

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



SEPTEMBER– DECEMBER 2016

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News & Updates:

A study performed by Dr. Velazquez (Murphy Lab) was selected for a press release by the American Physiological Society <http://www.the-aps.org/mm/hp/Audiences/Public-Press/2016-48.html>. The study 'Weight loss following diet-induced obesity does not alter colon tumorigenesis in the AOM mouse model' was co-authored by Dr. Reilly Enos, Meredith Carson, Dr. Taryn Cranford, Jackie Bader, Dr. Ioulia Chatzistamou, Dr. Udai Singh, Dr. Prakash Nagarkatti, Dr. Mitzi Nagarkatti, Dr. Mark Davis, Dr. James Carson and Dr. Angela Murphy.

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Dr. Berlin Londono-Renteria (Colpitts lab) spent the month of October in the laboratory of Dr. George Dimopoulos at the Johns Hopkins Malaria Research Institute in the Johns Hopkins University Bloomberg School of Public Health, funded by a Burroughs Wellcome Award.

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In November, Dr. Robert Startz presented a lecture on "Diseases of Famous People" at the Alumni Center as part of Carolina Classroom.

Dr. Tonya Colpitts served on an NIH NIAID Special Virology IRG Panel in November.

Dr. Carole Oskeritzian was invited to give a talk entitled "Mast cells and sphingosine-1-phosphate: the integrated signaling unit controlling inflammation" at the University of South Carolina Aiken Fall Biology Seminar Series, November 18, 2016, Aiken, SC. During her visit, she met with faculty and prospective students interested in joining USC School of Medicine as graduate students and medical students.

Dr. Udai Singh served on the National Institutes of Health (NIH), Immunity and Host defense (IHD) study section as ad-hoc member on October 27-28, 2016 reviewing grants.

Dr. Berlin Londono-Renteria (Colpitts lab) was an invited guest and speaker at the Deployment and Travel Related Infections Research Area Annual Meeting held at the Henry M. Jackson Foundation for the Advancement of Military Medicine (Bethesda - Maryland).

Taryn Cranford (Murphy Lab) successfully defended her dissertation and graduated with a Ph.D in December. She is now pursuing a post-doctoral fellow at Mayo Clinic in Jacksonville.

Dr. Tonya Colpitts served as a Scientist Reviewer for the Department of Defense MIDRP Flavivirus Research Panel and PRMRP Emerging Infectious Diseases Panel.

Dr. Pirisi-Creek gave an invited talk at the University of West Virginia Cancer Center, December 7, 2016.

Dr. Tonya Colpitts was selected as an Associate Editor for the journal Virology.

Dr. Carole Oskeritzian was invited to deliver the Journal of Lipid Research Junior Investigator Award Recipient Plenary Talk entitled "Redefining the skin hypodermis functions: newly uncovered site of mast cell- and sphingosine-1-phosphate-mediated pathogenic remodeling in pre-symptomatic eczema" during the 2016 annual SERLC, November 9-11, Cashiers, NC.

Dr. Testerman welcomed Yvonne Hui to her laboratory as a new research associate. Yvonne brings a wealth of experience in cell and molecular biology from previous employment by Drs. LaVoie and Fan.

Dr. Berlin Londono-Renteria (Colpitts lab) accepted a tenure-track faculty position at Kansas State University. She will begin her position in January of 2017. The department wishes her the best and will miss her!

The Colpitts lab research on transmission-blocking vaccines for dengue virus infection was featured on national Fox News Health: <http://www.foxnews.com/health/2016/12/05/us-researchers-developing-new-vaccine-to-help-prevent-spread-dengue-fever.html>

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Katherine M. Castleberry, a Magellan Scholar in Dr. Carole Oskeritzian's laboratory, has finished her classwork in December 2016. She will be graduating Cum Laude with Leadership Distinction with a Bachelor of Science in Biological Science and a minor in Chemistry from USC in May 2017. She will continue her research efforts in the Oskeritzian Laboratory until then.

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Yvon Woappi graduated with his Ph.D., from Dr. Pirisi-Creek's laboratory, in December, 2016 and moved on to a postdoctoral job at Brigham and Women's hospital, Harvard Medical School, Boston, MA.

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Through the efforts and commitment of M2 student Joshua Schoen, grant funding from the Intersociety Council for Pathology Information (ICPI) was obtained, as well as matching funds generously provided by the PMI Chair, Dr. Mitzi Nagarkatti, to promote events and initiatives of the USCSOM **Medical Student Interest Group for Pathology** for the academic year 2016-2017. The first meeting of the group was held in the **M2 Classroom at Noon on Thursday 17 November** in conjunction with (and celebration of) International Pathology Day. Lunch was offered and Dr. Jeff Welsh of Pathology Associates of Lexington, P.A. gave a presentation titled: "Past, Present, and Future in the Practice of Pathology – A Few Cases to Surprise your Surgeon". Dr. Welsh engaged attendees with "a day in the life of a practicing pathologist...", a contemporary philosophy of practice, the ever more important role of the pathologist on the molecular pathology-era 21st-century healthcare team vis-à-vis patient care, management decisions, "tailored/personalized therapy", prognostic informational support to the clinicians... and how practicing pathologists can make a difference in patients' lives through their contribution to patient care – helping to begin the healing process, as from their diagnosis "healing began". Students also had the opportunity to "meet and greet" with physicians and other students who share their interest in pathology as a career in medicine.



Dr. Tonya Colpitts was interviewed about her research for an article in the Charleston Post and Courier:

http://www.postandcourier.com/features/your_health/usc-researcher-wants-humans-to-spread-dengue-vaccine-to-mosquitoes/article_ea4a85ee-ab6d-11e6-bf97-3f135733cad2.html

Honors & Awards:

Dr. Mitzi Nagarkatti has been named as the SmartState Endowed Chair of Center for Cancer Drug Discovery. This appointment was recommended by the USC Committee on Named and Distinguished Professorships, with the approval by the Provost and the President of the University of South Carolina.

Dr. James F. Catroppo, Course Director for Medical Pathology, has been promoted to the rank of Clinical Associate Professor in the Department of Pathology, Microbiology and Immunology of the USC School of Medicine.

Dr. Mitzi Nagarkatti was recently awarded a five-year National Institutes of Health Research Project Grant for \$2.4million to study the connection between inflammation and post-traumatic stress disorder (PTSD).

Dr. Carole Oskeritzian was the recipient of the 2016 Journal of Lipid Research Junior Investigator Award. This award is sponsored by the American Society for Biochemistry and Molecular Biology and recognizes not-yet-tenured investigators who made significant scholarly contributions to lipid research.

Taryn Cranford (Murphy Lab) was the recipient of a Sorensen Research Fellow award (\$5,000) from the Center for Colon Cancer Research.

Dr. Sarah Rothenberg (Environmental Health Sciences), Dr. Marj Pena (Biological Sciences), Dr. Angela Murphy (PMI), and Dr. Jim Carson (Exercise Science) received a pilot grant in the amount of 80K from the Center for Colon Cancer Research to study 'The role of microbiome in intestinal tumor development and response to 5-FU chemotherapy'.

Dr. Carole Oskeritzian is the recipient of a new award by NIH/NIGMS entitled "Pilot Project: Mast cell-based non-invasive screening for colorectal cancer." Dr. Oskeritzian serves as Pilot Project PI and Dr. Frank Berger, Director of the USC Colon Cancer Research Center, serves as PI on this COBRE grant. This award was funded on September 28, 2016 for one year and a total amount of \$58,000. Nabihah I. Kumte, a sophomore from the Honors College at USC, will conduct this research project, also supported by Alena P. Chumanevich, Research Associate (Oskeritzian Lab) and Celestia (Tia) Davis, USC Mouse Core Manager and Research Specialist and the expertise of Drs. Marjorette (Marj) Peña (Biological Sciences) and Ioulia Chatzistamou (PMI).

Piper Wedman, PhD Candidate in Dr. Oskeritzian's laboratory received a Travel Award from USC Graduate School to attend the 51st South Eastern Regional Lipid Conference (SERLC), November 9-11, 2016, Cashiers, NC.

Publications:

Fanourakis G, Tosios K, Papanikolaou N, Chatzistamou I, Xydous M, Tseleni-Balafouta S, Sklavounou A, Voutsinas GE, Vastardis H. Evidence for APOBEC3B mRNA and protein expression in oral squamous cell carcinomas. *Experimental Molecular Pathology*. 2016 101(3): 314-319.

Mihailidou C, Chatzistamou I, Papavassiliou AG, Kiaris H. Ciclopirox enhances pancreatic islet health by modulating the unfolded protein response in diabetes. *Pflugers Arch*. 2016 468(11-12):1957-1968.

Mihailidou C, Chatzistamou I, Papavassiliou AG, Kiaris H. Modulation of pancreatic islets' function and survival during aging involves the differential regulation of endoplasmic reticulum stress by p21 and CHOP. *Antioxidants and Redox Signalling*, 2016. (In Press).

Farmaki E, Kaza V, Papavassiliou AG, Chatzistamou I, Kiaris H. Induction of the MCP chemokine cluster cascade in the periphery by cancer cell-derived CCL3. *Cancer Letters*, 2016 (In Press).

Velázquez KT, Enos RT, Carson MS, Cranford T, Bader J, Chatzistamou I, Singh UP, Nagarkatti P, Nagarkatti M, Davis JM, Carson JA, Murphy EA. Weight loss following diet-induced obesity does not alter colon tumorigenesis in the AOM mouse model. *Am J Physiol Gastrointestinal Liver Physiol* 2016 Oct 1;311 (4):G699-G712.

Narsale AA, Puppa MJ, Hardee JP, VanderVeen BN, Enos RT, Murphy EA, Carson JA. Short-term pyrrolidine dithiocarbamate administration attenuates cachexia-induced alterations to muscle and liver in ApcMin/+ mice. *Oncotarget*. 2016 Sep 13;7(37):59482-59502.

Enos RT, Velázquez KT, Carson MS, McClellan JL, Nagarkatti PS, Nagarkatti M, Davis JM, Murphy EA. A Low Dose of Dietary Quercetin Fails to Protect Against the Development of an Obese Phenotype in Mice. *PLoS One*. 2016 Dec 13;11(12):e0167979.

Macht VA, Vazquez M, Petyak C, Grillo CA, Kaigler K, Enos RT, McClellan JL, Cranford TL, Murphy EA, Nyland JF, Gertler A, Wilson MA, Reagan LP. Leptin resistance elicits depressive-like behaviors in rats. *Brain Behav Immun*. 2017 Feb;60:151-160.

Cranford TL, Velázquez KT, Enos RT, Bader J, Carson M, Chatzistamou I, Nagarkatti M, Murphy EA. Loss of monocyte chemoattractant protein-1 expression decreases mammary tumorigenesis and reduces localized inflammation in the C3(1)/SV40Tag triple negative breast cancer model. (In Press)

Londono-Renteria B, Cardenas JC, Troupin, A, Colpitts TM. Natural Mosquito-Pathogen Hybrid IgG4 Antibodies in Vector Borne Diseases: A Hypothesis. *Frontiers in Immunology* 2016. Sep 29; 7:380.

Londono-Renteria B, Troupin, A, Colpitts TM. Arbovirology and potential transmission blocking vaccines. *Parasites & Vectors* 2016. Sep 23;9(1):516.

Conway MJ, Londono-Renteria B, Troupin, A, Watson AM, Klimstra WB, Fikrig E, Colpitts TM. Aedes aegypti D7 saliva protein inhibits dengue virus infection. *PLoS Neglected Tropical Diseases* 2016. Sep 15;10(9): e0004941.

Troupin A, Londono-Renteria B, Conway MJ, Cloherty E, Jameson S, Vanlandingham D, Higgs S, Fikrig E, Colpitts TM. A novel mosquito ubiquitin targets viral envelope protein for degradation and reduces virion production during dengue virus infection. *Biochim Biophys Acta*. 2016. Sep;1860(9):1898-909.

Troupin A, Shirley D, Londono-Renteria B, Watson AM, McHale C, Hall A, Hartstone-Rose A, Klimstra WB, Gomez G, Colpitts TM. A role for human skin mast cells in dengue virus infection and systemic spread. *Journal of Immunology* 2016. Dec 1;197(11):4382-4391.

Heuker J, Ray SK. Calcium ionophores as research tools for studying calcium mediated cell death mechanisms in the central nervous system cells. In: *Horizons in Neuroscience Research* (ed., Costa A and Villalba E), Vol. 27, Nova Science Publishers, New York, NY, p. 75-86, 2016.

Smith AW, Rohrer B, Wheless L, Samantaray S, Ray SK, Inoue J, Azuma M, Banik NL. Calpain inhibition reduces structural and functional impairment of retinal ganglion cells in experimental optic neuritis. *J Neurochem*. 39:270-284, 2016.

Ray SK, Samantaray S, Banik NL. Future directions for using estrogen receptor agonists in the treatment of acute and chronic spinal cord injury. *Neural Reg Res*. 11:1418-1419, 2016.

Podbielska M, Das A, Smith AW, Chauhan A, Ray SK, Inoue J, Azuma M, Hogan EL, Banik NL. Activation of microglia-neuron induced bi-directional cytotoxicity is associated with calpain activation. *J Neurochem*. 139:440-455, 2016.

Haque A, Ray SK, Banik NL. Challenging pathophysiology in spinal cord injury and promising stem cell therapy. *Proc Neurosci.* 1:78-88, 2016.

Ray SK. The transcription regulator Krüppel-like factor 4 and its dual roles of oncogene in glioblastoma and tumor suppressor in neuroblastoma. *For Immunopathol Dis Therap.* 7:131-143, 2016.

Augustine MR, Testerman TL, Justo JA, Bookstaver PB, Kohn J, Albrecht H, Al-Hasan MN. Clinical Risk Score for Prediction of Extended-Spectrum β -Lactamase-Producing Enterobacteriaceae in Bloodstream Isolates. *Infect Control Hosp Epidemiol.* 2016 (In Press).

Sido JM, Jackson AR, Nagarkatti PS, Nagarkatti M. Marijuana-derived Δ -9-tetrahydrocannabinol suppresses Th1/Th17 cell-mediated delayed-type hypersensitivity through microRNA regulation. *J Mol Med (Berl).* 2016 Sep;94(9):1039-51.

Chumanevich AA, Witalison EE, Chaparala A, Chumanevich A, Nagarkatti P, Nagarkatti M, Hofseth LJ. Repurposing the anti-malarial drug, quinacrine: new anti-colitis properties. *Oncotarget.* 2016 Aug 16;7(33):52928-52939.

Bam M, Yang X, Zumbun EE, Zhong Y, Zhou J, Ginsberg JP, Leyden Q, Zhang J, Nagarkatti PS, Nagarkatti M. Dysregulated immune system networks in war veterans with PTSD is an outcome of altered miRNA expression and DNA methylation. *Sci Rep.* 2016 Aug 11;6:31209.

Chumanevich AA, Chaparala A, Witalison EE, Tashkandi H, Hofseth AB, Lane C, Pena E, Liu P, Pittman DL, Nagarkatti P, Nagarkatti M, Hofseth LJ, Chumanevich AA. Looking for the best anti-colitis medicine: A comparative analysis of current and prospective compounds. *Oncotarget.* 2016 (In Press)

Chitrala KN, Nagarkatti P, Nagarkatti M. Prediction of Possible Biomarkers and Novel Pathways Conferring Risk to Post-Traumatic Stress Disorder. *PLoS One.* 2016 Dec 20;11(12):e0168404.

Murphy EA. (2016). Novel Adipokines; Monocyte Chemotactic Protein-1, Plasminogen Activator Inhibitor-1, Chemerin. In *Energy Balance and Cancer* Volume 12. Springer.

Mihaidildou V, Kiaris H, Chatzistamou I. Is Endoplasmic Reticulum Stress linked to the Pathogenesis of Pemphigus Vulgaris? *Medical Research Archives*, Vol 4, No 7, November 2016, Invited review.

Presentations:

Dr. Berlin Londono-Renteria and Mr. Nicholas Dopkins (graduate student) from the Colpitts lab presented "Dengue immune sera enhance Zika virus infection in primary human macrophages" at the American Society of Tropical Medicine and Hygiene Annual Meeting, in Atlanta, GA.

Carson MS, Enos RT, Velazquez KT and Murphy EA. Estrogen is protective against the development of obesity, adipose tissue inflammation and insulin resistance. Carolina Women's Health Research Forum, Columbia, SC November 4th, 2016.

Dr. Prakash Nagarkatti gave an invited presentation titled "Epigenetic Mechanisms in Immunomodulation Mediated by Resveratrol in SEB-induced Acute Lung Injury" at the 4th International Conference on Resveratrol and Health, Nov. 17-19, 2016, in Taipei, Taiwan.

Dr. Prakash Nagarkatti was also invited to China Medical University (CMU) to present his research and sign an MOU for faculty/student exchange.

Ms. Andrea Troupin, MSPH, and Mr. Alex Hall (graduate student) from the Colpitts lab presented "A Role for Human Skin Mast Cells in Dengue Virus Infection and Systemic Spread" at the American Society of Tropical Medicine and Hygiene Annual Meeting, in Atlanta, GA.

Rodriguez YI, Campos LE, Castro MG, Aladhami A, Oskeritzian CA*, Alvarez SE*. Sphingosine-1 Phosphate: A New Modulator of Immune Plasticity in the Tumor Microenvironment. *Front. Oncol.*, 2016;6:218. * Co-corresponding authors.

Dr. Tonya Colpitts gave an invited talk entitled 'Discover of flavivirus host factors in the mosquito transmission vector' at the U.S. Department of Homeland Security National Biodefense Analysis & Countermeasures Center (NBACC) at Fort Detrick, Maryland.

Cervino JM, Faulkner AN, Kaza V, Kiaris H, Chatzistamou I. Development of a reporter vector for the study of human and mouse CCL8 promoter. Carolina's Women's Health Research Forum, University of South Carolina Alumni Center, Columbia, SC, November 4th, 2016.

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Tobiansky DJ, Schmidt KL, Enos RT, Kachkovski G, Tomm RJ, Hamden JE, Floresco SB, Murphy EA, and Soma KK. A high-sucrose maternal diet influences reward seeking behavior in the offspring. Society for Behavioral Neuroendocrinology Annual Meeting, Montreal, Quebec, Canada, August 7 - 10, 2016.

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Dr. Mitzi Nagarkatti was invited to present "Microbiome Profile of Lung-gut Axis in Staphylococcal Enterotoxin-induced Acute Lung-injury Following Treatment with Resveratrol" at the 4th International Conference on Resveratrol and Health, November 17-19, 2016, in Taipei, Taiwan. Dr. Mitzi Nagarkatti was also invited to China Medical University (CMU) to present her research.

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Farmaki E, Chatzistamou I, Kaza V, Cervino JM, Faulkner A, Kiaris H. CCL8 and breast cancer metastasis. Carolina's Women's Health Research Forum, University of South Carolina Alumni Center, Columbia, SC, November 4th, 2016.

Dr. Berlin Londono-Renteria (Colpitts lab) presented her work on "Human C5a interacts with a G-protein coupled receptor in *Aedes aegypti* cells modulating dengue virus infection in vitro" at the XXV International Congress of Entomology (ICE 2016) in Orlando, FL.

Piper Wedman, PhD Candidate in Dr. Oskeritzian's laboratory presented a poster entitled "New insights in atopic dermatitis pathogenesis: Mast cell activation augments ceramide lipids and triggers endoplasmic reticulum stress-induced apoptosis", also authored by Alena P. Chumanovich, Ahmed Aladhami, Katherine M. Castleberry, Reilly T. Enos, K. Alexa Gandy, Kandy T. Velazquez, Angela E. Murphy, John W. Fuseler, Mitzi Nagarkatti and Carole A. Oskeritzian at the 2016 annual SERLC, November 9-11, Cashiers, NC.

Dr. Tonya Colpitts gave an invited talk entitled 'Transmission-blocking vaccines for arbovirois' at the Tulane School of Public Health and Tropical Medicine in New Orleans, LA.