



# 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

January 2019 - April 2019

## P Honors & Awards

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Congratulations to Dr. Pirisi-Creek, as she announced her imminent retirement July 15, 2019! Wishing her all the very best in her new endeavors and rest & relaxation! She will be greatly missed in our department and at the School of Medicine!!!

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Dr. Reilly Enos received an ASPIRE grant from the office of the VPR titled "8-Prenylningerinin: A Natural Therapy for Estrogen Deficiency in Obesity".

Congratulations to Dr. Haider Alrafas, PhD (Nagarkatti lab). Dr. Alrafas defended his PhD thesis on April 10, 2019.

Congratulations to the Discover UofSC award winners:

Dr. Brandon Busbee (Dr. Nagarkatti's lab), Discover USC First Place Postdoctoral Scholar. This paper was co-authored by: H Alrafas, N Dopkins, M Nagarkatti, and PS Nagarkatti and was titled "Indole-3-carbinol prevents murine colitis development via an IL-22-dependent mechanism that regulates anti-microbial peptides and mucus production".

Dr. Marpe Bam (Dr. Nagarkatti's lab), Discover USC First Place Postdoctoral Scholar Award. This paper was co-authored by: M Bam, X Yang, P Nagarkatti, and M Nagarkatti and was titled "Inflammation in PTSD is a consequence of dysregulated WNT signaling orchestrated by long non-coding RNA LINC00926 and lysine methyltransferase MLL1".

Zinah Al-Ghezi, (Dr. Nagarkatti's lab), Discover USC First Place Graduate Student Poster Award. This paper was co-authored by: K Miranda, M Nagarkatti, and PS Nagarkatti and was titled "Role of CB1 and CB2 receptors in cannabinoid-mediated amelioration of experimental autoimmune encephalomyelitis: Effects on Treg development and cytokine production".

Kathryn Miranda (Dr. Nagarkatti's lab) Discover USC First Place Graduate Student Poster Award in the Biomedical Science division. The paper was titled "Cannabinoid receptor 1 blockade attenuates obesity and adipose tissue type 1 inflammation through miR-30e-5p regulation of Delta-like-4".

Congratulations to Dr. Lucia Pirisi-Creek! She received her "30 years of service to the state" award!! She received a certificate and pin at the awards ceremony at the Office of Human Resources.

Jackie Bader (Murphy Lab) received a Breakthrough Scholar Award from the Office of the Vice President for Research.

Dr. Swapan Ray has edited a new book, which has been published by Elsevier/Academic Press in January: *NEUROBLASTOMA - Molecular Mechanisms and Therapeutic Interventions* (ed. Ray SK), 2019, Elsevier/Academic Press, New York, NY.

Dr. Ioulia Chatzistamou received an ASPIRE-1 Track-2 award for the study "Exploring the anticancer activity of *P. leucopus* serum".

Dr. Carole Oskeritzian was awarded a Global Carolina Faculty International Travel Grant from the Office of the Provost, with matching funds from PMI, to present research from her lab at the 9<sup>th</sup> EMBRN International Mast Cell and Basophil Meeting to be held on June 17 to 19, 2019 in Uppsala, Sweden. She will give a talk and serve as Session Chair at the conference.

Jackie Bader (Murphy lab) received the Dean Barnhart award from the School of Medicine.

Jackie Bader (Murphy lab) also received an Andrew Sorsenson Scholarship from the Center for Colon Cancer Research. Jackie received \$5,000 with this award.

Congratulations to the following award winners at the Annual NIH CAM Center for Epigenetic Regulation of Inflammation & NIH COBRE for Dietary Supplements and Inflammation - Phase 2 External Advisory Committee Meeting on March 28, 2019:

Nicholas Dopkins, graduate student in Dr. Nagarkatti's lab, 1<sup>st</sup> place graduate student poster award winner. Nicholas also was the recipient of \$100.00.

Kathryn Miranda, graduate student in Dr. Nagarkatti's lab, 1<sup>st</sup> place graduate student poster award winner. Kathryn was the recipient of \$100.00.

Alexander Sougiannis, graduate student from Dr. Angela Murphy's lab, 2<sup>nd</sup> place graduate student poster award winner. Alexander was the recipient of \$50.00.

Ahmed Mohammed, graduate student from Dr. Jason Kubinak's lab, 2<sup>nd</sup> place graduate student poster award winner. Ahmed was the recipient of \$50.00.

Congratulations to Alexander Sougiannis (Murphy lab) for receiving the first place award at the 2019 Newton Symposium and to Ahmed Mohammed (Dr. Jason Kubinak's lab) for receiving the 2019 Newton Symposium honorable mention award. The Newton symposium was hosted by the Biomedical Sciences Graduate Program on February 8, 2019.

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## *News & Updates*

Dr. Lucia Pirisi-Creek participated in a SPORE Special Emphasis Panel for the National Cancer Institute in February, 2019, and in an R35 SOAR Review Panel Meeting, also for NCI, in March, 2019.

Dr. Swapan Ray served as a reviewer for the poster presentations in Discover USC on Friday, April 26, 2019, at the Columbia Metropolitan Convention Center (CMCC). This event at the CMCC featured over 1,000 presentations by undergraduate and graduate students, postdocs, and medical scholars.

Dr. Carole Oskeritzian also served as a judge for Medical Scholars poster presentations at Discover USC, April 26, Columbia, SC.

Dr. Ioulia Chatzistamou served as a reviewer for the Magellan awards, March 2019.

Dr. Angela Murphy served as a reviewer for NIH/NCI Transition to Independence awards on February 21 & 22 and March 7, 2019.

Dr. Carole Oskeritzian, together with Dr. John Fuseler, Dr. Frank Berger, Ms. Alena Chumanevich, Ms. Nabihah Kumte and Mr. Ahmed Aladhami, have filed a provisional patent application No. 62/807,403 – USC-652-P (1403) entitled: "System and method for early detection of colorectal cancer", in February 2019.

Dr. Traci Testerman was invited to participate in the Innovation Lab: Systems Biology for the Cancer Microbiome, which was held April 29th - May 3rd, 2019 at the Beaver Hollow Conference Center in Java Center, NY. This event was sponsored by the National Cancer Institute and Memorial Sloan Kettering Cancer Center. The goal of the think-tank was to accelerate research on the role of the microbiome in cancer by bringing together researchers from diverse fields to form interdisciplinary teams and by identifying key challenges and opportunities.

On January 29, Dr. Natasha Savage (Residency Program Director) and Dr. Matt Powell (Chief Resident) spoke about the Pathology Residency Program at the Medical College of Georgia at a lunch meeting of the UofSC SOM Medical Student Interest Group (MSIG) for Pathology.



Dr. Mitzi Nagarkatti reviewed grants for the NIH Systemic Injury by Environmental Exposure (SIEE) Study Section review from February 28 – March 1, 2019 in Alexandria, VA.

Madison Ryan, a UofSC Pre-Med Sophomore and Capstone Scholar joined the Oskeritzian Lab in February to study the effect of microRNA-34a on primary mouse and human mast cell functions. Madison is majoring in Biochemistry and minoring in English.

Drs. Prakash Nagarkatti and Mitzi Nagarkatti were guests of honor at the Beijing Watson Baoiou Biotechnology Research Institute, PR China, March 28 - April 9, 2019. Dr. Nagarkattis presented talks and signed a Memorandum of Understanding to work on a collaboration with US-China Program for Biomedical Collaborative Research.

Dr. Pirisi-Creek served as second reader for the Honors Thesis of Emily Milz, who worked in the Pirisi-Creek and Kim Creek laboratories over the summer and in the fall and defended her thesis on April 25, 2019.

Dr. Swapan Ray accepted an invitation from Oak Ridge Associated Universities (ORAU) and served as an External Peer Reviewer in April, 2019, for the Ralph E. Powe Junior Faculty Awards. These awards are an investment in the future of scientific research that rewards ambitious young faculty at ORAU member universities and supports their professional development.

Dr. Mitzi Nagarkatti gave an invited talk at Penn State University. She presented the seminar at the Department of Veterinary and Biomedical Sciences A.L. Bortree Lecture Series, March 19 – March 20, 2019.

On January 16, Dr. James Catroppo discussed “Ultrasound-Pathology Correlations in Medical Education” with Professor Constantinos Zervides and others from University of Nicosia Medical School, Cyprus, visiting the Uof SC SOM Ultrasound Institute.

Dr. Carole Oskeritzian served as a judge for oral presentations in the Molecular Biology session at the 2019 South Carolina Academy of Sciences Meeting on March 30 at Francis Marion University, Florence, SC.

On March 25, Dr. Bradley Marcus, Chief Medical Examiner for Richland County, was invited to speak on “A Day in The Life of A Forensic Pathologist” at a lunch meeting of the MSIG.

Dr. Angela Murphy served as a grant reviewer on the NIH/NCI Special Emphasis Panel on March 12, 2019.

Dr. Carole Oskeritzian was invited to a discussion panel organized by the UofSC Postdoctoral Association on Salary and Benefits Negotiations.

Dr. Ioulia Chatzistamou served as a judge for the 2019 Center for Complementary and Alternative Medicine/COBRE on Dietary Supplements and Inflammation External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Dr. Swapan Ray served as a judge for the poster presentations at the annual CAM Center (Center for Epigenetic Regulation of Inflammation) and COBRE (Center for Dietary Supplements and Inflammation) External Advisory Committee Meeting, Thursday, March 28, 2019.

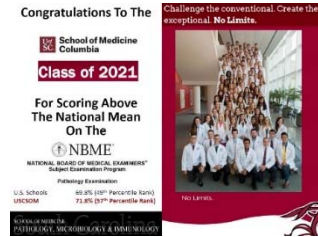


On April 1, Dr. Robert Startz gave a presentation entitled “Show Me the Money: Financial Planning for Pathologists” at a lunch meeting of the MSIG.

On April 25, the MSIG for Pathology celebrated Medical Laboratory Professionals Week with KrispyKreme® doughnuts and coffee, as well as SWAG from the American Society for Clinical Pathology (ASCP), and interactive laboratory medicine presentations by Dr. Allan Brett (liver enzyme panels) and Dr. Andy Sides (the CBC).

On May 7, Dr. James Catroppo gave a presentation entitled “Ultrasound-Pathology Correlations in Medical Education” to faculty from L’Université Paris Descartes visiting the UofSC SOM Ultrasound Institute.

Dr. Prakash Nagarkatti was interviewed by The State Newspaper, which was published on April 4, 2019 under the headline, “One of nation’s top marijuana experts is at UofSC. He says pot laws are ‘a political mess’”. Dr. Nagarkatti has been researching the medical uses for cannabis for 20 years. As a leading researcher of medical marijuana, he says federal law makes getting mass results difficult.” <https://www.thestate.com/news/special-reports/article225993350.html#storylink=mainstage>



Dr. Swapan Ray acted as an International Expert Reviewer for the grants submitted to the National Science Center, Kraków, Poland, in January 2019.

Dr. Ioulia Chatzistamou was a judge for the genetic counseling scholar presentations at Discover USC, April 26, Columbia SC.

Madison Yemc, a first-year student in the Biomedical Science Master’s Program, Applied Biotechnology Concentration, joined the Oskeritzian Lab in April to study the mechanisms of action of resveratrol in skin inflammation.

Dr. Angela Murphy served as a grant reviewer on the NIH/NCCIH Training and Education Review Panel on March 26, 2019.

Dr. Carole Oskeritzian served as a judge for poster presentations at the COBRE/CAM Center External Advisory Committee Meeting, March 28, Columbia, SC.

PMI welcomed 3 new Postdoctoral Fellows to the department - Courtney Culpepper (Nagarkatti lab), Alex Rutkovsky (Nagarkatti lab), and Brandon VanderVeen (Murphy lab). We are excited to have them join!

- Dr. Courtney Culpepper is a native of Baltimore, Maryland. She graduated with a Ph.D. in biomedical sciences from Georgia State University. Dr. Culpepper’s dissertation work focused on the functional reprogramming of innate myeloid leukocytes in the bone marrow during chronic inflammation. The primary significance of this work was the discovery that traditional pro-inflammatory cytokine IL-17a induces simultaneous expansion of neutrophil and suppressive myeloid derived suppressor cells at the chronic stage of colitis in mice. Outside of the laboratory, Dr. Culpepper is passionate about scientific communication and improving relations with the public, especially in minority communities. In her personal life, she is an avid supporter of all things science fiction and plans on creating content for minorities in this genre.
- Dr. Alex C Rutkovsky joined the Department of Pathology and Laboratory Medicine at the Medical University of South Carolina in Charleston, SC for her PhD. Under the direction of Dr. Stephen Ethier and Dr. Robin Muise-Helmericks, she elucidated targeted interventions to treat breast cancer, with a focus on genomic instability and functional genomics. In her spare time, Alex is often found data mining and consulting with other biomedical professionals or advocating for unbiased research practices and healthy lifestyle habits. She also enjoys nature, meditation, live music, and creating art through various mediums.
- Dr. Brandon N. VanderVeen is originally from the western suburbs of Chicago, Illinois. He just recently married (3 months ago). His wife’s name is Michelle and she is a Neuroscience ICU nurse at Palmetto/Prizma Health Richland. Brandon finished his PhD in May 2019 from The University of South Carolina, Arnold School of Public Health, Department of Exercise Science in the Applied Physiology division. He worked in Dr. James Carson’s Integrative Muscle Biology lab which focusses on understanding the molecular mechanisms of cancer-induced wasting. His dissertation was examining cancer related skeletal muscle fatigue which contributes to reduced overall function and life quality. He is excited to join the PMI department to get a better understanding the involvement of macrophages in both tumor progression and overall functional life quality.

## Publications

Alrafas HR, Busbee PB, Nagarkatti M, Nagarkatti PS. Resveratrol modulates the gut microbiota to prevent murine colitis development through induction of Tregs and suppression of Th17 cells. *J Leukoc Biol*. 2019 Mar 21. [Epub ahead of print]

Gandy KAO, Zhang J, Nagarkatti P, Nagarkatti M. Resveratrol (3, 5, 4'-Trihydroxy-trans-Stilbene) Attenuates a Mouse Model of Multiple Sclerosis by Altering the miR-124/Sphingosine Kinase 1 Axis in Encephalitogenic T Cells in the Brain. *J Neuroimmune Pharmacol*. 2019 Apr 2. [Epub ahead of print]

Bader JE, Enos RT, Velazquez KT, Carson MS, Sougiannis A, McGuinness OP, Robinson CM, Murphy EA. Clodronate-Liposome treatment results in neutrophilia, anemia, and is not effective in limiting obesity-linked metabolic impairments. *Am J Physiol Endocrinol Metab*. 2019 Mar 1;316(3):E358-E372.

VanderVeen BN, Fix DK, Montalvo RN, Counts BR, Smuder AJ, Murphy EA, Koh HJ, Carson JA. The regulation of skeletal muscle fatigability and mitochondrial function by chronically elevated interleukin-6. *Exp Physiol*. 2019 Mar;104(3):385-397.

Sougiannis AT, VanderVeen BN, Enos RT, Velazquez KT, Bader JE, Carson M, Chatzistamou I, Walla M, Pena MM, Kubinak JL, Nagarkatti M, Carson JA, Murphy EA. Impact of 5 fluorouracil chemotherapy on gut inflammation, functional parameters, and gut microbiota. *Brain Behav Immun*. 2019 Feb 23. [Epub ahead of print]

Zheng J, Tabung FK, Zhang J, Murphy EA, Shivappa N, Ockene JK, Caan B, Kroenke CH, Hébert JR, Steck SE. Post-cancer diagnosis dietary inflammatory potential is associated with survival among women diagnosed with colorectal cancer in the Women's Health Initiative. *Eur J Nutr*. 2019 Apr 6. [Epub ahead of print]

Havighorst A, Zhang y, Farmaki E, Kaza V, Chatzistamou I, Kiaris H. Differential regulation of the unfolded protein response in outbred deer mice and susceptibility to metabolic disease. *Dis Model Mech*. 2019 27:12(2).

-Featured with First Person interview by A. Havighorst: *Disease Models & Mechanisms* 2019 12: dmm039255 doi: 10.1242/dmm.039255

-Highlighted in "Lab Animal: Deer mice bring genetic diversity to metabolic research."  
<https://doi.org/10.1038/s41684-019-0294-x>

Khathayer F, Ray SK (2019) Rationale for using N-(4-hydroxyphenyl) retinamide (4HPR) for modulation of different molecular mechanisms for treatment of glioblastoma. In: *Horizons in Cancer Research* (ed., Watanabe HS), Vol. 71, Nova Science Publishers, New York, NY, p. 73-110.

Ray SK (2019) Emerging evidence for Krüppel-like factor 4 (KLF4) as a tumor suppressor in neuroblastoma. In: *NEUROBLASTOMA - Molecular Mechanisms and Therapeutic Interventions* (ed., Ray SK), Elsevier/Academic Press, New York, NY, p. 283-297.

Ray SK (2019) Modulation of expression of miRNAs for therapeutic effects in human malignant neuroblastoma. In: *NEUROBLASTOMA - Molecular Mechanisms and Therapeutic Interventions* (ed., Ray SK), Elsevier/Academic Press, New York, NY, p. 299-312.

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## Presentations

Bader JE, Carson MS, Velázquez KT, Enos RT, Sougiannis AT, Singh UP, Murphy EA. Ovariectomized mice exhibit accelerated tumor growth, consistent with increased M2-like tumor associated macrophages, in an obesity-enhanced MC38 subcutaneous tumor model. Tumor Metabolism Keystone Symposia, Keystone, CO, February 24-28, 2019.

Alghetaa HF, Mohammed AK, Nagarkatti M, Nagarkatti PS. Resveratrol-induced FoxP3<sup>+</sup> regulatory T cell subset, Th3, alleviates acute lung injury induced by Staphylococcal enterotoxin-B (SEB). Annual Meeting of Society of Toxicology, Baltimore, MD, March 10-14, 2019.

Mohammed A, Alghetaa H, Nagarkatti M, Nagarkatti PS. Protective effects of sodium butyrate resulted from reconstruction of altered gut microbiota mediated by SEB-induced acute lung injury. Annual Meeting of Society of Toxicology, Baltimore, MD, March 10-14, 2019.

Neamah WH, Nagarkatti M, and Nagarkatti PS. TCDD alters microbiome and induces myeloid derived suppresser cells that inhibit T cell activation by depleting cysteine. Annual Meeting of Society of Toxicology, Baltimore MD, March 10-14, 2019.

Havighorst A, Kiaris H, Chatzistamou I. Loss of coordination in the expression of hepatic lipase and endoplasmic reticulum stress genes in steatosis. Annual Endocrine society Meeting, New Orleans, LA, March 22-26, 2019.

Soltanmohamadi E, Havighorst A, Chatzistamou I, Kiaris H. Resilience in the regulation of the unfolded protein response across tissues and species. Annual Endocrine society Meeting, New Orleans, LA, March 22-26, 2019.

Aladhami A, Hobensack M, Kumte NI, Chumanevich AP, Cranford TL, Sougiannis A., Enos RT, Velázquez KT, Chatzistamou I, Fuseler JW, Murphy EA, Oskeritzian CA. Mast cells promote local angiogenic and structural remodeling, a precursor of prostate cancer. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Fuseler JW, Castleberry KM, Kumte NI, Wedman PA, Aladhami A, Chumanevich AP, Oskeritzian CA. Mast cells and microvasculature expansion in asymptomatic atopic dermatitis. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Busbee PB, Alrafas H, Dopkins N, Nagarkatti M, Nagarkatti PS. Indole-3-carbinol prevents murine colitis development via an IL-22-dependent mechanism that regulates anti-microbial peptides and mucus production. COBRE/CAM Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Miranda K, Mehrpouya-Bahrami P, Nagarkatti PS, Nagarkatti M. Cannabinoid receptor 1 blockade attenuates obesity and adipose tissue type 1 inflammation through miR-30e-5p regulation of Delta-like-4. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Mohammed A, Alghetaa H, Nagarkatti M, Nagarkatti PS. Protective effects of  $\Delta^9$ -Tetrahydrocannabinol (THC) results from alteration in lung dysbiosis mediated by SEB-induced acute lung injury. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Velázquez KT, Fan D, Johnson R, Nagarkatti M, Murphy EA. The effects of Ojeok-san on cancer-induced visceral nociception. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Bader JE, Carson MS, Velázquez KT, Enos RT, Sougiannis AT, Singh UP, Murphy EA. Ovariectomized mice exhibit accelerated tumor growth, consistent with increased M2-like tumor associated macrophages, in an obesity-enhanced MC38 subcutaneous tumor model. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Sougiannis AT, Kelly B, Velázquez KT, Enos RT, Bader JE, Chatzistamou I, Pena MM, Nagarkatti M, Carson JA, Murphy EA. Emodin, a natural anthraquinone, may help protect gastrointestinal health during chemotherapy treatment. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Almurshidi B, Scott G, Lead J, Baalousha M, Ray SK, Carver W. Anti-inflammatory effects of platinum nanoparticles in embryonic fibroblast and human leukemia cells. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.

Khathayer F, Ray SK. Combination of 4HPR and SAHA controls cell growth and invasion and induces differentiation in glioblastoma C6 and T98G cells: miR-34a reinforces efficacy of combination of drugs for induction of apoptosis. CAM/COBRE Center External Advisory Committee Meeting, Columbia, SC, March 28, 2019.



Abboodi F, Pirisi-Creek L. Molecular mechanisms of loss of E7 expression in HPV16-transformed human keratinocytes. American Association for Cancer Research Annual Meeting, Atlanta, GA, March 29-April 3, 2019.

Aladhami A, Hobensack M, Kumte NI, Chumanevich AP, Cranford TL, Sougiannis AT, Enos RT, Velázquez KT, Chatzistamou I, Fuseler JW, Murphy EA, Oskeritzian CA. Mast cells promote local angiogenic and structural remodeling, a precursor of prostate cancer. American Association for Cancer Research Annual Meeting, Atlanta, GA, March 29-April 3, 2019.

Sougiannis AT, Kelly B, Velázquez KT, Enos RT, Bader JE, Chatzistamou I, Pena MM, Nagarkatti M, Carson JA, Murphy EA. Emodin, a natural anthraquinone, may help protect gastrointestinal health during chemotherapy treatment. Experimental Biology, Orlando, FL, April 6-9, 2019.

Busbee PB, Alrafas H, Dopkins N, Nagarkatti M, Nagarkatti PS. Indole-3-carbinol prevents murine colitis development via an IL-22-dependent mechanism that regulates anti-microbial peptides and mucus production. Discover USC, Columbia, SC, April 26, 2019.

Bam M, Yang X, Nagarkatti P, Nagarkatti M. Inflammation in PTSD is a consequence of dysregulated WNT signaling orchestrated by long non-coding RNA LINC00926 and lysine methyltransferase MLL1. Discover USC, Columbia, SC, April 26, 2019.

Alghetaa HF, Mohammed AK, Sultan M, Nagarkatti M, Nagarkatti P. Microbiome profile of lung-gut axis in Staphylococcal enterotoxin-induced acute lung-injury following treatment with resveratrol. Discover USC, Columbia, SC, April 26, 2019.

Al-Ghezi Z, Miranda K, Nagarkatti M, Nagarkatti PS. Role of CB1 and CB2 receptors in cannabinoid-mediated amelioration of experimental autoimmune encephalomyelitis: Effects on Treg development and cytokine production. Discover USC, Columbia, SC, April 26, 2019.

Miranda K, Mehrpouya-Bahrami P, Nagarkatti PS, Nagarkatti M. Cannabinoid receptor 1 blockade attenuates obesity and adipose tissue type 1 inflammation through miR-30e-5p regulation of Delta-like-4. Discover USC, Columbia, SC, April 26, 2019.

Almurshidi B, Scott G, Lead J, Carver W, Ray SK. Plausible role of platinum nanoparticles in differentiation of oligodendrocyte precursor cells and therapeutic implication for multiple sclerosis. Discover USC, Columbia, SC, April 26, 2019.

Khathayer F, Ray SK. Diosgenin is a novel alternative therapy for inhibition of growth, invasion, and angiogenesis of different glioblastoma cell lines. Discover USC, Columbia, SC, April 26, 2019.

Daneshvar N, Farmaki E, Chatzistamou I, Kiaris H. Study of the promoter of the human and mouse gene encoding the chemokine CCL8. Discover USC, Columbia, SC, April 26, 2019. *\*First Place Tie in Biology and Biomedical Sciences, afternoon session.*

Zhang Y, Kaza V, Chatzistamou I, Kiaris H. Variations of the Unfolded Protein Response in Outbred Deer Mice Affect the Regulation of Appetite. Discover USC, Columbia, SC, April 26, 2019.

Havinghorst A, Zheng Y, Kaza V, Farmaki E, Chatzistamou I, Kiaris H. Inherent Variation in the Unfolded Protein Response in Outbred Deer Mice: Effect on Susceptibility to Metabolic Disease. Discover USC, Columbia, SC, April 26, 2019.

Alkarkoushi R, Chatzistamou I, Bam M, Nagarkatti P, Nagarkatti M, Testerman T. The effect of Helicobacter spp., and indole-3-carbinol in animal models of colitis and colitis-associated colon tumorigenesis. Discover USC, Columbia, SC, April 26, 2019.

Soltanmohammadi E, Kaza V, Chatzistamou I, Kiaris H. Coordination of the Unfolded Protein Response in different species and tissues of Peromyscus. Discover USC, Columbia, SC, April 26, 2019.

Aladhami A, Hobensack M, Kumte NI, Chumanevich AP, Cranford TL, Sougiannis A, Enos RT, Velázquez KT, Chatzistamou I, Fuseler JW, Murphy EA, Oskeritzian CA. Mast cells promote local angiogenic and structural remodeling, a precursor of prostate cancer. Discover USC, Columbia, SC, April 26, 2019.