Research Assistant and Amy Harrington, an undergraduate student who is Biochemistry and Molecular Biology Major.

Dr. Dev Karan served as a Scientific Reviewer for SC INBRE Developmental Research Program.

Dr. Angela Murphy was invited to serve as a reviewer for NCCIH on grants related to Methods Development in Natural Product Chemistry SBIR/STTR.

Honors & Awards:

Dr. Lucia Pirisi-Creek received the notice of award for the competitive renewal of SC INBRE (P20GM103499) funded from July 10, 2015 to June 30, 2020 for a total of \$18.2M. SC INBRE III includes 13 institutions across South Carolina and provides funding for faculty development, student training, core facility support and other means of developing biomedical research infrastructure at the participating institutions.

Dr. Farhan Zameer, a Visiting Scientist in Dr. Nagarkatti's lab received a "Presidential Junior Faculty/Post-Doc" award to attend 48th Meeting on Immunity in Health and Disease by Society for Leukocyte Biology. The title of Dr. Zameer's abstract was "Integrative studies on 3,3'-diindolylmethane triggered regulation of Th17 and Treg cells in ameliorating multiple sclerosis through microbiome-host interplay".

Dr. Lucia Pirisi-Creek received a CCCR COBRE Pilot Project to study the possible HPV etiology of rectal cancer in young (<50) individuals (August 1, 2015-July 31, 2016).

Dr. Alexa Orr Gandy, Ph.D. a Postdoctoral Fellow in Dr. Nagarkatti's lab attended the American Association of Immunologists (AAI) Annual Meeting held in New Orleans. She received the AAI Trainee Poster Award. The title of her abstract was "Resveratrol regulates the miR-124/Sphingosine Kinase 1 axis in encephalitogenic T cells and protects from experimental multiple sclerosis".

Dr. Lucia Pirisi-Creek received a 3rd percentile score (impact score 18) on her NCI R21 application (1R21CA201853-1) entitled "Molecular Origin and Evolution of HPV-inactive Head and Neck Cancers. Funding for this project is expected to start December 1, 2015 at the latest.

Catherine Dong (Biochemistry Major) carried out undergraduate research with Dr. Venkatesh Hegde in Dr. Nagarkatti's group since 2012. Catherine's research was on the topic of "Anti-inflammatory effects of resveratrol in autoimmune hepatitis". She has won a number of awards including Magellan grants, SURF fellowship, SURF Travel fellowship and the Betty R. Fudenberg Biochemistry Award. Catherine presented her research as an oral presentation at USC Discovery Day, at Columbia Women's Health Forum and at a Sigma XI Student Research Conference held at Research Triangle Park, NC. Catherine graduated with honors, and will be starting her medical education soon at MUSC (class of 2019).

Publications:

Hedge VL, Singh UP, Nagarkatti M, and Nagarkatti PS. Critical role of mast cells and peroxisome proliferator-activated receptor gamma in the induction of myeloid-derived suppressor cells by Marijuana cannabidiol *in vivo*. *J Immunol* 2015; 194 (11): 5211-22.

Tomar S, E Zumbun E, Nagarkatti M, Nagarkatti PS. Protective role of cannabinoid receptor 2 activation in galactosamine/lipopolysaccharide-induced acute liver failure through regulation of macrophage polarization and microRNAs. *J Pharmacol Exp Ther*. 2015 May;353(2):369-79.

Das S, Alhasson F, Dattaroy D, Pourhoseini S, Seth RK, Nagarkatti M, Nagarkatti PS, Michelotti GA, Diehl AM, Kalyanaraman B, Chatterjee S. NADPH Oxidase-Derived Peroxynitrite Drives Inflammation in Mice and Human Nonalcoholic Steatohepatitis via TLR4-Lipid Raft Recruitment. *Am J Pathol*. 2015 Jul;185(7):1944-57.

Sido JM, Nagarkatti PS, Nagarkatti M. Δ^9 -Tetrahydrocannabinol attenuates allogeneic host-versus-graft response and delays skin graft rejection through activation of cannabinoid receptor 1 and induction of myeloid-derived suppressor cells. *J Leukoc Biol*. 98:435-447, 2015.

Singh NP, Abbas IK, Menard M, Singh UP, Zhang J, Nagarkatti P, Nagarkatti M. Exposure to diethylstilbestrol during pregnancy modulates microRNA expression profile in mothers and fetuses reflecting oncogenic and immunological changes. *Mol Pharmacol* 2015; 87(5): 842-854.

Murphy EA, Velazquez KT, Herbert KM. Influence of high-fat diet on gut microbiota: a driving force for chronic disease risk. *Curr Opin Clin Nutr Metab Care* 2015 (In Press).

Murphy EA, Enos RT, Velázquez KT. Influence of Exercise on Inflammation in Cancer: Direct Effect or Innocent Bystander? *Exercise and Sports Science Reviews* 2015; 43(3):134-42.

Adams SA, Wirth MD, Khan S, Murphy EA, Heiney SP, Davis LC, Davis B, Drayton RF, Hurley TG, Blair SM, Hebert JR. The association of C-reactive protein and physical activity among African Americans. *Preventative Medicine* 2015; 77:137-40.

Enos RT, Velázquez KT, McClellan JL, Cranford TL, Walla MD, Murphy EA. Lowering the Dietary Omega-6:Omega-3 Does Not Hinder Non-Alcoholic Fatty-Liver Disease Development in a Murine Model. *Nutrition Research* 2015; 35(5):449-59.

Londono-Renteria B, Patel J, Vaughn M, Funkhauser S, Ponnusamy L, Grippin C, Jameson SB, Apperson C, Mores CN, Wesson DM, Colpitts TM, Meshnick SR. Long-Lasting Permethrin-Impregnated Clothing Protects Against Mosquito Bites in Outdoor Workers. *Am J Trop Med Hyg.* 2015 Jul 20. pii: 15-0130.

Penta, Kayla L, Diego Altomare, Devon L Shirley, and Jennifer F Nyland. 2015. Female Immune System is Protected from Effects of Prenatal Exposure to Mercury. *AIMS Environmental Science.* 2(3): 448-463.

Chakrabarti M, Kiseleva R, Vertegel A, Ray SK. Carbon nanomaterials for drug delivery and cancer therapy. *J. Nanosci. Nanotechnol.* 2015; 15: 5501-5511.

Chakrabarti M, Ray SK (2015) Direct transfection of miR-137 mimics is more effective than DNA demethylation of miR-137 promoter to augment anti-tumor mechanisms of delphinidin in human glioblastoma U87MG and LN18 cells. *Gene* 2015 Jul 15. (In Press)

Presentations:

Londono-Renteria B, Grippin C, Troupin A, Cloherty E, Jameson S, Colpitts TM. Effect of human complement on dengue virus infection in *Aedes aegypti*. Keystone Symposia: The arthropod vector, controller of transmission, New Mexico.

Troupin A, Londono-Renteria B, Cloherty E, Jameson S, Colpitts TM. Role of HSP70 in dengue infection of mosquitoes. American Society for Virology Annual Meeting, Toronto, Canada.

Dubey S and Karan D. Human glandular kallikrein (hK2): a negative regulator in prostate cancer immunotherapy. Federation of Clinical Immunology Societies: 06/24 - 06/27/2015; San Diego, CA.

Barnstein B., Kolawole E., Oskeritzian CA, Ryan JJ. "Statin treatment suppresses IgE-mediated mast cell activation in vitro and in vivo" presented at The American Association of Immunologists (AAI) Annual Meeting, May 8-12, 2015, New Orleans, LA.

Drs. Oskeritzian and Fuseler presented a poster at the Dorn VA Research Day on May 19, 2015 entitled "Identification of microRNA expression profiles in a preclinical model of atopic dermatitis: correlation with cytokine/chemokine expression linked to sphingosine-1-phosphate/Stat3 signaling" authored by Piper Wedman, Alena Chumanevich, Elizabeth Zumbun, Prakash Nagarkatti, Mitzi Nagarkatti and Carole A. Oskeritzian.

Pegah Mehrpouya, Mitzi Nagarkatti and Prakash Nagarkatti. Role of microRNAs in cannabinoid receptor (CB1) antagonist-mediated suppression of inflammation and attenuation of diet-induced obesity. Dorn VA Research Day, May 2015.

Hongbing Guan, Mitzi Nagarkatti and Prakash Nagarkatti. Unique gut bacteria in CD44 deficient mice can ameliorate experimental autoimmune encephalomyelitis. Dorn VA Research Day, May 2015.

Marpe Bam, Xiaoming Yang, Juhua Zhou, Prakash Nagarkatti and Mitzi Nagarkatti. Epigenetic regulation of proinflammatory cytokines in peripheral blood mononuclear cells from patients with PTSD. Dorn VA Research Day, May 2015.

Xiaoming Yang, Mitzi Nagarkatti and Prakash Nagarkatti. Delta -9-Tetrahydrocannabinol (THC)-mediated Alterations in Lymphocyte Gene Expression. Dorn VA Research Day, May 2015.

David M. Elliott, Prakash Nagarkatti and Mitzi Nagarkatti. Cannabidiol-induced myeloid derived suppressor cells ameliorate experimental autoimmune encephalomyelitis through microRNA regulation. Dorn VA Research Day, May 2015.

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Narendra, P. Singh, Xiaoming Yang, Udai Singh, Mitzi Nagarkatti and Prakash Nagarkatti. Dioxin (TCDD) induces epigenetic transgenerational inheritance through alterations in DNA methylation, histone modifications and microRNA profile. Dorn VA Research Day, May 2015.

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Jessica Sido, Mitzi Nagarkatti and Prakash Nagarkatti. Marijuana THC attenuates allogeneic host-versus-graft response and skin allograft transplants through induction of MDSCs. Dorn VA Research Day, May 2015.

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Brandon Busbee, Mitzi Nagarkatti and Prakash Nagarkatti. Natural indoles, indole-3-carbinol and 3,3'-diindolymethane, attenuate staphylococcal enterotoxin B-mediated liver injury by downregulating miR-31 expression and promoting caspase-2-mediated apoptosis. Dorn VA Research Day, May 2015.

Alexa Gandy, Mitzi Nagarkatti & Prakash Nagarkatti. Resveratrol regulates the miR-124/Sphingosine Kinase 1 axis in encephalitogenic T cells and protects from experimental multiple sclerosis. Dorn VA Research Day, May 2015.

Velázquez KT, Enos RT, McClellan JL, Cranford TL, Chatzistamou I, Singh U, Nagarkatti M, Nagarkatti PS, Fan D, Murphy EA. MicroRNA-155 deletion promotes tumorigenesis in the azoxymethane/dextran sulfate sodium model of colon cancer. Dorn VA Research Day, May 2015.