



# **Department of/Office of Biochemistry & Molecular Biology**

## **Annual Report:**

**Jan, 2018 – December 2018**

Madhavi Kadakia, Ph.D.  
Professor and Chair

# 1

## Statement from the Chair/Associate Dean

In 2018, we had a total of 2 BMB admin staff, 12 Ph.D. students, 15 Master's students, 7 undergraduate researchers, 4 post-doctoral fellows and 5 research associates. Of the 28 graduate students, 7 students graduated by end of 2018 (1 Ph.D. and 5 Master's students). In August 2018, BMB held its annual BMB faculty retreat.

BMB faculty received a total of funded grants (national, local and internal) totaling \$1,654,975 (\$1,064,297.65 in direct costs and \$476,213.68 in indirect costs). BMB faculty reported a total of 22 manuscripts in 2018. Students and faculty from the department presented a total of 45 posters and/or talks on their research at local forums (Central Research Forum, Celebration of Research, COSM research celebration day), and several national and international meetings. In addition, BMB faculty presented 7 invited talks which included research meetings.

There are currently 55 majors (28 full and 27 pre), up from 25 (18 full and 7 pre) last year. The class rank breakdown is 23 freshman, 10 sophomores, 9 juniors and 13 seniors. We had one student graduate in the Fall and will have an additional 3 in the spring. An additional 2 minors will graduate this spring. Currently, 14/69 potential students for Fall have accepted. A total of 18 undergraduate (3 freshman, 6 sophomores, 6 juniors, and 3 seniors) students are involved in research on campus or at AFRL. We officially offered BMB minor for the first time with many students inquiring about this opportunity. BMB 4210 was fully converted to a active learning course. Three new electives courses were run for the first time; BMB 4630: NMR Spectroscopy, BMB 4700: Molecular Biology of Cancer and BMB 4750: Molecular Biology of RNA.

A number of changes and improvements were incorporated in Origins 1 module following the initial successful run of the module in 2017 including 1) Major rearrangement of topic organization with the DNA and molecular biology section moved to the end of the module to provide better integration with Origins 2; 2) Study guides were prepared and included for all PI and TBL learning events; 3) A new edition of the textbook was introduced after the 2017 run and it was used for 2018 (this required necessary changes reflecting some edition content changes); 4) all learning events (both Peer Instruction and Team based learning) were carefully evaluated and refinements introduced throughout for 2018; 5) Two TBL learning events (dietary carbohydrates and protein structure) were converted to Peer Instruction sessions for 2018; 6) Integration of the use of a metabolic chart provided to students during learning events was accomplished (reflecting the planned future use of such charts on the USMLE boards). All changes were well received by the students and this was reflected by a favorable module review as presented to the FCC.

In 2018, BMB faculty member Dr. Weiwen Long received the COSM Faculty Excellence Award Early Career Achievement and Dr. Madhavi Kadakia was accepted into the Executive Leadership in Academic Medicine (ELAM) program. Dr Kadakia, served as Assistant Dean of research from June 2018-Dec 2018.

BMB faculty was involved in several outreach activities. BMB faculty was a speaker at an event hosted local American Cancer Society reception and at the Dayton Oakwood Rotary Club. BMB faculty participated as a judge at the Montgomery County Science Day, Intel International Science and Engineering Fair and at the Miami Valley Career Technology center Biotechnology day held at WSU.

## 2 Programs/Divisions

Name of Division or Program	Director	Dates
[Provide a description here of programs/divisions within the department including directors and participating faculty]		
BMB, BMB M.S. Program Director		
M.S. in BMB	Dr. John Paietta	Jan 1, 2017 – present
B.S. in BMB	Dr. Chad Campbell	Jan 1, 2017 – present

## 3 Fully Affiliated Faculty (may be the same as #2 above for some depts)

Name and Academic Position	Research Interests
<b>Cambroner Julian G.</b>	Our laboratory studies the molecular mechanisms underlying cell movement of blood leukocytes and cancer cells. We have a proven track record in the area of cell signaling for 17 years. Our efforts concentrate on the regulation of the signaling molecule phospholipase D (PLD) and we have become leaders in the field. We proved that the enzyme PLD2 is necessary for inflammation and leukocyte chemotaxis in seminal papers (Blood and FASEB J). We were the first group to explain how PLD2 biological activity is regulated, by discovering new molecular associations through SH2 domains with the signaling molecules Grb2, Sos and Rac2 (Oncogene, JMB, JBC and MCB). We have also provided the groundbreaking demonstration (PNAS; Cell Signaling, 2011) that a phospholipase can act as a GTPase exchange factor, GEF, and have mapped the enzymatic catalytic site (JBC, 2012; J Cell Science, 2013). Our team will continue to investigate the intracellular signaling hierarchy that controls chemotaxis. We are using a multi-disciplinary approach to do this, involving contemporary molecular, biochemical, genetic, cellular

Name and Academic Position	Research Interests
<b>Campbell Chad</b>	<p>and physiological tools. Our long-term goal is to find ways (an inhibitor) to prevent the accumulation of leukocytes that cause chronic inflammation and tissue damage in the heart. In a 2nd line of research, we are applying our mechanistic understanding of cell migration to breast cancer cell invasion, with the ultimate goal of finding ways to prevent breast cancer metastasis in the lung (Oncogene, 2013). We have recently demonstrated the role of PLD in specific microRNAs involved in the Epithelial to Mesenchymal transition (EMT) in breast cancer cells (JBC, 2015, MCB, 2015).</p> <p>This past year I have served as the Undergraduate Program Director which graduated its first student and was responsible for program evaluation, development and administration. In the Spring, I was the course director for BMB 1010: Topics in Biochemistry, BMB 2100: Introduction to Biochemistry and BMB 3900: Scientific Communications and taught in BMB 4230: Biochemistry and Molecular Biology II. In the Fall, I was the course director for BMB 1000: Freshman Seminar, BMB 2000: Careers in BMB, BMB 3850: Biochemistry Laboratory, BMB 4100: Senior Reflection and BMB 4210: Biochemistry and Molecular Biology I and taught 4 lectures in BMB 3220: Biochem for Pre-Meds. Additionally, this year I have served as the BMB program advisor guiding the transfer of students into our major and the reception of our incoming Freshman Class. Moreover, I have also participated on various different committees at the departmental and college level and worked with the department chair in efforts related to undergraduate program marketing and BMB major social gatherings.</p>

Name and Academic Position	Research Interests
<b>Cho Kwang-Jin</b>	<p>The Ras GTPases comprising three main isoforms H-, N- and K-Ras operate at the plasma membrane as molecular switches in essential signaling pathways. Approximately 15% of all human carcinomas have activating point mutations in RASgenes. Oncogenic K-Ras mutants are found in 90 percent of pancreatic, 45 percent of colorectal and 35 percent of lung cancers. Despite significant efforts to directly target Ras activity, no anti-Ras drugs have been developed and taken into the clinic. Since Ras proteins must be anchored to the inner leaflet of the plasma membrane for full biological activity, inhibition of K-Ras plasma membrane interaction is a valid therapeutic approach to abrogate oncogenic K-Ras activity. My research investigates molecular mechanisms of K-Ras interaction with the plasma membrane, and discovery of compounds and proteins that regulate K-Ras plasma membrane interaction. Such compounds and/or proteins may be a starting point to develop novel anti-cancer therapies that specifically target K-Ras-driven cancers.</p> <p>From a high content cell-based screen of chemical and human siRNA libraries, I identified both exogenous and endogenous regulators of the K-Ras plasma membrane interaction. Three classes of compounds and a set of proteins that induce K-Ras dissociation from the plasma membrane were identified. The mechanisms, which reduced K-Ras signaling were: (1) Increased K-Ras phosphorylation by the AMPK/eNOS/PKG pathway, and (2) perturbation of cellular phosphatidylserine (PS) distribution. Characterization of these novel mechanisms will provide new insight into K-Ras plasma membrane interactions, and form the basis of a novel approach to inhibit K-Ras plasma membrane interaction.</p>
<b>Craig Michael</b>	<p>I obtained my BA in microbiology from Miami University in 1993, my MS in biological sciences in 2001, and my PhD in Systems Biology in 2015.</p>
<b>Kadakhia Madhavi</b>	<p>Our laboratory has been involved in understanding the signaling pathways regulated by p63 to better understand the role of p63 in development as well as cancer. We have studied the effects of naturally occurring mutant forms of p63 on the biological activity of p53 and p63 and shown that the mutant p63 differentially regulates known p53 and p63 target genes and could explain the difference in the biology of two members of the p53 family, p53 and p63. We have shown that p63 regulates sonic hedgehog, known to be important in both</p>

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	<p>development and cancer. Additionally, we demonstrated that <math>\Delta Np63\alpha</math>, the most abundant and physiologically relevant p63 isoform, negatively regulates PTEN, a tumor suppressor gene often deregulated in a variety of cancer including the model system we focus on in my laboratory, skin cancer. Our studies on examining the role of p63 in cancer progression demonstrated that vitamin D receptor (VDR) is regulated by p63 and p73, another member of the p53 family and its biological significance. Our studies on examining the mechanism behind feedback regulation of p63 by VDR and VD3 demonstrated a dose dependent effect of VD3 on inhibition or promotion of cell survival which further provided an insight into its use as a chemotherapeutic adjuvant for anti-cancer therapy and fill the gap in the understanding of VD3 mediated regulation of <math>\Delta Np63\alpha</math> levels and its role in the development and progression of non melanoma skin cancer. My laboratory is currently focused on identification of microRNAs regulated by p63 and how it impacts its downstream signaling and its role in cancer progression. In addition, we are looking at upstream regulators of p63 involved in post-translational modification of p63. Finally, my laboratory is involved in examining the differential expression of known microRNAs and unknown small RNAs in tissue and plasma sample of patients with Barrett's esophagus (BE), Esophageal adenocarcinoma (EAC) in order to identify circulating microRNA biomarkers for early detection of EAC using next generation sequencing.</p>
<b>Leffak Ira</b>	<p>The work in our laboratory is built on our discovery of the human c-myc origin of DNA replication. There are currently two major project directions underway. The first is the identification of proteins that bind to the c-myc replication origin and the mechanism by which they promote the initiation of DNA synthesis. The second is the use of the c-myc replication origin in the design and genetic engineering of human cell models of disease (myotonic dystrophy type 1, Huntington disease, and spinocerebellar ataxia type 10, polycystic kidney disease) caused by the instability of short, microsatellite DNA sequences.</p>
<b>Long Weiwen</b>	<p>Below are the personnel who have worked in the lab during 2018. We have been actively performing research projects as described below.</p> <ol style="list-style-type: none"> <li>1. Weiwen Long, Ph.D., the Lab PI, has been training and supervising students and postdoctoral fellow on their research projects. In addition, the PI has also been conducting experiments for developing new</li> </ol>

Name and Academic Position	Research Interests
	<p>research projects in the lab.</p> <p>2. Lobna Elkhadragy, a postdoctoral fellow (02/12/18-08/31/18), had conducted projects on the molecular regulations of ERK3 gene expression and kinase activity in cancer cells.</p> <p>3. Marion Morel, Postdoctoral Fellow, has been working on the regulation of ERK3 protein stability in cancers.</p> <p>4. Astha Shakya, a BMS Ph.D. student, is working on a project about the regulation of IL-6/Stat3 signaling pathway by ERK3.</p> <p>5. Amanda Kaye Myers, a BMS Ph.D. student, is working on a project about the role of ERK3 in regulating phospho-lipid signaling.</p> <p>6. Krushangi Shah, a BMS Ph.D. student, joined the lab in October and has been working on a project about the role of FBXL16 in ER+ breast cancer.</p> <p>7. Eid Alshammari, a BMB master student, is working on a project about the interplay of P63 and ERK3 in skin cancer.</p> <p>8. Brian James Caprul, a Bio-star program undergraduate student, had worked on a project on miRNAs regulated by ERK3 and their functions in cancer cell migration/invasion.</p>
<p><b>Markey Michael</b></p>	<p>My research also involves several projects through my role as Director of the Center for Genomics Research. These include collaborative proposals and projects with several other laboratories and small businesses.</p> <p>Current projects include genotyping of human specimens to understand the role of germline variation in athletic performance and response to physical training, and determining the role of genotype and microRNA expression on susceptibility to motion sickness</p>
<p><b>Paietta John</b></p>	<p>A newly developing area of research in my laboratory is the identification and study of novel gene control elements termed riboswitches. In particular, we are examining the regulation of eukaryotic gene expression by riboswitches. Riboswitches, which are non-coding RNAs that selectively bind target molecules and alter gene expression levels by a variety of mechanisms, offer new opportunities for a variety of medical and biotechnology applications. In addition, we are continuing our work on the molecular genetic study of fungal sulfur metabolism. Our work involves the study of a complex control network of regulatory proteins that sense the level of sulfur and direct subsequent cellular responses.</p>

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<b>Ren Hongmei</b>	<p>The goal of my research is to elucidate a pathway that controls the clearance of dysfunctional mitochondria (mitophagy) which could be manipulated to protect patients from muscle injury and age-related diseases. This application is an advancement of our recent discovery that lipin1 plays an intriguing role in mitophagy by maintaining mitochondrial integrity and function. We recently generated some unique mouse models including GFP-tagged lipin1-deficient LC3 transgenic mice, and skeletal muscle-specific lipin1 deficient mice. These unique mouse models can be used to monitor the autophagy/mitophagy process efficiently. We will determine the underlying mechanisms of lipin1 in regulating mitophagy and in the control of LPIN1-related rhabdomyolysis and muscle wasting.</p> <p>The second area of focus in my laboratory has been to examine the role of Lipin1 in regulating fate Tran's differentiation of myogenic progenitors between skeletal muscle and adipose tissue. Our previous work in global lipin1 deficient (fld) mice demonstrate that lipin1 plays a major role in SM regeneration. Current work from our laboratory using newly generated cell type-specific mouse model, myf5-cre; Lipin1<sup>fl/fl</sup> conditional knockout (Lipin1<sup>myf5+KO</sup>) mice unequivocally shows that lipin1 is a major determinant of SM and adipose tissue development. The overall goal of this research is to identify biological mechanisms that regulate cell fate and Tran's differentiation of the SM, BAT and WAT cell lineages. The results of this study should help in developing new strategies to improve SM metabolism and promote adipose browning for the treatment of obesity and metabolic syndrome.</p>
<b>Reo Nicholas</b>	<p>In general, my research interest is focused in the development and application of nuclear magnetic resonance (NMR) based metabolomics in biomedical research. Several projects strive to develop this technology as a tool to: (1) assess tissue function/dysfunction; (2) detect exposure to chemical toxicants and assess related health effects; and (3) diagnose health status and disorders of the intestinal tract. Metabolite profiles from blood serum, urine, fecal extracts, or tissue extracts are measured by NMR spectroscopy and correlated with other biological/biochemical indices. Multivariate data analyses and bioinformatics tools are used to help visualize, analyze, and interpret complex data, and</p>



<u>Name and Academic Position</u>	<u>Research Interests</u>
	relate or correlate this information to disease processes or toxicity.
<b>Schmidt Michael</b>	<p>Miami University, Oxford, OH  May 2012  Ph.D. Chemistry and Biochemistry (Ann Hagerman, advisor)  Dissertation Title: Tannins in Natural Soil Systems</p> <p>Edinboro University, Edinboro, PA  May 2007  B.S. Biochemistry</p>
<b>Todd Amber</b>	<p>Amber Todd received an AS from Cottey College, a BA in biochemistry from Mount Holyoke College, and her Ph.D. in Biomedical Sciences from Wright State University. Her dissertation research focused on genetics education research at the high school level. She completed a postdoctoral fellowship at Wright State University focusing on educational assessment in genetics at the high school and college level. She has published multiple first author papers in peer-reviewed journals in the field of science education and presented at several international conferences. She is currently the Director of Assessment for the Office of Medical Education for the Boonshoft School of Medicine at Wright State University and is also an Adjunct Assistant Professor in the Department of Biochemistry &amp; Molecular Biology at Wright State University.</p>

## 4 Teaching

### Dr. Campbell

#### **Spring 2018**

BMB 1010: Topics In Biochemistry, .5 credit hours, 18 students, total contact hours ( lecture hours, non-contact hours), Seminar

BMB 2100: Introduction to Biochemistry, 2 credit hours, 13 students, 31 total contact hours (25 lecture hours, 6 non-contact hours), Classroom course, Course Director: Chad Campbell, Taught all lectures mostly in the active learning style to introduce to fundamental concepts of Biochemistry. Also created and graded all assessments in the course.

BMB 3900: Scientific Communications, 2 credit hours, 7 students, 31 total contact hours (30 lecture hours, 1 non-contact hours), Classroom course, Course Director: Chad Campbell, My role in this course was to facilitate the improvement of scientific writing through many drafts and revisions of a standard IMRaD style journal article. In addition students learned about scientific

grant proposals, alternative science writing genres and various scientific article reading strategies.

4230: Biochemistry and Molecular Biology II, 3 credit hours, 31 students, 13 total contact hours (10 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Dr. Oleg Paliy, It was my responsibility to teach 10 lectures about cellular signaling and Whole body Metabolism and run one review session and generate one final exam, which was also proctored.

### **Fall 2018**

BMB 1000: Freshman Seminar, .5 credit hours, 37 students, total contact hours (lecture hours, non-contact hours), Seminar

BMB 2000: Careers in BMB, 1 credit hour, 14 students, total contact hours (lecture hours, non-contact hours), Seminar

BMB 3220: Biochemistry for Pre-Meds, 3 credit hours, 50 students, 4 total contact hours (3 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: Dr. Schmidt, For this course I taught 2 classes (3 lecture hours) covering cell signaling and gene expression. For his course I also developed one exam.

BMB 4100: Senior Reflection, 1 credit hour, 4 students, 15 total contact hours (15 lecture hours, 0 non-contact hours), classroom course, Course Director: Chad Campbell, The purpose of this course is for BMB students to finalize their learning centered portfolios, generate career documents towards the application to a job or higher education degree, to evaluate the BMB program and produce and present a final senior project. I facilitated all the above objectives with one on one mentoring with each student.

BMB 4210: Biochemistry and Molecular Biology I, 3 credit hours, 72 students, 40 total contact hours (31 lecture hours, 9 non-contact hours), Team taught, Classroom course, Course Director: Dr. Chad Campbell, It was my responsibility to cover Thirty-one lectures and four review sessions. I also generated four in class assessments on those lectures all of which I proctored. This course has been completely adapted to the active learning approach all of which was generated by myself. This included the incorporation of online homework and in class activities. These activities ranged from pre prepared workbook assignments, clicker sessions and self-prepared classroom activities.

BMB 3850: Biochemistry Laboratory, 3 credit hours, 12 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory

### **Dr. Cho**

#### **Spring 2018**

BMB 7520: Molecular Biochemistry II, 3 credit hours, 16 students, 10 total contact hours (6 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: Dr. Nicholas Reo, It was a lecture-style class. I prepared PowerPoint slides for the lectures. I taught 6 lectures including 1 paper discussion session, and each lecture was 55 min long. Also, there was 1 homework assignment.

BMB 8990: Biochemistry Research, 4 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9950-01: Non-Dissertation Research, 1 credit hour, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9970: Laboratory Rotation II, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Summer 2018**

BMB 8990-06: Biochemistry Research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9950-01: Non-Dissertation Research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Fall 2018**

BMB 6020: Research Perspectives, 3 credit hours, 15 students, 1.5 total contact hours (1.5 lecture hours, 0 non-contact hours), Team taught, classroom course, Course Director: Dr. John Paietta, I presented and discussed one of my research article with students for 1.5 hours. Furthermore, Sylvia Cunningham did a rotation in my lab from 08/29/18 - 09/24/18,

BMB 7530: Molecular Signaling, 3 credit hours, 5 students, 10 total contact hours (8 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Dr. Weiwen Long, It was a lecture-style class. I prepared PowerPoint slides for the lectures. I taught 6 lectures, and each lecture was 80 min long.

BMB 8990: Biochemistry Research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Dr. Craig**

#### **Spring 2018**

SMD8190: Staying Alive (BSOM), 12 credit hours, 117 students, 10 total contact hours (10 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Katrina Marie Davis, Served as Wright facilitator for group of 6 students enrolled in course.

#### **Fall 2018**

BMB3850: Biochemistry Laboratory, 3 credit hours, 3 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory

### **Dr. Kadakia**

#### **Spring 2018**

BMB8990: Biochemistry Research, 0.5 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Laboratory, Course Director: Madhavi Kadakia

BMS9990: Dissertation Research, 2 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Independent Study, Laboratory, Course Director: Madhavi Kadakia

BMS9960: Laboratory Rotation #1, 5 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Laboratory, Course Director: Madhavi Kadakia

### **Summer 2018**

BMB8990: Biochemistry Research, 2 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Laboratory, Course Director: Madhavi Kadakia

BMS9990: Dissertation Research, 6 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Independent Study, Laboratory, Course Director: Madhavi Kadakia

BMS9950: Non-Dissertation Research, 5 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Independent Study, Laboratory, Course Director: Madhavi Kadakia

### **Fall 2018**

BMB8990: Biochemistry Research, 10.5 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Laboratory, Course Director: Madhavi Kadakia

BMS9990: Dissertation Research, 5 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Independent Study, Laboratory, Course Director: Madhavi Kadakia

BMS9950: Non-Dissertation Research, 9 credit hours, 1 student, 0 total contact hours: 0 (0 lecture hours, 0 non-lecture hours), Independent Study, Laboratory, Course Director: Madhavi Kadakia

### **Dr. Leffak**

#### **Spring 2018**

BMB4990: Special Problems in Biology, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMB7030: Research Ethics, .5 credit hours, 4 students, 8 total contact hours (8 lecture hours, 0 non-contact hours), Classroom course, Course Director: Michael Leffak, course organizer

BMB7600: Molecular Biology of the Nucleus, 3 credit hours, 6 students, 14 total contact hours (6 lecture hours, 8 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, course organizer

BMS7600: Molecular Biology of the Nucleus, 3 credit hours, 2 students, 14 total contact hours (6 lecture hours, 8 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, course organizer

BMS7030: Research Ethics, .5 credit hours, 4 students, 8 total contact hours (8 lecture hours, 0 non-contact hours), Classroom course, Course Director: Michael Leffak, course organizer

BMB8990: Biochemistry Research, .5 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMB8990: Biochemistry Research, 1 credit hour, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

#### **Summer 2018**

BMB4990: Undergraduate Research, 6 credit hours, 1 students total contact hours (lecture hours, non-contact hours), Laboratory

#### **Fall 2018**

BMB7500: Molecular Biochemistry, 3 credit hours, 36 students, 24 total contact hours (20 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, course organizer

BMS7500: Molecular Biochemistry, 3 credit hours, 5 students, 24 total contact hours (20 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, course organizer

BMS9960: Laboratory Rotation, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Dr. Long**

#### **Spring 2018**

BMB 4000: Biochemistry and Molecular Biology Seminar, 1 credit hour, 2 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, as the course director, conducting dissertation research

BMB 7600/BMS 7600: Molecular Biology of the nucleus, 3 credit hours, 8 students, 13 total contact hours (6 lecture hours, 7 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak. My lectures were focused on posttranslational regulation of transcription factors. I taught 4 lectures and attended Proposal presentations (totally about 7 hours).

BMB 8990: Biochemistry Research, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMB 9000/BMS 9900: Advanced Seminar in Biochemistry and Molecular Biology -BMB 9000 - 01, 1 credit hour, 12 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, as the course director, conducting dissertation research

Dr. Long, Spring 2018, BMS 9950: Non-Dissertation Research - BMS 9950 02, 2 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory

BIO4990: Capstone course, 1 credit hour, 1 students total contact hours (lecture hours, non-contact hours), Laboratory

BIO 4990-01: Special Problems in biology, 1 credit hour, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BIO 4990-03: Special Problems in biology, 3 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

#### **Summer 2018**

BMB 8990: Biochemistry Research BMB 8990 - C05, 6 credit hours, 1 students, total contact hours ( lecture hours, non-contact hours), Laboratory

BMS 9950: Non-Dissertation Research - BMS 9950 02, 6 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory

**Fall 2018**

BMB 4000: Biochemistry and Molecular Biology Seminar, 1 credit hour, 5 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, as the course director, conducting dissertation research

BMB 7530: Molecular Signaling - BMB 7530 - 01, 3 credit hours, 5 students, 15.3 total contact hours (13.3 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Julian Cambroner, I was the course director and taught 10 lectures (1 hr and 20 min each) and one exam (2 hrs)

BMB 8990: Biochemistry Research BMB 8990 - C05, 2 credit hours, 1 students, total contact hours ( lecture hours, non-contact hours), Laboratory

BMB 9000/BMS 9900: Advanced Seminar in Biochemistry and Molecular Biology -BMB 9000 - 01, 1 credit hour, 10 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, as the course director, conducting dissertation research

BMS 9990: Dissertation Research - BMS 9990 02, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9990: Dissertation Research - BMS 9990 03, 3 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9990: Dissertation Research - BMS 9990 05, 5 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

**Dr. Markey****Spring 2018**

SMD 8190: Staying Alive, 12 credit hours, 8 students, 16 total contact hours (16 lecture hours, 0 non-contact hours), Classroom course, Course Director: Irina Overman, M.D., Facilitated a group (8 students) throughout the semester.

BMB 8990: Biochemistry Research, credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

**Summer 2018**

BMB 8990: Biochemistry Research, credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

**Fall 2018**

BMB 3850: Undergraduate Research, 3 credit hours, 12 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory

BMB 4020: Research Perspectives, 1 credit hour, 10 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, Taught one lecture about my laboratory research.

BMB 6020: Research Perspectives, 1 credit hour, 5 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: John Paietta,

Taught one lecture about my laboratory research.

BMB 8990: Biochemistry Research, credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Dr. Paietta**

#### **Spring 2018**

BMB 3030: Research Ethics, 1 credit hour, 12 students, 16 total contact hours (14 lecture hours, 2 non-contact hours), Classroom course, Course Director: John Paietta, Course director and instructor. Instructor for all 14 weeks of course

BMB 7600: Molecular Biology of the Nucleus, 3 credit hours, 10 students, 7 total contact hours (6 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: M. Leffak, Taught section on non-coding RNAs and various aspects of gene regulation.

#### **Summer 2018**

BMB 4990: Undergraduate Research, 7 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMB 6990: Special Problems in Biochemistry, 5 credit hours, 1 students, 10 total contact hours (0 lecture hours, 10 non-contact hours), Classroom course, Course Director: John Paietta, Supervisory role for independent research by MS student in my lab, Independent project by new MS student in program.

#### **Fall 2018**

BMB 4020: Research Perspectives, 1 credit hour, 10 students, 5 total contact hours (4 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, Ran course in role of Director of BMB M.S. Program. The course was taught by myself and by other BMB faculty (1 class meeting/faculty). This was the second run of the undergraduate portion of Research Perspectives under the BMB 4020 listing.

BMB 6020: Research Perspectives, 3 credit hours, 5 students, 5 total contact hours (4 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, Ran course in role as Director of BMB M.S. Program. The course was taught by myself and by other BMB faculty (1 class meeting/faculty). BMB 6020 is taken by MS students and is cross-listed with BMB 4020. Coordinated graduate student lab selection and related course assignments.

BMB 6990: Special Problems in Biochemistry, 1 credit hour, 1 students, 10 total contact hours (0 lecture hours, 10 non-contact hours), Classroom course, Course Director: John Paietta, Special problems course offered for a new student needing a course for enrollment requirements., Independent project by new ms student in program.

BMB 8990: Biochemistry Research, 12.5 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory

SMD 8170: Origins 1, 7 credit hours, 120 students, 38 total contact hours (26 lecture hours, 12 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, Module (course) director. Involved in the synthesis, organization and implementation of this module as part of the new curriculum in BSOM. Ran peer instruction sessions on amino acid metabolism, heme synthesis, jaundice, nucleotide metabolism, DNA structure, DNA replication, RNA

structure, transcription, gene regulation, protein synthesis, DNA repair/mutation, genome rearrangements, recombinant DNA and clinical molecular genetics. Assisted with Team-based Learning (TBL) sessions involving cases in nucleotide metabolism, DNA replication and repair, and amino acid metabolism. In addition, due to the joint board final with Origins 2, as well as, the retake board exam my course director/instructor duties (review sessions, exam construction, targeted individual and group help sessions) continued through early January 2019.

### **Dr. Paliy**

#### **Spring 2018**

BMB 4230: Biochemistry II, 3 credit hours, 31 students, 22 total contact hours (20 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Chad Campbell, Course director, taught section on carbohydrate metabolism

BMB 4870: Brownbag seminar for undergraduate students, 1 credit hour, 3 students, total contact hours (lecture hours, non-contact hours), Seminar

BMB 8000: Brownbag seminar, 1 credit hour, 12 students, total contact hours (lecture hours, non-contact hours), Seminar

BMS 9990: Dissertation research, 1 credit hour, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9990: Dissertation research, 5 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

ES 8130: Dissertation research, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

#### **Summer 2018**

BMB4990: Undergraduate Research, 5 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMB 8990: Biochemistry Research, 7.5 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9990: Dissertation research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

ES 8130: Dissertation research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

#### **Fall 2018**

BMB 4870: Brownbag seminar for undergraduate students, 1 credit hour, 1 students, total contact hours (lecture hours, non-contact hours), Seminar

BMB4880: Independent Study, 1 credit hour, 1 students, total contact hours (lecture hours, non-contact hours), Seminar

BMB 7530: Molecular Signaling, 3 credit hours, 5 students, 7 total contact hours (6 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Taught a section of the class focused on the microbial signaling. The class was cross-listed with BMS 9910-04



BMB 8000: Brownbag seminar, 1 credit hour, 5 students, total contact hours (lecture hours, non-contact hours), Seminar

BMS 9990: Dissertation research, 5 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

ES 8130: Dissertation research, 3 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Dr. Ren**

#### **Spring 2018**

BMB-7600: Molecular Biology of the Nucleus , 6 credit hours, 10 students, 11 total contact hours (6 lecture hours, 5 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, I provided an outline to students where I discussed the components of a proposal highlighting the sections concerned with significance, background, and gap in knowledge. I taught strategy involved an analysis of papers from the primary scientific literature to demonstrate how a research project is designed and conducted. This course taught students to write a research (mock) grant proposal.

#### **Summer 2018**

BMB-4990-09: Undergraduate Research, .515 credit hours, 3 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMB 8990-C09: Biochemistry Research, 3 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

#### **Fall 2018**

BMB-7020: Research Perspective, 3 credit hours, 5 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Dr. John Paietta, I introduced the research focus and projects in my lab to graduate students and discussed papers published from my lab.

BMB 7530: Molecular Signaling, 8 credit hours, 5 students, 10 total contact hours (8 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Dr. Julian Cambroner, I taught the lipid mediated cell signaling section in this course, The aim of this course is to provide an integrative view of cell signaling in mammalian and prokaryotic cells, covering (a) the transduction of signals from the cell membrane to the cytoplasm to the nucleus; (b) focusing on regulation of the pathways and structural changes of molecules; (c) studying in detail major cellular specific pathways; (d) tying them up to biomedical/pathological themes and (e) providing the students with the necessary intellectual tools to dissect relevant papers in the field that will be presented and discussed in class.

PTX-9000: Introduction to Research, 3 credit hours, 10 students, total contact hours (lecture hours, non-contact hours), Team taught, Seminar

### **Dr. Reo**

#### **Spring 2018**

BMB 4230: Biochemistry & Molecular Biology II, 3 credit hours, 31 students, 10 total contact hours (8 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Oleg Paliy, I provide 8 one-hour lectures + 1 one-hour review class + 1 exam

BMB/BMS 7520: Biochemistry & Molecular Biology II, 3 credit hours, 16 students, 23.5 total contact hours (16 lecture hours, 7.5 non-contact hours), Team taught, Classroom course, Course Director: Nicholas Reo, In addition to lectures I contributed to two HW assignments, 3 recitations, and 3 exams. Thus the non-lecture contact hours include: recitation (3 @ 1 h each) + exams (2 @ 1.25 h + 1 Final @ 2 h) = 7.5 h.

### **Summer 2018**

BMS 9990: Dissertation Research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

### **Fall 2018**

BMB 4020/6020: Research Perspectives, 1 credit hour, 15 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, I gave a 1 hour presentation on my research. The enrollment was: 10 (4020) + 5 (6020) = 15 total.

BMB 4630: Fundamental Principles of NMR Spectroscopy & Imaging, 3 credit hours, 4 students, 41.5 total contact hours (34.5 lecture hours, 7 non-contact hours), Classroom course, Course Director: Nicholas Reo, I listed this course as not team-taught, but Peter Mirau (AFRL) provide 3 lectures on 2D-NMR (4 hrs). I contributed all the remaining 23 lectures (34.5 hours) + 15 problem sets (in-class + homework) + 3-h of review sessions + two 2-h exams (4 h). Note: there were no graduate students enrolled for BMB 6630.

BMB 4990: Biochemistry Research, 2 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9990: Dissertation Research, 5 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

BMS 9990: Dissertation Research, 6 credit hours, 1 students, total contact hours (lecture hours, non-contact hours), Laboratory

P&N 6300: Medical Cell Biology & Physiology, 3 credit hours, 6 students, 10 total contact hours (8 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Adrian Corbett, I provided 8 hrs of lecture + 2 quizzes (20 min each) + 1 midterm exam (30%)

SMD 8570: Origins 1, 10 credit hours, 120 students, 22 total contact hours (19 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, Peer Instruction (13 h) + Team-based Learning (6 h) + 3-h review sessions (one 2-h session + one 1-h session).

### **Dr. Schmidt**

#### **Spring 2018**

BMB 3220: Biochemistry for Pre-Med, 3 credit hours, 20 students, 45 total contact hours (37 lecture hours, 8 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I was the course director and taught the majority of the course.<sup>37</sup>

BMB 7520: Molecular Biochem II, 3 credit hours, 16 students, 22 total contact hours (16 lecture hours, 6 non-contact hours), Team taught, Classroom course, Course Director: Nick Reo, I taught 16 lectures in this course

N/A: Wright Q First Year, credit hours, 8 students, 25 total contact hours (24 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: Colleen Hayden, I was trained and conducted Wright sessions.

N/A: Wright Q Second Year, credit hours, 8 students, 25 total contact hours (24 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: Colleen Hayden, I was trained and conducted Wright sessions.

### **Summer 2018**

BMB 3220 Section A: Biochemistry for Pre-Med, 3 credit hours, 32 students, 39 total contact hours (39 lecture hours, 0 non-contact hours), Classroom course, Course Director: Michael Schmidt, This course was taught online in the summer of 2017. I was the only instructor

BMB 3220 Section B: Biochemistry for Pre-Med, 3 credit hours, 13 students, 39 total contact hours (39 lecture hours, 0 non-contact hours), Classroom course, Course Director: Michael Schmidt, This course was taught online in the summer of 2017. I was the only instructor

### **Fall 2018**

BMB 3220: Biochemistry for Pre-Med, 3 credit hours, 42 students, 45 total contact hours (37 lecture hours, 8 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I was the course director and taught the majority of the course.

BMB 3850: Biochem Lab, 3 credit hours, 3 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory

BMB 4210: Biochem and Mol Biology, 3 credit hours, 71 students, 4 total contact hours (3 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: Chad Campbell, I taught the introduction and Acid/Base

BMB 7500: Molecular Biochemistry 1, 3 credit hours, 41 students, 22 total contact hours (19 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffack, I taught the first half of this course. Covering the introductory information along with the material about proteins and enzymes.

WQC8102.2017: Origins 1, credit hours, 120 students, 24 total contact hours (15 lecture hours, 9 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, I was responsible for just over 1/3 of the PI material.

### **Graduate student thesis supervisor**

#### **Dr. Cho**

BMB Masters Defense Committee as Chair for Christian Garrido  
BMB Masters Defense Committee as Chair for Sarah Kovar

#### **Dr. Kadakia**

BMB, Eid Alshammari, MS student mentor  
BMB, Akshay Hira, MS student mentor  
BMB, Amjad Aljagthmi, MS student mentor  
BMS, Andrew Stacy, PhD student mentor  
BMS, Reilly Clark, PhD student mentor

### **Dr. Leffak**

BMB, Caitlin Castagno, M. S. Student mentor

French Damewood, M. S. Student mentor

BMS, Rujuta Gadgil, Ph.D. Student mentor

### **Dr. Long**

BMB, Eid Alshammari, MS student mentor

BMS, Krushangi Shah, Ph.D. Student,

BMS, Amanda Kaye Myers, PhD Student mentor

BMS, Astha Shakya, PhD Student mentor

### **Dr. Markey**

BMB, Stacy Simmons, MS student mentor

BMB, Abdullah Alatwi, M. S. Student mentor

### **Dr. Paietta**

BMB, Keshab Joshi, M. S. Student mentor

### **Dr. Paliy**

BMS, Alex Gordon, Ph.D. Student mentor

BMS, Denise Kramer, Ph.D. Student mentor

BMS, Sumudu Rajakaruna, Ph.D. Student mentor

BMB, Trupthi Mehta, M. S. Student mentor

### **Dr. Ren**

BMB, Mentor in Sandhya R. Sattiraju's Master's Dissertation Committee

BMS, Mentor in Abdullah A Alshudukhi's PhD Dissertation Committee

BMS, Mentor in Abdulrahman Jama's Master's and PhD Dissertation Committee

### **Dr. Reo**

BMS, Angela Campo, PhD Student co-mentor

## **5** Scholarly Activity

### **Funded grants**

#### **Extramural**

#### **Dr. Cho**

NIH/NCI, K-RAS PLASMA MEMBRANE INTERACTIONS: A TRACTABLE THERAPEUTIC TARGET, P.I. Kwang-jin Cho, (12/1/2018 to 11/30/2019) Total \$241529, Direct Current Year \$163196, Indirect Current Year \$78333, Total cost for entire grant period \$739529, 16.7% salary for Dr. Cho.

#### **Dr. Kadakia**

Ohio Federal Research Network, Motion Sickness interactions with Spine Disorders, P.I. Ali Reiter, (9/19/2016 to 9/18/2018) Total \$91638.25, Direct Current Year \$76365.21, Indirect Current Year \$15273.04, Total cost for entire grant period \$133000, 5% salary for Dr. Kadakia.

Department of Defense, Office of Naval Research-Multi University Research Investigation (MURI) Precision High Intensity Training through Epigenetics (PHITE), P.I. Timothy Broderick, (09/01/2016 to 08/31/2021) Total \$256093.59, Direct Current Year \$172399.54, Indirect Current Year \$83694.05, Total cost for entire grant period \$1508485, 10% salary for Dr. Kadakia.

NIH, Telomere length dynamics in relation to the changes in Adiposity and metabolic risk, P.I. Miryoung Lee, (9/23/2016 to 8/31/2016) Total \$11195.68, Direct Current Year \$8238.05, Indirect Current Year \$2957.63, Total cost for entire grant period \$121101, 3% salary for Dr. Kadakia.

#### **Dr. Leffak**

NIGMS, Mechanisms of Replication-Dependent Microsatellite Instability in Human Disease, P.I. Ira Michael Leffak, (9/9/2017 to 8/31/2021) Total \$99000, Direct Current Year \$66000, Indirect Current Year \$33000, Total cost for entire grant period \$1200000, 20% salary for Dr. Leffak.

#### **Dr. Long**

NCI 1R01CA193264-01, ERK3 Kinase Signaling in Lung Cancer, P.I. Weiwen Long, (06/01/2018 to 5/31/2019) Total \$338550, Direct Current Year \$228750, Indirect Current Year \$109800, Total cost for entire grant period \$1692750, 25% salary for Dr. Long.

DOD CDMRP, Role of SRC-3Æ4 in the Progression and Metastasis of Castration-Resistant Prostate Cancer, P.I. Weiwen Long, (07/01/2017 to 06/30/2018) Total \$241855, Direct Current Year \$163416, Indirect Current Year \$78439, Total cost for entire grant period \$241855, 30% salary for Dr. Long.

#### **Dr. Markey**

Ohio Federal Research Network, Human Performance and Human Sciences: Ohio Federal Research Network; Cycle II: Motion Sickness Interactions with Spine Disorders (MOSSD), P.I. Timothy Broderick, (9/1/2016 to 8/31/2018) Total \$686309, Direct Current Year \$571112, Indirect Current Year \$115197, Total cost for entire grant period \$1097484, 20% salary for Dr. Markey.

Department of Defense, Precision High Intensity Training through Epigenetics (PHITE), P.I. Timothy Broderick, (06/01/2016 to 05/31/2021) Total \$1538485.48, Direct Current Year \$1402489, Indirect Current Year \$135996.48, 10% salary for Dr. Markey.

#### **Dr. Paliy**

DAGSI, Biomolecular interaction of nanoparticles and other aerospace chemicals with gut microbial and metabolite profiles, P.I. Oleg Paliy, (06/01/2015 to 12/31/2018) Total \$44237.63, Direct Current Year \$35109.23, Indirect Current Year \$9128.4, Total cost for entire grant period \$155520, 8% salary for Dr. Paliy.

Ginkgo Bioworks / DARPA, Ginkgo Bioworks CRISPR IGS pilot 2, P.I. Oleg Paliy, (06/01/2018 to 09/30/2018) Total \$29689, Direct Current Year \$20060, Indirect Current Year \$9629, Total cost for entire grant period \$32297, 8% salary for Dr. Paliy.

NIH NIDDK, Intestinal epithelial cell regulation of allergic inflammation at distant sites, P.I. Prosper Boyaka, (07/01/2015 to 04/30/2020) Total \$25650.41, Direct Current Year \$17331.31, Indirect Current Year \$8319.1, Total cost for entire grant period \$123977, 5% salary for Dr. Paliy.

NSF MRI, MRI: Acquisition of High Performance Computer Cluster for Multidisciplinary Computational Research and Education, P.I. Amit Sharma, WSU, (9/1/2015 to 8/30/2018) Total \$3333, Direct Current Year \$3333, Indirect Current Year \$0, Total cost for entire grant period \$150000.

U Wisconsin - Milwaukee RGI, Understanding and enhancing rhizobium-cereal interactions, P.I. Dr Gyaneshwar Prasad, (04/26/2018 to 12/31/2019) Total \$10000, Direct Current Year \$10000, Indirect Current Year \$0, Total cost for entire grant period \$30000, 3% salary for Dr. Paliy.

#### **Dr. Ren**

NIH 1R01NS102720-01A1, Exosomes from miR-primed endothelial progenitor cells for treating ischemic stroke , P.I. Ji Bihl Chen, (07/01/2018 to 06/30/2023) Total \$1860000, Direct Current Year \$1250000, Indirect Current Year \$610000, 10% salary for Dr. Ren.

#### **Dr. Reo**

NIH, RO1, Intestinal Epithelial Cell Regulation of Allergic Inflammation at Distant Sites, P.I. P.N. Boyaka, (7/1/2015 to 4/30/2020) Total \$2389, Direct Current Year \$1614, Indirect Current Year \$775, Total cost for entire grant period \$29909, 2.67% salary for Dr. Reo.

DoD, Henry Jackson Foundation for the Advancement of Military Medicine, Mechanistic Interpretations of Hypobaric and Hyperoxia Using Metabolomics and Proteomics, P.I. Nicholas V. Reo, (7/1/2018 to 6/30/2019) Total \$35276, Direct Current Year \$23517, Indirect Current Year \$11759, Total cost for entire grant period \$70551, 2.5% salary for Dr. Reo.

DoD, Henry Jackson Foundation for Advancement of Military Medicine, Air Force Research Laboratory, Metabolomics Analysis of Fecal Extracts in a Humanized Microbiome Mouse Model, P.I. Nicholas V. Reo, (5/1/2017 to 10/31/2018) Total \$115301, Direct Current Year \$88209, Indirect Current Year \$27092, Total cost for entire grant period \$207541, 15% salary for Dr. Reo.

DoD, Henry Jackson Foundation for Advancement of Military Medicine, Air Force Research Laboratory, Metabolomics Analysis of Urine and Fecal Extracts in Humans Exposed to High Altitude, P.I. Nicholas V. Reo, (11/1/2018 to 5/31/2019) Total \$27444, Direct Current Year \$18827, Indirect Current Year \$8617, Total cost for entire grant period \$96054, 15% salary for Dr. Reo.

#### **Internal**

##### **Dr. Campbell**

Wright State University, 2016 Teaching Innovation Grant Proposal: The Redevelopment of BMB 4210 into a Student-Centered, Active Learning Majors Course, P.I. Dr. Chad Campbell, (1/1/2018 to 12/31/2018) Total \$6000, Direct Current Year \$6000, Indirect Current Year \$0, Total cost for entire grant period \$6000.

#### **Publications**

**Dr. Cho**

L. Tan, K-J Cho, P. Neupane, R.J. Capon, J.F. Hancock, 'An oxanthroquinone derivative that disrupts RAS plasma membrane localization inhibits cancer cell growth.', *Journal of Biological Chemistry*, 293, 13696-13706, 2018.

**Dr. Craig**

S. Sakaram, M.P. Craig, N.T. Hill, A. Aljagthmi, C. Garrido, O. Paliy, M. Bottomley, M. Raymer, and M.P. Kadakia, 'Identification of novel Np63 -regulated miRNAs using an optimized small RNA-Seq analysis pipeline.', *Scientific Reports*, 3, online, 2018.

Dr. Craig, R.J. Clark, M.P. Craig, S. Agrawal and M. Kadakia, 'microRNA Involvement in the Onset and Progression of Barretts Esophagus: a systematic review, *Oncotarget*, 9, 8179-8196, 2018.

**Dr. Kadakia**

S. Sakaram, M.P. Craig, N.T. Hill, A. Aljagthmi, C. Garrido, O. Paliy, M. Bottomley, M. Raymer, and M.P. Kadakia, 'Identification of novel Np63 -regulated miRNAs using an optimized small RNA-Seq analysis pipeline.', *Scientific Reports*, 3, online, 2018.

Dr. Craig, R.J. Clark, M.P. Craig, S. Agrawal and M. Kadakia, 'microRNA Involvement in the Onset and Progression of Barretts Esophagus: a systematic review, *Oncotarget*, 9, 8179-8196, 2018.

**Dr. Leffak**

Rujuta Yashodhan Gadgil, S. Dean Rider, Todd Lewis, Joanna Barthelemy, Michael Leffak, 'Analysis of Trinucleotide Repeat Stability by Integration at a Chromosomal Ectopic Site', *Methods in Molecular Biology*.

Todd W. Lewis, Joanna R. Barthelemy, Elizabeth L. Virts, Felicia M. Kennedy, Rujuta Y. Gadgil, Constanze Wiek, Rene M. Linka, Feng Zhang, Paul R. Andreassen, Helmut Hanenberg\*, and Michael Leffak, 'Deficiency of the Fanconi anemia E2 ubiquitin conjugase UBE2T only partially abrogates Alu-mediated recombination in a new model of homology dependent recombination', *Nucleic Acids Research*.

Sumeet Poudel, Jianhong Yao, Michael G. Kemp, and Michael Leffak, 'Interaction between DUE-B and Treslin is required to load Cdc45 on chromatin in human cells', *JBC*, 293, 14497-14506, 2018.

**Dr. Long**

Chen M, Myers AK, Markey MP, Long W, 'The atypical MAPK ERK3 potently suppresses melanoma cell growth and invasiveness', *J Cell Physiol*, 2018.

Dr. Long, Elkhadragey L, Alsarhan H, Morel M, Long W, 'Activation loop phosphorylation of ERK3 is important for its kinase activity and ability to promote lung cancer cell invasiveness.', *J Biol Chem*, 293, 16193-16205, 2018.

Dr. Long, Tanaka K, Martinez GJ, Yan X, Long W, Ichiyama K, Chi X, Kim BS, Reynolds JM, Chung Y, Tanaka S, Liao L, Nakanishi Y, Yoshimura A, Zheng P, Wang X, Tian Q, Xu J, O'Malley BW, Dong C, 'Regulation of Pathogenic T Helper 17 Cell Differentiation by Steroid Receptor Coactivator-3', *Cell Reports*, 23, 2318-2329, 2018.

**Dr. Markey**

EMP Almazan, SL Lesko, MP Markey, L Rouhana, 'Girardia dorotocephala transcriptome sequence, assembly, and validation through characterization of piwi homologs and stem cell progeny markers', *Developmental Biology*.

M Chen, AK Myers, MP Markey, W Long, 'The atypical MAPK ERK3 potently suppresses melanoma cell growth and invasiveness', *J Cell Physiology*, 2018.

**Dr. Paliy**, E. Kim, M. Lambert, G. Fallata, J. Rowe, T. Martin, A. Satoskar, N. Reo, O. Paliy, E. Cormet-Boyaka, and P.N. Boyaka, 'Intestinal epithelial cells regulate gut CCL11 responses and severity of allergy', *Front. Immunol.*, 9, 1692, 2018.

M.C. Jugan, A.J. Rudinsky, A. Gordon, D.L. Kramer, J.B. Daniels, O. Paliy, P. Boyaka, C. Gilor, 'Effects of oral Akkermansia muciniphila supplementation in healthy dogs following antibiotic administration', *Am J Vet Res*, 79, 884-892, 2018.

R. Agans, A. Gordon, D.L. Kramer, S. Pžrez-Burillo, J.A. Rufiñ-Henares, and O. Paliy, 'Dietary fatty acids sustain the growth of the human gut microbiota', *Appl. Environ. Microbiol.*, 84, e01525-18, 2018.

S. Sakaram, M. Craig, N. Hill, A. Aljagthmi, C. Garrido, O. Paliy, M. Bottomley, M.L. Raymer, and M. Kadakia, 'Identification of novel Np63 -regulated miRNAs using an optimized small RNA-Seq analysis pipeline', *Sci. Rep.*, 8, 10069, 2018.

**Dr. Ren**

Jama A, Huang D, Alshudukhi AA, Chrast R, Ren H., 'Lipin1 is required for skeletal muscle development by regulating MEF2c and MyoD expression.', *J Physiol*. 2018 Dec 4. doi: 10.1113/JP276919.

Dr. Ren, Alshudukhi AA, Zhu J, Huang D, Jama A, Smith JD, Wang QJ, Esser KA, Ren H. , 'Lipin-1 regulates Bnip3-mediated mitophagy in glycolytic muscle.', *FASEB J.*, 32, 6796-6807, 2018.

Dong L, Ren H., 'Blood-based DNA Methylation Biomarkers for Early Detection of Colorectal Cancer.', *J Proteomics Bioinform.* , 11(6), 120-126, 2018.

Federico L, Yang L, Brandon J, Panchatcharam M, Ren H, Mueller P, Sunkara M, Escalante-Alcalde D, Morris AJ, Smyth SS., 'Lipid phosphate phosphatase 3 regulates adipocyte sphingolipid synthesis, but not developmental adipogenesis or diet-induced obesity in mice.', *PLoS One*. 2018 Jun 11;13(6):e0198063., 13(6), e0198063, 2018.

**Dr. Reo**

I. Sibomana, N. Grobe, N.J. DelRaso, and N.V. Reo, 'Influence of Myo-inositol Plus Ethanolamine on Plasmalogens and Cell Viability During Oxidative Stress', *Chemical Research in Toxicology*.

N. Grobe, L. Narayanan, D.N. Brown, S.T. Law, I. Sibomana, P. Shiyanov, N.V. Reo, C.E. Hack, T.R. Sterner, and D.R. Mattie, 'Lipid, Water, and Protein Composition to Facilitate Kinetic Modeling of the Auditory Pathway', *Toxicology Mechanisms and Methods*.

D.A. Mahle, M.C. Moulton, N. Grobe, S. Pak, A.M. Lowman, M.E. Chapleau, M. Grogg, S.T. Law, M.K. Makley, L. Narayanan, A. Hoffman, A. Campo, and N.V. Reo, 'Mechanistic



interpretation of hypobaric and hyperoxic using metabolomics and proteomics', Air Force Research Laboratory Technical Report, AFRL-RH-WP-TR-2018-0001, AD1055941, 2018.

E. Kim, M. Lambert, G.M. Fallata, J.C. Rowe, T. Martin, A.R. Satoskar, N.V. Reo, O. Paliy, E. Cormet-Boyaka, and P.N. Boyaka, 'Intestinal epithelial cells regulate gut eotaxin responses and severity of allergy', *Frontiers in Immunology*, 9, 1692, 2018.

### **Posters and Platform Presentations**

#### **Dr. Cho**

S.E. Kovar, D. Ketcha, and K-J Cho, Discovery of small molecules blocking oncogenic K-Ras activity, Central Research Forum, Wright State University-(Poster).

#### **Dr. Craig**

J. Zhang, M.P. Craig, A. Hira, M. Markey, M. Raymer, T. Broderick, and M. Kadakia, Differential MicroRNA Biomarker Expression in Response to Moderate and High Intensity Exercise Regimen, BSOM Central Research Forum, Wright State University 10/18/2018 - 10/18/2018 (Poster).

#### **Dr. Kadakia**

A. Aljagthmi, M.P. Kadakia,  $\Delta$ Np63 $\alpha$  Suppresses Cells Invasion by Downregulating RAC1 Activity, BMB Brown Bag, Wright State University, 11/27/2018 (Platform)

A. Aljagthmi, N.T. Hill, S. Sakaram, and M.P. Kadakia, Regulation of Rac1 localization and activation by DNp63a, CoSM Festival of Research, Wright State University, 10/26/2018 (Platform)

A. Aljagthmi and M.P. Kadakia,  $\Delta$ Np63 $\alpha$  suppresses cells invasion by Downregulating RAC1 through miR-320a/PKC $\gamma$  signaling, Celebration of Research, Scholarship and Creative Activities, Wright State University, 4/3/2018 (Platform)

A. Aljagthmi and M.P. Kadakia,  $\Delta$ Np63 $\alpha$  suppresses cells invasion by downregulating Rac1 through miR-320a/PKC $\gamma$  signaling, BMB Brown Bag, Wright State University, 2/13/2018 (Platform)

A.J. Stacy, J. Zhang, M.P. Craig and M.P. Kadakia, TIP60 regulation of  $\Delta$ Np63 $\alpha$  is associated with squamous cell carcinoma proliferation, BMB Brown bag, Wright State University, 11/3/2018 (Platform)

A.J. Stacy, J. Zhang, M.P. Craig and M.P. Kadakia, TIP60 regulation of  $\Delta$ Np63 $\alpha$  is associated with squamous cell carcinoma proliferation, CoSM Festival of Research, Wright State University, 10/26/2018 (Platform)

A.J. Stacy, J. Zhang, M.P. Craig and M.P. Kadakia, TIP60 regulation of  $\Delta$ Np63 $\alpha$  is associated with squamous cell carcinoma proliferation, Biomedical Sciences Seminar, Wright State University, 9/17/2018 (Platform)

A. Hira and M.P. Kadakia, Role of TIP60 on  $\Delta$ Np63 $\alpha$  transcriptional activity, BMB Brown Bag, Wright State University, 4/17/2018 (Platform)

R.J. Clark, S. Madhavan, J. Zhang, M. Bottomley, S. Rajakaruna, M.P. Craig, O. Paliy, M.P. Kadakia and S. Agrawal, Differential MicroRNA Signatures in the Pathogenesis of Barrett's Esophagus, Gastroenterology 154: S902 (Published Abstract)

R.J. Clark, S. Madhavan, J. Zhang, M. Bottomley, S. Rajakaruna, O. Paliy, M.P. Kadakia, S. Agrawal, Differential MicroRNA Signatures in the Pathogenesis of Barrett's Esophagus, Central Research Forum, Wright State University, 10/18/2018 (Platform)

A. Aljagthmi, N.T. Hill, S. Sakaram and M.P. Kadakia,  $\Delta$ Np63 $\alpha$  suppresses cells invasion by downregulating RAC1 through miR-320a/PKC gamma signaling, CoSM Festival of Research, 10/26/2018 (Poster)

A. Aljagthmi, N.T. Hill, S. Sakaram and M.P. Kadakia,  $\Delta$ Np63 $\alpha$  suppresses cells invasion by downregulating RAC1 through miR-320a/PKC gamma signaling, Boonshoft School of Medicine Central Research Forum, 10/18/2018 (poster)

A.J. Stacy, J. Zhang, M.P. Craig and M.P. Kadakia, TIP60 regulation of  $\Delta$ Np63 $\alpha$  is associated with squamous cell carcinoma proliferation, CoSM Festival of Research, Wright State University, 10/26/2018 (poster)

A.J. Stacy, J. Zhang, M.P. Craig and M.P. Kadakia, TIP60 regulation of  $\Delta$ Np63 $\alpha$  is associated with squamous cell carcinoma proliferation, Celebration of Research, Scholarship and Creative Activities, Wright State University, 4/13/2018 (poster)

M.P. Craig, J. Zhang and M.P. Kadakia, Differential MicroRNA biomarker expression in response to moderate and high intensity exercise regimen, COSM Festival of Research, Wright State University, 10/26/2018 (poster)

J. Zhang, M.P. Craig, A. Hira, M. Markey, M. Raymer, T. Broderick, and M. Kadakia, Differential MicroRNA Biomarker Expression in Response to Moderate and High Intensity Exercise Regimen, BSOM Central Research Forum, Wright State University 10/18/2018 - 10/18/2018 (Poster).

R.J. Clark and M.P. Kadakia, MicroRNAs in Barrett's Esophagus, COSM Festival of Research, Wright State University, 10/26/2018 (Platform)

R.J. Clark, S. Madhavan, J. Zhang, M. Bottomley, S. Rajakaruna, M.P. Craig, O. Paliy, M.P. Kadakia and S. Agrawal, Differential MicroRNA Signatures in the Pathogenesis of Barrett's Esophagus, Digestive Disease Week, Washington, D.C., 6/2/2018 – 6/5/2018 (poster)

#### **Dr. Leffak**

Gadgil, R., Rider, S.D., Goodman, C., Lewis, T. and Leffak, M., DNA Breaks at (CTG/CAG) and (Pu/Py) Microsatellites During Replication Stress; Analysis by a Novel Flow Cytometry Assay, Unstable Microsatellites and Human Disease, Capri, Italy 4/21/2018 - 4/26/2018 (Platform).

Gadgil, R.Y., and Leffak, M., A novel method to analyze DNA double strand breaks, 20th Annual Midwest DNA Repair Symposium, Columbus, Ohio 5/4/2018 - 5/6/2018 (Poster).

### **Dr. Long**

Lobna Elkhadragey, Hadel Alsaran and Weiwen Long. The C-terminus tail is important for ERK3's kinase activity and migration- and invasion-promoting abilities in cancer cells, Association for Cancer Research (AACR) annual conference. Chicago, IL. April 14-18, 2018, Chicago 04-14-2018 - 04-18-2018 (Poster).

Marion Morel, Sreeram Vallabhaneni, Ming-Jer Tsai, Francesco Demayo and Weiwen Long, Conditional ERK3 overexpression and PTEN deletion induce lung tumors in mice, Association for Cancer Research (AACR) annual conference. Chicago, IL. April 14-18, 2018, Chicago 04-14-2018 - 04-18-2018 (Poster).

Astha Shakya, Minyi Chen, Michael Markey, Weiwen Long, ERK3 negatively regulates IL-6 signaling by suppressing STAT3 phosphorylations, Boonshoft School of Medicine Central Research Forum, Wright State University, Dayton, Ohio 10-18-2018 - 10-18-2018 (Poster).

Astha Shakya, Minyi Chen, Michael Markey, Weiwen Long, ERK3 negatively regulates IL-6 signaling by suppressing STAT3 phosphorylations, CoSM Festival of Research, Wright State University, Dayton Ohio 10-26-2018 - 10-26-2018 (Poster).

Astha Shakya, Minyi Chen, Michael Markey, Weiwen Long, ERK3 negatively regulates IL-6 signaling by suppressing STAT3 phosphorylations, Brown Bags Presentation, Department of BMB, Wright State University, Dayton Ohio 03-13-2018 - 03-13-2018 (Platform).

Marion Morel and Weiwen Long, FBXL16 regulates the stability of proteins targeted by GSK3, Brown Bag presentation, Dept. of BMB, Wright State University 01-30-2018 - 01-30-2018 (Platform).

Amanda Myers, Hitham Aldharee, Shimpi Bedi and Weiwen Long, Phosphatidic acid binds to ERK3 and stimulates phosphorylation of the ERK3 activation loop, Boonshoft School of Medicine Central Research Forum, Wright State University 10-18-2018 - 10-18-2018 (Poster).

Amanda Myers, Hitham Aldharee, Shimpi Bedi and Weiwen Long, Phosphatidic acid binds to ERK3 and stimulates phosphorylation of the ERK3 activation loop, COSM Research Festival, Wright State University 10-26-2018 - 10-26-2018 (Poster).

Eid Alshammari, Andrew Stacy, Weiwen Long and Madhavi Kadakia,  $\Delta$ Np63 Positively Regulates ERK3 Expression in Squamous Cell Carcinoma of the Skin, Boonshoft School of Medicine Central Research Forum, Wright State University, Dayton 10-18-2018 - 10-18-2018 (Poster).

### **Dr. Markey**

S Aygun-Sunar, B Gousia, C Maharjan, P Markey, M Wormstone, NC Adragna, and PK Lauf, Long-term Ouabain treatment promotes ATP1A1-dependent IL-6 expression in a fetal human lens epithelial cell line (FHL124), Experimental Biology 2018, San Diego, CA 4/21/2018 - 4/25/2018 (Poster).

S Simmons, A Reiter, M Markey, MicroRNAs as biomarkers for motion sickness susceptibility, Central Research Forum, Dayton, OH 10/18/2018 - 10/18/2018 (Poster).

S Simmons, A Reiter, M Markey, the Center for Genomics Research, Central Research Forum, Dayton, OH 10/18/2018 - 10/18/2018 (Poster), Next-Generation DNA Sequencing at WSU, Wright Brothers Day, Dayton, OH 10/5/2018 - 10/5/2018 (Poster).

#### **Dr. Paliy**

S Perez-Burillo, A. Esteban-Muñoz, T. Mehta, Oleg Paliy, S. Pastoriza de la Cueva, J.A. Rufiñán-Henares, Green and roasted coffee phenolic profile after in vitro digestion and fermentation and effect on gut microbiota composition, XXII Jornadas de Nutrición Práctica y XII Congreso Internacional de Nutrición, Alimentación y Dietética, Madrid, Spain 4/11/2018 - 4/12/2018 (Poster).

R.J. Clark, S. Madhavan, J. Zhang, M. Bottomley, S. Rajakaruna, M. Craig, O. Paliy, M. Kadakia, S. Agrawal, Differential MicroRNA Signatures in the Pathogenesis of Barrett's Esophagus, Digestive Disease Week 2018, Washington, DC 6/2/2018 - 6/5/2018 (Poster).

R.T. Agans, A.M. Gordon, O. Paliy, Biointeractions of Titanium Oxide Nanomaterials with Human Gut Microbiota, WSU BSoM Central Research Forum, Dayton OH 10/16/2018 - 10/16/2018 (Poster).

R.T. Agans, A.M. Gordon, O. Paliy, Biointeractions of Titanium Oxide Nanomaterials with Human Gut Microbiota, DAGSI/AFRL Annual Conference 2018, Dayton 11/15/2018 - 11/15/2018 (Poster).

#### **Dr. Ren**

Hongmei Ren, the new role of lipin1 in myogenic progenitor differentiation to muscle and adipose tissues, 2018 ASBMB-Deuel Conference on Lipids, Hotel Del Coronado, March 6 - 9, 2018 (Poster).

Rebecca R Reese, Abdulrahman Jama, Dengtong Huang, Abdullah Ali A Alshudukhi, Roman Chrast, Hongmei Ren, Lipin1 is required for skeletal muscle development, Inaugural Biomedical Research Conference, Wright State University - (Poster).

Alshudukhi AA, Zhu J, Huang D, Jama A, Smith JD, Wang QJ, Esser KA, Ren H., Lipin-1 Regulates Bnip3-mediated Mitophagy in Glycolytic Muscle, CoSM Festival of Research, Wright State University - (Poster).

Alshudukhi AA, Zhu J, Huang D, Jama A, Smith JD, Wang QJ, Esser KA, Ren H., Lipin-1 Regulates Bnip3-mediated Mitophagy in Glycolytic Muscle, Boonshoft School of Medicine Central Research Forum, Wright State University - (Poster).

Dengtong Huang, Abdulrahman Jama, Abdullah Ali A Alshudukhi, Karim Nadra, Roman Chrast, Hongmei Ren, Lipin1 stimulates the trans differentiation of Myf5-expressing progenitors into myoblasts versus brown pre-adipocytes, Boonshoft School of Medicine Central Research Forum, Wright State University - (Poster).

Jama A, Huang D, Alshudukhi AA, Chrast R, Ren H., Lipin1 Regulates Myoblast Differentiation through the MyoD-Mef2c-HDAC5 Axis, CoSM Festival of Research, Wright State University -

(Platform).

**Dr. Reo**

I. Sibomana, N. Grobe, N.J. DelRaso, and N.V. Reo, Influence of myo-inositol plus ethanolamine on plasmalogen molecular species and cell protection against H<sub>2</sub>O<sub>2</sub>-induced oxidative stress, Toxicology and Risk Assessment Conference, Cincinnati, OH 4-23-2018 - 4-26-2018 (Poster).

N.V. Reo, WSU Magnetic Resonance Laboratory and NMR-Based Metabolomics, BSOM Central Research Forum, Wright State University, Dayton, OH 10/18/2018 - 10/18/2018 (Poster).

**Invited Lectures**

**Dr. Kadakia**

M.P. Kadakia, MicroRNA Biomarker and SNP Genotyping in response to moderate and high intensity exercise regimen, DOD Office of Naval Research, University of Alabama, Birmingham, AL, 8/13/2018 (invited talk)

M.P. Kadakia, Overview: Boonshoft School of Medicine, Ohio Department of Higher Education, Chancellor, Columbus, OH, 3/9/2018 (invited talk)

PHITE: Precision High Intensity Training through Epigenetics, miRNA Biomarker and SNP genotyping, DOD Office of Naval Research, Arlington, WV, 10/30/2018 (invited talk)

M.P. Kadakia, The Tip60 Acetyltransferase Acetylates and Stabilizes  $\Delta$ Np63 $\alpha$  to Regulate SCC Proliferation, 2nd Frankfurt Conference on Quality Control in Life Processes and 8th International p63/p73 Workshop, Goethe University, Frankfurt, Germany, 9/3/2018 (invited talk)

**Dr. Long**

Elucidating ERK3 kinase signaling in cancers: very challenging but exciting!, Seminar series of the Department of Biology, Wright State University, Wright State University, Dayton, Ohio, 01-08-2018.

**Dr. Markey**

Next Generation Sequencing in Cancer Care and Research, Dayton Area Hospital Tumor Registrars annual meeting, Beavercreek, OH, 4/10/2018.

**Dr. Ren**

The new role of lipin1 in myogenic progenitor differentiation to muscle and adipose tissues, Invited by Dr. Paul A Harding, Professor and Chair of Department of Biological Sciences, Miami University, 11/1/2018.

**Outreach**

**Dr. Kadakia**

M.P. Kadakia, A Glimpse into Cancer Research in the Biochemistry and Molecular Biology Department at Wright State University, American Cancer Society, 4/18/2018 (invited talk)

M.P. Kadakia, Overview: Boonshoft School of Medicine, Oakwood Rotary Club, Dayton, OH, 10/26/2018 (invited talk)

**Dr. Long**

Elucidating ERK3 kinase signaling in cancers: very challenging but exciting!, Seminar series of the Department of Biology, Wright State University, Wright State University, Dayton, Ohio, 01-08-2018.

**Dr. Markey**

Dr. Markey, Montgomery County Science Day, Intel International Science and Engineering Fair (Judged science fair projects for ISEF.), 3/3/2018, Located at Dayton, OH.

**Consultantships**

Not applicable.

# 6 Summary of Service Activities

## **Committee membership/officer**

### **BMB Committee Service**

**Dr. Campbell**

BMB, BMB Curriculum Committee  
BMB, BMB Undergraduate Oversight Committee  
BMB, Weisman Travel Award Committee

**Dr. Cho**

BMB, Admission Committee for BMB Master's Program

**Dr. Leffak**

BMB, BMB BS Oversight Committee  
BMB, BMB FDC  
BMB, Undergrad. Honors Research Committee

**Dr. Long**

BMB, BMB department seminar program coordinator

**Dr. Markey**

BMB, Weismann travel grant committee

**Dr. Paighta**

BMB M.S. Program Director

**Dr. Paliy**

BMB Undergraduate Research Committee

**Dr. Reo**

BMB, Bylaws Review Committee (BMB Department)  
BMB, Faculty Development Committee  
BMB, Undergraduate Curriculum Committee (BMB Department)  
BMB, Undergraduate Program Oversight Committee

**Dr. Schmidt**

BMB, Departmental Curriculum Committee  
BMB, New MS Committee  
BMB Undergraduate Research Committee

**BSOM Committee Service**

**Dr. Paietta**

SOM, Foundations of Clinical Medicine (FCM) Committee  
SOM, Origins 1 Steering Committee  
SOM, WCSC (Wright Curriculum Steering Committee)

**Dr. Reo**

SOM, Bylaws Committee (BSOM)  
SOM, Faculty Promotion and Advancement Committee  
SOM, Steering Committee Member for Origins 1 Course

**Dr. Schmidt**

SOM, Faculty Curriculum Committee  
SOM, Origins 1 Steering Committee

**Science and Math Committee Service**

**Dr. Campbell**

S & M, ASK Scholarship Committee  
S & M, College of Science and Math Teaching Awards Committee  
S & M, College of Science and Math Undergraduate Curriculum Committee  
S & M, New Student Orientation Committee  
S & M, Scholarship Committee

**Dr. Leffak**

S & M, CoSM FDC  
S & M, Undergrad Petitions Comm.

**Dr. Paietta**

S & M, COSM Steering Committee  
S & M, Graduate Studies Committee

**Dr. Ren**

S & M, CoSM Petition Committee Member

**BMS Committee Service**

**Dr. Leffak**

BMS, BMS/CoSM Research Retreat Committee

**Dr. Long**

BMS, BMS admission committee, elected

**Dr. Markey**

BMS, BMS Nominating Committee

**Dr. Paliy**

BMS, BMS Curriculum committee

**Dr. Ren**

BMS, Biomedical Sciences PhD Program Nomination Committee Member

**Dr. Reo**

BMS, Admissions Committee (BMS Program)

**Wright State University Committee Service**

**Dr. Kadakia**

University, Strategic Committee member

University, Faculty Senate

**Dr. Long**

University, IACUC member

**Dr. Markey**

University, Graduate Council BSOM faculty representative

University, Graduate Council Membership Committee

**Dr. Paietta**

University, Graduate Curriculum Committee (GCC)

**Dr. Paliy**

University, WSU Institutional Biosafety committee

**Dr. Reo**

University, Bottled Gas Supplier Selection Committee

University, Faculty Senate

University, Research Council

**Student research committee service**

**Dr. Cho**

Student Research Committee, I was involved in BMB Masters Defense Committee as a committee member for Abdulrahman (Abdi) Jama in Summer 2018.



Student Research Committee, I was involved in BMB Masters Defense Committee as a committee member for Trupthi Metha in Summer 2018.

Student Research Committee, I was involved in BMB Masters Defense Committee as Chair for Christian Garrido in Fall 2018.

Student Research Committee, I was involved in BMB Masters Defense Committee as Chair for Sarah Kovar in Summer 2018.

#### **Dr. Kadakia**

BMB, Eid Alshammari, MS student mentor

BMB, Akshay Hira, MS student mentor

BMB, Amjad Aljagthmi, MS student mentor

BMS, Andrew Stacy, PhD student mentor

BMS, Reilly Clark, PhD student mentor

BMS, Lobna Elkhadragey, PhD student committee

BMB, Christian Garrido, MS student committee

BMS, Astha Shakya, PhD student committee

BMB, John Trombley, MS student committee

#### **Dr. Leffak**

BMA, Alan Cone

BMS, Amanda Myers

BMS, Sara Seibert thesis committee

Student Research Committee, Daniel Miranda

Student Research Committee, Jama Abdulrahman

Student Research Committee, John Trombley

Student Research Committee, Melissa Ward

#### **Dr. Long**

Student Research Committee, As a research committee member for the following graduate students:

Elliott Hayden, Ph.D. student

Stacy, Andrew J., Ph.D. student

Amjad Aljagthmi, Ph.D. student

Prithy Martis, Ph.D. student

Langni Liu, Ph.D. Student

Rajalakshmi Santhanakrishnan, Ph.D. student

Christopher A. Waker, BMS PhD student

Melissa J. Ward, BMS PhD student

Sarah E. Kovar, M.S.

Christian Garrido, M.S.

#### **Dr. Markey**

BMB, Caitin Castagno MS committee

BMB, John Trombley M.S. committee

BMB, Padmashree Prasad MS committee

BMB, Sarah Kovar MS committee

BMB, Weismann travel grant committee

BMS, Alex Gordon PhD committee

BMS, Andrew Stacy PhD committee

BMS, BMS Nominating Committee

BMS, Hima Yalamanchili Ph.D. committee

BMS, Langni Liu PhD committee

**Dr. Paietta**

Student Research Committee, Student Research Committee for Keshab Joshi (M.S.)  
Student Research Committee, Student Research Committee for Padmashree Prasad (M.S.)  
Student Research Committee, Student Research Committee for Trupthi Mehta (M.S.)

**Dr. Paliy**

Student Research Committee, BMS representative on BMS PhD committee for: Xiu-Huan Yap  
Student Research Committee, Committee member for BMS PhD student: Angela Campo  
Student Research Committee, Committee member for BMS PhD student: Sara Seibert

**Dr. Ren**

BMB, Member in Sarah E. Kovar's Master's Dissertation Committee  
BMB, Mentor in Sandhya R. Sattiraju's Master's Dissertation Committee  
BMS, Member in Amanda Kaye Myers's PhD Dissertation Committee  
BMS, Member in Astha Shakya's PhD Dissertation Committee  
BMS, Member in Ishita Haider's PhD Dissertation Committee  
BMS, Member in James M. Readler's PhD Dissertation Committee  
BMS, Member in Jananie Rockwood 's PhD Dissertation Committee  
BMS, Member in Krushangi Nirav Shah's PhD Dissertation Committee  
BMS, Mentor in Abdullah A Alshudukhi's PhD Dissertation Committee  
BMS, Mentor in Abdulrahman Jama 's Master's and PhD Dissertation Committee

**Dr. Reo**

Student Research Committee, BMS Ph.D. Dissertation Committee (Denise Kramer)  
Student Research Committee, BMS Ph.D. Dissertation Committee (Hima Yalamanchili)  
Student Research Committee, BMS Ph.D. Dissertation Committee (Xiu Huan Yap)  
Student Research Committee, M.S. Thesis Committee (Jama Abdulrahman)

**Other Service**

**Dr. Campbell**

Other, Sinclair Biotech Advisory Board

**Dr. Kadakia**

Board of Directors, Association of Medical and Graduate Departments of Biochemistry

**Grant and Manuscript Review**

**Grant Proposal, Ad Hoc Reviewer:**

Dr. Markey, Czech Science Foundation (Grantov agentura ?esk republiky) (1)

**Grant Proposal, As study section member:**

Dr. Markey, National Cancer Institute (10)  
Dr. Paliy, NIH ZRG1 DKUS-J (82) study section (4)

**Journal Manuscript, Ad Hoc Reviewer:**

Dr. Campbell, Advances in Physiology Education (APE) (1)  
Dr. Campbell, Cell Biology Education (CBE) Lifesciences (3)

Dr. Campbell, Evolution: Education and Outreach (1)  
Dr. Campbell, Journal of Research in Science Teaching (1)  
Dr. Craig, Cell Biology (1)  
Dr. Craig, Journal of Molecular Biology (1)  
Dr. Kadakia, Cell Biology (1)  
Dr. Kadakia, Journal of Molecular Biology (1)  
Dr. Kadakia, Molecular Diagnosis and Therapy (1)  
Dr. Leffak, Nucleic Acids Research (4)  
Dr. Leffak, PLOS One (1)  
Dr. Long, American Journal of Pathology (1)  
Dr. Long, Breast Cancer Research (1)  
Dr. Long, Cancer Letters (2)  
Dr. Long, Cancer Science (2)  
Dr. Long, Journal of Biological Chemistry (2)  
Dr. Long, Journal of Cancer (1)  
Dr. Long, Journal of Cellular and Molecular Medicine (1)  
Dr. Long, Journal of Cellular Physiology (4)  
Dr. Long, Oncogene (1)  
Dr. Long, Oncology Reports (2)  
Dr. Long, Scientific Reports (2)  
Dr. Markey, BioTechniques (1)  
Dr. Markey, Cellular Physiology and Biochemistry (1)  
Dr. Paietta, PLOS ONE (1)  
Dr. Paliy, Clin Gastroenterology Hepatology (1)  
Dr. Paliy, PLOS One (2)

**Journal Manuscript, As member of editorial board:**

Dr. Leffak, JBC (10)  
Dr. Paliy, EC Microbiology (1)  
Dr. Paliy, Scientific Reports (3)  
Dr. Ren, Current Research in Bioorganic & Organic Chemistry (5)  
Dr. Ren, Current Trends in Metabolomics (1)  
Dr. Ren, Journal of Biotech Research & Biochemistry (2)

**Journal Manuscript, Other:**

Dr. Ren, Chinese Journal of Biochemistry and Molecular Biology (1)

**Other, Ad Hoc Reviewer:**

Dr. Campbell, Society for Advancement of Biology Education Research (SABER) Abstract reviewer (9)

**Personnel**

**Undergraduate students**

**Dr. Long**

Brian James Caprul, Lab participation: 20 hours per week, This student is an Honors student., Completed research during Spring 2018 on course BIO 4990/BIO 4000 (5 credit hours)., Brian is a BioStar program student and had worked in my lab as a student Research Assistant from

05/2016 to 05/2018.

**Dr. Ren**

Nour A. Wahdan, Lab participation: 4hrs/week for 16 weeks. This student is a STEM student. Did not complete any undergraduate research. Summer 2018 BMB 4990 3 credits

Rebecca Reese, Lab participation: 12 hrs/week for 16 weeks. This student is a STEM student. Did not complete any undergraduate research. Fall 2018 BMB 4990 Undergraduate Research 1.5 credits

Stevens Cole, Lab participation: 7 hrs/week for 16 weeks. This student is a STEM student. Did not complete any undergraduate research.

**Dr. Reo**

Adam Petry, Lab participation: 6 hrs/week for 15 weeks. This student is a STEM student. Completed research during Fall 2018 on course BMB 4990 (2 credit hours). This student is a Chemistry major (senior) who is conducting research in my laboratory.

**Graduate Student (M.S./Ph.D.Student)**

**Dr. Cho**

Amjad Aljagthmi, Ph.D. Student, Faculty role: Lab Rotation Director, 1 Semester in lab rotation, Amjad Aljagthmi did her rotation in my lab in Spring 2018.

Sylvia Cunningham, M. S. Student, Faculty role: Lab Rotation Director, 1 Semester in lab rotation, Sylvia Cunningham did her rotation in my lab in Fall 2018.

Christian Garrido, M. S. Student, Faculty role: Thesis/Dissertation Director, Thesis Title: Avicin is a potent sphingomyelinase inhibitor that blocks K-Ras plasma membrane interaction and its oncogenic activity. This student graduated this year. They are now looking for an industrial position, Christian graduated in December 2018.

Sarah Elizabeth Kovar, M. S. Student, Faculty role: Thesis/Dissertation Director, Thesis Title: Discovery of small molecules blocking oncogenic K-Ras activity. This student graduated this year. They are now looking for an industrial position, Sarah Kovar graduated in July, 2018.

**Dr. Kadakia**

Eid Alshammari, M.S. Student, Faculty role: Thesis/Dissertation Director. This student did not graduate this year.

Akshay Hira, M.S. Student, Faculty role: Thesis/Dissertation Director. This student did not graduate this year.

Andrew Stacy, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Reilly Clark, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

**Dr. Leffak**

Caitlin Castagno, M. S. Student, Faculty role: Thesis/Dissertation Director, Thesis Title: A Novel Method to Analyze DNA Breaks and Repair in Human Cells, This student graduated this year. They are now Ohio State

French Damewood, M. S. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Rujuta Gadgil, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

**Dr. Long**

Alshammari, Eid Salem, M. S. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Amanda Myers, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Astha Shakya, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Krushangi Shah, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

**Dr. Markey**

Abdullah Alatwi, M. S. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Stacy Simmons, M. S. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

**Dr. Paietta**

Keshab Joshi, M. S. Student, Faculty role: Lab Rotation Director, 2 Semesters in lab rotation

**Dr. Paliy**

Alex Gordon, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Denise Kramer, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year. Left BMS program in summer of 2018

Sumudu Rajakaruna, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Trupthi Mehta, M. S. Student, Faculty role: Thesis/Dissertation Director, Thesis Title: Availability of fermentable nutrients affect gut microbiota composition. This student graduated this year. They are now Sinclair College

**Dr. Ren**

Abdullah A. Alshudukhi, Ph.D. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Sandhya Ramani Sattiraju, M. S. Student, Faculty role: Thesis/Dissertation Director, This student did not graduate this year.

Abdulrahman Jama, M.S./Ph.D. Student, Faculty role: Thesis/Dissertation Director, Thesis Title: Lipin1 Regulates Myoblast Differentiation through the MyoD-Mef2c-HDAC5 Axis, This student graduated this year and accepted by the PhD program at WSU. He also received the Graduate Student Excellence Award in 2018.

#### **Dr. Reo**

Angela Campo, Ph.D. Student, Faculty role: Thesis/Dissertation Co-Director, This student did not graduate this year. I serve as a co-mentor for this student who is employed at the Air Force Research laboratory (AFRL), Materials and Manufacturing Directorate. Angela is working on a research project that directly aligns with her job responsibilities at AFRL, and as such, her other co-mentor (Dr. Peter Mirau) is an AFRL scientist. She plans to use NMR spectroscopy in her research project and meets with me on a regular basis to discuss her research progress. She has also worked on a project in my laboratory (Reo project) during the time while she was developing her dissertation research project, and as a means to learn NMR techniques.

#### **Post Doctorate fellows**

##### **Dr. Leffak**

Eric Romer, Part Time (25%), left lab in March 2018  
S. Dean Rider, Research Assistant Professor, Part Time (87.5%)

##### **Dr. Long**

Marion Morel, Full Time

##### **Dr. Ren**

Dengtong Huang, Full Time

##### **Dr. Long**

Lobna Elkhadragey, Full Time

#### **Research Associates**

##### **Dr. Cho**

Karen Henkels, Full Time, Karen joined my laboratory June 2017.  
Taylor Miller, Full Time, Taylor joined my laboratory in June 2017.

##### **Dr. Reo**

Andrew Neuforth, Part Time (65%), Andrew Neuforth is funded through grants. His percent time depends on the current status of my grant awards. During 2018, Andy was employed at 68% (Jan - Apr), 51% (May - Oct), and 100% (Nov - Dec). Thus the average percent time for this employee for 2018 is 65%.

William Couch, Part Time (9%), Mr. Couch is a part-time technician who helps with NMR maintenance/repairs and provides some technical support for research projects.

#### **Visiting Researcher**

**Dr. Leffak**  
Yixiong Lin

**Other**

**Dr. Cho**  
Christian Garrido, Student work employee, Full Time, Student work employee, Christian started working in my lab as a student work employee from September 2018 - December 2018.

**Dr. Kadakia**  
Jin Zhang, PhD. Research Associate, full-time  
Michael Craig, PhD. Research Assistant Professor, full-time  
Karley Fisher, part-time, volunteer

**Dr. Leffak**  
Matilyn Shanahan, undergraduate ASK student, Part Time (15%), undergraduate ASK student, Did not see this student in any course enrollment

Nathen Zavada, undergraduate ASK student, Part Time (15%), undergraduate ASK student, Did not see this student in any course enrollment

Nathen Zavada, undergrad research assistant, Part Time (15%), undergrad research assistant

## 7 Patient Care Summary

Not applicable.

## 8 Honors and awards [Faculty or staff]

**Awards**

**Dr. Long**  
COSM Faculty Excellence Award Early Career Achievement, received by Dr. Long.

**Dr. Kadakia**  
Accepted to Executive Leadership in Academic Medicine (ELAM).

**Other information**

**Dr. Markey**

Special Interest Program: Precision Genomics Midwest, 5/11/2018. This program is located at Cincinnati, Ohio.

**Dr. Leffak**

Unstable Microsatellite DNA: Replication-Dependent Double Strand Breaks Lead to Highly Mutagenic Break-Induced Replication, FASEB Summer Research Conference Dynamic DNA Structures in Biology, 7/8/2018 - 7/13/2018.

Unstable Microsatellite DNA: Replication-Dependent Double Strand Breaks Lead to Highly Mutagenic Break-Induced Replication, 3<sup>rd</sup> International Conference on Molecular Biology & Nucleic Acids, Toronto, Canada, 8/27/2018 - 8/28/2018.

**Dr. Kadakia**

Annual Meeting of the Association of Medical and Graduate Departments of Biochemistry (AMGDB), Panama City, Panama 1/11/2018 - 1/15/2018 (attendee)

M.P. Kadakia, Being a Resilient Leader Workshop, Association of American Medical Colleges (AAMC), Washington D.C., 1/29/2018 (meeting attendee)