

ANNUAL RESEARCH REPORT

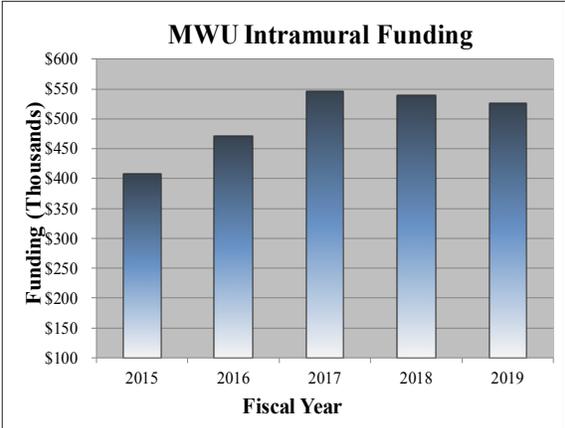
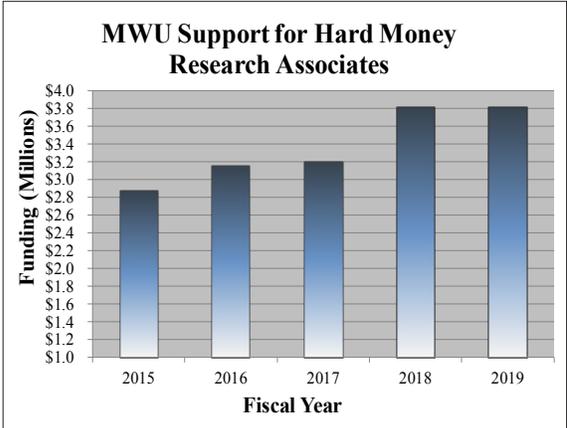
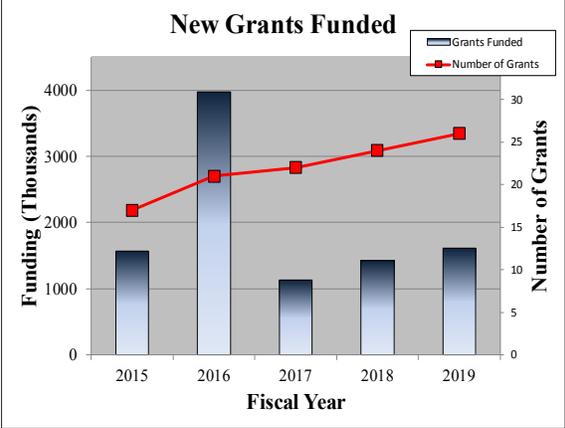
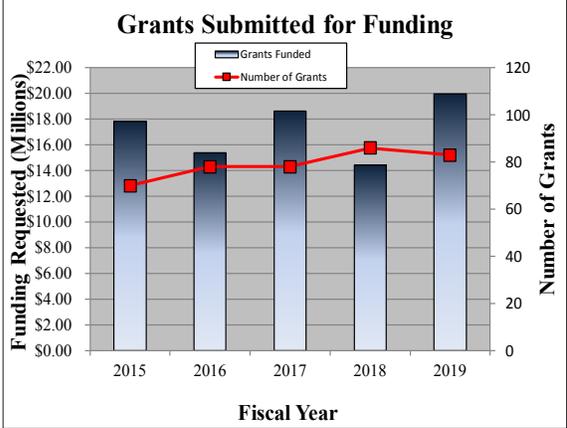
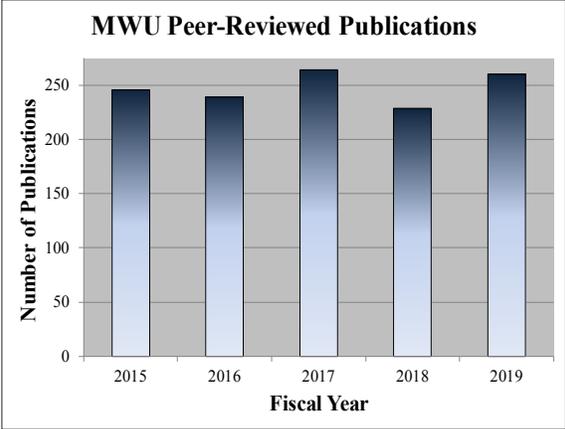
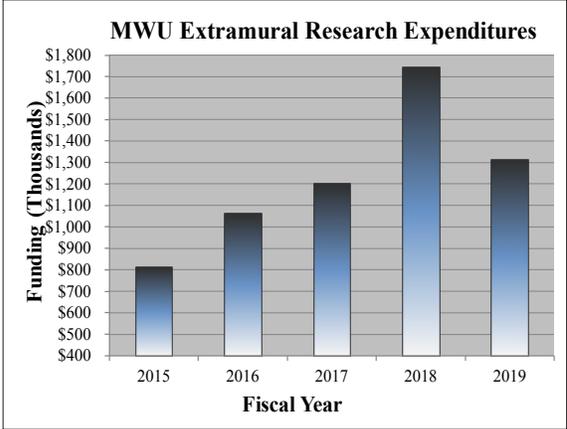
TOGETHER, WE'LL GUIDE THE FUTURE OF TOMORROW'S HEALTH CARE.

OFFICE OF RESEARCH AND SPONSORED PROGRAMS

July 1, 2018 - June 30, 2019

Historical Research Support and Activity Data

The Midwestern University (MWU) *Annual Research Report* demonstrates research achievements of which members of the MWU community should be proud. As you will see inside this report, support for research at MWU is growing. The graphs below show historical data over the last five years, highlighting MWU's research activity and support. THANK YOU to all of MWU's faculty members, research staff and students whose efforts have consistently strengthened MWU's research programs.



Theresa W. Fossum, DVM, PhD
Vice President of Research & Strategic Initiatives



James M. Woods, PhD
Director, Office of Research & Sponsored Programs

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Fast Research Facts 2018 - 2019

Support for Faculty Research

- All Midwestern University (MWU) faculty are in 100% “hard money” (university-funded) positions, where they are encouraged, but not depended upon bringing in extramural funding;
- Recaptured Salary Incentive: Faculty who receive grants which support “hard money” salary positions can earn “additional compensation;”
 - MWU faculty were eligible for \$39,598 in such incentives during FY 2019;
- MWU provides “hard money” research technicians for faculty, including 57.3 Full Time Equivalent funded at \$3,816,165 for FY 2019;
- New faculty are provided start-up packages;
- Faculty can request capital research equipment through the university;
 - MWU purchased \$1,305,835 in capital research equipment during FY 2019;
 - Each campus requested and received a new confocal microscope within FY 2013 or FY 2014;
- Competitive intramural funding is available for faculty who actively seek extramural funding, including \$525,477 awarded in FY 2019;

Support for Student Research

- MWU makes a significant commitment to student research, demonstrated through the awarding of 105 fellowships at a total cost of \$473,600 in research stipends in FY 2019;
- MWU’s Research Days, held on each campus, had a total of 325 presentations in 2019 where almost all of these were by students engaged in research;
- MWU pays for high-quality poster printing costs for its students and faculty, including support of \$27,688 for printing research posters through the ORSP in FY 2019;
- MWU supports students to travel and present their research, including up to \$500 of support for first author students who have an abstract accepted at a national meeting: \$35,810 in FY 2019

Funding Success

- MWU’s extramural research expenditures during FY 2019 totaled \$1,310,110;
- MWU faculty have received more than 50 NIH grants through 2019, the majority of which have been R15 awards, but also include
 - several R01, R21 and R03 awards;
 - NSF & HRSA Grants
 - Foundation Grants: American Heart Association, American Optometric Foundation, Leakey Foundation, Alzheimer’s Drug Discovery Foundation, National Association of Chain Drug Stores, Pharmaceutical Research & Manufacturers of America Foundation, etc.
 - For-profit grants: Allegra Therapeutics, Merck, Nevakar, Hiossen, Sangart, etc.

Office of Research & Sponsored Programs (ORSP)

- MWU's ORSP handles both pre-award and post-award grant and contract submissions, including 83 proposals submitted in FY 2019 requesting \$19,966,233;
- MWU's ORSP offers intramural funds to all colleges, and offers the following full-time positions to support faculty research:
 - A *Grants Specialist* on each campus to assist faculty with grant and budget preparation and submission;
 - *Research Administrators* on each campus to assist MWU's IACUC, IRB, Radiation Safety and Biosafety Committees;
 - A *Manager of Bio/Clinical Statistics* to assist with data management and statistical needs;
 - An *ORSP Assistant Director* and a *Research Compliance Specialist* to help ensure MWU performs research in a manner compliant with federal, state and MWU regulations;
- For faculty involved in animal research who are seeking extramural funding, the ORSP can waive animal per diem charges, including nearly \$331,599 of waived charges in FY 2019;
- In FY 2019, MWU's ORSP offered \$6,550 to support a Research Seminar Series where faculty can bring in experts in their field (departments typically supplement the ORSP honorarium);

Research Facilities

- In 2014 MWU completed Cactus Wren, a new building with research facilities, on our Glendale campus:
 - This building has 11,161 square feet of space dedicated to research;
 - The research-related costs of the building totaled \$10,017,270;
 - This brings the total cost of expenditures for research space on the Glendale campus, including our Foothills, Cholla and Cactus Wren buildings, to \$20,870,255;
 - Our Foothills Building includes a 2,920 square foot animal facility;
- In 2011 MWU completed construction of a new Science Hall on our Downers Grove campus:
 - This provides researchers with 104,789 net assignable square feet dedicated to research;
 - The research-related costs of the building totaled \$56,200,200;
 - This includes a 13,170 square foot animal facility which received full AAALAC accreditation in 2015;
- A new vivarium for animal research is being constructed on the Glendale campus, which will add additional research space for studying rodents, anticipated in FY 2020;

The Bottom Line

- Midwestern University's commitment to building and sustaining a vital research environment is genuine;
- Administrative support for research is very strong, because of a firm belief in the ingenuity of MWU faculty.

MULTIDISCIPLINARY EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Gasiorowski, J. (CHS), Traka, M. (CGS), Joshi, M. (CCP), Gulati, A. (CCP) & Fay, M. (CGS)	CHS, CGS & CCP	Multidisciplinary	MRI: Acquisition of a Transmission Electron Microscope for Multidisciplinary Research and Education at Midwestern University Core Facility	1/22/2019	\$377,625	National Science Foundation	8/1/2019
Kramer, R. (CDMA) & Mifflin, M. (AZCOM)	CDMA & AZCOM	Multidisciplinary	H.O.M.E. Improvement: Enhancing our Dental Impact	9/14/2018	\$25,000	Alliance for a Cavity-Free Future	1/1/2019
Rodriguez Sosa, J. (CGS), Kreisler, R. (CVM) & Tullo, T. (CGS)	CGS & CVM	Multidisciplinary	Effect of Plastic Additives on the Maturation and Function of Canine Testicular Tissue Ectopically Grafted into Immunocompromised Mice	3/13/2019	\$10,793	Morris Animal Foundation	11/1/2019
*Vandenbrooks, J. (CGS), Hernandez, J. (CGS), Quinlan, M. (CGS), Lee, J. (CVM), & Goetz, N. (CVM)	CGS & CVM	Multidisciplinary	Elucidating the Role of <i>Rhipicephalus sanguineus</i> (the Brown Dog Tick) as a Vector for Rocky Mountain Spotted Fever (RMSF) Transmission in Arizona	4/9/2019	\$446,496	Arizona Department of Health Services through the Arizona Biomedical Research Commission	7/1/2019
Woods, C. (IHI) & Murthy, A. (CVM)	IHI & CVM	Multidisciplinary	Fulbright Parabolic Mechanisms	7/10/2018	\$42,939	Operation Angel Bug, LLC	9/20/2018

Total of Multidisciplinary Extramurally-submitted Proposals: \$902,853

ARIZONA COLLEGE OF OPTOMETRY (AZCOPT): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
*Esposito, C.	AZCOPT	Optometry	Measurements of Microsaccades and Fixational Eye Movements in Acquired Brain Injury Patients Pre- and Post-Vision Therapy Utilizing the Tracking Scanning Laser Ophthalmoscope (TSLO)	5/16/2019	\$3,500	College of Optometrists in Vision Development	7/2/2019

Total of AZCOPT Extramurally-submitted Proposals: \$3,500

ARIZONA COLLEGE OF OSTEOPATHIC MEDICINE (AZCOM): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Reeder, S.	AZCOM	Family Medicine	OMM Mini-CEX to Assess Competency in ACGME Residency Programs with Osteopathic Recognition	2/28/2019	\$2,000	AACOM Subcontract from A.T. Still	7/1/2019

Total of AZCOM Extramurally-submitted Proposals: \$2,000

CHICAGO COLLEGE OF OPTOMETRY (CCO): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Rice, S.	CCO	Optometry	Binocular Dig Rush Game Treatment for Amblyopia (ATS20)	8/31/2018	\$23,125	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	9/1/2018
Rice, S.	CCO	Optometry	A Randomized Clinical Trial of Overminus Spectacle Therapy for Intermittent Exotropia (IXT5)	8/31/2018	\$28,500	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	9/1/2018

Total of CCO Extramurally-submitted Proposals: \$51,625

CHICAGO COLLEGE OF OSTEOPATHIC MEDICINE (CCOM): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Serrecchia, F. (Wojcik, C., CCOM '22)	CCOM	OMM	The Prevalence of Otolaryngologic Disorders and Barriers to ENT Care Within the Homeless Population of Chicago	3/8/2019	\$4,000	Arnold Gold Foundation - Student Summer Fellowship	5/18/2019

Total of CCOM Extramurally-submitted Proposals: \$4,000

CHICAGO COLLEGE OF PHARMACY (CCP): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Andurkar, S.	CCP	Pharmaceutical Sciences	Defining the Role of the Endothelin-A Receptor and Beta Arrestin-2 in the Modulation of Morphine Analgesia and Tolerance by BQ123	10/25/2018	\$450,000	NIH-R15 (AREA)	7/1/2019
Briyal, S.	CCP	Pharmaceutical Sciences	Defining the Role of ETB Receptors in Neural Regeneration and Synaptogenesis in Alzheimer's Disease	10/25/2018	\$449,909	NIH-R15 (AREA)	7/1/2019
*Joshi, M.	CCP	Pharmaceutical Sciences	Elucidation of Fetal and Maternal Vancomycin-induced Kidney Injury During Pregnancy	6/25/2019	\$450,000	NIH-R15 (REAP)	4/1/2020
Merker, A.	CCP	Pharmacy Practice	Midwest Integration of the National HIV Curriculum	3/4/2019	\$10,000	HRSA Subcontract from the University of Illinois at Chicago	3/1/2019
Rhodes, N.	CCP	Pharmacy Practice	Implementing Electronic Health Record-based Approaches Paired with Antibiotic Stewardship to Increase Appropriate Antibiotic Prescribing and Improve Outcomes in Community Acquired Pneumonia	1/25/2019	\$2,491,620	Agency for Healthcare Research and Quality (AHRQ) with Subcontracts to Northwestern University and Northwestern Memorial Healthcare	9/1/2019
Scheetz, M.	CCP	Pharmacy Practice	Patient-oriented Research on <i>Pseudomonas aeruginosa</i>	7/12/2018	\$45,285	NIH-K24 Subcontract from Northwestern University	4/1/2019

CCP: EXTRAMURALLY-SUBMITTED PROPOSALS (Continued)

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Scheetz, M.	CCP	Pharmacy Practice	Defining the Blood Brain Barrier Transit of Cefepime/AAI101 in a Sprague Dawley Rat Model	8/31/2018	\$15,075	Allegra Therapeutics	8/31/2018
Scheetz, M.	CCP	Pharmacy Practice	Nano Antibiotics for Treating MRSA with High Efficacy and Safety	10/5/2018	\$225,000	NIH-R01 Subcontract from Wayne State University	7/1/2019
Scheetz, M.	CCP	Pharmacy Practice	Severe Pneumonia Antibiotic Resistance Network (SPARK)	11/14/2018	\$194,894	NIH-UM1 Subcontract from Northwestern University	12/1/2019
Scheetz, M.	CCP	Pharmacy Practice	Quantifying Renal Injury Among the Most Commonly Used Clinical Antibiotic Combinations	2/16/2019	\$412,500	NIH-R21	9/1/2019
Scheetz, M.	CCP	Pharmacy Practice	Patient-Oriented Research on <i>Pseudomonas aeruginosa</i>	3/12/2019	\$39,760	NIH-K24	12/1/2019
*Scheetz, M.	CCP	Pharmacy Practice	Micafungin PK in ECMO	4/19/2019	\$20,329	Northwestern Medicine Transplant Innovation Endowment Subcontract from Northwestern University	9/1/2019
*Scheetz, M.	CCP	Pharmacy Practice	Nano Antibiotic Delivery for Treating MRSA Infections	6/5/2019	\$225,000	NIH-R01 Subcontract from Wayne State University	4/1/2020

Total of CCP Extramurally-submitted Proposals: \$5,029,372

COLLEGE OF DENTAL MEDICINE ARIZONA (CDMA): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Kramer, R. & Brownstein, S.	CDMA	Dental Medicine	Operation Smiles for Veterans	10/11/2018	\$50,000	Delta Dental of Arizona Foundation	3/1/2019
Mitchell, J.	CDMA	Dental Medicine	Development of a Pressurized Water-based Cutting Solution for Removal of Carious Lesions	7/19/2018	\$74,000	National Science Foundation Subcontract from Dentavations, Inc.	12/1/2018
Mitchell, J.	CDMA	Dental Medicine	The Effects of a One-step Oxidative Etching Process on Cell Differentiation, Proliferation and Attachment Compared to Conventional Micro- and Nano-scale Topography of Titanium Implants	12/14/2018	\$5,000 (Value of)	Institut Straumann AG	12/14/2018
Pierre-Bez, A. (Kerr, M., CDMA '21)	CDMA	Dental Medicine	Stain Susceptibility of Composite CAD/CAM Blocks and Direct Composite Resin	1/18/2019	\$2,100	American Association for Dental Research - Student Research Fellowship	3/1/2019

Total of CDMA Extramurally-submitted Proposals: \$131,100

COLLEGE OF GRADUATE STUDIES (CGS): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
*Al-Nakkash, L., Broderick, T. & Shim, M.	CGS	Physiology & Biochemistry	Diabetic Obesity Results in Cognitive Impairment: Evaluation of the Relationship Between Inflammation and Senescence in the Gut-Brain Axis, and the Response to Exercise and Genistein Treatment	4/19/2019	\$24,896 (Includes a \$12,448 match from MWU)	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2019
*Bae, N. & Swanson, M.	CGS	Biochemistry	Studies on the Effects of the Telomere Protection RAP1 and the Epsilon Isoform of Glial Fibrillary Acidic Protein on Amyloid Peptides Produced by Gamma-secretase	4/19/2019	\$6,219 (Includes a \$3,109 match from MWU)	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2019
Buhlman, L.	CGS	Biomedical Sciences	Assessing the Ability of a Complex I Modulator to Improve the Parkin Loss-of-function Phenotype in a Drosophila Model of Parkinson's Disease	9/14/2018	\$172,978	Boehringer Ingelheim	2/1/2019
*Ellermeier, J.	CGS	Microbiology & Immunology	Genetic Regulation of the Twin Translocation System in <i>Salmonella enterica</i> serovar Typhimurium	4/30/2019	\$150,000	NIH-R03 Transfer from Southeast Missouri State University	6/17/2019
Fay, M.	CGS	Biomedical Sciences	MicroRNA Dysregulation and Function During Cadmium-induced Nephrotoxicity	10/25/2018	\$448,901	NIH-R15 (AREA)	7/1/2019
Griffin, M.	CGS	Biochemistry	Transcriptional Regulation of Adipocyte Inflammation by Early B-Cell Factor-1 (Ebf1)	10/24/2018	\$447,500	NIH-R15 (AREA)	7/1/2019
*Hall, M.	CGS	Anatomy	Functional and Developmental Diversity in Mammal Body Wall Composition	6/1/2019	\$1,000	American Association of Anatomists	7/1/2019
Jentarra, G.	CGS	Biochemistry	Exploring the Association Between the Presence of Bacterial DNA in Brain Tissue and the Development of Alzheimer's Disease	11/17/2018	\$50,000	Infectious Diseases Society of America	1/1/2019
*Jentarra, G. & Jones, B.	CGS	Biochemistry & Anatomy	Follow the Evidence: The Role of Microbes in the Development of Alzheimer's Disease	4/19/2019	\$40,183 (Includes a \$20,092 match from MWU)	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2019
Johnson, N.	CGS	Biomedical Sciences	Public Assumptions Surrounding Invasive vs. Non-invasive Neural Interventions	2/5/2019	\$44,321	NIH-R01 Subcontract from Arizona State University	9/1/2019
Korch, S. & Call, G.	CGS	Pharmacology	Characterization and Functional Analysis of the Microbiome in a Drosophila Model of Parkinson's Disease	2/18/2019	\$45,000	Arizona Alzheimer's Disease Core Center	7/1/2019
*Lawson, K.	CGS	Biochemistry	Oncogenic P-cadherin Signaling in Oral Preneoplasia	6/14/2019	\$412,500	NIH-R21	4/1/2020

CGS: EXTRAMURALLY-SUBMITTED PROPOSALS (Continued)

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Muldoon, K.	CGS	Anatomy	Paleontological Exploration of Northern Madagascar: Implications for the Ecological History of a Transition Zone	7/9/2018	\$30,391	National Geographic Foundation	5/15/2019
*Muldoon, K.	CGS	Anatomy	Paleontological Exploration of Regional Environmental Change in Northern Madagascar	4/5/2019	\$35,234	National Geographic Foundation	5/15/2020
O'Neill, M.	CGS	Anatomy	Collaborative Research: Musculoskeletal Design and Early Hominin Walking and Running Performance	1/22/2019	\$225,445	National Science Foundation	9/1/2019
Plotkin, B.	CGS	Microbiology & Immunology	Anaerobic, Non-glycolytic Cancer Cell Metabolism and its Role in Tumor Cell Viability	10/25/2018	\$444,294	NIH-R15 (AREA)	7/1/2019
Porta, M.	CGS	Physiology	The Epigenetic Memory of Pregnancy in the Uterus: Myometrial Contractility	10/25/2018	\$444,853	NIH-R15 (AREA)	7/1/2019
Puthanveetil, P.	CGS	Pharmacology	Investigating the Anti-inflammatory Role of Apigenin in Metabolic Stress	9/1/2018	\$100,000	PhRMA Foundation	2/1/2019
Revill, A.	CGS	Physiology	Cholinergic Modulation of XII Motoneurons and XII Premotoneurons	10/25/2018	\$443,685	NIH-R15 (AREA)	7/1/2019
Revill, A.	CGS	Physiology	Cholinergic Modulation of XII Motoneurons and XII Premotoneurons	2/15/2019	\$224,999	Whitehall Foundation	7/1/2019
*Revill, A.	CGS	Physiology	Cholinergic Modulation of XII Motoneurons and XII Premotoneurons	6/25/2019	\$447,700	NIH-R15 (REAP)	4/1/2020
Riede, T.	CGS	Physiology	The Role of Vocal Ligament in Fundamental Frequency and Adduction Control	2/5/2019	\$236,535	NIH-R01 Subcontract from the University of Utah	9/1/2019
Riede, T. & Baab, K.	CGS	Physiology & Anatomy	Development of a High Throughput Workflow for Laryngeal Imaging and Shape Analysis	2/15/2019	\$154,160	NIH-R03 with a Subcontract to Northern Arizona University	9/1/2019
Shim, M.	CGS	Biochemistry	Cyclooxygenase-2 Signaling in Cell Senescence and its Role in Chemotherapy-induced Long-term Adverse Sequelae	2/22/2019	\$450,000	NIH-R15 (REAP)	9/1/2019
*Shim, M., Broderick, T. & Al-Nakkash, L.	CGS	Biochemistry & Physiology	Exercise-mediated Mitigation of Cellular Senescence as a Peripheral Control Mechanism for Alzheimer's Disease Risk	4/19/2019	\$28,702 (Includes a \$14,351 match from MWU)	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2019
Smith, H. & Townsend, K.E.B.	CGS	Anatomy	Conservation Anatomy of the Endangered Snow Leopard (<i>Panthera uncia</i>)	3/15/2019	\$19,534	Association of Zoos and Aquariums	10/1/2019

CGS: EXTRAMURALLY-SUBMITTED PROPOSALS (Continued)

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Smith, H., Townsend, K.E.B., Georgi, J. & Lee, A.	CGS	Anatomy	Arizona Research Collection for Integrative Vertebrate Education and Study (ARCIVES): Exotic Species Dissection Manuals, Atlases, and Data Repository	11/14/2018	\$50,112	Morris Animal Foundation	1/1/2019
Swartzendruber, J.	CGS	Microbiology & Immunology	Prevention of House Dust Mite-induced Asthma with <i>Bacillus subtilis</i>	10/25/2018	\$447,188	NIH-R15 (AREA)	7/1/2019
Tiwari, V.	CGS	Microbiology & Immunology	Synthetic Mimetics of Heparan Sulfate as Inhibitors of Ocular Herpes Infection	10/5/2018	\$1,904,605	NIH-R01 with a Subcontract to Virginia Commonwealth University	7/1/2019
*Tiwari, V.	CGS	Microbiology & Immunology	Synthetic Mimetics of Heparan Sulfate as Inhibitors of Ocular HSV Infection	6/16/2019	\$430,000	NIH-R21 with a Subcontract to Virginia Commonwealth University	4/1/2020
Townsend, K.E.B.	CGS	Anatomy	Collaborative Research: After the Bridgerian Crash - An Integrated Analysis of Mammalian Paleocommunities and Paleoecologies During the Middle Eocene	8/26/2018	\$158,361	National Science Foundation	1/1/2019
Traka, M.	CGS	Anatomy	Mechanisms of N-acetylaspartate Function in the CNS	10/25/2018	\$437,386	NIH-R15 (AREA)	7/1/2019
VandenBrooks, J.	CGS	Physiology	Determining the Feasibility of Vaccination as a Strategy to Curtail the Spread of RMSF in Canines	3/13/2019	\$10,800	Morris Animal Foundation	8/1/2019
Velez-Cruz, R.	CGS	Biochemistry	The Role of SWI/SNF Complexes in Homologous Recombination	10/25/2018	\$449,380	NIH-R15 (AREA)	7/1/2019

Total of CGS Extramurally-submitted Proposals: \$9,016,862

**COLLEGE OF HEALTH SCIENCES-DOWNERS GROVE (CHS-DG):
EXTRAMURALLY-SUBMITTED PROPOSALS**

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Krzak, J.	CHS-DG	Physical Therapy	Effect of Functional Strengthening on Mobility, Activity, and Participation in Youth with Osteogenesis Imperfecta	2/5/2019	\$26,112	National Institute on Disability, Independent Living, and Rehabilitation Research Subcontract from Marquette University	9/30/2019
Krzak, J.	CHS-DG	Physical Therapy	Effectiveness of Tuning to Improve the Prescription of Ankle Foot Orthoses for Children with Cerebral Palsy	2/5/2019	\$52,224	National Institute on Disability, Independent Living, and Rehabilitation Research Subcontract from Marquette University	9/30/2019
*Krzak, J.	CHS-DG	Physical Therapy	Disability and Rehabilitation Research Program (DRRP) to Improve Longer-term Post-interventional Mobility and Participation in Adults with Cerebral Palsy	4/16/2019	\$179,394	National Institute on Disability, Independent Living, and Rehabilitation Research Subcontract from Marquette University	9/30/2019

CHS-DG: EXTRAMURALLY-SUBMITTED PROPOSALS (Continued)

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Noronha, S.	CHS-DG	Physician Assistant Program	Increasing the Number of Primary Care Physician Assistants (PAs) by Enhancing PA Training in Rural and Urban Underserved Settings and Initiating New PA Training to Combat the Opioid Crisis	1/14/2019	\$647,461	Health Resources and Services Administration (HRSA)	7/1/2019

Total of CHS-DG Extramurally-submitted Proposals: \$905,191

COLLEGE OF HEALTH SCIENCES-GLENDALE (CHS-GD): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Eikenberry, M.	CHS-GD	Physical Therapy	CAREER: Transparent Robot-aided Rehabilitation (TRAIN)	7/19/2018	\$10,221	National Science Foundation Subcontract from Arizona State University	1/1/2021
Eikenberry, M.	CHS-GD	Physical Therapy	Development of a New Robotic Approach to Quantify the Ankle Neuromechanics in the Control of Postural Balance Post-stroke	3/16/2019	\$4,553	NIH-R03 Subcontract from Arizona State University	9/1/2020
*Eikenberry, M.	CHS-GD	Physical Therapy	Patient-adaptive Robotic Balance Training for Lower-extremity Stroke Rehabilitation	4/9/2019	\$10,127	Arizona Department of Health Services through the Arizona Biomedical Research Commission Subcontract from Arizona State University	7/1/2019
*Ratiu, I.	CHS-GD	Speech-Language Pathology	The Impact of Cognition, Voice, and Swallowing on Quality of Life in Individuals with Marfan Syndrome	4/1/2019	\$79,950	Marfan Foundation	1/1/2020

Total of CHS-GD Extramurally-submitted Proposals: \$104,851

COLLEGE OF PHARMACY-GLENDALE (CPG): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Olsen, M.	CPG	Pharmaceutical Sciences	Fragment-based Drug Design of a Blood-Brain Barrier Penetrating Therapeutic for Treatment of Feline Infectious Peritonitis	3/13/2019	\$238,140	Morris Animal Foundation	12/1/2019
Weissig, V.	CPG	Pharmaceutical Sciences	Novel Mechanistic Determinant of Cerebrovascular Inflammation and Vascular Modulation of Neuroinflammation in Aging and VCID	10/5/2018	\$140,580	NIH R01 Subcontract from Carl T. Hayden Medical Research Foundation	3/1/2019

Total of CPG Extramurally-submitted Proposals: \$378,720

COLLEGE OF VETERINARY MEDICINE (CVM): EXTRAMURALLY-SUBMITTED PROPOSALS

Investigator/s	College	Department	Proposal Title	Date Submitted	Total	Agency	Start Date
Jaffey, J.	CVM	Veterinary Medicine	Serum Vitamin D Binding Protein in Hospitalized Critically Ill Dogs	10/5/2018	\$15,000	AKC Canine Health Foundation	11/1/2018
Jaffey, J.	CVM	Veterinary Medicine	Immune Function and Vitamin D in Shelter Dogs	1/15/2019	\$5,000	Maddie's Fund IDEA Lab	4/1/2019
*Jaffey, J. (Allison, L., CVM '21)	CVM	Veterinary Medicine	The Role of Vitamin D as a Biomarker for Immune Function in Shelter Dogs	1/21/2019	\$5,500	Maddie's Fund Summer Scholar Program	6/1/2019
Lee, J.K.	CVM	Veterinary Medicine	Engineering DNA Delivery Polymers Using Combinatorial and Chemoinformatics Methods	3/5/2019	\$112,262	NIH-R01 Subcontract from Arizona State University	9/1/2019
Murthy, A.	CVM	Veterinary Medicine	USDA Animal Health and Disease Research Grant	7/23/2018	\$25,604	USDA National Institute of Food and Agriculture	10/1/2018
Murthy, A.	CVM	Veterinary Medicine	miRNA Activation of Inflammatory Signaling Pathways During Chlamydiae Infection	10/5/2018	\$125,472	NIH R01 Subcontract from the Arkansas Children's Research Institute	7/1/2019
Murthy, A.	CVM	Veterinary Medicine	Mechanism(s) of CD8 T Cell-mediated Chlamydia-induced Reproductive Pathology	11/6/2018	\$450,000	NIH-R15 (AREA)	7/1/2019
*Murthy, A.	CVM	Veterinary Medicine	Synthesis of Clp Protease Proteolytic Subunit (ClpP) Activators to Treat Chlamydial Infections	6/5/2019	\$268,857	NIH-R01 Subcontract from the University of Nebraska Medical Center	5/1/2023
Murthy, A. & Goetz, N.	CVM	Veterinary Medicine	Boehringer Ingelheim Veterinary Scholarship Program	10/30/2018	\$20,000	Boehringer Ingelheim	5/1/2019
*Struthers, J.	CVM	Veterinary Medicine	Optimizing a Patient-specific Regenerative Larynx Implant for Restoration of Voice, Breathing, and Swallowing	6/14/2019	\$65,691	NIH-R01 Subcontract from the Mayo Clinic	4/1/2020
Thangamani, S.	CVM	Veterinary Medicine	Unveiling Gut Metabolite Sensing Mechanisms in <i>Candida albicans</i>	10/2/2018	\$1,875,000	NIH-R35	7/1/2019
Thangamani, S.	CVM	Veterinary Medicine	Role of Bile Acids in the Gastrointestinal Colonization of <i>Candida albicans</i>	2/18/2019	\$467,773	NIH-R15 (REAP) with Subcontracts to Purdue University and the University of California, Merced	9/1/2019

Total of CVM Extramurally-submitted Proposals: \$3,436,159

MWU SUBMITTED 83 EXTRAMURAL PROPOSALS FROM ALL COLLEGES THROUGH Q4 OF FISCAL YEAR 2019 TOTALING \$19,966,233

**MULTIDISCIPLINARY: ALL EXTRAMURALLY-FUNDED
ACTIVE RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total Award	Agency	Start Date	End Date
Eckman, D. (CGS), Jones, C. (CGS), Jones, T.B. (CGS), Vallejo-Elias, J. (CGS), Virden, T. (CHS-GD) & Powell, J. (CHS-GD)	CGS & CHS-GD	Multidisciplinary	Cerebrovascular Dysfunction and Cognitive Decline in Aging APOE2, APOE3 and APOE4 Targeted-Replacement Mice	\$225,000	Arizona Department of Health Services through the Arizona Biomedical Research Commission	4/1/2018	3/31/2021
Fitzgerald, N. (CDMA) & Mifflin, M. (AZCOM)	CDMA & AZCOM	Multidisciplinary	Oral Cancer Prevention for Homeless Populations	\$5,000	Academy of General Dentistry Foundation	8/14/2018	12/1/2018
Woods, C. (IHI) & Murthy, A. (CVM)	IHI & CVM	Multidisciplinary	Fulbright Parabolic Mechanisms	\$42,939	Operation Angel Bug, LLC	9/20/2018	12/31/2018

Total of Multidisciplinary Active Extramurally-funded Research Awards: \$272,939

**AZCOM: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total Award	Agency	Start Date	End Date
Finch, C. & Nydam, R.	AZCOM	Clinical Education & Administration	Multi-Institutional Program for Ultrasound Based Training for Osteopathic Practitioners in Arizona	\$217,456	HonorHealth Foundation Phoenix General Hospital Osteopathic Endowment Fund	1/1/2018	12/31/2018
Sands, L. (Burkart, A., AZCOM '21)	AZCOM	Family Medicine	LGBTQ+ Wellness Initiative	\$336	American Osteopathic Foundation	11/1/2018	6/10/2019

Total of AZCOM Active Extramurally-funded Research Awards: \$217,792

**AZCOPT: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total Award	Agency	Start Date	End Date
Esposito, C.	AZCOPT	Optometry	Study of Adult Strabismus (SAS1): A Prospective Observational Study of Adult Strabismus	\$5,880	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	3/1/2016	12/31/2018
Feis, A.	AZCOPT	Optometry	Binocular Dig Rush Game Treatment for Amblyopia (ATS20)	\$11,938	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	4/10/2017	12/31/2019
Feis, A.	AZCOPT	Optometry	A Randomized Clinical Trial of Overminus Spectacle Therapy for Intermittent Exotropia (IXT5)	\$14,625	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	6/12/2017	12/31/2019
Putnam, N.	AZCOPT	Optometry	An Inquiry-based Approach to Teaching Sphero-Cylindrical Ametropia	\$1,800	Association of Schools and Colleges of Optometry	8/28/2017	12/29/2018

Total of AZCOPT Active Extramurally-funded Research Awards: \$34,243

**CCO: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Rice, S.	CCO	Optometry	Binocular Dig Rush Game Treatment for Amblyopia (ATS20)	\$23,125	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	9/1/2018	12/31/2018
Rice, S.	CCO	Optometry	A Randomized Clinical Trial of Overminus Spectacle Therapy for Intermittent Exotropia (IXT5)	\$28,500	National Eye Institute Cooperative Agreement with JAEB Center for Health Research, Inc.	9/1/2018	12/31/2018

Total of CCO Active Extramurally-funded Research Awards: \$51,625

**CCP: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Gulati, A.	CCP	Administration	Mentor and Train PCCM and NPM Fellows for Scholarly Activity	\$170,000	Advocate Health and Hospitals Corporation	1/1/2018	12/31/2019
Rhodes, N. J.	CCP	Pharmacy Practice	A United States Based Program to Evaluate the <i>In Vitro</i> Potency of Gram-Negative Therapies Against Contemporary <i>P. aeruginosa</i>	\$800	Center for Anti-Infective Research and Development of Hartford Hospital	2/16/2018	8/15/2018
Scheetz, M.	CCP	Pharmacy Practice	Defining the Link Between Cefepime Exposure and Effect in Canine Pneumonia: A Two-Way Bridge Serving Dogs and Humans	\$12,500	CARE Foundation	1/1/2016	1/1/2020
Scheetz, M.	CCP	Pharmacy Practice	Optimizing Clinical Use of Polymyxin B: Teaching an Old Drug to Treat Superbugs	\$75,162	NIH-R01 Subcontract from the University of Michigan	9/1/2016	2/28/2019
Scheetz, M.	CCP	Pharmacy Practice	A Retrospective Study to Understand the Risk Factors/Drivers of "Inappropriate" Antimicrobial Use and the Performance Evaluation of a Clinical Decision Support Tool that Facilitates Prediction of Outbreaks of Inappropriate Antibiotic Use	\$159,835	Merck Sharp & Dohme Corp. with a Subcontract to the University of Michigan and Wayne State University	9/13/2017	6/30/2020
Scheetz, M.	CCP	Pharmacy Practice	A Pilot Study to Define Colistin Population PK and Interrogate Renal TD	\$32,400	Cystic Fibrosis Foundation Subcontract from Northwestern University	11/1/2017	10/31/2019
Scheetz, M.	CCP	Pharmacy Practice	Nanoparticle-Polymyxin B Conjugates for Treating Infections in CF Patients	\$70,403	Cystic Fibrosis Foundation Subcontract from Northwestern University	11/1/2017	10/31/2019
Scheetz, M.	CCP	Pharmacy Practice	Defining the Blood Brain Barrier Transit of Cefepime/AAI101 in a Sprague Dawley Rat Model	\$15,075	Allegra Therapeutics	8/31/2018	8/20/2020

CCP: ALL ACTIVE EXTRAMURALLY-FUNDED AWARDS (Continued)

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Scheetz, M.	CCP	Pharmacy Practice	AKI001 Vancomycin (MEEK) and AKI002 Liposomal Vancomycin	\$124,718	Nevakar, Inc.	11/9/2018	TBD
Tran, T. & Fjortoft, N.	CCP	Pharmacy Practice & Administration	Preparing Pharmacy Students for their Role in the Opioid Crisis: Advancing the Pharmacy Curriculum	\$20,000	National Association of Chain Drug Stores	10/1/2016	5/31/2019

Total of CCP Active Extramurally-funded Research Awards: \$680,893

CDMA: ALL ACTIVE EXTRAMURALLY-FUNDED RESEARCH AWARDS DURING THE REPORTING PERIOD

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Atkinson, J.	CDMA	Dental Medicine	Emotional Quotient Testing for Curriculum Assessment	\$11,500 (Value of)	Six Seconds Emotional Intelligence Network	10/1/2018	9/30/2020
Mitchell, J.	CDMA	Dental Medicine	The Effects of a One-step Oxidative Etching Process on Cell Differentiation, Proliferation and Attachment Compared to Conventional Micro- and Nano-scale Topography of Titanium Implants	\$5,000 (Value of)	Institut Straumann AG	12/14/2018	12/13/2019
Smith, B. & Beals, D.	CDMA	Dental Medicine	A Partnership Protocol for Treatment of Oral Mucositis Using LLLT	\$25,000	Dental Trade Alliance Foundation	10/1/2018	9/30/2019

Total of CDMA Active Extramurally-funded Research Awards: \$41,500

CGS: ALL ACTIVE EXTRAMURALLY-FUNDED RESEARCH AWARDS DURING THE REPORTING PERIOD

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Al-Nakkash, L.	CGS	Physiology	Genistein: Understanding Its Ability to Ameriorate Intestinal Dysfunction in Diabetes	\$20,000	Diabetes Action Research and Education Foundation	1/1/2017	12/31/2018
Al-Nakkash, L.	CGS	Physiology	High Fat Induced Diabetes is Abolished by Combined Genistein and Exercise Treatment: Identifying the Mechanisms	\$10,000	Diabetes Action Research and Education Foundation	1/1/2019	12/31/2019
Al-Nakkash, L. & Broderick, T.	CGS	Physiology	Diabetic Obesity Results in Cognitive Impairment: Evaluation of the Gut and Brain in Response to Treatment with Genistein and Exercise	\$15,000	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2018	6/30/2019
Edwards, J.	CGS	Pharmacology	Mechanisms of Cadmium-induced Dysglycemia	\$446,697	NIH-R15 (AREA)	8/15/2017	7/31/2020
*Ellermeier, J.	CGS	Microbiology & Immunology	Genetic Regulation of the Twin Arginine Translocation System in <i>Salmonella enterica</i> serovar Typhimurium	\$150,000	NIH-R03	6/17/2019	12/31/2020

CGS: ALL ACTIVE EXTRAMURALLY-FUNDED AWARDS (Continued)

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Esfandiarei, M.	CGS	Biomedical Sciences	Children and Adolescents with Marfan Syndrome - 10,000 Healthy Steps and Beyond	\$30,484	Marfan Foundation Subcontract from Stanford University	1/1/2017	12/31/2019
Esfandiarei, M.	CGS	Biomedical Sciences	Targeting Endothelial Dysfunction in a Genetic Mouse Model of Aortic Aneurysm: Implications for Prevention and Therapy	\$441,048	NIH-R15 (AREA)	1/15/2019	12/31/2021
Haley, N.	CGS	Microbiology & Immunology	Managing CWD in Farmed Cervids through Antemortem Testing, Targeted Culling, and Development of Genetic Resistance Breeding Programs	\$48,593	North American Deer Farmers Association	3/1/2016	3/1/2021
Henderson, K.	CGS	Physiology	Analytical Assessment of the Cranial Rhythmic Impulse	\$8,000	American Academy of Osteopathy	6/15/2017	6/15/2019
Jentarra, G. & Jones, T.B.	CGS	Biochemistry & Anatomy	Continuing Investigations into the Role of Microbes in the Development of Alzheimer's Disease	\$78,998 (includes a \$43,998 match from MWU)	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2018	6/30/2019
Kim, C.	CGS	Biochemistry	The Role of SAM Polymerization in Polycomb-dependent Chromatin Structures	\$1,019,683	NIH-R01 with a Subcontract to the Institut de Recherchers Cliniques de Montréal	6/1/2016	5/31/2020
Kopf, P.	CGS	Pharmacology	The Role of 12-Lipoxygenase in Aldosterone Secretion	\$417,791	NIH-R15 (AREA)	7/1/2015	6/30/2019
Mejia-Alvarez, R.	CGS	Physiology	Control of IP ₃ R-mediated Calcium Release	\$122,504	NIH-R01 Subcontract from Rush University Medical School	4/1/2015	5/31/2019
Muldoon, K.	CGS	Anatomy	Collaborative Research: Human and Non-human Influences on Species Biodiversity in an Island Ecosystem	\$44,144	National Science Foundation	3/1/2018	2/21/2021
Olson, C.	CGS	Physiology	Vocalizing in a Complex and Crowded Forest: An Investigation of a Unique Hummingbird Solution	\$30,000	National Geographic Society	10/4/2018	10/20/2020
Potter, P.	CGS	Pharmacology	Effects of Norclozapine on Beta-amyloid in Transgenic Mice: A Potential New Treatment Option for Alzheimer's Disease?	\$6,002	Arizona Department of Health Services through the Arizona Alzheimer's Research Center, Inc.	7/1/2018	6/30/2019
Ramsey, K.	CGS	Microbiology & Immunology	Isolation of Novel Rodent Chlamydiae	\$422,488	NIH-R21	4/1/2016	3/31/2019
Riede, T.	CGS	Physiology	Collaborative Research: Evolution of Long-distance Communication in Vocal Rodents	\$193,774	National Science Foundation	8/1/2018	7/31/2021
Townsend, K.E.B.	CGS	Anatomy	The Other Non-renewable Resource: Salvaging the Middle Eocene Mammalian Fossil Record in the Wake of Oil and Gas Exploration	\$6,000	American Philosophical Society - Franklin Grant	7/1/2018	6/30/2019

Total of CGS Active Extramurally-funded Research Awards: \$3,511,206

**CHS-DG: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Mahaffey, L.	CHS-DG	Occupational Therapy	Tiered Occupational Therapy (TOT): Preparing Scholars to Work in School Mental Health	\$1,157,279	U.S. Department of Education	12/1/2015	11/30/2020
Prodoehl, J.	CHS-DG	Physical Therapy	The Effect of Head Position Three Dimensional Temporomandibular Joint Motion and Muscle Activation Patterns	\$2,000	American Physical Therapy Association Section on Research	5/15/2018	5/14/2019

Total of CHS-DG Active Extramurally-funded Research Awards: \$1,159,279

**CPG: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
Olsen, M.	CPG	Pharmaceutical Sciences	Developing a Safe and Effective Combined Anticoronaviral Therapy (CACT) for Cats with FIP	\$6,000	Winn Feline Foundation Subcontract from the University of California-Davis	12/1/2017	11/30/2018
Weissig, V.	CPG	Pharmaceutical Sciences	Cationic Bolaamphiphiles (CAB) and Phosphorothioate Gappers as Antisense Therapy for <i>C. difficile</i>	\$18,567	NIH-R21 Subcontract from the University of Arizona	6/5/2017	5/31/2019
Yao, M. & Elbayoumi, T.	CPG	Pharmaceutical Sciences	Novel Therapeutic Strategy for Pulmonary Arterial Hypertension: Abrogation of Excess Thrombospondin 1 by Pharmaceutical Formula of CD47 Peptide	\$96,670	Cardiovascular Medical Research and Education Fund	11/1/2017	10/31/2019
Yao, M. & Elbayoumi, T.	CPG	Pharmaceutical Sciences	Atrial Fibrillation Strategically Focused Research Network: Atrial Substrate in Atrial Fibrillation and AF-associated Brain Disease	\$126,979	American Heart Association Subcontract from Northwestern University	7/1/2018	6/30/2022

Total of CPG Active Extramurally-funded Research Awards: \$248,216

**CVM: ALL ACTIVE EXTRAMURALLY-FUNDED
RESEARCH AWARDS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Total	Agency	Start Date	End Date
*Jaffey, J.	CVM	Veterinary Medicine	Immune Function and Vitamin D in Shelter Dogs	\$5,000	Maddie's Fund IDEA Lab	4/1/2019	7/31/2019
*Jaffey, J. (Allison, L., CVM '21)	CVM	Veterinary Medicine	The Role of Vitamin D as a Biomarker for Immune Function in Shelter Dogs	\$5,500	Maddie's Fund Summer Scholar Program	6/1/2019	8/1/2019
Lee, J.K.	CVM	Veterinary Medicine	Photothermal Nanocomposites for Tissue Repair	\$76,876	NIH-R01 Subcontract from Arizona State University	9/9/2015	5/31/2020
Murthy, A.	CVM	Veterinary Medicine	Mechanism(s) of CD8 ⁺ T Cell-mediated Chlamydia-induced Reproductive Pathology	\$450,000	NIH-R15 (AREA)	7/1/2016	6/30/2019
Murthy, A.	CVM	Veterinary Medicine	Boehringer Ingelheim Veterinary Scholarship Program	\$20,000 (includes a \$10,000 match from MWU)	Boehringer Ingelheim	6/1/2018	9/30/2018
*Murthy, A.	CVM	Veterinary Medicine	Boehringer Ingelheim Veterinary Scholarship Program	\$30,000 (includes a \$15,000 match from MWU)	Boehringer Ingelheim	5/1/2019	10/31/2019
Murthy, A.	CVM	Veterinary Medicine	MWU-PSC Student Summer Fellowship	\$10,000	PetSmart Charities, Inc.	6/1/2018	9/1/2019
Murthy, A.	CVM	Veterinary Medicine	USDA Animal Health and Disease Research Grant	\$25,604	USDA National Institute of Food and Agriculture	10/1/2018	9/30/2019

Total of CVM Active Extramurally-funded Research Awards: \$622,980

Proposals included are defined as active grants based on end dates reported to the ORSP on the Principal Investigator's Proposal Approval Form plus any granted no-cost extension or contract addendum.

Total MWU Active Extramurally-funded Research Awards: \$6,840,673

*The asterisk denotes new material. All material in this report is cumulative from July 1, 2018 through June 30, 2019, with the exception of active extramurally-funded research.

**INSTITUTE FOR HEALTHCARE INNOVATION (IHI):
SUBMITTED CLINICAL CONTRACTS DURING THE REPORTING PERIOD**

Investigator/s	College	Department	Proposal Title	Potential Total	Agency	Date Submitted
Helmuth, K. & Vasudevan, B.	AZCOPT	Eye Institute	Inflammatory Biomarker Study in Contact Lens Users	\$134,331	Pharmaceutical Sponsor	12/17/2018
Mitchell, J., Fitzgerald, N., Chen, G. & Wooden, E.	CDMA, AZCOM	College of Dental Medicine and Family Practice Clinic	An Inch-loss Study Using the NovoPod Photomodulation Bed	~\$150,000 (Value of)	Thor Photomedicine	3/31/2019
Vasudevan, B. & Escobedo, E.	AZCOPT	Eye Institute	Randomized, Double-masked, Placebo-controlled Study of an Ophthalmic Drop for Myopia Progression	\$113,250	Pharmaceutical Sponsor	2/15/2018
Vasudevan, B., Esposito, C. & Bland, T.	AZCOPT	Eye Institute	Randomized, Double-masked, Placebo-controlled Study of an Ophthalmic Drop in Children	\$132,000	Pharmaceutical Sponsor	12/13/2018

Total of Submitted Clinical Contracts: ~\$529,581

IHI: ACTIVE CLINICAL CONTRACTS DURING THE REPORTING PERIOD

Investigator/s	College	Location of Study	Proposal Title	Total	Agency	Start Date	End Date
Curtis, D., Tassone, J., Kroleski, J., & VanDenBerg, C.	CHS, IHI	Multispecialty Clinic	A Multicenter, Randomized, Double Blind, Parallel-group Study Comparing the Efficacy and Safety of Clonidine Hydrochloride Topical Gel, 0.1%, to Topical Gel of Identical Appearance to Clonidine Gel in the Management of Painful Diabetic Neuropathy	\$78,520 (Potential)	Pharmaceutical Sponsor	6/10/2016	Open
Fountain, A., Florento, G. & Mitchell, J.	CDMA	Dental Institute	A Bleach Rinse a Day Keeps the Gum Disease Away?	\$29,800 (Value of)	Century Pharmaceuticals, Inc.	1/26/2017	1/25/2020
Gibbons, J. & Mitchell, J.	CDMA	Dental Institute	Dentures: A Patient Preference Study	\$80,000 (Value of)	White Square Company	12/6/2016	Open
Helmuth, K.	AZCOPT	Eye Institute	Phase 3 Multisite, Randomized, Double-masked Study in Patients with Bacterial Conjunctivitis	\$11,673 (Potential)	Pharmaceutical Sponsor	4/27/2018	Open
Helmuth, K. & Vasudevan, B.	AZCOPT	Eye Institute	Phase 3 Multisite, Randomized, Double-masked Study in Patients with Viral Conjunctivitis	\$52,870 (Potential)	Pharmaceutical Sponsor	4/27/2018	Open
Huang, V.	CPG	Pharmacy Practice	Clinical and Economic Comparison of Ceftaroline Fosamil versus Daptomycin for the Treatment of Blood Stream Infections Caused by Methicillin-resistant <i>Staphylococcus aureus</i>	\$1,400	Subcontract from Allergan, Inc.	1/1/2017	12/31/2018

IHI: ACTIVE CLINICAL CONTRACTS DURING THE REPORTING PERIOD (Continued)

Investigator/s	College	Location	Proposal Title	Total	Agency	Start Date	End Date
Huang, V.	CPG	Pharmacy Practice	Pharmacoeconomic Analysis of Ceftaroline for Acute Bacterial Skin and Skin Structure Infections: Focus on those at Risk for Methicillin-resistant <i>Staphylococcus aureus</i>	\$10,000	Subcontract from Allergan, Inc	1/1/2017	12/31/2018
Huang, V.	CPG	Pharmacy Practice	A Multicenter Evaluation of Vancomycin-associated Nephrotoxicity in Hospitalized Patients with Acute Bacterial Skin and Skin Structure Infections	\$4,500	Subcontract from Motif BioSciences, Inc.	6/1/2018	Open
Mitchell, J., Fitzgerald, N., Chen, G. & Wooden, E.	CDMA, AZCOM	College of Dental Medicine & Family Practice Clinic	An Inch-loss Study Using the NovoPod Photomodulation Bed	~\$150,000 (Value of)	Thor Photomedicine	6/1/2018	Open
Mitchell, J., Haering H., Carroll, A., Beals, D., & Carpenter, R.	CDMA	College of Dental Medicine & Dental Institute	Bicon SHORT® Implants: A Preclinical and Clinical Research Study	\$949,363 (Value of)	Bicon Dental Implants	5/6/2016	5/5/2022
Mitchell, J., Schuster, G., Brannock, M. Cohn, M., Carroll, A. & Brachvogel, W.	CDMA	Dental Institute	Anesthesia-free Dentistry?	\$840,000 (Value of)	Convergent Dental	9/30/2017	8/31/2019
Mitchell, J., Velazquez D., Mathews, J., Ferguson, G. & Sheram, D.	CDMA	Dental Institute	Tooth Whitening with Sodium Bicarbonate versus Carbamide Peroxide	\$6,000 (Value of)	Oralgen, LTD & Ivoclar Vivadent	12/1/2017	11/30/2019
Page, J., Curtis, D. & VanDenBerg, C.	CHS, IHI	Multispecialty Clinic	A Clinical Investigation to Study the Effect of Exufiber Ag+ and Other Gelling Fibre Dressings on Wound Exudate and Bioburden in Medium to High Exuding Wounds	\$13,922	Pharmaceutical Sponsor	7/21/2017	Open
Reeder, S. & Yevseyenkov, V.	AZCOM, AZCOPT	Multispecialty Clinic	A Multicenter Masked Study to Evaluate Performance of an Automated Device for the Detection of Diabetic Retinopathy and Diabetic Macular Edema	\$34,225 (Potential)	Medical Device Sponsor	12/7/2016	Open
Tassone, J. & VanDenBerg, C.	CHS, IHI	Multispecialty Clinic	A Phase 3 Randomized, Placebo-controlled, Blinded Study to Investigate the Safety and Efficacy of a Topical Gentamicin-Collagen Sponge in Combination with Systemic Antibiotic Therapy in Diabetic Patients with an Infected Foot Ulcer	\$14,173 (Potential)	Medical Device Sponsor	3/7/2016	Open
VanDenBerg, C., Woods, C., Szabo, S. & Shaver, S.	IHI, CVM	Animal Health Institute	Evaluation of (drug) on Pulmonary Metastasis Size and Quantity in Dogs with Osteosarcoma	\$2,720 (Potential)	Pharmaceutical Sponsor	10/26/2017	Open
VanDenBerg, C., Woods, C., Szabo, S., Shaver, S., Fossum, T., Gonzalez-Cintron, O. & Maki, L.	IHI, CVM	Animal Health Institute	Evaluation of a Tumor Selective Imaging Agent in Dogs with Solid Neoplasia	\$22,128 (Potential)	Pharmaceutical Sponsor	12/01/2017	Open

IHI: ACTIVE CLINICAL CONTRACTS DURING THE REPORTING PERIOD (Continued)

Investigator/s	College	Location	Proposal Title	Total	Agency	Start Date	End Date
Woods, C.	IHI	Institute for Healthcare Innovation	Therapeutic Effect of an Endothelin Agonist in Dogs with Degenerative Myelopathy	\$9,750	CARE Foundation	6/1/2016	5/31/2019
Woods, C., Eberhardt, J., Thomas, K., Robbins, E., Keenan, L. & Huang, V.	CHS, CVM, CPG, IHI	Animal Health Institute	Comparison of Chelating Agent Alone or in Combination with Standard of Care Otic Formulation for Treatment of Canine Chronic Otitis Externa	\$37,125 (Potential)	Pharmaceutical Sponsor	9/6/2017	Open
Woods, C., Gulati, A., & Evans, J.	CVM, IHI	Animal Health Institute	Therapeutic Effect of Endothelin Agonist in Dogs with Degenerative Myelopathy	~\$10,000 (Potential)	Pharmaceutical Sponsor	1/3/2018	Open
Woods, C., VanDenBerg, C., Szabo, S. & Shaver, S.	IHI, CVM	Animal Health Institute	Evaluation of (drug) on Dogs with Primary Osteosarcoma	\$65,213 (Potential)	Pharmaceutical Sponsor	9/6/2017	Open
Woods, C., VanDenBerg, C., Thomas, K., Keenan, L., Nickell, J., Jones, T., Gonzalez-Cintrón, O. & Shaver, S.	IHI, CVM	Animal Health Institute	Evaluation of Post-operative Pain Control Outcomes Using Subcutaneous Continuous Rate Infusion of an Analgesic in Dogs Undergoing Soft Tissue Surgery	\$48,771 (Potential)	Medical Device Sponsor	8/9/2018	Open

Total Active Clinical Contracts During the Reporting Period: ~\$2,472,153

PEER-REVIEWED PUBLICATIONS - MULTI-COLLEGE COLLABORATIONS

Alkhouli MF (AZCOM), **Hung J** (AZCOM), **Squire M** (AZCOM), **Anderson M** (AZCOM), **Castro M** (CGS), **Babu JR, Al-Nakkash L** (CGS), **Broderick TL** (CGS) & **Plochocki JH** (CHS). (2019) Exercise and resveratrol increase fracture resistance in the 3xTg-AD mouse model of Alzheimer's disease. *BMC Complementary and Alternative Medicine* 19:39.

***Avedissian SN** (CCP), **Pais GM** (CCP), **O'Donnell JN**, **Lodise TP**, **Liu J** (CCP), **Prozialeck WC** (CGS), **Joshi MD** (CCP), **Lamar PC** (CGS) **Becher L** (CCP), **Gulati A** (CCP), **Hope W** & **Scheetz MH** (CCP). (2019) Twenty-four hour pharmacokinetic relationships for intravenous vancomycin and novel urinary biomarkers of acute kidney injury in a rat model. *Journal of Antimicrobial Chemotherapy* May 7: epub ahead of print.

Bradley KD, **Schumacher C** (CCP), **Borchert JS** (CCP), **Kliethermes MA** (CCP) & **Anderson DK** (CHS). (2018) Validity and reliability pilot study of a tool for assessing ambulatory care pharmacist practice. *American Journal of Health-System Pharmacy* 75(23):1890-1901.

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Buchan L (AZCOM), **St. Aubin CR** (CGS), **Fisher AL** (CGS), **Hellings A** (AZCOM), **Castro M** (CGS), **Al-Nakkash L** (CGS), **Broderick TL** (CGS) & **Plochocki JH** (CGS). (2018) High-fat, high-sugar diet induces splenomegaly that is ameliorated with exercise and genistein treatment. *BMC Research Notes* 11:752.

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Gallegos KM (CGS), **Taylor CR** (CGS), **Rabulinski DJ** (CCOM), **Del Toro R** (CGS), **Girgis DE** (CCOM), **Jourha D** (CGS), **Tiwari V** (CGS), **Desai UR** & **Ramsey KH** (CGS). (2019) A synthetic, small, sulfated agent is a promising inhibitor of *Chlamydia spp.* infection *in vivo*. *Frontiers in Microbiology* 9:3269.

***Goral J** (CGS), **Cuadros K**, **Pitstick L** (CGS), **Meyer A** (CGS), **Jham BC** (CDMI), **Guimaraes EP**, **Hanemann JAC** & **Green JM** (CGS). (2019) Decreased expression of folate transport proteins in oral cancer. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology* 127(5):417-424.

Incrocci R (CGS), **McAloon J** (CCOM), **Montesano M** (CCOM), **Bardahl J** (CCOM), **Vagvala S** (CCOM), **Stone A** (CCOM) & **Swanson-Mungerson M** (CGS). (2018) Epstein-Barr virus LMP2A utilizes Syk and PI3K to activate NF- κ B in B-cell lymphomas to increase MIP-1 α production. *Journal of Medical Virology* January 4: epub ahead of print.

Johnson GM (CDMA), **Buros AF** (ORSP) & **Lukas RW** (CDMA). (2018) Comparison of postbaccalaureate and baccalaureate graduates' performance in first and second years of dental school. *Predoctoral Dental Education* 82(9):929-935.

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Lee BJ, **Wang SK** (CCP), **Constantino-Corpuz JK**, **Apolinario K**, **Nadler B** (Library), **McDanel JS**, **Scheetz MH** (CCP) & **Rhodes NJ** (CCP). (2018) Cefazolin versus anti-staphylococcal penicillins for the treatment of methicillin-susceptible *Staphylococcus aureus* bloodstream infections in acutely-ill adult patients: Results of a systematic review and meta-analysis. *International Journal of Antimicrobial Agents* November 23: epub ahead of print.

PEER-REVIEWED PUBLICATIONS - MULTI-COLLEGE COLLABORATIONS (Continued)

Li W (CVM), **Gudipaty P** (CGS), **Li C** (CGS), **Henderson KK** (CGS), **Ramsey KH** (CGS) & **Murthy AK** (CVM). (2018) Intranasal immunization with recombinant chlamydial protease-like activity factor attenuates atherosclerotic pathology following *Chlamydia pneumoniae* infection in mice. *Immunology & Cell Biology* July 27: epub ahead of print.

Lord R (AZCOM), **Fairbourn N** (AZCOM), **Mylavarapu C** (AZCOM), **Dbeis A** (AZCOM), **Bowman T** (AZCOM), **Chandrashekar A** (AZCOM), **Banayat T** (CGS), **Hodges CA** & **Al-Nakkash L** (CGS). (2018) Consuming genistein improves survival in XF508-CF female mice. *Nutrients* October 3: epub ahead of print.

Manway M (OPTI), **Blackburn S** (OPTI), **Barr J** (OPTI), **Hull E** (CGS), **Averitte R** (OPTI) & **Ahn Y**. (2018) Effects of acupuncture on chronic idiopathic pruritus: An uncontrolled pilot study evaluating inflammatory changes with treatment. *Journal of Complementary and Integrative Medicine* October 4: epub ahead of print.

***Pais GM** (CCP), **Avedissian SN** (CCP), **O'Donnell JN** (CCP), **Rhodes NJ** (CCP), **Lodise TP** (CCP), **Prozialeck WC** (CGS), **Lamar PC** (CGS), **Cluff C** (CCP), **Gulati A** (CCP), **Fitzgerald JC**, **Downes KJ**, **Zuppa AF** & **Scheetz MH** (CCP). Comparative performance of urinary biomarkers for vancomycin induced kidney injury according to timeline of injury. *Antimicrobial Agents and Chemotherapy* April 15: epub ahead of print.

***Prozialeck WC** (CGS), **Avery BA**, **Boyer EW**, **Grundmann O**, **Henningfield JE**, **Kruegel AC**, **McMahon LR**, **McCurdy CR**, **Swogger MT**, **Veltri CA** (CPG) & **Singh D**. (2019) Kratom policy: The challenge of balancing therapeutic potential with public safety. *International Journal of Drug Policy* 70:70-77.

Putnam NM (AZCOPT), **Vasudevan B** (AZCOPT), **Juarez A** (AZCOPT), **Le CT** (AZCOPT), **Sam K** (AZCOPT), **de Gracia P** (CCO) & **Hoppert A** (AZCOPT). (2019) Comparing habitual and i. Scripton refractions. *BMC Ophthalmology* 19:49.

Ratiu I (CHS-GD), **Viriden T** (CHS-GD), **Baylow HE**, **Flint M** (CHS-GD) & **Esfandiarei M** (CGS). (2018) Executive function and quality of life in individuals with Marfan syndrome. *Quality of Life Research* 27(8):2057-2065.

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Roberts EP (CDMA), **Mills DA** (CDMA) & **Stein AF** (ORSP). (2018) Dentists' perceptions of their peer learning experiences in dental school and effects on practice. *Journal of Dental Education* 82(11):1185-1193.

Zafiratos MT (CHS-DG), **Cottrell JT** (CCOM), **Manam S** (CVM), **Henderson KK** (CGS), **Ramsey KH** (CGS) & **Murthy AK** (CVM). (2018) Tumor necrosis factor receptor superfamily members 1a and 1b contribute to exacerbation of atherosclerosis by *Chlamydia pneumoniae* in mice. *Microbes and Infection* October 4: epub ahead of print.

PEER-REVIEWED PUBLICATIONS - AZCOM

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***Patton EI** & **Middleton TO**. (2019) Tinea incognito. In FJ Domino (Ed.) *www.5minuteconsult.com*. Philadelphia, PA: Wolters Kluwer.

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PEER-REVIEWED PUBLICATIONS - AZCOPT

Harrison W, **Osmotherly K**, **Biancardi N**, **Langston J**, **Gray R**, **Kneip T** & **Loveless R**. (2018) Foveal amplitudes of multifocal electroretinograms are larger following full-field electroretinograms. *Documenta Ophthalmologica* October 10: epub ahead of print.

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PEER-REVIEWED PUBLICATIONS - CCO

*Mao J, Lao J, **Liu C**, Wu M, Yu X, Shao Y, Zhu L, Chen Y & Shen L. (2019) Factors that influence refractive changes in the first year of myopia development in premature infants. *Journal of Ophthalmology* 2019:7683749.

*Mao J, Wu H, **Liu C**, Zhu C, Lao J, Chen Y, Tao J, Zhang Y & Shen L. (2019) Changes in metamorphopsia, visual acuity, and central macular thickness after epiretinal membrane surgery in four preoperative stages classified with OCT B-Scan images. *Journal of Ophthalmology* 2019:7931654.

*Mao J, Zhang C, **Liu C**, Shen L, Lao J, Shao Y, Chen Y & Tao J. (2019) The efficacy of intravitreal conbercept for chronic central serous chorioretinopathy. *Journal of Ophthalmology* 2019:7409426.

PEER-REVIEWED PUBLICATIONS - CCOM

Patel N, **Patel M** & **Poustinchian B**. (2019) Dry needling-induced pneumothorax. *The Journal of the American Osteopathic Association* 119(1):59-62.

PEER-REVIEWED PUBLICATIONS - CCP

Avedissian SN, **Scheetz MH**, Zembower TR, Silkaitis C, Maxwell R, Jenkins C, Postelnick MJ, Sutton SH & **Rhodes NJ**. (2018) Measuring the impact of varying denominator definitions on standardized antibiotic consumption rates: Implications for antimicrobial stewardship programmes. *Journal of Antimicrobial Chemotherapy* 73(10):2876-2882.

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Click ZR, **Seddon AN**, Bae YR, Fisher JD & Ogunniyi A. (2018) New FDA-approved and emerging novel treatment options for acute myeloid leukemia. *Pharmacotherapy* September 16: epub ahead of print.

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- Kaye AB, Bhakta A, Moseley AD, Rao AK, **Arif S**, Lichtenstein SJ, Aggarwal NT, Volgman AS & Sanghani RM. (2018) Review of cardiovascular drugs in pregnancy. *Journal of Women's Health* November 8: epub ahead of print.
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PEER-REVIEWED PUBLICATIONS - COLLEGE OF DENTAL MEDICINE ILLINOIS (CDMI)

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Kanjirath P & **Williams L**. (2018) The impact of taste perception on the health of the aging population. *General Dentistry* 66(5):20-23.

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- ***Broderick TL, JM Sennott, Gutkowska J & Jankowski M**. (2019) Anti-inflammatory and angiogenic effects of exercise training in cardiac muscle of diabetic mice. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy* 12:565-573.
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***Yeung AW, Aggarwal B, Balacheva A, Barreca D, Battino M, Belwal T, Bishayee A, Daglia M, Devkota H, Echeverría J, El-Demerdash A, Erdogan I, Georgiev M, Godfrey K, Gupta V, Horbańczuk J, Huminiecki L, Jóźwik A, Mocan A, Mozos I, Nabavi S, Pajpanov T, Pittal V, Rengasam K, Sampin S, Silvax A, Sheridan H, Sureda A, Tewaria D, Wang D, Weissig V, Yang Y, Zengin G, Shanker K, Moosavi M, Shah M, Kozuharova E, Al-Rimawi F, Durazzo A, Lucarini M, Soutoak E, Santini A, Malainer C, Djilianov D, Tancheva L, Li H, Gan R, Tzvetkov N & Atanasov AG.** (2019) Resveratrol, a popular dietary supplement for human and animal health: Quantitative research literature analysis. *Animal Science Papers and Reports* 37(2):103-118.

Yeung AWK, Aggarwal BB, Barreca D, Battino M, Belwal T, Horbańczuk OK, Berindan-Neagoe I, Bishayee A, Daglia M, Devkota HP, Echeverría J, El-Demerdash A, Orhan IE, Godfrey KM, Gupta VK, Horbańczuk JO, Modliński JA, Huber LA, Huminiecki L, Jóźwik A, Marchewka J, Miller MJS, Mocan A, Mozos I, Nabavi SF, Mohammed Nabavi S, Pieczynska MD, Pittala V, Rengasamy KRR, Silva AS, Sheridan H, Stankiewicz AM, Strzalkowska N, Sureda A, Tewari D, Weissig V, Zengin G & Atanasov AG. (2018) Dietary natural products and their potential to influence health and disease including animal model studies – A review. *Animal Science Papers and Reports* 36(4):345-358.

PEER-REVIEWED PUBLICATIONS - CVM

***Acierno MJ**, Brown S, Coleman AE, Jepson RE, Papich M, Stepien RL & Syme HM. (2018) ACVIM consensus statement: Guidelines for the identification, evaluation, and management of systemic hypertension in dogs and cats. *Journal of Veterinary Internal Medicine* 32(6):1803-1822.

***Acierno MJ & Labato MA.** (2019) Canine incontinence. *Veterinary Clinics: Small Animal Practice* 49(2):125-140.

PEER-REVIEWED PUBLICATIONS - CVM (Continued)

- ***Acierno MJ**, Partyka M, Waite K, da Cunha A & Mitchell MA (2018). Effect of refrigeration of canine urine on quantitative bacterial culture in clinical patients. *Journal of the American Veterinary Medical Association* 253(2):177-180.
- Brosnahan MM**. (2018) Eosinophils of the horse: Part I: Development, distribution, structure and biochemical mediators. *Equine Veterinary Education* August 20: epub ahead of print.
- Brosnahan MM**, Al Abri MA, Brooks SA, Antczak DF & Osterrieder N. (2018) Genome-wide association study of equine herpesvirus type 1-induced myeloencephalopathy identifies a significant single nucleotide polymorphism in a platelet-related gene. *The Veterinary Journal* December 12: epub ahead of print.
- Ferguson SH**, Foster DM, Sherry B, Magness ST, Nielsen DM & Gookin JL. (2019) Interferon- λ 3 promotes epithelial defense and barrier function against *Cryptosporidium parvum* infection. *Cellular and Molecular Gastroenterology and Hepatology* March 5: epub ahead of print.
- Groom LM & **Sullins KE**. (2018) Surgical excision of large melanocytic tumours in grey horses: 38 cases (2001-2013). *Equine Veterinary Education* 30(8):438-443.
- Guinan J & Thangamani S**. (2018) Antibiotic-induced alterations in taurocholic acid levels promote gastrointestinal colonization of *Candida albicans*. *FEMS Microbiology Letters* 365(18):fny196.
- ***Guinan J**, Wang S, Hazbun TR, Yadav H & **Thangamani S**. (2019) Antibiotic-induced decreases in the levels of microbial-driven short-chain fatty acids correlate with increased gastrointestinal colonization of *Candida albicans*. *Scientific Reports* 9:8872.
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- Jaffey J**, DeClue A, Cannon A, Tocci L & Hyland J. (2019) Presumptive glucocorticoid-induced refractory hypocalcemia in a dog with idiopathic immune-mediated hypoparathyroidism, thrombocytopenia, and hemolytic anemia. *Journal of the American Animal Hospital Association* 55(1):e551-04.
- Jaffey JA**, Amorim J & DeClue AE. (2018) Effects of calcitriol on apoptosis, toll-like receptor 4 expression, and cytokine production of endotoxin-primed canine leukocytes. *American Journal of Veterinary Research* 79(9):1071-1078.
- Jaffey JA**, Amorim J & DeClue AE. (2018) Effects of calcitriol on phagocytic function, toll-like receptor 4 expression, and cytokine production of canine leukocytes. *American Journal of Veterinary Research* 79(9):1064-1070.
- ***Jaffey JA**, Leach SB, Kong LR, Wigger KE, Bender SB & Reinero CR. (2019) Clinical efficacy of tadalafil compared to sildenafil in treatment of moderate to severe canine pulmonary hypertension: A pilot study. *Journal of Veterinary Cardiology* 24:7-19.
- Jones T**, Bracamonte JL, Ambros B & Duke-Novakovski T. (2019) Total intravenous anesthesia with alfaxalone, dexmedetomidine and remifentanyl in healthy foals undergoing abdominal surgery. *Veterinary Anaesthesia and Analgesia* January 22: epub ahead of print.
- ***Kjaergaard AB**, Davis JL & **Acierno MJ**. (2018) Treatment of carprofen overdose with therapeutic plasma exchange in a dog. *Journal of Veterinary Emergency and Critical Care* 28(4):356-360.
- Kreisler R**. (2018) Formulary. In K Polak and A Kommedal (Eds.) *Field Manual for Small Animal Medicine*. (pp.627-675). Hoboken, NJ: John Wiley & Sons, Inc.
- Kreisler RE**, **Cornell HN** & Levy JK. (2019) Decrease in population and increase in welfare of community cats in a twenty-three year trap-neuter-return program in Key Largo, FL: The ORCAT program. *Frontiers in Veterinary Science* 6:7.
- Kreisler RE**, **Cornell HN**, **Smith VA**, **Kelsey SE** & **Hofmeister EH**. (2019) Use of nalbuphine as a substitute for butorphanol in combination with dexmedetomidine and tiletamine/zolazepam: A randomized non-inferiority trial. *Journal of Feline Medicine and Surgery* February 8: epub ahead of print.

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- ***Kreisler RE, Stackhouse NL & Graves TK.** (2019) Arizona veterinarians' perceptions of and consensus regarding skills, knowledge, and attributes of day one veterinary graduates. *Journal of Veterinary Medical Education* June 13: epub ahead of print.
- ***Labato MA & Acierno MJ** (Eds.). (2019) Urology. *Veterinary Clinics: Small Animal Practice* 49(2).
- ***Levitin HA, Foss KD, Hague DW, Connolly SL, Vieson M, Wycislo KL, Lezmi S & Lovett MC.** (2019) The utility of intraoperative impression smear cytology of intracranial granular cell tumors: Three cases. *Veterinary Clinical Pathology* 48(2):282-286.
- Lopez BS, Hurley DJ, Giancola S, Guguère S, Felipe JB & Hart KA.** (2019) The effect of age on foal monocyte-derived dendritic cell (MoDC) maturation and function after exposure to killed bacteria. *Veterinary Immunology and Immunopathology* March 9: epub ahead of print.
- ***Norris JW, Watson JL, Tablin F, Kozikowski TA & Knych HK.** (2019) Pharmacokinetics and competitive pharmacodynamics of ADP-induced platelet activation after oral administration of clopidogrel to horses. *American Journal of Veterinary Research* 80(5):505-512.
- ***Piech TL & Wycislo KL.** (2019) Importance of urinalysis. *Veterinary Clinics: Small Animal Practice* 49(2):233-245.
- ***Rosser MF, Wycislo KL, Duffy DJ & Vieson MD.** (2019) What is your diagnosis? A ventral cervical mass in a dog. *Veterinary Clinical Pathology* 48(1):125-127.
- ***Scagnelli AM, Walton SA, Liu CC & Acierno MJ.** (2018) Effects of therapeutic plasma exchange on serum immunoglobulin levels in a dog with refractory immune-mediated hemolytic anemia. *Journal of the American Veterinary Medical Association* 252(9):1108-1112.
- ***Schlein LJ, Wycislo KL, Welle KR & Barger AM.** (2019) What is your diagnosis? Impression smear from the uropygial gland of an African Gray Parrot. *Veterinary Clinical Pathology* 48(1):140-142.
- Shaver SL, Larrosa M & Hofmeister EH.** (2019) Factors affecting the duration of anesthesia and surgery of canine and feline gonadectomies performed by veterinary students in a year-long preclinical surgery laboratory. *Veterinary Surgery* January 12: epub ahead of print.
- Shaver SL, Yamada N & Hofmeister EH.** (2018) *In vitro* security of 3 surgical knots placed by novice veterinary students. *Veterinary Surgery* 48(2):209-215.
- Struthers JD, Robl N, Wong VM & Kiupel M.** (2018) Gastrinoma and Zollinger-Ellison syndrome in canids: A literature review and a case in a Mexican gray wolf. *Journal of Veterinary Diagnostic Investigation* 30(4):584-588.
- Villa P, Arumugam N, Almansour AI, Kumar RS, Mahalingam SM, Maruoka K & Thangamani S.** (2019) Benzimidazole tethered pyrrolo[3,4-b]quinolone with broad-spectrum activity against fungal pathogens. *Bioorganic & Medicinal Chemistry Letters* 29(5):729-733.
- Wong VM, Trageser EE & Luong RH.** (2019) Pathology in practice. *Journal of the American Veterinary Medical Association* 254(4):475-477.
- ***Wycislo KL & Piech TL.** (2019) Urinary tract cytology. *Veterinary Clinics: Small Animal Practice* 49(2):247-260.

PEER-REVIEWED PUBLICATIONS - IHI

Alterie J, Dennis AJ, Baig A, **Impens A**, **Ivkovic K**, Joseph KT, Messer TA, Poulakidas S, Starr FL, Wiley DE, Bokhari F & Nagy KK. (2018) Does pain have a role when it comes to tourniquet training? *Journal of Special Operations Medicine* 18(3):71-74.

PATENTS ISSUED

Anil Gulati (CCP)

Title: Methods for Treatment of Stroke or Cerebrovascular Accidents Using an ETB Receptor Agonist

Inventors: Gulati A. (Naperville, IL)

U.S. Patent Number: 10,112,981

Date Issued: October 30, 2018

Anil Gulati (CCP) & **Shridhar Andurkar** (CCP)

Title: Methods and Compositions for Hypotensive Resuscitation

Inventors: Gulati A, Lavhale MS, Andurkar SV

Australian Patent Number: 2012388759

Date Issued: September 27, 2018

PATENTS PUBLISHED

*Alan R. Hauser, Andrew Lee, **Marc H. Scheetz** (CCP) & **Nathaniel J. Rhodes** (CCP)

Title: Antibiotic-Coated Nanoparticles

U.S. Patent Application Number: US2019/0099500A1

Date Issued: April 4, 2019

INTRAMURAL FUNDING

AZCOPT

Investigator/s	College	Department	Proposal Title
Baker, J.	AZCOPT	Optometry	Is There a "Safe" Level of Blue Light Exposure?
Helmuth, K.	AZCOPT	Optometry	Comparison of TrueTear to Preservative-free Artificial Tears in Treating Dry Eye Associated with Visual Display Use
Kozlowski, M.	AZCOPT	Optometry	Evaluation of New Classes of Compounds for Treating Lung Cancer Metastases to the Eye
Putnam, N.	AZCOPT	Optometry	Development of Outcome Metrics Using Tracking Scanning Laser Ophthalmoscopy (TSLO)
Roe, M.	AZCOPT	Optometry	Improving Batting Performance Through the Use of Senaptec Strobe Glasses
Vasudevan, B.	AZCOPT	Optometry	Contact Lens Drop Out and Dry Eye
Yeh, F.	AZCOPT	Optometry	The Effects of Scleral Lens Wear on the Corneal Endothelium

Total AZCOPT Intramural Funding: \$23,892

CCO

Investigator/s	College	Department	Proposal Title
*Chakraborty, A. & Upadhyaya, S.	CCO	Optometry	Cross-talks Among Visual, Oculomotor and Skeletomotor Networks: A Transcranial Direct Current Stimulation (tDCS) Study
*De Gracia, P.	CCO	Optometry	Visual Performance Under Presbyopia with Multifocal Solutions

Total CCO Intramural Funding: \$14,036

CCP

Investigator/s	College	Department	Proposal Title
Bertram, C.	CCP	Pharmacy Practice	Determining 5-day Urine Pharmacokinetics After Administration of Intravenous High-dose Amikacin: An Early Assessment of Carbapenem-sparing Agent for ESBL UTIs
Briyal, S.	CCP	Pharmaceutical Sciences	Effect of ETB Receptor Stimulation by IRL-1620 on Mitochondrial Dysfunction <i>in vitro</i> Human Hippocampal Neuron Cells and Transgenic Mouse Model of Alzheimer's Disease
Gilchrist, A.	CCP	Pharmaceutical Sciences	Examining the Role of Arrestins with Free Fatty Acid Receptor (FFAR2)
Joshi, M.	CCP	Pharmaceutical Sciences	Pharmacokinetics and Biodistribution of PEGylated Liposomal Vancomycin Formulation in Pregnant Rats
Ranjan, A.	CCP	Pharmaceutical Sciences	Role of ETB Receptor Agonist, IRL-1620, in Neuronal Regeneration and Functional Improvement in Brain After Stroke
Rhodes, N. J.	CCP	Pharmacy Practice	Evaluation of Durations of Bacterial Pneumonia Treatment and Viable Pathogen Eradication

Total CCP Intramural Funding: \$43,150

INTRAMURAL FUNDING

CDMI

Investigator/s	College	Department	Proposal Title
Bjork, B. (Vivirito, C. CDMI '21)	CDMI Joint Appointment	Dental	Quantitative Determination of Cell Proliferation and Apoptosis in Prdm16 and Mecom Null Mutant Palate Shelves and MC
Chandar, N. (Raman, R. CDMI '21)	CDMI Joint Appointment	Dental	Differentiation of Dental Pulp Stem to Enamel-like Cells by BMP2 Overexpression on Modified 3D Fluorapatite Scaffolds
Ciancio, M. (Chen, J. CDMI '21)	CDMI Joint Appointment	Dental	Detection of Nodal Signaling in 4NQO-induced Squamous Cell Carcinoma
Cuevas-Nunez, M.C. (Svetanoff, E. CDMI '19 & Song, A. CDMI '19)	CDMI	Dental	Expression of Nodal in Oral Squamous Cell Carcinoma
Edwards, J. (Leavitt, L. CDMI '20)	CDMI Joint Appointment	Dental	Periodontal Disease and the Environmental Toxicant Cadmium: Mechanism of Cadmium-induced Erosion of Alveolar Bone
Fernández, C.E. (Shen, H. CDMI '21)	CDMI	Dental	Analysis of Fluoride Content and Ph of Commercial Teas
Mayer, A. (Liao, A. CDMI '20)	CDMI Joint Appointment	Dental	Exploring a Potential Link Between Periodontitis and Neurodegenerative Diseases: Rat Brain Microglia Activation by <i>Porphyromonas gingivalis</i> Lipopolysaccharide (LPS)
Plotkin, B. (Cho, H. CDMI '20)	CDMI Joint Appointment	Dental	Insulin Modulation of Oral Pathogen Plaque Biofilm Formation
Rocha de Oliveira Carrilho, M. (Killpack, S. CDMI '20 & Chan, Y. CDMI '20)	CDMI	Dental	Efficacy of Non-operative Treatments in Controlling Caries Progression in Primary Teeth: A Systematic Review
Swartzendruber, J. (Jung, A. CDMI '21)	CDMI Joint Appointment	Dental	Determining Ability of Probiotic <i>Bacillus subtilis</i> to Suppress Allergen-specific Antibody Production

Total CDMI Intramural Funding: \$37,336

CGS

Investigator/s	College	Department	Proposal Title
Al-Nakkash, L.	CGS	Physiology	The DF508-CF Mouse: Influence of Genistein on the Intestinal Epithelial Barrier and Bile Acids
Bjork, B.	CGS	Biochemistry	Identification of Opposing Mechanisms of Cleft Palate Formation in Prdm16 and Mecom Mouse Mutants
Broderick, T.	CGS	Physiology	Effects of the Diabetic State on Hepoatic Biosynthesis and Renal Handling of Carnitine
Buhlman, L.	CGS	Biomedical Sciences	Exploring the Role of Endoplasmic Reticulum Stress in Parkin Loss-of-function Drosophila Phenotypes
Call, G.	CGS	Pharmacology	Mechanism of Action of Nicotine in the Fly PD Model
Chandar, N.	CGS	Biochemistry	Role of Retinoblastoma Gene in the Regulation of Cadherin11 Expression and its Effect on Communication
Ciancio, M.	CGS	Biomedical Sciences	Impact of High Fat Diet on Male Infertility: Protective Role of Heat Shock Protein 70
Dineley, K.	CGS	Pharmacology	Determining the Role of the M2 Muscarinic Receptor in the Adrenal Cortex
Eckman, D.	CGS	Biomedical Sciences	Cerebral Artery Function in 3-month- and 9-month-old 3xTg-AD Mice
Eckman, D.	CGS	Biomedical Sciences	Cardiovascular and Cerebrovascular Function in APO3 and APO4 Targeted-Replacement Mice
Fay, M.	CGS	Pharmacology	The Role of microRNA-34a-5p in Cadmium-induced Nephrotoxicity
Gallegos, K.	CGS	Microbiology & Immunology	Evaluation of the Inhibitory Effect of SPGG Against Chlamydia Attachment in an Animal Model

INTRAMURAL FUNDING

CGS (Continued)

Investigator/s	College	Department	Proposal Title
Gonzalez, F.	CGS	Microbiology & Immunology	Role of Oral Microbiota in Fungal Viability
Goral, J.	CGS	Anatomy	Effects of Diet and Gender on 4-NQO-induced Histopathological Changes in Various Organs; Role of Inflammation
Green, J.	CGS	Biochemistry	Analysis of Expression of Inflammatory Proteins and Folate Transporters in a Mouse Model of Oral Cancer
Griffin, M. J.	CGS	Biochemistry	Transcriptional Regulation of Adipocyte Inflammation by Early B-Cell Factor-1 (Ebf1)
Grossman, A.	CGS	Anatomy	Fossils From New Early Miocene Localities in Israel: Implications for the Role of the Levantine Corridor in Shaping the Modern Biotic Interchange between Africa and Eurasia
Hall, M.	CGS	Anatomy	Prostatic Neurovascular Anatomical Variation May Explain Radical Prostatectomy Outcomes
Heesy, C.	CGS	Anatomy	High Resolution Three-Dimensional Coordinate Data Collection on Skulls for Scaling Analysis of Orbit Anatomy in Gliding Mammals
Hull, E.	CGS	Biomedical Sciences	The Role of Gain of Function p53 Mutations in Oncogenesis
Kaufman, J. A.	CGS	Anatomy	Optical Clearing of GFP-reporter Zebrafish at Multiple Developmental Stages
Kopf, P.	CGS	Pharmacology	The Pathophysiology of Moderately High Salt-induced Hypertension
Korch, S.	CGS	Pharmacology	Analysis of Cancer Cell Metabolism Following ATP Sequestration by a Synthetic ATP-binding Protein
Kristjansdottir, K.	CGS	Biomedical Sciences	Examining the Interactions of p53/p14ARF Pathway and NPM1 in Neuroblastoma
Kristjansdottir, K.	CGS	Biomedical Sciences	The Role of NPM1 on the Migration and Invasion of Neuroblastoma Cells
Lawson, K.	CGS	Biochemistry	The Role of P-cadherin in Tumor Chemoresistance
Lee, A. H.	CGS	Anatomy	Micro-computed Tomographic and Chemical Assays to Test for Medullary Bone in the Avian Skull
LePard, K. J.	CGS	Physiology	Dynamic Glucose Transport by Pancreatic Beta Cells
Leyva, K. J.	CGS	Microbiology & Immunology	Factors Influencing the Progress of EMT in Cutaneous Squamous Cell Carcinoma
Mayer, A. M. S.	CGS	Pharmacology	Isolation and Culture of Human Microglia: Effect of Cyanobacterial Lipopolysaccharide on Classical and Alternative Activation
McCulloch, P.	CGS	Physiology	Brainstem Cardiorespiratory Control Mechanisms
O'Hagan, K.	CGS	Physiology	Effect of Exercise and High Fat Diet on Skeletal Muscle miR133a
Plotkin, B. J.	CGS	Microbiology & Immunology	Characterization of Mammalian Cells Under Anoxic Conditions: Anoxic Cell Respiration and Susceptibility to Chemotherapeutic Agents
Porta, M.	CGS	Physiology	The Memory of Pregnancy in the Uterus: Myometrial Contractility
Potter, P. E.	CGS	Pharmacology	Beta Arrestin in Transgenic Mice
Simons, E.	CGS	Anatomy	Assessing the Accuracy of 20 Histological Measures of Bone Laminarity
Smith, H. F.	CGS	Anatomy	Analyses of a New Species of the Late Cretaceous Fossil Turtle <i>Basilemys</i> from the Arlington Archosaur Site, Woodbine Formation, Texas
Soby, S.	CGS	Biomedical Sciences	Developing a Genetic System for <i>Chromobacterium vaccinia</i>

INTRAMURAL FUNDING

CGS (Continued)

Investigator/s	College	Department	Proposal Title
Soby, S.	CGS	Biomedical Sciences	Volatile Organic Compounds from Bog Soils
Swanson-Mungerson, M.	CGS	Microbiology & Immunology	Requirement of the BTK for the LMP2A-mediated Survival of Pre-tumor B Cells
Vallejo-Elias, J.	CGS	Physiology	The Role of <i>C. albicans</i> Infection in Alzheimer Disease (AD) Neuropathology Using a Triple Transgenic AD (3xTG) Mouse Model

Total CGS Intramural Funding: \$214,868

CHS-DG

Investigator/s	College	Department	Proposal Title
Anderson, D.	CHS-DG	Physical Therapy	Excellence in Pediatric Physical Therapy Education: Teaching for the Future
Bazzetta, S.	CHS-DG	Physician Assistant Program	Pilot Study to Assess Effectiveness of an Optional Online Wellness Program on Perceived Stress Scores (PSS) in the First Year of PA School
Elliott-Burke, T.	CHS-DG	Physical Therapy	Is a Visual Cue or an Auditory Cue More Effective in Producing a Lumbar Multifidus Muscle Contraction?
Gunn, J.	CHS-DG	Physician Assistant Program	Utilization of and Perceptions Toward Entrustable Professional Activities in Physician Assistant Education
Noronha, S.	CHS-DG	Physician Assistant Program	Evaluation of miRNA Expression in Normal Adipocytes, the SW-872 Human Liposarcoma Cell Line and SW-872 Cells Treated with Aurora Kinase Inhibitor AMG 900
Prodoehl, J.	CHS-DG	Physical Therapy	Spatiotemporal Parameters of Cortical Sensorimotor Processing During Orofacial Palpation, Jaw Movement and Biting in Individuals with Chronic Orofacial Pain
Provencher, D.	CHS-DG	Physician Assistant Program	Feasibility of Using a Modified Version of the ICAR to Evaluate Communication and Professional Collaboration Among Students in Different Healthcare Disciplines
Simpson, E.	CHS-DG	Occupational Therapy	An Occupational Therapy Work-Self-Efficacy Intervention for Transitionally Housed LGBTQ Young People

Total CHS-DG Intramural Funding: \$23,813

CHS-GD

Investigator/s	College	Department	Proposal Title
Flint, M.	CHS-GD	Behavioral Sciences	Psychological Characteristics of the Older Adult Hoarder: A Study with Evidence from Clinical and Non-clinical Peer Group
O'Neal, S.	CHS-GD	Physical Therapy	The Effects of Dog Walking on Gait Parameters in People with Parkinson's Disease: A Pilot Study

Total CHS-GD Intramural Funding: \$2,957

INTRAMURAL FUNDING

CPG

Investigator/s	College	Department	Proposal Title
Bowman, B. & Raney, E.	CPG	Pharmaceutical Sciences & Pharmacy Practice	Impact of a Student Leadership Development Program Upon Emotional Intelligence
Jordan, M., Veltri, C. & Kreisler, R.	CPG & CVM	Pharmaceutical Sciences & Veterinary Medicine	Stability of Cefovecin Sodium (Convenia) Stored Off-label in Veterinary Clinical Practice
Olsen, M.	CPG	Pharmaceutical Sciences	Synthesis and Evaluation of Novel ASPH Inhibitors for the Treatment of Cancer

Total CPG Intramural Funding: \$45,425

CVM

Investigator/s	College	Department	Proposal Title
Li, W.	CVM	Veterinary Medicine	Characterization of the CD8 T Cell-Neutrophil Axis in Chlamydial Pathogenesis
Lopez, B.	CVM	Veterinary Medicine	Optimized Methods for the <i>ex vivo</i> Generation of Bovine Monocyte-derived Dendritic Cells Under Serum-free Conditions
Thangamani, S.	CVM	Veterinary Medicine	Restoring Colonization Resistance Against <i>Candida albicans</i>

Total CVM Intramural Funding: \$45,000

MULTIDISCIPLINARY RESEARCH AWARDS

Investigator/s	Campus	Award	Proposal Title
Fornaro, M. (CGS), Gulati, A. (CCP) & Kristjansdottir, K. (CGS)	Downers Grove	Multidisciplinary	Mechanistic Pathways of Endogenous Spinal Cord Stem Cells Activation via Endothelin B Receptor Agonist, IRL 1620
Mitchell, J. (CDMA), Pulido, M.T. (CDMI), Eckman, D (CGS) & Wellensiek, B. (CGS)	Glendale	Multidisciplinary	Can Laser Therapy in the Dental Office Heal Cold Sores Better Than Anything Else?
Malaiyandi, L. (CGS), Gilchrist, A. (CCP) & Dineley, K. (CGS)	Downers Grove	Multidisciplinary	Muscarinic Receptor Signaling Pathways in an Aldosterone-producing Cell Line

Total Multidisciplinary Intramural Funding: \$60,000

ONE HEALTH RESEARCH AWARDS

Investigator/s	Campus	Award	Proposal Title
Browar, A. (CDMI) & Edwards, J. (CGS)	Downers Grove	One Health	Periodontal Changes with Cadmium Exposure
Rodriguez Sosa, J. (CGS) & Tullot, T. (CGS)	Glendale	One Health	Xenogenic Transplantation of Spermatogonial Stem Cells and Sertoli Cells into the Testes of Immunodeficient Mice to Study Spermatogenesis and Preserve Fertility in Non-rodent Mammals

Total One Health Research Awards: \$15,000

**TOTAL MWU INTRAMURAL FUNDING AWARDED BY ALL COLLEGES
DURING THIS REPORTING PERIOD: \$525,477**

FY19, QUARTER #4 REPORT

UNIVERSITY-FUNDED RESEARCH SUPPORT POSITIONS BY CAMPUS*

MWU "HARD MONEY" RESEARCH SUPPORT POSITIONS		
CAMPUS	FTE	TOTAL COMPENSATION FOR REPORTING PERIOD
DOWNERS GROVE, ILLINOIS	24.3	\$1,735,066
GLENDALE, ARIZONA	33.0	\$2,081,099
TOTAL	57.3	\$3,816,165

***THIS INCLUDES FUNDED OR FILLED, TEMPORARY OR PERMANENT POSITIONS. THIS DOES NOT INCLUDE "SOFT MONEY" RESEARCH POSITIONS FUNDED BY GRANTS OR CONTRACTS.**

TOTAL COMPENSATION TO ALL COLLEGES FOR RESEARCH SUPPORT POSITIONS IN THIS REPORTING PERIOD IS \$3,816,165

UNIVERSITY-FUNDED CAPITAL RESEARCH EQUIPMENT

Another manner in which MWU supports research is through consideration and funding of capital research equipment requests submitted by departments. During FY 2019, MWU spent \$1,305,835 on capital equipment purchases for research purposes across both campuses.

UNIVERSITY-FUNDED PER DIEM CHARGES

A way in which MWU supports research is through the waiving of animal per diem charges for those seeking extramural funding. During the current reporting period, MWU waived \$331,599 in animal per diem charges across both campuses.

UNIVERSITY-FUNDED RECAPTURED SALARIES AS "ADDITIONAL COMPENSATION"

Finally, another way that MWU supports research is through offering additional pay to faculty who receive grants which support "hard money" salary positions. When grant funds are exhausted the additional pay is eliminated. During FY 2019, MWU paid out \$39,598 as "Additional Compensation" to faculty Principal Investigators on grants. This payment is available to all faculty who receive extramural funding for their research, subject to the ORSP's *Recaptured Salaries on Grants* policy.

FY19, QUARTER #4 REPORT

UNIVERSITY-FUNDED STUDENT SUPPORT BY CAMPUS DURING REPORTING PERIOD

RESEARCH SUPPORT FOR STUDENTS IN DOWNERS GROVE, ILLINOIS		
ACTIVITY	NUMBER OF AWARDS	TOTAL FUNDING
RESEARCH POSTER PRINTING	277	\$15,661
TRAVEL TO PRESENT RESEARCH	43	\$21,574
FELLOWSHIPS*	44	\$196,000
TOTAL FUNDING IN SUPPORT OF STUDENT RESEARCH ACTIVITIES IN ILLINOIS		\$233,235

RESEARCH SUPPORT FOR STUDENTS IN GLENDALE, ARIZONA		
ACTIVITY	NUMBER OF AWARDS	TOTAL FUNDING
RESEARCH POSTER PRINTING	210	\$12,027
TRAVEL TO PRESENT RESEARCH	30	\$14,236
FELLOWSHIPS*	61	\$277,600
TOTAL FUNDING IN SUPPORT OF STUDENT RESEARCH ACTIVITIES IN ARIZONA		\$303,863

#Includes fellowships awarded in FY19, even though some payments are made in FY20

ONE HEALTH STUDENT RESEARCH AWARDS

Investigator/s	Campus	Award	Proposal Title
Lisowski, S. (CVM '20)	Glendale	One Health	Assessing the Feasibility of a Canine Vaccination as a Strategy to Prevent Rocky Mountain Spotted Fever Vectored by <i>Rhipicephalus sanguineus</i> in Arizona

TOTAL ONE HEALTH STUDENT RESEARCH FUNDING: \$2,500

**TOTAL FUNDING IN SUPPORT OF STUDENT RESEARCH ACTIVITIES
ACROSS BOTH CAMPUSES IS \$539,598**

THE ORSP WEBSITE CAN BE FOUND AT: <http://www.midwestern.edu/orsp.html>

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