



Department of Biochemistry & Molecular Biology

Annual Report:

January 2022 – December 2022

Eric S. Bennett, Ph.D.
Professor and Interim Chair

1

Statement from the Chair/Associate Dean

The Department of Biochemistry and Molecular Biology is a matrix department with split roles between the Boonshoft School of Medicine and the College of Science and Mathematics. Faculty in BMB have a long tradition of excellence in teaching, research, and service. The past year continued that tradition of excellence and I have been honored to lead the department in the role of Interim Chair.

Undergraduate medical education continues as a major departmental activity. Faculty roles in the Origins module in the Foundations phase of the curriculum included co-directorship and teaching major sections of the course. Our faculty continued to make incremental improvements to the innovative WrightCurriculum based on careful evaluation and feedback. Peer instruction and Team-based Learning represent the major learning modalities in the Origins module. Our faculty also participate in the Staying Alive, Beginning to End, and Balance and Control modules in various roles, including that of WrightQ facilitators.

Our undergraduate B.S. in Biochemistry and Molecular degree program continues to develop. With the B.S. degree having been established only a few years ago, our initial cohorts are graduating and moving on to begin their careers primarily in academia, health professions and industry. Enrollment in the program continues to improve. The undergraduate degree program has provisional accreditation from the American Society of Biochemistry and Molecular Biology (ASBMB) and is working toward full accreditation which is expected in late 2023. Efforts to promote our new 4+1 program, an exciting option for our undergraduates are underway. Finally, we continued to strongly promote opportunities for undergraduate research.

Research programs had a substantial boost this year with funding received from sources such as the National Institutes of Health, American Lung Association and the Department of Defense. Grant submission continued at a high rate and we are expecting growth in this area. As we have come out of restrictions from the pandemic, presentations at scientific meetings increased. A substantial output of papers was also accomplished. Our graduate programs, a key to BMB research activities, continue to do well. Both our M.S. in Biochemistry and Molecular Biology and Biomedical Sciences Ph.D. students presented and published their work and those graduating generated high-quality dissertations in the past year.

2 Programs/Divisions

Name of Division or Program	Director	Dates
M.S. in Biochemistry and Molecular Biology	Dr. Weiwen Long	Jul 1, 2020 – present
B.S. in Biochemistry and Molecular Biology	Dr. Chad Campbell	Jan 1, 2017 – present

3 Fully Affiliated Faculty

Name and Academic Position	Research Interests
Campbell, Chad Instructor	<p>This past year I have served as the Undergraduate Program Director and as such was responsible for program evaluation, development and administration. In the Spring, I was the course director for BMB 2100: Introduction to Biochemistry, BMB 3900: Scientific Communications and 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. Additionally, I used BMB 3990 to “employ” successful students from previous BMB 4210 and 4230 semesters as learning assistants in the current semesters of BMB 4210 and 4230. I received very positive course evaluations from students in both the Spring and Fall semester. I have served as the BMB program advisor guiding students in our major and those transferring into our major towards successful graduation. Moreover, I have also participated on various different committees at the departmental (5, chairing 3) and college (5, chairing 2) level and worked with the department chair in efforts related to undergraduate program marketing and outreach and BMB major social gatherings. External to institutional service I was also active in the research community as a publication reviewer (7 reviews). Additionally, I was able to grow as a professional by</p>

Name and Academic Position	Research Interests
Cho, Kwang-Jin Assistant Professor	<p data-bbox="675 224 1325 285">attending the Faculty Success Symposium here at WSU.</p> <p data-bbox="675 296 1386 957">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 data-bbox="675 999 1386 1461">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>
Craig, Michael Research Assistant Professor	<p data-bbox="675 1472 1386 1864">Dr. Craig utilizes next-generation sequencing of microRNA isolated from serum exosomes, tissue biopsies, and formalin-fixed archival samples to identify biomarkers of exposure and biomarkers of disease. He has developed collaborations with the Dayton VA Medical Center, from which he helped to identify miRNA biomarkers of Barrett's esophagus (BE) and Esophageal adenocarcinoma (EAC) that has potential clinical value in improving detection of individuals at increased risk of progressing to EAC. He is a contributor on an Office of Naval Research MURI Initiative aimed at identifying microRNA biomarkers of</p>

Name and Academic Position	Research Interests
Kadakia, Madhavi Vice Provost for Research and Innovation and Professor	<p>athletic performance to aid in the optimization of physical training protocols.</p> <p>My research program employs bench-based research that integrates clinical studies with the goal of translating biomedical research findings to the bedside. My laboratory has focused on three areas of research. The first area is focused on identification of signaling pathways that play a role on cancer and development. We are studying the mechanism by which p53 family members, comprising of both oncogenes and tumor suppressors, are deregulated in non-melanoma skin cancer. Specifically, my laboratory has been studying the role of p53 family of proteins (p53, p63 and p73) either directly or via modulation of other proteins in development and progression of cancer. Our studies 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 $\Delta Np63\alpha$ levels and its role in the development and progression of non-melanoma skin cancer. We have identified the histone acetyltransferase TIP60 as a regulator of p63 stability and activity. Since TIP60 regulates the cellular response to DNA damage, we are investigating the potential implications of the TIP60/p63 axis in the DNA damage response and chemoresistance. Further, we have identified a novel mechanism by which p63 regulates cancer cell migration and invasion through regulation of the rho GTPase RAC1, thus providing key insights into the role that p63 plays in cancer progression and metastasis. Taken together, these studies will address the discrepancy whether VD3 inhibits or promotes cell survival and provide further insight into the role that p63 plays in its use as a chemotherapeutic adjuvant for anti-cancer therapy and fill the gap in the understanding of VD3 mediated regulation of $\Delta Np63\alpha$ levels and its role in the development and progression of non-melanoma skin cancer. Further, 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.</p>

Name and Academic Position	Research Interests
	<p>The second area of focus in my laboratory has been to identify biomarkers that can help differentiate different stages of cancer and in long term lead to personalized patient care. Towards this goal I have obtained grant funding to purchase state-of-the art, next-generation sequencing (NGS) tools as well as a high throughput, real time PCR machine which will aid in these studies. Developments in next generation sequencing (NGS) technology have revolutionized our understanding of the complexity of cellular gene expression. NGS provides a better understanding of the molecular mechanisms involved and is the most suitable approach to develop biomarker discovery pipelines. We will compare the differential expression of known microRNAs in tissue and plasma samples from patients with Barrett's esophagus (BE) and Esophageal adenocarcinoma (EAC) in order to identify circulating microRNA biomarkers for early detection of EAC. Endoscopy is currently the only way to diagnose BE and EAC, so identification of noninvasive biomarkers is critical for the improvement of current screening tools and for the identification of patients at high risk for progression to cancer who will benefit from surveillance. We have also used NGS to identify microRNAs and mRNAs regulated by both VD3 and p63.</p> <p>In addition, my laboratory has obtained funding from Ohio federal research network and multi-university related research initiative from office of Naval research to study microRNA as biomarkers for motion disorders and High intensity training, respectively.</p>
<p>Leffak, Ira Professor</p>	<p>Leffak laboratory: 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, spinocerebellar ataxia type 10, polycystic kidney disease) caused by the instability of short, microsatellite DNA sequences.</p>
<p>Long, Weiwen Associate Professor</p>	<p>Below are the personnel who have worked in the lab during 2021. We have been actively performing research projects as described below.</p> <p>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</p>

Name and Academic Position	Research Interests
	<p>been conducting experiments for developing new research projects in the lab.</p> <p>2. Marion Morel, Postdoctoral Fellow, has been working on the role of FBXL16 in regulating the stability of oncoproteins in cancers, including ERK3, c-myc and ERK3.</p> <p>3. Amanda Kaye Myers, a BMS Ph.D. student, has been working on a project about the role of ERK3 in regulating phospho-lipid signaling.</p> <p>4. Krushangi Shah, a BMS Ph.D. student, has been working on a project about the role of FBXL16 in ER+ breast cancer.</p> <p>5. Shreya Akunapuram, a BMB Master student, worked on the role of ERK3 in the growth Lung adenocarcinomas with KRas mutations.</p>
<p>Markey, Michael Research Associate Professor, Director of the Center for Genomics Research</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 determining the role of genotype and microRNA expression on susceptibility to motion sickness, balance, and musculoskeletal health. Another external project looks at epigenetic changes on the RNA of honeybees. We are also undertaking a survey of MDM4 splice variation in human skin and melanomas.</p>
<p>Paietta, John Interim Chair and Associate Professor</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>
<p>Paliy, Oleg Associate Professor</p>	<p>The research in our laboratory is focused on the studies of complex microbial communities associated with human gastrointestinal system. We use a variety of research techniques including ribosomal gene sequencing, metagenomics, phylogenetic microarrays, and fluorescent in situ hybridization to gain knowledge of community composition and function, its changes in disease, and its response to diet perturbations. We also associate microbial dynamics to changes in luminal and fecal metabolites in the same samples.</p>

Name and Academic Position	Research Interests
Ren, Hongmei Assistant Professor	<p>We employ mathematical modeling to generate hypotheses of possible microbial and host-microbial interactions, that we then test in the in vitro human gut simulator system. We also study individual microbial species to gain insight into the specific roles these members play in our lives and how they interact with each other.</p> <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 transdifferentiation 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;Lipin1fl/fl conditional knockout (Lipin1myf5+KO) 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 transdifferentiation 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>
Schmidt, Michael Assistant Professor	<p>The work in my laboratory is focused on the biochemistry of plant secondary metabolites. The current project is based on a cooperative agreement with the USDA. The objective of this work is to understand how plant secondary metabolites such as small phenolic compounds are contributing to CO₂ efflux from soils.</p>

4 Teaching

Dr. Campbell

Spring 2022

Introduction to Biochemistry, 2 credit hours, 4 students, 30 total contact hours (28 lecture hours, 2 non-contact hours), Classroom course, Course Director: Chad Campbell, taught all “lectures” mostly in the active learning style to introduce the fundamental concepts of Biochemistry. Also created and graded all assessments in the course.

Scientific Communications, 2 credit hours, 8 students, 26 total contact hours (26 lecture hours, 0 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, writing and revision strategies and various scientific article reading strategies.

Biochemistry and Molecular Biology II, 3 credit hours, 32 students, 33 total contact hours (26 lecture hours, 7 non-contact hours), Team taught, Classroom course, Course Director: Dr. Chad Campbell, it was my responsibility to teach 26 lectures about central and whole-body metabolism and run three review sessions and generate three exams and a portion of the Final exam. As the course director it was also my responsibility to work with other faculty to coordinate course topics and schedules.

Fall 2022

Freshman Seminar, 1 credit hour, 27 students, total contact hours (lecture hours, non-contact hours), Team taught, Seminar.

Careers in BMB, 1 credit hour, 5 students, total contact hours (lecture hours, non-contact hours), Seminar.

Biochemistry Laboratory, 3 credit hours, 9 students, total contact hours (lecture hours, non-contact hours), Team taught, Classroom/Lab.

Undergraduate Teaching Assistant, 2 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Seminar.

Senior Reflection, 1 credit hour, 5 students, 16 total contact hours (14 lecture hours, 2 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.

Biochemistry and Molecular Biology I, 3 credit hours, 39 students, 43 total contact hours (38 lecture hours, 5 non-contact hours), Classroom course, Course Director: Dr. Chad Campbell, It

was my responsibility to cover all “lectures” in the course. 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. This course was taught with the help of 2 LAs and 1 TA.

Dr. Cho

Spring 2022

Molecular Biochemistry II, 3 credit hours, 11 students, 15 total contact hours (12 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I taught 12 classes.

Topics in BMB, 1 credit hour, 6 students, 5 total contact hours (5 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwon Long, I taught 5 classes.

Biochemistry Research, 3 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Classroom/Lab.

Dissertation Research, 3 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Summer 2022

Biochemistry Research, 1 credit hour, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation research, 6 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Fall 2022

Molecular Signaling, 3 credit hours, 4 students, 14 total contact hours (11 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Weiwon Long, I taught 7 classes.

Research Perspectives, 1 credit hour, 4 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwon Long, I participated in 1 class presenting my research work.

Dr. Craig

Spring 2022

BMB Brown Bag Series, 1 credit hour, 9 students, total contact hours (lecture hours, non-contact hours), Seminar.

Fall 2022

BMB Brown Bag Series, 1 credit hour, 10 students, total contact hours (lecture hours, non-contact hours), Seminar.

Biochemistry Laboratory, 3 credit hours, 7 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory.

Research Perspectives, 1 credit hour, students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Gave one lecture (Sep 6).

Dr. Leffak

Spring 2022

BMB seminar, 1 credit hour, 9 students, total contact hours (lecture hours, non-contact hours), Seminar.

Research Ethics, .5 credit hours, 3 students, 8 total contact hours (8 lecture hours, 0 non-contact hours), Classroom course, Course Director: Leffak, course director.

Molecular Biology of the Nucleus, 3 credit hours, 5 students, 22 total contact hours (18 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: Leffak, course director.

Biochemistry Research, 3 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

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

Molecular Biology of the Nucleus, 3 credit hours, 2 students, 22 total contact hours (18 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: Leffak, course director.

Advanced Seminar, 1 credit hour, 1 student, total contact hours (lecture hours, non-contact hours), Team taught, Seminar.

Non-Dissertation Research, 2 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation Research, 5 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory.

Summer 2022

Biochemistry Research, 3 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory.

Non-Dissertation Research, 6 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation Research, 6 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory.

Fall 2022

Molecular Biochemistry, 3 credit hours, 17 students, 26 total contact hours (20 lecture hours, 6 non-contact hours), Team taught, Classroom course, Course Director: Leffak, course director.

Molecular Biochemistry, 3 credit hours, 1 student, 26 total contact hours (20 lecture hours, 6 non-contact hours), Team taught, Classroom course, Course Director: Leffak, course director.

Non-Dissertation Research, 5 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation Research, 5 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory.

Dr. Long

Spring 2022

Topics in BMB, 1 credit hour, 5 students, 9 total contact hours (9 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, I was the course director and taught 9 lecture hrs.

Molecular Biology of the nucleus, 3 credit hours, 7 students, 10 total contact hours (8 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, My lectures were focused on posttranslational regulation of transcription factors. .

Biochemistry Research, 3 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation Research, 2 credit hours, 2 students, total contact hours (lecture hours, non-contact hours), Laboratory.

Summer 2022

Biochemistry Research, 4 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory

Fall 2022

Molecular Signalling, 3 credit hours, 4 students, 18 total contact hours (16 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, I was the course director and taught 16 lectures hours and one exam (2 hrs.).

Biochemistry Research, 3 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Research Perspectives, 1 credit hour, 5 students, 9 total contact hours (6 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Had 6 lectures hours and 3 hours of evaluating and grading assignments.

Research Perspectives, 3 credit hours, 2 students, 14 total contact hours (6 lecture hours, 8 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Had 6 lectures hours and 8 hours of evaluating and grading assignments.

Origins II, credit hours, n/a students, total contact hours (lecture hours, non-contact hours), Team taught, Online.

Origins II, credit hours, n/a students, 3 total contact hours (3 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Michael Matott, I taught Peer Instruction 18: Receptors and Signaling, which has 3 lecture hours.

Dr. Markey
Spring 2022

Molecular Biology of the Nucleus, 3 credit hours, 7 students, 7.5 total contact hours (7.5 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, Taught 5 classroom discussions of literature.

Staying Alive, 12 credit hours, 6 students, 24 total contact hours (24 lecture hours, 0 non-contact hours), Classroom course, Course Director: Irina Overman, M.D., Facilitated a group (6 students) throughout the semester.

Fall 2022

Biochemistry Laboratory, 3 credit hours, 9 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory.

Research Perspectives, 1 credit hour, 6 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Taught section about my research.

Research Perspectives, 1 credit hour, 6 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Taught section about my research.

Origins, 9 credit hours, 132 students, 9 total contact hours (9 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, Michael Matot, Taught Peer Instruction and Team Based Learning sessions on cancer.

Beginning to End, 12 credit hours, 6 students, 24 total contact hours (24 lecture hours, 0 non-contact hours), Classroom course, Course Director: Irina Overman, Taught a section of medical students through Wright.

Balance Control and Repair, 12 credit hours, 6 students, 24 total contact hours (24 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Irina Overman, Taught using Wright.

Dr. Paliy
Spring 2022

Biochemistry II, 3 credit hours, 32 students, 10 total contact hours (8 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Chad Campbell, Taught section on lipid metabolism.

Human Microbiome, 3 credit hours, 15 students, 42 total contact hours (39 lecture hours, 3 non-contact hours), Classroom course, Course Director: Oleg Paliy, Elective course on human microbiota.

Biochemistry Research, 1 credit hour, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Biochemistry Research, 3 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation research, 6 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Summer 2022

Biochemistry Research, 1 credit hour, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Biochemistry Research, 4 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Undergraduate Research, 6 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Dissertation research, 6 credit hours, 1 student, total contact hours (lecture hours, non-contact hours), Laboratory.

Fall 2022

Freshman Seminar, 1 credit hour, 27 students, 2 total contact hours (2 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Chad Campbell, Guided discussion in 2 class sessions.

Career Planning, 1 credit hour, 5 students, 4 total contact hours (4 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Chad Campbell, Guided discussion in 4 class sessions.

Research Perspectives, 1 credit hour, 4 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, Described research in my laboratory and recent publication. Cross-listed with the BMB 6020 class.

Molecular Signaling, 3 credit hours, 4 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.

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

Dr. Ren

Spring 2022

Molecular Biochemistry II, 6 credit hours, 11 students, 8 total contact hours (6 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I taught metabolic syndrome, lipids, fatty acid, triglycerides and phospholipid biosynthesis.

Medical Biochemistry, 3 credit hours, 11 students, 9 total contact hours (6 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I taught muscle disorders and heart disease.

Molecular Bio of the Nucleus, 3 credit hours, 7 students, 3 total contact hours (3 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, I taught transcriptional regulation of brown adipocyte development and function.

Summer 2022

BSoM Origins 1 TBL-6, 3 credit hours, 135 students, 9 total contact hours (9 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, I taught metabolic syndrome section, TBL5. I also taught as a substitute teacher for PI8 and TBL3.

Fall 2022

Research Perspective, 1 credit hour, 6 students, 1 total contact hours (1 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Weiwen Long, I taught 1 lectures hour for this course.

Freshman seminar in BMB, 5 credit hours, 27 students, 5 total contact hours (5 lecture hours, 0 non-contact hours), Team taught, Classroom course, Course Director: Chad, I taught 5 lectures.

Molecular Signaling, 3 credit hours, 4 students, 7 total contact hours (6 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: I am the course coordinator, I taught all the second messengers and lipid-mediated cell signaling.

Advanced Seminar, 1 credit hour, 11 students, total contact hours (lecture hours, non-contact hours), Seminar.

Dr. Schmidt**Spring 2022**

Fundamental of Biochemistry, 3 credit hours, 25 students, 48 total contact hours (40 lecture hours, 8 non-contact hours), Classroom course, Course Director: Michael Schmidt, Course Director and only faculty teaching in the course.

Medical Biochemistry, 3 credit hours, 11 students, 29 total contact hours (19 lecture hours, 10 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I was the course director and taught the majority of the class.

Molecular Biochemistry II, 3 credit hours, 1 student, 22 total contact hours (19 lecture hours, 3 non-contact hours), Team taught, Classroom course, Course Director: Michael Schmidt, I was the course director and taught and had 22 contact hrs.

Wright Q First Year, credit hours, 6 students, 25 total contact hours (24 lecture hours, 1 non-contact hours), Team taught, Classroom course, Course Director: Amanda Bell, I was trained and conducted Wright sessions.

Summer 2022

Fundamentals of Biochemistry A, 3 credit hours, 23 students, total contact hours (lecture hours, non-contact hours), Online.

Fundamentals of Biochemistry B, 3 credit hours, 11 students, total contact hours (lecture hours, non-contact hours), Online.

Fall 2022

Biochem Lab, 3 credit hours, 9 students, total contact hours (lecture hours, non-contact hours), Team taught, Laboratory.

Fundamentals of Biochemistry, 3 credit hours, 18 students, 48 total contact hours (40 lecture hours, 8 non-contact hours), Classroom course, Course Director: Michael Schmidt, I was the course director and taught the entire course.

Fundamentals of Biochemistry (graduate), 3 credit hours, 4 students, 48 total contact hours (40 lecture hours, 8 non-contact hours), Classroom course, Course Director: Michael Schmidt, I was the course director and taught the entire course.

Molecular Biochemistry 1, 3 credit hours, 18 students, 23 total contact hours (19 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: Michael Leffak, I taught the first half of this course. Covering the introductory information along with the material about proteins and enzymes.

Origins, credit hours, 130 students, 40 total contact hours (36 lecture hours, 4 non-contact hours), Team taught, Classroom course, Course Director: John Paietta, I was responsible for the first 4 weeks of the course.

Wright Year 2, credit hours, 6 students, 28 total contact hours (26 lecture hours, 2 non-contact hours), Team taught, Classroom course, Course Director: N/A, I was a facilitator for year 2 students.

5 Scholarly Activity

Extramural awards– Active during 2022

Dr. Kadakia

Universal Energy Systems Inc., iGEM competition, 2022-2023. ““BIOBESTD- Biotechnology Outreach Bolstered through Education in STEM and Development”. PI, M Kadakia. \$146,850.

Office of Naval Research, 9/1/2016-8/31/2023. “Precision High-Intensity Training through Epigenetics. PI, T Broderick, co-PI, M Kadakia., Total award, \$1,425,000.

Dr. Leffak

NIH NIGMS R01, 2017-2022, “Mechanisms of Replication-dependent microsatellite instability in human disease”. PI, IM Leffak.

Dr. Long

American Lung Association Discovery Award, LCD-823839, 2021-2023. “Role of FBXL16 in lung adenocarcinomas with activating KRAS mutations. PI, W Long, Total Award, \$100,000.

Dr. Markey

Central State University, 2022. “Third-generation direct sequencing of mRNA in Bees, part 2”. Co-Investigator, M Markey. Total award, \$15,804.

Central State University, 2022-2024. "Direct RNA sequencing of 6 ant samples (queen vs. male caste)". Co-Investigator, M. Markey. Total award, \$12, 930.

Dr. Ren

NIH, NIAMS, 1R01 AR077574-01A1. 7/1/2021-5/31/2026. "The role of lipin1 in myofiber stability and integrity. PI, H Ren. Total Award, \$1,845,694.

DoD, GRANT13252432, 8/15/2021-12/30/2024. "Lipin1 improves dystrophic pathology and muscle function. PI, H. Ren. Total award, \$525,000.

Dr. Schmidt

USDA Cooperative Agreement 58-3064-2-002. 7/1/2022-6/30/2024. WSU PI, M. Schmidt. Total award, \$50,000.

PUBLICATIONS

Papers in refereed journals

Dr. Leffak

Rider SD Jr, Gadgil RY, Hitch DC, Damewood FJ 4th, Zavada N, Shanahan M, Alhawach V, Shrestha R, Shin-Ya K, Leffak M. Stable G-quadruplex DNA structures promote replication-dependent genome instability. *J Biol Chem*. 2022 Jun;298(6):101947. doi: 10.1016/j.jbc.2022.101947. Epub 2022 Apr 18. PMID: 35447109; PMCID: PMC9142560.

Dr. Long

Vallabhaneni S, Liu J, Morel M, Wang J, DeMayo FJ, Long W. Conditional ERK3 overexpression cooperates with PTEN deletion to promote lung adenocarcinoma formation in mice. *Mol Oncol*. 2022 Mar;16(5):1184-1199. doi: 10.1002/1878-0261.13132. Epub 2021 Dec 14. PMID: 34719109; PMCID: PMC8895443.

Dr. Markey

Dufour JS, Reiter A, Cox C, Weston EB, Markey M, Turner A, Le P, Aurand AM, Simmons S, Altman L, Mageswaran P, Davis K, Huber D, Bhattacharya A, Marras WS. Motion sickness decreases low back function and changes gene expression in military aircrew. *Clin Biomech (Bristol, Avon)*. 2022 Jun;96:105671. doi: 10.1016/j.clinbiomech.2022.105671. Epub 2022 May 15. PMID: 35594783.

Dr. Paliy

Rajakaruna S, Pérez-Burillo S, Kramer DL, Rufián-Henares JÁ, Paliy O. Dietary Melanoidins from Biscuits and Bread Crust Alter the Structure and Short-Chain Fatty Acid Production of Human Gut Microbiota. *Microorganisms*. 2022 Jun 22;10(7):1268. doi: 10.3390/microorganisms10071268. PMID: 35888986; PMCID: PMC9323165.

Perez-Burillo S, Rajakaruna S, Paliy O. Growth of *Bifidobacterium* species is inhibited by free fatty acids and bile salts but not by glycerides. *AIMS Microbiol*. 2022 Mar 10;8(1):53-60. doi: 10.3934/microbiol.2022005. PMID: 35496991; PMCID: PMC8995189.

L.M. Ketelboeter, A. Gordon, S.U. Welmillage, V. S. Sreevidya, O. Paliy and P. Gyaneshwar, 'Transcriptomic and physiological responses of Rhizobium sp. IRBG74 to Sesbania cannabina and Rice (Oryza sativa L) rhizosphere', Plant Soil, 1-18.

Abstracts, posters, and presentations

Dr. Cho

Rehl K, Kuppuswamy S, Cho K-J, Identifying Ferrocene as a novel K-Ras inhibitor, FASEB, Regulation of small GTPases, Saxton River, Vermont 6/12/2022 - 6/17/2022 (Poster).

Dr. Craig

M.P. Craig, J. Zhang and M. Kadakia, Differential MicroRNA Biomarker Expression in Response to Moderate and High Intensity Exercise Regimen, BMB Brown Bag, WSU - (Platform).

Dr. Leffak

Gadgil, R.Y., Rider, S.D., Alhawach, V., Hitch, D., Leffak, Break-induced Replication at Microsatellite Repeats, Dynamic DNA Structures, Halifax, Nova Scotia, Canada - (Platform).

Dr. Long

Amanda Myers, Katherine A Hoffmann, Stephen H Gee and Weiwen Long. DGK ζ interacts with ERK3 and counteracts the promoting role of ERK3 in lung cancer migration, ASBMB Annual meeting, Philadelphia, PA 04/02/2022 - 04/05/2022 (Poster).

Marion Morel, Madison Alexander and Weiwen Long. The F-box protein FBXL16 upregulates IRS1 signaling in lung adenocarcinomas with KRAS mutation, American Association for Cancer Research, New Orleans, LA 04/08/2022 - 04/13/2022 (Poster).

Dr. Markey

M Markey, Direct Sequencing of RNA at the WSU Center for Genomics Research, Wright Brothers Day, Dayton, OH 10/5/2022 - 10/5/2022 (Poster).

Dr. Paliy

B. Bandow and O. Paliy, Gut Biota and Health, Wright Brothers Innovation Day, Dayton, OH, USA 10/5/2022 - 10/5/2022 (Poster).

Dr. Ren

Kamau JK, Ren H., Cardiomyopathy characterization of the mdx: lipin1 transgenic mice model., Annual BSOM Research Symposium, Wright State University - (Poster).

Alexandra Brown, Rakoczy RJ, Wyatt CN, Ren H., Effects of Lipin1 Deficiency and Overexpression in the Dystrophic Diaphragm, Annual BSOM Research Symposium, Wright State University - (Poster).

Hongmei Ren, Exploring the role of lipin1 in dystrophic pathology and muscle function., Department of Pharmacology and Toxicology, Wright State University - (Platform).

Ibrahim A. Alkhomsy, Brooklyn Morris, Hongmei Ren, Generating heart specific lipin-1 deficient mouse model, BSOM Research Symposium, Wright State University – (Poster).

Kya Dukes, Ibrahim Alkoms, Hongmei Ren., Generating heart specific lipin-1 deficient mouse model, Research Symposium of AHA Scholars Program at Historically Black Colleges and Universities., Nashville Marriott at Vanderbilt University - (Poster).

Abdullah Alshudukhi, Hongmei Ren, Lipin1 ameliorates dystrophic phenotypes in mdx mice via enhancing membrane integrity, Annual BSOM Research Symposium, Wright State University - (Poster).

Hongmei Ren, Lipin1: a promising target for the treatment of Duchenne muscular dystrophy, Department of Biological Sciences, Wright State University - (Platform).

Abdullah Alshudukhi, Abdulrahman Jama, Hongmei Ren, Moderate exercise ameliorates myopathic phenotypes in muscle specific lipin1 deficient mice, New Directions in Biology and Disease of Skeletal Muscle Conference, Ft. Lauderdale, FL - (Poster).

Abdulrahman Jama, Abdullah Alshudukhi, Steve Burke, Andrew Voss, Hongmei Ren, The Role of Lipin1 in Skeletal Muscle of MDX mice, New Directions in Biology and Disease of Skeletal Muscle Conference, Ft. Lauderdale, FL - (Poster).

Abdulrahman Jama, Hongmei Ren, The role of lipin1 in skeletal muscle of mdx mice. , Annual BSOM Research Symposium, Wright State University - (Poster).

Lectures

Dr. Leffak

Microsatellite Instability, BMB department seminar, WSU, 4/14/2022.

Dr. Ren

Exploring the role of lipin1 in dystrophic pathology and muscle function., Department of Pharmacology and Toxicology, Wright State University, 12/26/2022.

Lipin1: a promising target for the treatment of Duchenne muscular dystrophy, Department of Biological Sciences, Wright State University, 09/12/2022.

Consultantships

Dr. Markey

Dayton Crime Lab, Dayton, OH

Discussions about performing human forensic testing at WSU. The work, I believe, ultimately went to the state crime lab.

Neurostat Analytical Solutions, Great Falls, VA

Discussions about state of one of their grant submissions, in progress. Already lead to a grant submission in 2022.

Community Tissue Services, Dayton, OH

Discussions of technical nature regarding DNA work. Already lead to contract work for CGR in 2022.

Laboratory of Amit Singh, University of Dayton
Helped with flow cytometry. Brought external funds and new users to CGR.

Dr. Paliy

Uprising Foods

Consulted on the gut microbiota participation in the degradation of consumed foods

6

Summary of Service Activities

Committee Membership/Officer

BMB Committee Service

Dr. Campbell

BMB, 4+1 committee

BMB, BMB Curriculum Committee - Chair

BMB, BMB Undergraduate Oversight Committee

BMB, Departmental Honors Committee - Chair

BMB, Program Assessment Committee - Chair

Dr. Cho

BMB, Thesis Committee Member, Master's committee meeting for Matilyn Shanahan

BMB, Thesis Committee Director, Master's committee meeting for Parisa Sadrpour

BMB, Admission Committee for BMB Master's Program

Dr. Craig

BMB, Thesis Committee Member, Kourtney Sprague, M.S. Committee Member

BMB, Thesis Committee Member, Shreya Akunapuram, M.S. Committee Member

Dr. Leffak

BMB, Thesis Committee Member, A. Brown thesis committee

BMB, Thesis Committee Member, P. Sadrpour thesis committee

BMB, Thesis Committee, M. Shanahan thesis committee

BMB, Thesis Committee, N. Zavada thesis committee

BMB, BMB Education Committee

BMB, BMB Faculty Development Committee

Dr. Long

BMB, BMB Education committee

BMB, BMB P & T committee

Dr. Markey

BMB, Thesis Committee Member, Ayat Azzam MS Committee

BMB, Thesis Committee Member, Monica Christian M.S. Committee

BMB, Thesis Committee Director, Nehaal Patrick MS Committee

Dr. Paliy

BMB, BMB FDC committee

Dr. Ren

BMB, Master's student recruitment committee

BSOM Committee Service

Dr. Leffak

BSOM, BSoM Research Committee

BSOM, BSoM Strategic Planning Committee

Dr. Long

BSOM, BSOM Strategic Planning Research Committee

BSOM, Executive committee

Dr. Ren

BSOM, Thesis Committee Member, Nominating Committee

Dr. Schmidt

BSOM, Center for Faculty Excellence

BSOM, FCC Foundations Subcommittee Review

BSOM, Graduate Curriculum Committee

Science and Math Committee Service

Dr. Campbell

Science and Math, ASK Scholarship Committee

Science and Math, College of Science and Math Undergraduate Curriculum Committee - Chair

Science and Math, CoSM Steering Committee

Science and Math, Interdisciplinary Program Committee (Ad Hoc) - Chair

Science and Math, Retention Committee

Dr. Cho

IT committee for CoSM, member

Dr. Leffak

Science and Math, CoSM Promotion and Tenure Committee

Science and Math, CoSM Scholarship Committee

Science and Math, Dean Search Committee

Dr. Long

Science and Math, COSM Academic Mediation Committee member

Science and Math, CoSM Graduate Studies Committee

Dr. Ren

Science and Math, CoSM Petition Committee Member

Science and Math, Mentor of Brooklyn Morris for ASK program

Science and Math, Mentor of Raquel Woten for LSAMP program

BMS Committee Service

Dr. Cho

BMS, Thesis Committee Member, PhD Preliminary Exam for Resha Shrestha

Dr. Leffak

BMS, Thesis Committee Member, A. Myers thesis committee
BMS, Thesis Committee Member, C. Alex-Buckner thesis committee
BMS, Thesis Committee Member, D. Miranda thesis committee
BMS, Thesis Committee Member, J. Abdulrhaman thesis committee
BMS, Thesis Committee Member, J. Kamau thesis committee
BMS, Thesis Committee Member, K. Rehl thesis committee
BMS, Thesis Committee Member, M. Ward thesis committee
BMS, Thesis Committee Member, M. Ward thesis committee
BMS, Thesis Committee Member, S. Bhadra thesis committee
BMS, Thesis Committee Member, W. Cvammen thesis committee
BMS, Thesis Committee Director, R.Y. Gadgil thesis committee
BMS, Thesis Committee Director, V. Alhawach thesis committee

Dr. Long

BMS, BMS curriculum committee, elected.

Dr. Markey

BMS, Thesis Committee Member, Akshay Hira Ph.D. Committee
BMS, Thesis Committee Member, Clayton Alex-Bruckner Ph.D. Committee
BMS, Thesis Committee Member, John Miller Ph.D. Committee
BMS, Thesis Committee Member, Restha Shrestha Ph.D. committee
BMS, Thesis Committee Member, Venicia Hawach Ph.D. Committee
BMS, Thesis Committee Member, William Cvammen Ph.D. Committee
BMS, BMS Admissions Committee (Chair)
BMS, BMS Nominating Committee

Dr. Ren

BMS, Thesis Committee Member, Nominating Committee

Wright State University Committee Service

Dr. Campbell

2022 Faculty Success Symposium (Fall), contributed organizer

Dr. Long

Wright State University, IACUC member

Dr. Paliy

Wright State University, WSU Institutional Biosafety committee

Student Research Committee Committee Service

Dr. Long

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

Miliben Anandbhai Bhakta (BMS representative), Ph.D. student, Pharmacology and Toxicology
John Kamau, Ph.D. student, BMB
Christopher A. Waker, BMS PhD student, NCBP
Melissa J. Ward (BMS representative), BMS PhD student, Biology
Rujuta Yashodhan Gadgil, PhD student, BMB
Jananie Rockwood, PhD student, BCBP
Abdulrahman Jama, PhD student, BMB
Abdullah Ali Alshudukhi (BMS representative), PhD student, BMB.
Akshay Hira, PhD student, BMB
Abdullah Alatawi, MS. student, BMB
Alexandra Sue Brown, MS. student, BMB
Ayat Azzam, MS. student, BMB
Matilyn Shanahan, BS/MS. student, BM

Dr. Paliy

Student Research Committee, Thesis Committee Director, BMB MSc thesis co-director for:
Monica Christian
Student Research Committee, Thesis Committee Director, BMB MSc thesis director for: Brant
Bandow
Student Research Committee, Thesis Committee Director, BMB MSc thesis director for:
Kourtney Sprague
Student Research Committee, Thesis Committee Director, ES PhD thesis director for: Sumudu
Rajakaruna

Dr. Ren

Student Research Committee, Committee member in Birendra Sharma's PhD Dissertation
Committee
Student Research Committee, Member in Anthony Milard Young's PhD Dissertation Committee
Student Research Committee, Member in Breonna Gillespie's Master's Dissertation Committee
Student Research Committee, Member in Jananie Rockwood's PhD Dissertation Committee
Student Research Committee, Member in Kourtney Lee Sprague's Master's Dissertation
Committee
Student Research Committee, Member in Krushangi Nirav Shah's PhD Dissertation Committee
Student Research Committee, Member in Parisa Sadrpour's Master's Dissertation Committee
Student Research Committee, Mentor in Abdullah A Alshudukhi's PhD Dissertation Committee
Student Research Committee, Mentor in Abdulrahman Jama 's PhD Dissertation Committee
Student Research Committee, Mentor in Alexandra Sue Brown's Master's Dissertation
Committee
Student Research Committee, Mentor in Ayat Azzam's Master's Dissertation Committee
Student Research Committee, Mentor in John Karanja Kamau 's PhD Dissertation Committee

Other Committee Service

Dr. Campbell

Other, Sinclair Biotech Advisory Board

Dr. Paliy

Other, M&I Master's Program Admission Committee

Dr. Ren

Other, Mentor for AHA Historically Black Colleges and Universities (HBCU) Scholars Program

Grant and Manuscript Review

Grant Proposal, Ad Hoc Reviewer

Dr. Leffak, Cancer Research UK (1)
Dr. Leffak, NIH MG study section (1)
Dr. Ren, NIH SMEP study section (9)

Journal Manuscript, Ad Hoc Reviewer

Dr. Campbell, Cell Biology Education (CBE) Lifesciences (5)
Dr. Campbell, Journal of Research in Science Teaching (JRST) (2)
Dr. Cho, British Journal of Cancer (1)
Dr. Leffak, Nucl. Acids Res. (2)
Dr. Long, Journal of Cellular Physiology (1)
Dr. Long, Molecular Oncology (2)
Dr. Long, Nature Communications (1)
Dr. Long, Skin Research and Technology (1)
Dr. Markey, Biomedicines (1)
Dr. Markey, Cancers (1)
Dr. Markey, International Journal of Molecular Science (1)
Dr. Markey, Viruses (1)
Dr. Paliy, Frontiers Medicine (1)
Dr. Paliy, International Journal for Vitamin and Nutrition Research (1)
Dr. Paliy, Journal of Nutritional Biochemistry (1)
Dr. Ren, Advanced Science (1)
Dr. Ren, Cell & Bioscience (1)
Dr. Ren, Epigenetics (1)
Dr. Ren, Experimental Biology and Medicine (1)
Dr. Ren, Journal of Advances in Medicine and Medical Research (1)
Dr. Ren, Mitochondrion (1)
Dr. Ren, Molecular Medicine (1)
Dr. Ren, PLOS ONE (1)
Dr. Ren, The Journal of Physiology (1)

Journal Manuscript, As member of editorial board

Dr. Leffak, J. Biol. Chem. (8)
Dr. Long, Cancer Drug Resistance (1)
Dr. Paliy, Microorganisms (4)
Dr. Paliy, Scientific Reports (1)

Journal Manuscript, Other

Dr. Long, Frontiers in Oncology (1)

Other, Ad Hoc Reviewer

Dr. Cho, External referee for Doctoral thesis (1)

Other, Other

Dr. Paliy, Princeton University Press (1)

Personnel

M. S. Student

Dr. Long

Shreya Akunapuram, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

Dr. Markey

Nehaal Patrick, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

Dr. Paliy

Brant Barlow, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

Kourtney Sprague, Faculty role: Thesis/Dissertation Director, Thesis Title: Reconstruction of gut microbiome via intermittent fasting This student graduated this year. They are now University of Cincinnati PhD program,

Dr. Ren

Alexandra Brown, Faculty role: Thesis/Dissertation Director, Thesis Title: Effects of Lipin1 Deficiency and Restoration in the Dystrophic Diaphragm This student graduated this year. They are now Research Associate in my lab,

Ayat Azzam, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

Medical Student

Dr. Markey

Tongfan (Tia) Wu, Lab participation: 2,

Dr. Paliy

Katherine Ji, Lab participation: 8h/week,

Other

Dr. Leffak

Matilyn Shanahan, Part Time (15%) undergraduate student, undergraduate student

Nathen Zavada, Part Time (15%) undergraduate student, undergraduate student

Ph.D. Student

Resha Shrestha, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

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

Venicia Alhawach, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

Dr. Long

Amanda Myers, Faculty role: Thesis/Dissertation Director, Thesis Title: Title: ERK3 AND DGK ζ INTERACT TO MODULATE CELL MOTILITY IN LUNG CANCER CELL This student graduated this year. They are now She is working in Medpace, Cincinnati.,

Krushangi Shah, Faculty role: Thesis/Dissertation Director, Thesis Title: FBXL16 PROMOTES BREAST CANCER CELL GROWTH AND DIMINISHES FULVESTRANT RESPONSIVENESS BY STABILIZING ER α PROTEIN This student graduated this year. They are now She is working in Metagenomi, Emeryville, C,

Dr. Paliy

Sumudu Rajakaruna, Faculty role: Thesis/Dissertation Director, Thesis Title: Modulation of human gut microbiota through dietary associations This student graduated this year. They are now University of Arizona,

Dr. Ren

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

Abdulrahman Jama, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

John Kamau, Faculty role: Thesis/Dissertation Director, this student did not graduate this year.

Post Doctorate**Dr. Leffak**

S. Dean Rider, Part Time (87.5%) Research Assistant Professor

Dr. Long

Marion Morel, Full Time

Undergraduate**Dr. Craig**

Alexandria Baughman, Lab participation: 5-10 hours per week, this student is an Honors student. Completed research during Summer 2022 on course iGEM Stipend (0 credit hours).

Emma Tetlak, Lab participation: 2 hours per week, this student is a STEM student. Completed research during Summer 2022 on course iGEM stipend (0 credit hours).

Jaidan Peters, Lab participation: 20 hours per week from March through October 2022, this student is a STEM student. Completed research during Summer 2022 on course iGEM stipend (0 credit hours).

Jeremy Rismiller, Lab participation: 5-10 hours per week, this student is a STEM student. Completed research during Summer 2022 on course iGEM Stipend (0 credit hours).

Madeline Gruenberg, Lab participation: 25 hours per week, this student is a STEM student. Completed research during Summer 2022 on course iGEM Stipend (0 credit hours).

Megan King, Lab participation: 20 hours per week from May through August, this student is a STEM student. Completed research during Summer 2022 on course iGEM stipend (0 credit hours).

Natasha Kennel, Lab participation: 25 hours per week, this student is a STEM student. Completed research during Summer 2022 on course iGEM Stipend (0 credit hours).

Sara McClain, Lab participation: 5 hours per week, this student is a STEM student. Completed research during Summer 2022 on course iGEM Stipend (0 credit hours).

Dr. Paliy

Gary Kash, Lab participation: 12h per week, this student is a STEM student. Did not complete any undergraduate research.

Dr. Ren

Brooklyn Morris, Lab participation: 8h/week for 16 weeks., This student is a STEM student. Did not complete any undergraduate research.

Joseph Warren, Lab participation: 8h/week for 16 weeks., This student is a STEM student. Did not complete any undergraduate research.

Raquel Woten, Lab participation: 8h/week for 16 weeks., This student is a STEM student. Did not complete any undergraduate research.

Visiting Researcher

Dr. Leffak

David Hitch,

7

Patient Care Summary

[If applicable. Include number of ambulatory visits, hospitalizations, surgeries, new techniques or programs developed; new collaborations.]

Not applicable.

8

Honors and awards [Faculty or staff]

Honors and Awards

Dr. Markey

Certificate in virtual teaching, Independently Applying the QM Rubric – Virtual (APPQMR): (Statewide Systems) 2022

Dr. Paliy

World Learning Fulbright Specialist
received by Dr. Paliy.

World Learning Fulbright Scholar
received by Dr. Paliy.

Dr. Ren

Experimental Biology and Medicine outstanding reviewer award
received by Dr. Ren.

Outreach programs**Dr. Markey**

Lebanon High School Career Experience Class
12/10/2022

This program is located at Lebanon High School, Lebanon, O.

Special interest programs

ABRF Virtual Seminar Series: Curio Bioscience - Overview of Curio Seeker
12/7/2022

This program is located at Online.

ABRF Online Workshop - The Future Forward in Flow Cytometry
12/6/2022

This program is located at Online.

COSM Creating Program Learning Outcome
1/21/2022

This program is located at WSU.

PIPSeg single-cell RNA sequencing
7/5/2022

This program is located at Online.

Nanopore Community Meeting 2022
12/5/2022-12/7/2022

This program is located at Online.

Quality Matters Workshop
2/16/2022

This program is located at WSU.

9

Hosted events [CME, etc.]

Not applicable.

10

Other information

[Other information that represents your department's contribution to the academic mission of the Boonshoft School of Medicine.]

Not applicable.