

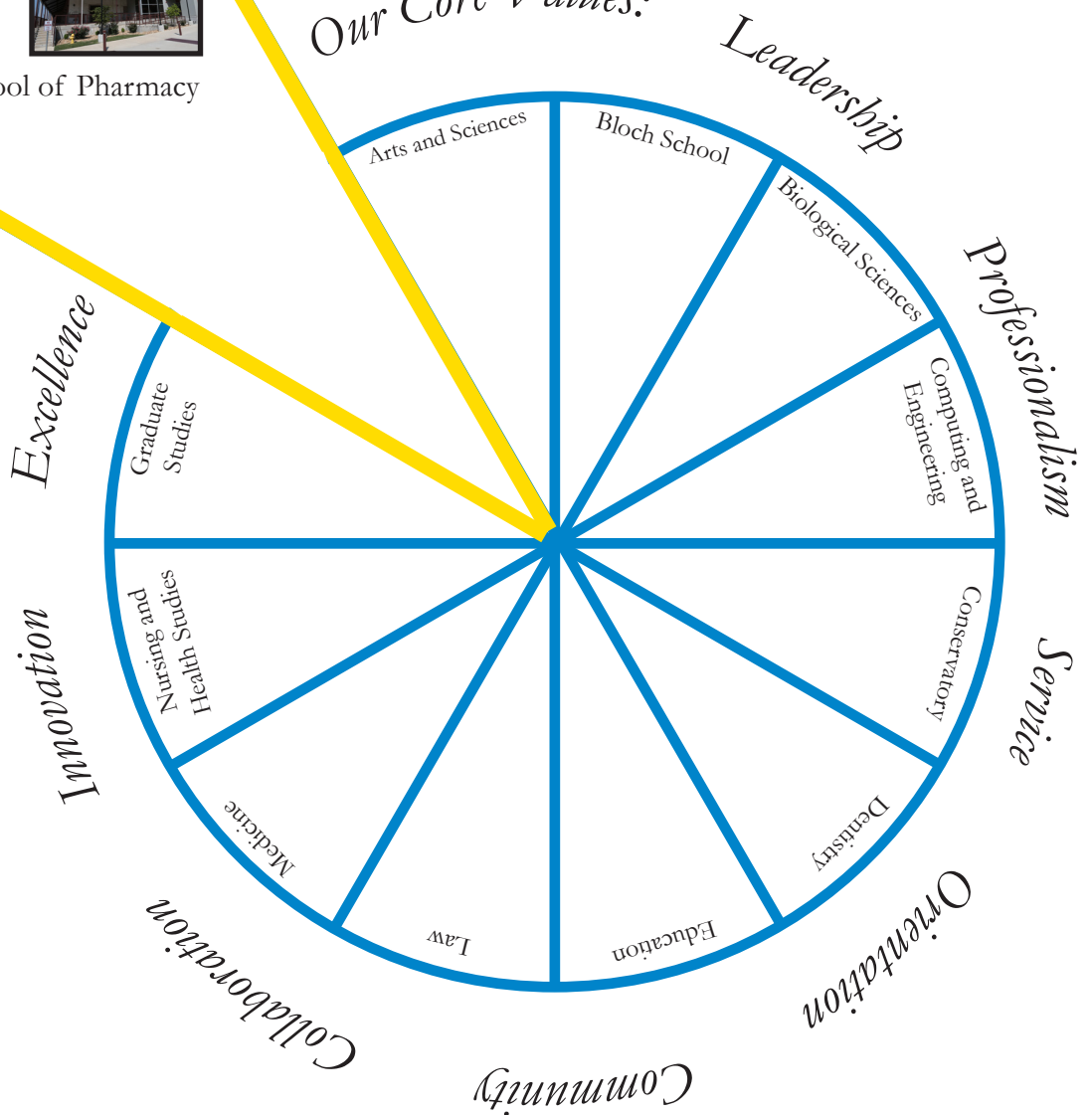
2015 UMKC School of Pharmacy Annual Report

Growing Outside The Lines



UMKC School of Pharmacy

Our Core Values:



Letter From The Dean

Dear Colleagues,

This report summarizes activities and accomplishments of the UMKC School of Pharmacy in 2015 and documents numerous successes of our students, staff, and faculty and significant progress on our 2015-2020 Strategic Plan!

The UMKC School of Pharmacy continued to contribute and bring prestige and international visibility to UMKC and the University of Missouri System. Toward our goal of placing student success in the center of all we do, faculty and staff led our pharmacy and graduate students to many great achievements. Our pharmacy student organizations were once again recognized among the top chapters in the country! Doctor of pharmacy graduates performed well on the NAPLEX and MPJE licensure exams, and many went on to match in prestigious residency positions. Our doctor of philosophy students also continued to bring prestige to the university by winning international research awards and publishing cutting edge research articles in highly rated national and international scientific journals. Our doctor of pharmacy and doctor of philosophy graduates in 2015 found outstanding postdoctoral training opportunities or jobs in clinical practice, academia, pharmaceutical industry, or regulatory organizations.

Our many successes led to an excellent report from our comprehensive self-study and ultimately culminated in full reaccreditation by the Accreditation Council for Pharmacy Education (ACPE) for an eight-year period beginning in 2016.

Our many success are entirely attributable to the hard work and dedication of our students, staff, and faculty as well as state financial support and assistance from our partners at the University of Missouri in Columbia, Missouri State University, UMKC, and the University of Missouri System.

Please enjoy reviewing all of the outstanding accomplishments of our students, staff, and faculty in this annual report.

Sincerely,

Russell B. Melchert, Ph.D.
Dean and Professor

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Introduction

The University of Missouri-Kansas City (UMKC) is comprised of 12 academic units, and the School of Pharmacy (SOP) is one of four health science units. The SOP contributes significantly to the university’s mission to lead in the life and health sciences, to develop a professional workforce and to collaborate on urban issues and create a vibrant learning experience.

University of Missouri-Kansas City Mission Statement

UMKC’s mission is to lead in life and health sciences; to deepen and expand strength in the visual and performing arts; to develop a professional workforce and collaborate in urban issues and education; and to create a vibrant learning and campus life experience.

School of Pharmacy Mission Statement

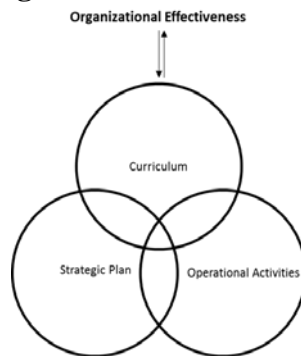
To educate, innovate, discover, engage, and serve to improve health.

The school prepares pharmacists through the *doctor of pharmacy degree program* and *advanced practice residencies* and prepares scientists through the *interdisciplinary doctor of philosophy programs* and *post-doctoral fellowships*.

The SOP programmatic assessment plan provides the framework for the continuous improvement of school operations, the curriculum and the learning experiences provided for professional and graduate students. The plan is designed to sustain a culture of assessment wherein operational and educational activities are routinely evaluated and evidence-based change implemented. Assessment of programmatic effectiveness ensures continuous improvement pursuant to the school’s mission.

Programmatic effectiveness involves the assessment of three interrelated components including the SOP strategic plan, the curriculum and operational activities.

Programmatic Effectiveness



Data are collected from key constituents regarding progress towards strategic initiatives, curricular effectiveness and faculty/staff alignment of work with the core mission.

<i>Internal Key Constituents</i>	<i>External Key Constituents</i>
Current students Alumni Faculty Staff School committees School administration and leadership	Employers Community members UMKC academic leadership Professional organizations Educational accrediting bodies Partner programs and institutions

Key findings are shared with internal and external constituents through the SOP Annual Report.

The SOP Strategic Plan 2015-2020

Several steps were involved in the development and approval of the 2015-2020 SOP Strategic Plan. The first step in the process was adoption of the UMKC Strategic Plan goals with appropriate modifications by the SOP Leadership Team in spring of 2013. This was followed by the creation of new Vision and Mission Statements by faculty and staff during the summer of 2013. Faculty, staff, professional and graduate students, alumni, preceptors and the Dean's Advisory Council then worked to develop objectives and action steps for each Strategic Plan goal from summer of 2013 through early fall in 2014. The 2015-2020 SOP Strategic Plan (below) was ratified by SOP faculty and staff on November 24, 2014.

Place Student Success at the Center

To provide the optimal learning environment for all students: outstanding academic programs and experiences, seamless student support and a vibrant campus community.

Objectives:

1. Advance student skill development through performance-based instruction and assessment such as simulated, authentic and interprofessional experiences.
2. Foster and maintain skills and expertise in methods to enhance student success through professional development opportunities for faculty, preceptors, and staff.
3. Create and assess innovative strategies to enhance student engagement in curricular and extracurricular activities across the programs' multiple sites.
4. Gain diverse and highly-qualified students across degree programs by using data-driven recruitment and admissions strategies.

Advance Statewide Engagement

To become a model school of pharmacy that enhances education, public health and economic development in the state of Missouri.

Objectives:

1. Promote interest in the science and practice of pharmacy through student recruitment and public awareness initiatives.
2. Equip pharmacists to provide quality, progressive patient care services and to support public health initiatives.
3. Partner with other health professions to promote health and wellness initiatives.
4. Advocate for the advancement of pharmacist delivered care.
5. Foster relationships with pharmacy stakeholders to support the School and the profession.

Promote Diversity

To promote diversity and inclusiveness in all aspects of school life.

Objectives:

1. Cultivate an environment committed to inclusiveness, civility, respect, and connectivity to the School.
2. Provide a diverse learning and life experience and create culturally competent citizens.
3. Recruit and retain a diverse community of students, staff, and faculty.
4. Ensure that diversity initiatives are actively reviewed and owned by the students, faculty, and staff.

Lead in Life and Health Sciences: Excel in Research and Promote Economic Development

To attain national and international recognition for excellence in research; produce world-class scholarship and creative activity; encourage entrepreneurship, foster innovation, and increase technology transfer; and build relationships that create economic and workforce development.

Objectives:

1. Develop innovative health care services, practice-based research and translational research.
2. Increase national and international recognition in research and health care services.
3. Implement innovative professional, doctoral, inter-professional education and research initiatives.
4. Expand available opportunities for extraordinary scholarship and creative activity.
5. Increase technology transfer and support interdisciplinary research and community partnerships.

Placing Student Success At The Center

Doctor of Pharmacy/Professional Degree Program.

Accreditation. The Doctor of Pharmacy program is fully accredited by the Accreditation Council for Pharmacy Education (ACPE). The customary on-site accreditation review cycle is eight years. An on-site evaluation requires completion of a self-study by the SOP. A written evaluation team report assessing compliance with each of the standards and performance with respect to student learning is generated following the on-site evaluation. The evaluation team report also comments on the program's areas of strength and areas needing improvement. The UMKC SOP's on-site evaluation occurred in November of 2015. The evaluation team report in addition to the school's self-study will be used by the ACPE Board of Directors to determine accreditation action at their January 2016 meeting.

Application and Admission Process. A number of changes occurred in the admission process for the professional degree seeking students. The school began participating in PharmCAS, an on-line application program supported by the American Association of Colleges of Pharmacy (AACP), with the entering class of 2012. In addition, the Admissions Committee began using a "whole file" review process for screening Doctor of Pharmacy applicants whereby committee members consider all materials in the applicant's file. Another important program revision that likely impacted student recruitment was the change from a 1-5 to a 2-4 curriculum in 2012.

In 2013, AACP refined the definition of "applicant" to be prospective students who complete the entire application process (i.e., submit a PharmCAS application, submit a supplemental UMKC application and considered a viable applicant by the Admissions Committee). The application process and definitions were unchanged in 2014 and 2015 with one exception: alumni interviewers were given access to the applicant's work and volunteer experience prior to the interview.

Applicant Data.

University of Missouri – Kansas City, School of Pharmacy Applicant Data, 2012 – 2015				
Applicants	2012	2013	2014	2015
Number of applicants who indicated UMKC in PharmCAS	Data not available	519	540	500
Number of completed applications	518	428	473	455
Number of incomplete applications	127	74	123	85
Number of applicants denied admission	146	132	94	88
Number of applicants that withdrew	56	53	48	51
Number of applicants on the alternate list	17	32	20	11
Number of offers declined	46	38	54	59
Number of offers rescinded	3	7	10	6
Number of offers deferred	0	0	1	0
Number of applicants that matriculated	123	124	143	155

Admissions Data.

University of Missouri – Kansas City, School of Pharmacy Admissions Data, 2012 - 2015				
Entering Pharm.D. Class Data	2012*	2013	2014	2015
Accepted Applicants	169	170	208	221
Applicants Matriculated	123	124	143	155
Matriculated Applicants with Missouri Residency	89%	89%	81%	83%
Matriculated Applicants Identifying as Female	57%	61%	64%	56%
Matriculated Applicants with a Previous Baccalaureate Degree	28%	32%	48%	37%
Average Age of Matriculated Applicants	22	22	22	22
Average Cumulative Grade Point Average	3.54	3.51	3.47	3.52
Average Science and Math Grade Point Average	3.45	3.40	3.33	3.43
Average Number of Credit Hours Earned	92	98	110	98
Ethnicity				
White	80%	82%	72%	72%
Asian / Pacific Islander	11%	8%	16%	10%
Black or African American	3%	5%	6%	9%
American Indian or Alaskan Native	0%	3%	0%	0%
Hispanic or Latino	4%	2%	1%	3%
Two or More Races	2%	0%	3%	3%
International / Foreign	0%	4%	1%	2%
Not Specified	0%	0%	1%	1%
PCAT Percentages				
Verbal	60	60	57	58
Biology	66	63	64	62
Reading Comprehension	51	55	58	51
Quantitative Ability	51	51	53	57
Chemistry	57	62	64	63
Composite	60	61	59	60

Student Learning Outcomes and Educational Goals. The essential premise of the Center for Advancement of Pharmaceutical Education (CAPE) Educational Outcomes 2013 is that pharmacists now and of the future must be capable of 1) functioning collaboratively as members of an interprofessional team, 2) advocating for patients and demonstrating leadership, 3) providing care for diverse patient populations, 4) contributing to the health and wellness of individuals and communities, 5) educating a broad range of constituents, and 6) effectively managing a highly technical workplace. CAPE 2013 was designed to represent all areas of pharmacy and guide the academy's efforts to educate Doctor of Pharmacy students

Student Learning Outcome 1.

Domain 1-Foundational Knowledge. Develop, integrate and apply knowledge from the foundational sciences (pharmaceutical, social/administrative/behavioral, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems and advance population health and patient-centered care.

The Pharmacy Curriculum Outcomes Assessment. The Pharmacy Curriculum Outcomes Assessment (PCOA) is a comprehensive test developed by NABP to measure student performance. The PCOA can assist in determining whether the UMKC SOP curriculum is meeting the desired educational outcomes. The PCOA will be required for all pharmacy students nearing completion of their didactic curriculum to meet Standard 24 of the 2016 ACPE

Standards. The 2016 Standards become effective July 1, 2016 therefore the SOP has decided to administer the test in the last semester of the third professional year. Student will complete the PCOA in April of 2016.

Student Learning Outcome 2.

Domain 2-Essentials for Practice and Care.

- 2.1. Patient-Centered Care (Caregiver) - Provide patient-centered care as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, implement, monitor and adjust plans, and document activities).
- 2.2. Medication Use Systems Management (Manager) - Manage patient healthcare needs using human, financial, technological, and physical resources to optimize the safety and efficacy of medication use systems.
- 2.3. Health and Wellness (Promoter) - Design prevention, intervention, and educational strategies for individuals and communities to manage chronic disease and improve health and wellness.
- 2.4. Population-Based Care (Provider) - Describe how population-based care influences patient-centered care and influences the development of practice guidelines and evidence-based best practices.

Pharmacotherapy. Students complete 7 credit hours of Pharmacotherapy in both the spring and fall semesters. Pharmacotherapy II and III are designed to develop the student’s ability to assess patients and provide pharmaceutical care. The courses focus on developing and applying problem-solving strategies for complex illnesses commonly encountered in pharmacy practice. The student’s ability to apply knowledge is assessed by completing 4-5 cases per exam and 4-5 exams per semester. For each case, students must:

1. Identify and prioritize medical and drug related problems.
2. Establish patient care goals.
3. Assess medical condition and medication therapy and provide rationale for treatment plan.
4. Recommend pharmacologic and non-pharmacologic therapy.
5. Suggest monitoring for safe and effective drug use.

Each case section above as well as the overall case score is analyzed to determine if and where students struggle so that global course changes can be implemented when necessary. The following table provides a summary of data evaluated.

Case Section	Problems	Goals	Assessment	Plan	Monitoring	Total
Section Worth	5 points	5 points	10 points	10 points	5 points	35 points
Spring 2015	4.6 (92%)	4.6 (92%)	8.8 (88%)	8.4 (84%)	4.1 (82%)	30.6 (87%)
Fall 2015	4.5 (90%)	4.6 (92%)	8.9 (89%)	8.5 (85%)	4.3 (86%)	30.8 (88%)

Student Learning Outcome 3.

Domain 3-Approach to Practice and Care.

- 3.1. Problem Solving (Problem Solver) – Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.

- 3.2. Educator (Educator) - Educate all audiences by determining the most effective and enduring ways to impart information and assess understanding.
- 3.3. Patient Advocacy (Advocate) - Assure that patients' best interests are represented.
- 3.4. Interprofessional Collaboration (Collaborator) – Actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs.
- 3.5. Cultural Sensitivity (Includer) - Recognize social determinants of health to diminish disparities and inequities in access to quality care.
- 3.6. Communication (Communicator) – Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization.

Student Learning Outcome 4.

Domain 4-Personal and Professional Development.

- 4.1. Self-Awareness (Self-aware) - Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth.
- 4.2. Leadership (Leader) - Demonstrate responsibility for creating and achieving shared goals, regardless of position.
- 4.3. Innovation and Entrepreneurship (Innovator) - Engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals.
- 4.4. Professionalism (Professional) - Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society.

ACT Engage. Engage was developed to measure student behaviors and psychosocial attributes (motivation and skills, social engagement, self-regulation) which are critical components of academic success. Results help students and advisors identify strengths and areas for improvement.

	Academic Success Index	Retention Index	Academic Discipline	Academic Self-Confidence	Commitment to College	General Determination
Fall 2015 (Class of 2019)	84	82	69	59	67	69

Data reported as a percentile.

Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ assesses the types of learning strategies and academic motivation used by college students. Results can help students improve motivation to study, study habits and course performance.

	Intrinsic Goal Orientation	Extrinsic Goal Orientation	Control of Learning	Basic Rehearsal Strategies	Elaboration Strategies	Critical Thinking	Help Seeking Behavior
Fall 2015 (Class of 2019)	5.02	5.26	5.61	4.89	4.91	4.08	4.45
National	5.03	5.03	5.74	4.53	4.91	4.16	3.84

Data reported are averages.

Asking students to complete validated tests followed by differing learning activities and self-reflection is a strategy to develop self-awareness of motivation, metacognition and skills. Surveys or inventories are administered to students in the first and second professional year in preparation for discussion. In-class activities allow students, with and without advisors present, to interact and discuss similarities and differences in survey or inventory results. Reflection-based assignments document students' understanding of the personal characteristics in relation to their development.

Attrition. Overall attrition rates are well within the standards set by ACPE. However, attrition due to academic dismissal for the classes of 2012, 2013, 2014 and 2015 exceeded the 5% limit set forth by ACPE. The SOP is working to reduce attrition through the stringent and thorough admission process and close monitoring of student progression through the program. A student success program was implemented in the fall of 2011 to detect academic struggle throughout the semester and to intervene as needed. In addition, the curriculum changed from a 1-5 to a 2-4 program with the entering class of 2012 (graduating class of 2016). More than a third of the overall attrition occurred during the first year of the 1-5 program; therefore, changing to a 2-4 curriculum should slow attrition.

Graduation and Attrition Statistics for the Pharm.D. Program.

University of Missouri – Kansas City, School of Pharmacy Graduation and Attrition Statistics for the Pharm.D. Program Class of 2012 – Class of 2015								
Year of Entry	Year of Graduation	Overall and By Site	Number Admitted	On Time Graduation (%)	Delayed Finish (%)	Attrition: Personal (%)	Attrition: Academic (%)	Graduation Rate of Original Class (%)
2007	2012	Total	123	107 (87%)	3 (2%)	3 (2%)	10 (8%)	110/123 (89%)
		Kansas City	95	82 (86%)	2 (2%)	3 (3%)	8 (8%)	84/95 (88%)
		Columbia	28	2 (89%)	1 (4%)	0 (0%)	2 (7%)	26/28 (93%)
2008	2013	Total	138	121 (88%)	3 (2%)	2 (1%)	12 (9%)	124/138 (90%)
		Kansas City	110	98 (89%)	1 (1%)	2 (2%)	9 (8%)	99/110 (90%)
		Columbia	28	23 (86%)	2 (7%)	0 (0%)	3 (11%)	25/28 (89%)
2009	2014	Total	136	122 (90%)	1 (<1%)	4 (3%)	9 (7%)	123/136 (90%)
		Kansas City	108	98 (91%)	1 (<1%)	3 (3%)	6 (6%)	99 (92%)
		Columbia	28	24 (85.7%)	0	1 (4%)	3 (11%)	24 (86%)
2010	2015	Total	138	122 (88.4%)	4 (2.9%)	2 (1.4%)	10 (7.2%)	126/138 (91.3%)
		Kansas City	110	97 (88.2%)	4 (3.6%)	1 (0.9%)	8 (7.3%)	101/110 (91.8%)
		Columbia	28	25 (89.3%)	0 (0.0%)	1 (3.6%)	2 (7.1%)	25/28 (89.3%)

Student Scholarships and Awards.

Number of Scholarships Awarded by Class.

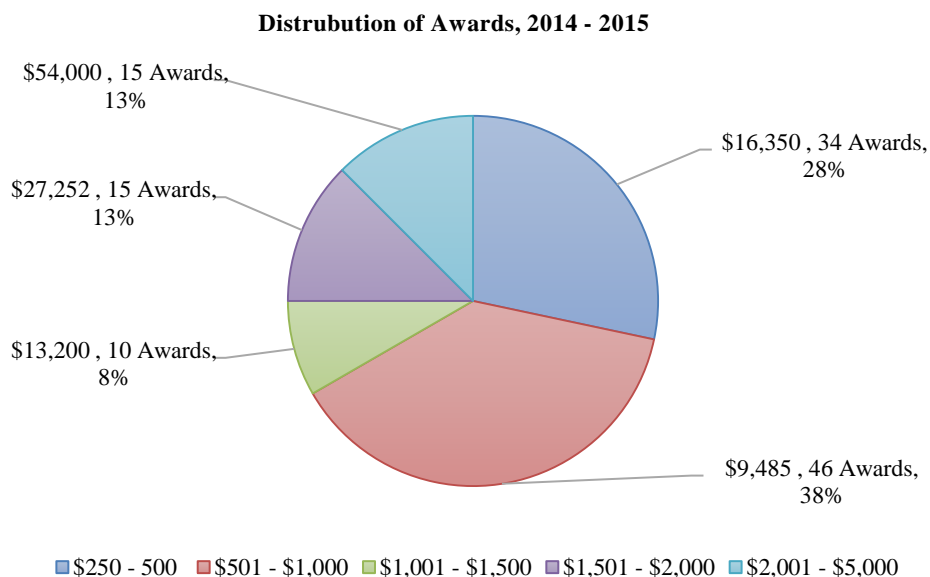
University of Missouri – Kansas City, School of Pharmacy Number of Scholarships Awarded By Class Fall 2015			
Year of Study	Class of 2013-2014	Class of 2014-2015	Class of 2015-2016
P1	19	26	17
P2	25	33	42
P3	24	27	27
P4	24	20	31
Graduate	3	5	8
Students Receiving Multiple Scholarships	9	9	8
Total Scholarships Awarded	104	120	135

- Four additional P1 students each received a \$1,000.00 scholarship from annual Walgreens money that was not used for recruitment efforts/camps. The money is not available for scholarships in 2015-2016. These students are not represented in the above table.
- Three P1 students received Chancellors Nonresident Diversity Awards worth the differential between out-of-state and in state tuition. These students are not represented in the above table.

Percentage of Students that Received a Scholarship.

University of Missouri – Kansas City, School of Pharmacy Percentage of Students That Received a Scholarship Fall 2015			
Type of Student	Class of 2013-2014	Class of 2014-2015	Class of 2015-2016
All Students	62%	80%	60%
Pharm.D. Students	68%	85%	62%
Graduate Students	17%	33%	36%

Scholarship Award Distribution.



Recognition of Student Honors and Accomplishments.

Achievers of Excellence. School of Pharmacy scholarship winners are recognized at the Achievers of Excellence awards program each fall. The reception for students and their families, scholarship donors, faculty, staff and alumni is sponsored by the Pharmacy Foundation. Each student has his or her photograph taken with the scholarship donor, if possible, and copies are sent to the donors. A brief biography submitted by each scholarship recipient is printed in the awards program booklet. Over 275 people attended the 2015 event.

UMKC Women’s Council. The UMKC Women’s Council presents their annual Graduate Assistance Awards at a reception in the spring. Doctor of pharmacy students are among the women recognized for their research projects. In 2013, one Doctor of Pharmacy received an award. No Doctor of Pharmacy student received an award in years 2012, 2014 and 2015.

Doctor of Pharmacy Graduating Class. Each spring, award recipients in the Doctor of Pharmacy graduating class are recognized during the commencement ceremony and during the graduation banquets. Awards are given for superior academic achievement, leadership and service. Sponsors of the awards are invited to attend the ceremony and be recognized.

Licensure.

North American Pharmacist Licensure Examination.

North American Pharmacist Licensure Examination (NAPLEX) Pass Rates. UMKC NAPLEX pass rates were above the national average in 2014 and 2015 and almost identical to the national average in 2013.

University of Missouri – Kansas City School of Pharmacy National Pass Rate Comparison for NAPLEX 2012-2015		
Calendar Year	UMKC	National
2012	93.81%	96.45%
2013	95.31%	95.36%
2014	96.06%	94.35%
2015	94.53%	92.64%

NAPLEX Pass Rates for UMKC and Comparator Schools. UMKC NAPLEX pass rates were comparable to neighboring programs. The pass rate for UMKC first-time NAPLEX examinees exceeded the national average in 2013 (95.93% vs. 95.87%), 2014 (95.97% vs. 94.88%) and 2015 (95.12% vs. 92.64%).

School Name	2012 Graduates				2013 Graduates				2014 Graduates				2015 Graduates			
	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)
University of Nebraska	65	100	65	100	65	100	65	100	41	97.56	40	97.50	65	98.15	60	98.11
University of Oklahoma	117	100	117	100	108	95.37	105	95.24	112	99.11	111	99.10	104	98.08	104	98.08
*Creighton University	151	100	151	100	180	96.67	178	97.19	154	98.05	151	98.01	171	97.66	168	97.62
Southern Illinois University-Edwardsville	73	98.63	73	98.63	81	95.06	78	94.87	82	92.68	77	92.21	74	97.30	73	97.26
University of Kansas	101	99.01	100	99.00	104	98.08	103	98.06	149	98.66	147	98.64	159	96.23	154	96.75

University of Iowa	115	96.52	112	97.32	115	93.91	109	93.58	101	97.03	100	97.00	110	94.85	106	95.28
University of Missouri-Kansas City	113	93.81	107	93.46	128	95.31	123	95.93	127	96.06	124	95.97	128	94.53	123	95.12
*St. Louis College of Pharmacy	181	98.34	179	98.88	174	97.70	170	97.65	195	91.79	182	92.86	223	86.10	203	88.18

Multistate Pharmacy Jurisprudence Exam.

Multistate Pharmacy Jurisprudence Exam (MPJE) Pass Rates. The 2012-2015 MPJE pass rates for UMKC were consistently above the national average.

University of Missouri – Kansas City School of Pharmacy National Pass Rate Comparison for MPJE 2012-2015		
Calendar Year	UMKC	National
2012	98.85%	92.50%
2013	95.45%	92.80%
2014	96.97%	93.15%
2015	97.12%	92.89%

MPJE for UMKC and Comparator Schools. UMKC pass rates were similar to rates for neighboring and urban peers who require the MPJE for licensure. In addition, the UMKC MPJE pass rates for first-time examinees in 2014 and 2015 were above the national average (96.88% versus 95.17% and 97.03% versus 94.35%, respectively).

School Name	2012 Graduates				2013 Graduates				2014 Graduates				2015 Graduates			
	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)	All attempts	Pass rate (%)	First-time attempts	Pass rate (%)
Creighton University	40	100	40	100	40	95.00	38	94.74	31	100	31	100	44	100	44	100
University of Kansas	95	98.95	94	98.94	92	100	92	100	118	99.15	117	99.15	136	99.26	135	99.26
University of Iowa	67	92.54	63	93.65	76	96.05	73	97.26	56	98.21	55	98.18	72	98.61	71	98.59
University of Nebraska	60	100	60	100	49	100	49	100	35	100	35	100	50	98.00	49	97.96
University of Missouri-Kansas City	87	98.85	87	98.85	110	95.45	106	96.23	99	96.97	96	96.88	104	97.12	101	97.03
St. Louis College of Pharmacy	140	91.43	129	91.47	139	94.96	133	94.74	132	94.70	127	95.28	127	93.31	120	92.50
Southern Illinois University-Edwardsville	57	94.74	54	96.30	61	96.72	60	96.67	59	94.92	56	94.64	52	92.31	50	94.00

Note: UAMS graduates do not take the MPJE exam and are therefore not included in this table.

Post-Graduate Training and Employment. In 2015, 86% percent of the Doctor of Pharmacy class was employed or pursuing post-graduate training at the time of graduation.

Career Choices.

University of Missouri – Kansas City, School of Pharmacy Post-Graduate Employment and Training for Pharm.D. Graduates 2012 – 2015				
Career Choices	2012	2013	2014*	2015
Total N=	107	123	88**	123
Residency/Fellowship	26%	23%	26%	29%
Community Chain	40%	49%	49%	42%
Community Independent	6%	9%	10%	7%
Hospital	7%	6%	10%	6%
Industry (Sales, Clinical Residency)	0%	0%	0%	0%
Graduate School	0%	0%	1%	1%
Government, Military, Nuclear, Benefits, Mail Order	4%	1%	2%	1%
Unknown	0%	0%	0%	0%
Undecided	17%	12%	0%	18%

* The 2014 Pharm.D. exit survey was administered in October to assess employment at 6-months post-graduation. The response rate was lower than in previous years (70% vs ~100%). The 2014 data reflects only those responses. The graduating class size was 126 (98 in KC and 28 in Col).

Residency Placement.

Thirty-seven students (30%) were accepted into postgraduate residency or fellowship training programs. Thirty-two of these students attended classes in Kansas City where five students attended classes in Columbia. Students accepted positions in thirteen different states.

University of Missouri – Kansas City, School of Pharmacy Residency Programs: Pharm.D. Graduate Placement 2015		
2015 Match Summary	Percentage of Class Applied	Percentage of Applicants Placed
Received Placement on Match Day	21.9%	64.2%
Placement Outside of Official Match		
Placement During Scramble	4%	11.9%
Placement in Programs Not Participating in Match	4%	11.9%

Twenty-seven of forty-two UMKC student applicants (64.2%) were placed into a Postgraduate Year One Residency (PGY-I) versus 66.4% of all 2015 applicants (nationwide) for Phase I of the ASHP Resident Matching Program (the “Match”). Of note, the National Matching Service, who provides this data, does not report on placements made through the scramble process (Phase II) or for programs that do not participate in the Match.

Ten additional UMKC students were placed into residency programs during Phase II or outside of the Match:

- Five students placed during scramble (Phase II).
 - Three out of five students submitted a match list, were denied and subsequently placed during scramble.

- Two out of five students did not submit a program rank order list and only applied to positions available through the scramble (Phase II).
- Five students placed in programs that do not participate in the Match.

Class of 2014 and Before Placement Data.

- Eleven out of fifteen (73%) students from the Class of 2014 who applied for a PGY-II residency were placed in the 2015 Match.
- Two students from the Class of 2011 were placed into a PGY-I residency in 2015.

Residency Placement Data 2012-2015.

University of Missouri – Kansas City, School of Pharmacy Residency Placement Data 2012 - 2015						
Year	UMKC Percent Placed Through Match*	National Percent Placed Through Match*	Percent Placed Through Scramble**	Percent Placed Outside of ASHP Match**	Percent Applied Placed in Residency or Fellowship**	Percent Graduating Class Completing Residency
2012	67.5% (27/40)	63.0%	6.9% (3)	Data Not Available***	69.8% (30/43)	28.0% (30/107) KC: 23 / COL:7
2013	73.6% (28/38)	65.2%	5% (2)	0%	75.0% (30/40)	24.2% (30/124) KC: 22 / COL: 8
2014	65.2% (30/46)	65.4%	7.8% (4)	1.9% (1)	68.8% (35/51)	27.8% (35/126) KC: 28 / COL: 7
2015	65.2% (27/42)	66.3%	7.8% (4)	9.8% (5)	70.6% (36/51)	29.2% (36/123) KC: 31 / COL: 5

*From ASHP Resident Matching Program – remaining placement data collected from graduating students and faculty reports.

**Includes students who received residency through match and scramble and placed in programs not affiliated with ASHP.

*** Data not available as to whether residency from scramble or from a non-accredited residency program.

Other Training and Degrees.

University of Missouri – Kansas City, School of Pharmacy Other Training and Degrees 2015	
2015 AACP Graduating Student Survey	Number of Students
Pharm.D. / M.B.A.	1
Pharm.D. / M.S.	0
Other	1
“Current plans upon your graduation from the College/ School of Pharmacy”	
Pharmacy Residency Program	34
Pharmacy Master’s Program	1
M.B.A. Program	4
Other Health Professions	1
Fellowship	1
No Plans for Further Education	80

Interdisciplinary Program.

Enrollment. Graduate students enrolled in nine or more credits during a regular semester or five credits during a summer session are considered full-time students. All students registered for fewer than those specified totals are classified as part-time students, unless they hold a teaching or research appointment at UMKC.

Full-time enrollment for students holding graduate teaching assistant or graduate research assistant (GTA/GRA) appointments is six hours in a regular semester or three hours in a summer session.

GTAs/GRAs are expected to make normal progress toward their degrees and should enroll in a minimum of six hours per semester (three credits in the summer session). However, GTA/GRA appointees who have completed all required coursework for the degree and who are working full time on research need only enroll for the minimum of three credits. Students who are enrolled and do not meet the criteria for full-time enrollment are considered to be part-time graduate students.

Continuous enrollment is required. "Graduate students in good standing who have not enrolled for only one semester may re-enroll without applying for readmission. Students who attend other schools in the interim must submit transcripts of such work from each institution attended. Graduate students are considered inactive after a lapse of two or more regular semesters of enrollment. Subsequently, inactive graduate students who want to continue must follow the same admission procedures as those required for new applicants. After a lapse of three or more terms, graduate students will re-enter under requirements in effect at the time of readmission."

Graduate Student Enrollment in 2015.

- Spring:
 - Thirty-seven students in the Division of Pharmaceutical Sciences.
 - Sixteen students in the Division of Pharmacology and Toxicology.
- Fall:
 - Thirty-four students in the Division of Pharmaceutical Sciences.
 - Fifteen students in the Division of Pharmacology and Toxicology.

Pharmaceutical Sciences IPh.D. Learning Outcomes. The mission of the Graduate Program in the *Division of Pharmaceutical Sciences* is to prepare graduate students to be the next generation of productive scientists by training them in the techniques and concepts of cutting edge research in the pharmaceutical sciences, including the sub-disciplines of pharmaceutics and medicinal chemistry.

Program Goals.

- Students will learn fundamentals of discipline through course work.
- Students will read and analyze scientific literature.
- Students will apply knowledge through cutting edge research.

Student Learning Outcomes.

- Students will master broad fundamentals of the discipline.
- Students will be able to read, analyze and apply lessons from scientific literature.

- Students will be able to perform scientific research in their sub-discipline, including the mastery of techniques and concepts specific to their projects.
- Students will gain skill in presentation of scientific materials, including writing, posters and public speaking.

Pharmacology and Toxicology IPh.D. Learning Outcomes. The mission of the graduate program in the *Division of Pharmacology and Toxicology* is to educate and train the next generation of competitive, skilled, and knowledgeable pharmacologists and toxicologists who are competent to conduct health-related research.

Program Goals.

- To help students develop the knowledge and skills essential for becoming innovators in the fields of Pharmacology and Toxicology.

Student Learning Outcomes.

- Mastery of fundamental and advanced knowledge in Pharmacology and Toxicology along with appropriate knowledge in related interdisciplinary scientific fields.
- Understanding of the appropriate conduct of scientific investigations and competency in writing reports, manuscripts, and grant proposals, as well as oral presentations related to the dissemination of experimental results.
- Competency in developing professional collaborations with colleagues engaged in scientific research.

Research Publications, Posters, and Presentations.

University of Missouri – Kansas City, School of Pharmacy IPh.D. Discipline Enrollment 2015		
IPh.D. Disciplines	Publications	Posters/ Presentations
Pharmaceutical Sciences	11	13
Pharmacology and Toxicology	3	6

Graduate students demonstrate research proficiency through participation in faculty research, development of their own related studies and the dissemination of their work through peer-reviewed publications as well as presentations at scientific meetings. Typically, graduates from our doctoral programs have published multiple peer-reviewed articles and are engaged in an ongoing program of research. Our graduates are well-trained to work as independent scientists in industry and/or academe.

Publications.

Division of Pharmaceutical Sciences.

Chen, Z., Jin, W., Liu, H., Zhao, Z., and Cheng, K. (2015). Discovery of peptide ligands for hepatic stellate cells using phage display. *Molecular Pharmaceutics*, 12(6), 2180-2188.

Cholkar, K., Trinh, H.M., Pal, D., and Mitra, A.K. (2015). Discovery of novel inhibitors for the treatment of glaucoma. *Expert Opinion on Drug Discovery*, 10(3), 293-313.

Cholkar, K., Trinh, H.M., Vadlapudi, A.D., Wang, Z., Pal, D., and Mitra, A.K. (2015). Interaction studies of resolvin E1 analog (RX-10045) with efflux transporters. *Journal of Ocular Pharmacology and Therapeutics*, 31(4), 248-255.

- Lee, Y., Khemka, A., Acharya, G., Giri, N., and Lee, C.H. (2015). A cascade computer model for microbicide diffusivity from mucoadhesive formulations. *BMC Bioinformatics*, 16, 263.
- Mitra, A.K., Agrahari, V., Mandal, A., Cholkar, K., Natarajan, C., Shah, S., Joseph, M., Trinh, H.M., Vaishya, R., Yang, X., Hao, Y., Khurana, V., and Pal, D. (2015). Novel delivery approaches for cancer therapeutics. *Journal of Controlled Release*, 219, 248-268.
- Oh, B., and Lee, C.H. (2015). Development of Man-rGO for targeted eradication of macrophage ablation. *Molecular Pharmaceutics*, 12(9), 3226-3236.
- Oh, B., Melchert, R.B., and Lee, C.H. (2015). Biomimicking robust hydrogel for the mesenchymal stem cell carrier. *Pharmaceutical Research*, 32(10), 3213-3227.
- Ray, A., Mandal, A., and Mitra, A.K. (2015). Recent patents in pulmonary delivery of macromolecules. *Recent Patents on Drug Delivery and Formulation*, 9(3), 225-236.
- Vaishya, R., Mandal, A., Patel, S., and Mitra, A.K. (2015). Extended release microparticle in-gel formulation of octreotide: Effect of polymer type on acylation of peptide during in vitro release. *International Journal of Pharmaceutics*, 496(2), 676-688.
- Vaishya, R.D., Mandal, A., Gokulgandhi, M., Patel, S., and Mitra, A.K. (2015). Reversible hydrophobic ion-pairing complex strategy to minimize acylation of octreotide during long-term delivery from PLGA microparticles. *International Journal of Pharmaceutics*, 489(1-2), 237-245.
- Zhang, T., Xiong, H., Dahmani, F. Z., Sun, L., Li, Y., Yao, L., . . . Yao, J. (2015). Combination chemotherapy of doxorubicin, all-trans retinoic acid and low molecular weight heparin based on self-assembled multi-functional polymeric nanoparticles. *Nanotechnology*, 26(14), 145101. doi:10.1088/0957-4484/26/14/145101
- Division of Pharmacology and Toxicology.*
- Ande, A., McArthur, C., Ayuk, L., Awasom, C., Achu, P. N., Njinda, A., . . . Kumar, S. (2015). Effect of Mild-to-Moderate Smoking on Viral Load, Cytokines, Oxidative Stress, and Cytochrome P450 Enzymes in HIV-Infected Individuals. *Plos One*, 10(4). doi:10.1371/journal.pone.0122402
- Gangwani, M. R., and Kumar, A. (2015). Multiple Protein Kinases via Activation of Transcription Factors NF- κ B, AP-1 and C/EBP- δ Regulate the IL-6/IL-8 Production by HIV-1 Vpr in Astrocytes. *Plos One*, 10(8). doi:10.1371/journal.pone.0135633
- Zhang, Y., Karki, R., and Igwe, O.J. (2015). Toll-like receptor 4 signaling: A common pathway for interactions between oxidative stress and extracellular disulfide high mobility group box 1 (HMGB1) protein-coupled activation. *Biochemical Pharmacology*, 98(1), 132-143.

Graduate Student Posters and Presentations.

Division of Pharmaceutical Sciences.

Agrahari, V. (2015, May). *Development, optimization and evaluation of biological activity of tailor-made pentablock copolymer based composite formulation for sustained delivery of protein therapeutics.* Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.

Agrahari, V. (2015, June). *Development, optimization and evaluation of biological activity of tailor-made pentablock copolymer based composite formulation for sustained delivery of protein therapeutics.* American Association of Pharmaceutical Scientists National Biotechnology Conference, San Francisco, CA.

Agrahari, V. (2015, October). *Biodegradable and injectable thermosensitive pentablock copolymers hydrogels for sustained delivery of proteins for posterior segment ocular diseases.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Chen, Z., and Cheng, K. (2015, October). *Discovery of IGF2R specific peptide ligands for liver fibrosis using phage display.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Coulibaly, F.S., and Youan, B.B. (2015, October). *Top 300 drugs: General indicators of the most prescribed drugs in the USA in 2014.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Giri, N. (2015, October). *Effects of edaravone nanoparticles on oxidative stress.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Jain, A. (2015, October). *Exocytosis study of protein based siRNA nanocomplex.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Mandal, A., Vaishya, R.D., Gokulgandhi, M., Patel, S., and Mitra, A.K. (2015, October). *Reversible hydrophobic ion-paring complex strategy to minimize acylation of octreotide during long-term delivery from PLGA microparticles.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Ngo, A.N., Ezoulin, M.J.M., Murowchick, J.B., Gounev, A.D., and Youan, B.B. (2015, October). *Sodium acetate coated tenofovir-loaded chitosan nanoparticles for improved physico-chemical properties.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Oh, B., and Lee, C.H. (2015, October). *Mannosylated-reduced graphene oxides (Man-rGOs) for a targeted carrier against atherosclerotic plaque.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Vemula, H., and Gutheil, W.G. (2015, May/June). *Understanding the bacterial cell wall biosynthesis, regulation and inhibition in S. aureus by metabolomics approach using LC-MS/MS assay.* Annual meeting of the American Society of Mass Spectrometry, St. Louis, MO.

Vemula, H., and Gutheil, W.G. (2015, June/July). *Back into the future: Exploring and understanding the metabolomics and drug resistance pathways—by absolute quantitation in bacteria*. Annual International Conference of the Metabolomics Society, San Francisco, CA.

Vemula, H., and Gutheil, W.G. (2015, October). *Metabolomics profiling and quantitation of peptidoglycan cell wall pathway intermediates in S. aureus to different antibiotics*. Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Division of Pharmacology and Toxicology.

Alsousi, A.A., and Igwe, O.J. (2015, October). *Role of trace metal-generated oxidative stress in toll-like receptor 4 (TLR-4) signaling in synovial fibroblasts*. Annual meeting of the Society of Neuroscience, Chicago, IL.

Gangwani, M.R., and Kumar, A. (2015, April). *Methamphetamine synergistically interacts with HIV-1 Vpr in the induction of IL-6 in astrocytes*. Annual conference of the Society on NeuroImmune Pharmacology (SNIP), Miami, FL.

Nookala, A. (2015, April). *Invited symposium talk in Early Career Investigator session*. Annual conference of the Society on NeuroImmune Pharmacology (SNIP), Miami, FL.

Nookala, A., and Kumar, A. (2015, April). *HIV-1 Tat and methamphetamine mediated synergistic expression of IL-6 in astrocytes involves PI3K/Akt and NF-κB signaling pathways*. Annual conference of the Society on NeuroImmune Pharmacology (SNIP), Miami, FL.

Zhang, Y., and Igwe, O.J. (2015, October). *Role of toll-like receptor 4 in mediating oxidative stress-induced proinflammatory state in macrophages*. Annual meeting of the Society of Neuroscience, Chicago, IL.

Igwe, O.J., Karki, R., and Zhang, Y. (2015, October). *Role of c-Src in oxidant-mediated toll-like receptor 4 signaling*. Annual meeting of the Society of Neuroscience, Chicago, IL.

Progression.

Spring 2015 – Fall 2015.

University of Missouri – Kansas City, School of Pharmacy		
Progression Data, 2015		
Division	Total Number of Students	
	Students Enrolled	Students Graduated
Division of Pharmaceutical Sciences	38	7
Division of Pharmacology and Toxicology	18	2

To mark progression through the graduate programs, a white coat ceremony was instituted in the 2012- 2013 academic year. Students who have completed two full years of study in one of the Ph.D. programs and who have filed a plan of study with the graduate school are eligible to participate in the white coat ceremony.

Students receive a white laboratory coat and take the oath of the scientist signifying their commitment to upholding the highest standards in their scientific contributions to new knowledge. In the inaugural white coat ceremony in May of 2013, 36 graduate students received their white coats. Five students received a white coat in April 2014, and 10 students received their white coat in April 2015.

Graduate Student Awards.

The UMKC Women’s Council. The UMKC Women’s Council presents their annual Graduate Assistance Fund Awards at a reception in the spring. Ph.D. and doctor of pharmacy students are among the women recognized for their research projects. In spring of 2015, nine SOP graduate students were among the total of 66 awardees and two of the nine received outstanding merit awards.

Division of Pharmaceutical Sciences.

- Vibhuti Agrahari (with merit)
- Namita Giri
- Hoang “Holly” Trinh
- Harika Vemula (with merit)
- Xiaoyan Yang

Division of Pharmacology and Toxicology.

- Fatma Abdalla
- Asmaa Alsousi
- Anusha Ande
- Yan Zhang

Health Sciences Student Research Summit. At the 2015 Health Sciences Student Research Summit, three pharmacy graduate students and one pharmacy practice post-doctoral fellow received best poster awards.

Division of Pharmaceutical Sciences.

- Zhijin Chen
- Byeongtaek Oh

Division of Pharmacology and Toxicology.

- Anantha Ram Nookala

Division of Pharmacy Practice and Administration.

- Sam Zakkour

Graduate Student Awards.

Division of Pharmaceutical Sciences.

- Agrahari, Vibhuti
 - American Association of Pharmaceutical Scientists (AAPS)-Ocular Drug Delivery Disposition Focus Group (ODDDFG) Award at the AAPS Annual Meeting, 2015, Orlando, FL.
 - Modified Release Focus Group Travel award, at the AAPS Annual Meeting, 2015, Orlando, FL.

- AAPS National Biotechnology Conference (NBC), 2015 AAPS Biotechnology Graduate Student Symposium Award sponsored by Eli Lilly and Company, San Francisco, CA.
- Ronald MacQuarrie Fellowship, SGS, UMKC, 2015.
- UMKC School of Graduate Studies Research Grant Award, 2015.
- Graduate Student Professional Development and Leadership Program, UM System, 2015.
- Soroptimist International of Kansas City Award.
- Gracia Bremer Award.
- Chen, Zhijin
 - AAPS Foundation Graduate Student Honorable Mentions, 2015.
 - University of Missouri-Kansas City School of Graduate Studies Research Grant Award, 2015.
- Jain, Akshay
 - 2015-AAPS Travel Award (Physical Pharmacy and Biopharmaceutics Focus group-AAPS).
- Oh, Byeongtaek
 - 2015 Community of Scholar – University of Missouri Best Poster Presentation Award.
 - 2014 – 2016 Pre-doctoral Research Grant Proposal (2 consecutive years) Funded by University of Missouri.
- Trinh, Hoang (Holly)
 - UMKC Interdisciplinary Doctoral Student Council travel award 2015-2016.
 - UMKC Interdisciplinary Doctoral Student Council travel award 2014-2015.
- Vemula, Harika
 - AAPS Analytical and Pharmaceutical Quality (APQ) graduate student award, 2015.
 - AAiPS (American Association of Indian Pharmaceutical Scientists) Research award, 2015.

Division of Pharmacology and Toxicology.

- Cao, Lu
 - Certificate of Excellence, SNIP conference committee, for poster presentation at Society on NeuroImmune Pharmacology 21st Annual Scientific Conference.
- Gangwani, Mohitkumar
 - Early Career Investigator Certificate of Excellence, Society on NeuroImmune Pharmacology, Miami, FL, 2015.
- Nookala, Anantha
 - Early Career Investigator Travel Award, Society on NeuroImmune Pharmacology, Miami, FL, 2015.
- Zhang, Yan
 - Preparing Future Faculty Award, University of Missouri-Kansas City (2015).

2015 Graduations.

Graduates and Mentor.

Division of Pharmaceutical Sciences.

- Spring
 - Cholkar, Kishore.....Mitra, Ashim
 - Kala, Ashish.....Friedman, Simon
 - Sheng, Ye.....Mitra, Ashim

- Vaishya, Ravi.....Mitra, Ashim
- Yang, XiaoyanMitra, Ashim
- Fall
 - Agrahari, Vivek. Youan, Celestin
 - Meng, Jianing. Youan, Celestin

Division of Pharmacology and Toxicology.

- Spring
 - Ronghe, Amruta.....Bhat, Hari
- Fall
 - Ande, Anusha.....Kumar, Santosh

IPh.D. Graduate Job Placement.

University of Missouri – Kansas City, School of Pharmacy Job Placement of IPh.D. Graduates 2015					
Name	Advisor	Class	Employer	Location	Position
Agrahari, Vivek	Youan	2015	University of Nebraska Medical Center	Omaha, NE	Post-doctoral Fellow
Cholkar, Kishore	Mitra	2015	Ricon Pharma	Denville, NJ	Formulation Scientist
Kala, Ashish	Friedman	2015	St. Jude’s Children’s Research Hospital	Memphis, TN	Research Scientist
Sheng, Ye	Mitra	2015	Wuxi Apptec, Inc., XenoBiotec Laboratories	Plainsboro, NJ	Post-Doctoral Fellow
Vaishya, Ravi	Mitra	2015	Insys Therapeutics, Inc.	Chandler, AZ	Post-Doctoral Fellow
Yang, Xiaoyan	Mitra	2015	Food and Drug Administration	Washington, D.C.	Post-Doctoral Fellow, ORISE Department

Advancing Statewide Engagement

School of Pharmacy Faculty and Staff.

Faculty Engagement.

Clinical Practice Information. Within the Division of Pharmacy Practice and Administration, there were thirty-one clinical faculty located in twenty-two practice sites in the Kansas City Metropolitan Area, Columbia and Springfield.

- Center for Behavioral Medicine, Kansas City. (2).
- Centerpoint Medical Center, Kansas City. (1).
- Cox Health Steeplechase Family Physicians Clinic, Springfield. (1).
- Cox Health System South, Springfield. (1).
- Clay County Public Health Center/Samuel Rodgers. (1).
- Faith Community Health, Branson. (1).
- Goppert-Trinity Family Care Clinic. (2).
- Jordan Valley Community Health Center, Springfield. (1).
- Kansas City CARE Clinic. (2).
- Mercy Hospital, Springfield. (1).
- Red Cross Community Pharmacy, Kansas City. (1).
- Research Medical Center, Kansas City. (1).
- St. Luke's Multispecialty Clinic, Kansas City. (1).
- Truman Medical Center Behavioral Health, Kansas City. (1).
- Truman Medical Center–Hospital Hill, Kansas City. (3).
- Truman Medical Center–Lakewood, Kansas City. (1).
- UMKC Drug Information Center, Kansas City. (3).
- University of Missouri Hospital, Columbia. (3).
- Harry S. Truman Memorial Veteran's Administration Hospital, Columbia. (1).
- Veterans Affairs Medical Center Honor Annex, Kansas City. (1).
- University of Missouri Physicians Fairview Internal Medicine Clinic, Columbia. (1).
- University of Missouri Physicians Family and Community Medicine Clinic, Columbia. (1).

Faculty Involved in Post-Graduate Training.

- The school offers the following practice-based residencies.
 - Three PGY-I community pharmacy residencies in affiliation with Balls Food Stores, Red Cross Pharmacy, and Walgreens Pharmacy.
 - One PGY-I residency in public health at the Kansas City Care Clinic.
 - Three PGY-II in ambulatory care at Cox Health.
 - Two fellowships in Drug Information.
- The school also provides faculty support for the following residency programs.
 - Center for Behavioral Medicine. (2).
 - Truman Medical Center. (5).
 - University Hospital at MU. (3).

School of Pharmacy Student Engagement.

Doctor of Pharmacy.

Doctor of Pharmacy Student Organizations.

Membership.

- Academy of Managed Care Pharmacy. (30).
- American Pharmacists Association Academy of Student Pharmacists. (315).
- Kappa Epsilon. (56).
- Kappa Psi (Kansas City). (119).
- Kappa Psi (Springfield). (19).
- National Community Pharmacists Association. (68).
- Public Health Organization. (35).
- Phi Lambda Sigma. (50).
- Rho Chi. (75).
- Student National Pharmaceutical Association. (20).
- Student Society of Health-System Pharmacists. (82).
- Student College of Clinical Pharmacy. (39).

Examples of Community Service Provided by Doctor of Pharmacy Student Organizations.

- DEA National Drug Take-Back Day
- Operation Breakthrough
- Medicare Part D Signup Sessions
- Shepherd's Center
- Vampire Cup Blood Donation
- Harvesters
- Race For the Cure
- Organ Donor Awareness
- Generation Rx

Examples of Patient Care Provided by Doctor of Pharmacy Student Organizations.

- MedZou Project Homeless Connect
- Black Health Care Coalition Health Screenings
- Operation Immunization, Diabetes, Heart and Self Care
- ROO 4 Health
- Healthy for Life: the University of Missouri's Faculty and Staff Wellness Program
- Missouri State Fair Health Screenings
- Sojourner Clinic
- International Medical Mission Trips to Dominican Republic and Peru
- Bone Density Screenings at Assisted Living Facilities
- Falls Prevention

Examples of Philanthropy Provided by Doctor of Pharmacy Student Organizations.

- CRUSH Hunger Event
- Annual AIDS Walk
- KC Kidney Walk
- RxFactor

- Susan G. Komen Race for the Cure
- Harvesters
- Ronald McDonald House
- Bowling for Breast Cancer
- Marine Toys for Tots
- Vial of Life
- Adopt-A-Family
- Volley for Charity
- Angel Tree

Leadership, Clinical and Professional Skills Development Provided by Doctor of Pharmacy Student Organizations.

- | | |
|---|---|
| ○ Multicultural Lunch | ○ Financial Planning |
| ○ Clinical Pearls Discussions | ○ Mock Interview Day |
| ○ Professional Development Seminars | ○ Etiquette Lunch |
| ○ Research Skills Seminars | ○ Pharmacy and Therapeutics Competition |
| ○ Clinical Pharmacy Challenge | ○ Rho Chi Clinical Pearls |
| ○ Clinical Skills Competition | ○ General Medicine I Roundtable |
| ○ Attendance at National Meetings | ○ Student Practice Research Networks |
| ○ Residency Roundtable | ○ Clinical Case Presentations |
| ○ Strategies for Effective Networking | ○ CPR/First Aid Training |
| ○ National Patient Counseling Competition | |
| ○ Advocacy and Legislative Days | |
| ○ Compounding Competition | |

Examples of Social Events Provided by Doctor of Pharmacy Student Organizations. Baseball games, movie nights, game and trivia nights, casino night, formals, roller skating, holiday parties, laser tag, welcome picnics and dinners.

Student Community Engagement. T.E. Atkins UM Wellness Program (Healthy for Life) is the University of Missouri’s established employee wellness program which spans all four system locations and serves all benefit-eligible employees. In 2010, the School of Pharmacy established a collaboration with this program to conduct health screenings and flu shot clinics annually for employees. Our P3 IPPE students are actively involved in providing services at these events, allowing them to utilize therapeutic knowledge and employ many direct patient care skills. Students screen patients seeking immunization, obtain consent and administer flu shots. Biometric screenings are also performed where students measure blood pressure, perform a finger-stick to obtain a blood sample for blood glucose and lipid panel readings, and obtain patient height and weight to calculate body mass index. This collaboration engages students and faculty and allows our students to demonstrate the knowledge, skills, and impact that pharmacists can have on community health and wellness.

Healthy For Life Summary. The table below summarizes the SOP involvement with Healthy for Life.

University of Missouri – Kansas City, School of Pharmacy Healthy for Life Involvement 2012 - 2015								
Healthy For Life Summary Information	2011-2012		2012-2013		2013-2014		2014-2015	
	KC	MU	KC	MU	KC	MU	KC	MU
Flu Shots Administered	431	322	515	652	375	682	680	693
Biometric Screenings and Education	353	570	377	202	*	*	694	350
Students	124		128		124		120	
Faculty	14		14		8		10	

SOP immunization protocol was established in 2011.

Doctor of Pharmacy Student Awards and Honors.

APhA-ASP Awards, National.

- APhA-ASP Division AA National Chapter Achievement Award for 2013-14; March 2015.

APhA-ASP Awards, Local.

- UMKC Student Government Association Outstanding Service Program of the Year; May 4, 2015.
- UMKC Student Government Association Outstanding Leader Award, Alicyn Wyatt, third-year student at the Columbia site; May 4, 2015.
- UMKC Student Government Association Outstanding Graduate/Professional Award, Lara Kerwin, fifth-year student at the Kansas City site; May 4, 2015.

Individual Student and Other Organization Awards and Honors.

- Amy Moore and Patricia Hoover won best student poster at the 2015 Mid-America Pharmacy Conference; project mentored by Dr. Eric Wombwell.
- Rachel Howland was awarded the APhA/APhA Auxiliary Scholar, one of thirteen APhA Foundation scholarship recipients nationally; 2015 APhA Meeting.

IPh.D. Student Engagement.

Graduate Student Organizations.

Membership.

- American Association of Pharmaceutical Scientists. (32).
- Pharmaceutical Sciences Graduate Student Association. (35).

School of Pharmacy Alumni Engagement.

Alumni Numbers. As of July 2015, the campus advancement office records showed that the School of Pharmacy had 4,532 presumed living alumni members; 3,608 are listed as “potentially contactable,” 3,018 have a mailing address, 2,256 have a known phone number and 1,910 have a known email address.

University Rank for Volunteer Engagement. The school has ranked number one for volunteer engagement for the past eight fiscal years (FY07-FY15), contributing 58% of all volunteer service hours recorded by the entire UMKC campus in 2014-15. Volunteer engagement has been tracked on this campus since fiscal year 2007.

Number of Alumni Preceptors. 334 pharmacy professionals are on the 2014-2015 list of preceptors for the Division of Pharmacy Practice and Administration, and a large percentage of them are alumni.

- 2011-2012: preceptors provided 100,400 volunteer hours.
- 2012-2013: preceptors provided 119,760 volunteer hours.
- 2013-2014: preceptors provided 122,280 volunteer hours.
- 2014-2015: preceptors provided 151,682 volunteer hours.

Alumni Participation: School Committees and Events.

Alumni Service on School Committees.

- Admissions. (1).
- Curriculum. (1).
- Task Force on Diversity. (1).

Dean’s Advisory Council. Twenty-nine of the thirty-four members of the Dean’s Advisory Council are School of Pharmacy alumni. The council invites students to their spring and fall meetings to meet one-on-one with the members.

Pharmacy Foundation. In 2015, twenty-three of the twenty-seven members of the Pharmacy Foundation Board of Directors were School of Pharmacy alumni. Board members have opportunities to interact with students at the annual golf tournament, the Achievers of Excellence program, and other school activities.

Pharmacy Alumni Association. Fifteen alumni serve on the Pharmacy Alumni Association.

- Several alumni serve as guest speakers in required and elective pharmacy courses.
- APhA-ASP invites alumni to speak at some of their events and supervise at health screenings.
- Alumni attend Kappa Psi’s annual Volley for Charity event and Kappa Epsilon’s Bowling for Breast Cancer fundraisers.

Volunteer Hours.

In addition to preceptors, the school reported the following volunteer hours for events and meetings of the Pharmacy Alumni Association, Pharmacy Foundation and Dean’s Advisory Council.

- 2011-2012: 150 hours.
- 2012-2013: 323 hours.
- 2013-2014: 242 hours.

- 2014-2015: 213 hours.
 - The Pharmacy Alumni Association sponsors annual student appreciation day at all three sites.
 - Pharmacy alumni serve as speakers each year at the Achievers of Excellence program.
 - In the spring of 2012, 2013, 2014 and 2015, alumni served as the keynote speakers for the School of Pharmacy commencement ceremonies and a representative from the Pharmacy Alumni Association also speaks each year.

School of Pharmacy Fundraising.

Fundraising Numbers. The campus advancement office reports fundraising data on a fiscal year basis. Fundraising for the School of Pharmacy for 2012-2015 is presented in the following table.

University of Missouri – Kansas City, School of Pharmacy Fundraising Numbers 2012 - 2015		
Fiscal Year	Funds Raised	Number of Donors
Fiscal year 2012 (July 1, 2011-June 30, 2012)	\$181,102.02	398
Fiscal year 2013 (July 1, 2012-June 30, 2013)	\$513,502.16	413
Fiscal year 2014 (July 1, 2013-June 30, 2014)	*\$148,865.69	304
Fiscal year 2015 (July 1, 2014-June 30, 2015)	\$225,936.01	378

*In addition to the funds raised in fiscal year 2014, another \$1,666,666 was received as a bequest expectancy pledge.

The UMKC campus was engaged in a capital campaign running from 2009 to 2015. From July 1, 2009 through June 30, 2015, the School of Pharmacy raised \$8,884,924 in gifts and pledges for the recording time period of the campaign.

Scholarships Offered. The capital campaign goal and project list including scholarship support with goals to raise.

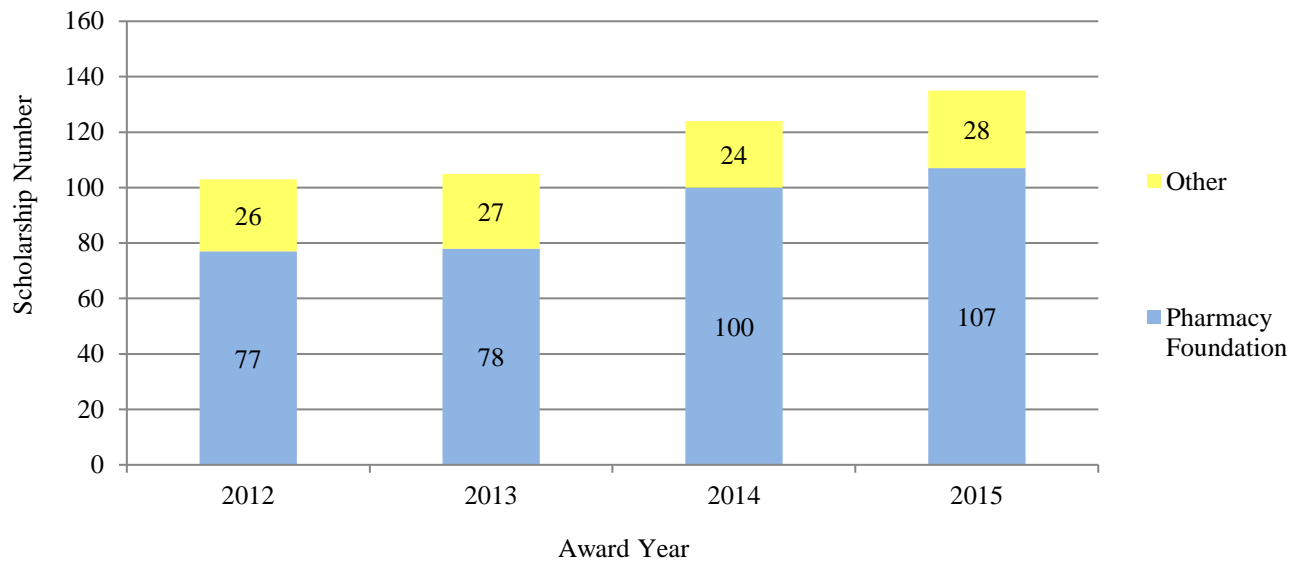
Private Funding. \$500,000 of private funds for the creation of new scholarships specifically for the doctor of pharmacy program and students at the Springfield site (priority level—immediate). To date, no funds have been raised toward this goal.

Pharmacy Foundation. \$500,000 of private funds for the creation of new scholarships to support the doctor of pharmacy program (priority level—ongoing, both immediate and future). This goal has been reached with over \$900,000 raised for scholarships from 2009 through 2015. \$100,000 of private funds for the creation of new scholarships for the support of students in the school’s Ph.D. programs (priority level—immediate). In fall 2014, a new one-time \$500 scholarship was awarded to a female graduate student in the IPh.D. program. In fall 2015, two new annual scholarships (\$750 and \$1,000) were awarded to graduate students in the Pharmaceutical Sciences IPh.D. program. \$1 million of private funds for an endowment to provide emergency loans and support for pharmacy students (priority level—immediate). In 2010, a donor pledged a planned estate gift of \$300,000 to endow a student emergency fund to provide short-term loans to students needing urgent financial assistance.

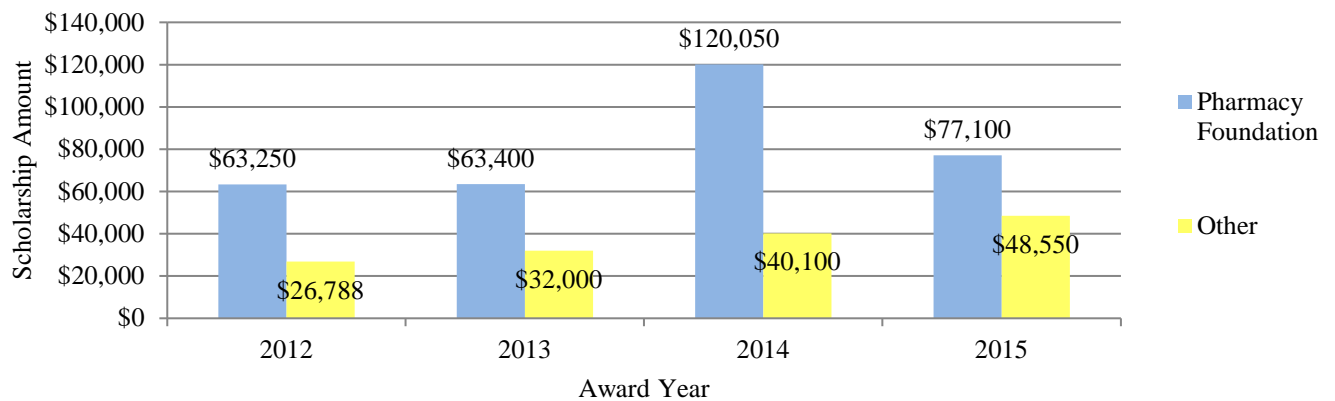
New Pharmacy Foundation Scholarships.

- Fall 2012: One new endowed scholarship; one new annual scholarship.
- Fall 2013: One new endowed scholarship; five new annual scholarships; one one-time scholarship.
- Fall 2014: Two new endowed scholarships; six new annual scholarships; one one-time scholarship.
- Fall 2015: Five new annual scholarships.

Numbers of Scholarships Awarded.



Total Scholarship Amounts Awarded.



School of Pharmacy Communication.

Development and Dissemination of Communication. The school employs a full-time staff member in the position of coordinator of communication and promotions, who serves as the resource and contact for news and information for the campus public relations department and the school as a whole. The coordinator is responsible for the dissemination of school news to campus public relations, social media, web site and appropriate news outlets and/or organizations. The coordinator also maintains and updates the School of Pharmacy's web page and Facebook site.

The school's web site has a page dedicated to news releases related to students, faculty, staff, alumni, awards, and upcoming events (<http://pharmacy.umkc.edu/news/>). The page includes a link for online submission of news items. School of Pharmacy news releases also appear on the web page of the UMKC office of public relations (<http://www.umkc.edu/news/>) and "UMatters," the web page for UMKC faculty and staff news (<http://info.umkc.edu/umatters/>).

The School of Pharmacy's director of advancement creates the *Postscript*, an annual award-winning alumni magazine mailed each year to approximately 3,100 school alumni and over 200 other friends. The magazine includes feature articles on students, faculty and alumni. The *Postscript* received the District VI Gold Institutional Award for Excellence in Communications at the 2012 conference of the Council for Advancement and Support of Education (CASE), the professional organization that helps direct and support alumni, fundraising and communications pieces for colleges and universities nation-wide.

Pharmacy Events and Programs.

- All university alumni are invited to the UMKC Alumni Awards luncheon. The invitation is produced and mailed by main campus each year.
- Alumni Association, Pharmacy Foundation and Dean's Advisory Council members receive regular communications for relevant specific events such as student appreciation days, wellness fairs, the Health Sciences Student Research Summit, career fair and commencement.
- The Pharmacy Foundation golf tournament player brochure is e-mailed to over 1,300 people – alumni, past players, constituent group members, SOP faculty and staff.
- The Pharmacy Alumni reunion weekend brochure is e-mailed to all alumni of the SOP, Alumni and Pharmacy Foundation board members, Dean's Advisory Council members and friends of the SOP each fall.
- The Pharmacy Alumni Board annually sponsors a wine tasting event. This tradition began in the fall of 2003. Invitations are e-mailed to over 1,500 alumni each year.
- The Tiger-Roo Tailgate tradition began in the fall of 2011. Each fall, approximately 900 e-mail invitations are sent to area alumni to attend a tailgate party prior to a Mizzou home football game, usually in October.
- The Roo Night at the Cardinals tradition began in summer 2015 to celebrate the alumni, students, faculty, staff and friends of the UMKC SOP at MSU. Invitations were emailed to approximately 900 Missouri alumni for the June event.

The UMKC Advancement division produces a monthly e-blast newsletter known as *eRoos* with all known alumni related information from across the campus. This newsletter is sent to all UMKC alumni with a known e-mail account. The UMKC Alumni Association includes news about alumni on their web page (<http://www.umkcalumni.com>) under "Roos in the News" and "Class Notes" and in their printed magazine *Perspectives* and *eRoos*, the online alumni newsletter. *Perspectives* is also mailed to over 3,000 pharmacy alumni each year.

Promote Diversity

School of Pharmacy Recruitment Activities and Diversity Initiatives.

Summary of 2014-2015 Activities and Initiatives.

School of Pharmacy Hosted Events. 33% of events were focused on underrepresented students.

- KC Prep Health Science Day
- BEST Students
- American Association of Colleges of Pharmacy Virtual Career Fair
- MSU and UMKC Pre-Pharmacy Club Tours of School of Pharmacy
- AHEC Medical Explorers
- Hospital Hill Health Science Day
- Missouri Southern State University Pre-Health Tour

Volker Campus Hosted Events. 24% of events were focused on underrepresented students.

- Freshman and Transfer Orientations
- Convocation
- Fall 2014 UMKC Preview Days
- Spring 2015 UMKC Preview Days
- Experience UMKC Days
- UMKC School of Medicine Summer Scholars
- Hospital Hill Diversity Council Scholarship Dinner and Dance Fundraiser
- UMKC Pre-Pharmacy Club
- UMKC STEM Career Fair
- Latino Youth Day
- Latinos of Tomorrow Career Readiness and Retention Event
- Arts and Sciences Pre-Health Class
- University College UNIV 101 class
- UMKC Arts and Sciences Pre-Professional Event
- St. Louis High School Counselors

Off Campus High School Events. 60% of events were focused on underrepresented students.

- Cristo Rey at MU
- SNPhA visit to Lincoln Prep Academy
- Scrub-in to Health Career Summer Camp
- Infinite Scholars St. Louis
- Northland Center for Advanced Professional Studies at Liberty Hospital
- Agricultural Education Field Day
- Grandview High School Career Jumping
- Hazelwood East School District
- Park Hill School District
- Liberty School District at Liberty North
- Raytown School District
- National Association for College Admission Counselors
- Harmon Career Jumping
- Lee's Summit School District College Fair
- St. Louis Public School Fair
- Blue Valley Middle School Career Day

- Kansas City, Kansas School District
- University City School District
- Center High School
- KC Infinite Scholars
- Cristo Rey
- KC STEM and Project Lead the Way Senior Showcase
- Hospital Hill Health Science Day (Prep-KC) – 3 events

Off Campus College Events. 7% of events were focused on underrepresented students.

- Graduate Life Sciences and Professional Summer Expo
- Johnson County Community College
- St. Louis University Health Professions Group
- K-State Pre-Pharmacy Club
- Philander Smith College, Little Rock Biology Department Visit
- University of Arkansas, Pine Bluff Biology Department Visit
- Ozark Technical College
- University of Missouri Health Professions
- College of the Ozarks College Career Fair
- MSU and MU visits by Steve McDonald
- University of Arkansas-Fayetteville Pre-pharmacy Club
- Avila Introduction to Health Care Careers Class
- Longview Community College Showcase
- Missouri University of Science and Technology - Scrubs
- Mizzou "Scrub in to a Health Career" Camp
- Health Systems 1000
- Truman State University Career Expo
- Westminster University Pre-Health Club
- Mizzou School of Health Professions Career Fair
- Baker University Health Students
- UMKC Health Careers Fair
- CAAHP Regional Conference

Diversity Surveys and Data.

AACP Graduating Student Survey. Results from the 2015 AACP Graduating Student Survey revealed that 95% of students feel that the SOP is welcoming to students with diverse backgrounds. The remaining 5% felt that they were unable to comment.

2015 U.S. Census Data: Racial Diversity in Missouri*.

Race	%
White	79.8
Black or African American	11.8
Hispanic or Latino	4.1
Asian	2.0
American Indian and Alaskan Native	0.6
Native Hawaiian and Other Pacific Islander	0.1
2 or more races	2.2

**Obtained from U.S. Census Bureau website.*

Diversity of Doctor of Pharmacy Students.

University of Missouri – Kansas City, School of Pharmacy Graduate Student Awards 2015								
Race	2012		2013		2014		2015	
White	406	79.6	393	78.6	391	76.3	407	74.8
Black or African American	15	2.94	18	3.6	22	4.2	34	6.3
Hispanic or Latino	10	1.96	11	2.2	12	2.3	14	2.6
Asian or Pacific Islander	46	9.2	48	9.6	58	11.3	60	11.0
American Indian or Native Alaska	2	0.39	3	0.6	3	<1	1	<1
Other/Unknown	24	4.7	16	3.2	12	2.3	9	1.7
Foreign	2	0.39	2	0.4	2	<1	5	0.9
Two or More Ethnicities	5	0.98	9	1.8	12	2.3	14	2.6
Grand total	510		500		512		544	

School of Pharmacy Faculty Diversity.

Qualification and Diversity of Faculty.

The school seeks to recruit, retain, and support a highly qualified and diverse faculty. Our faculty represent a range of ethnicities/races. Faculty demographics as of September 2015 are provided below.

University of Missouri – Kansas City, School of Pharmacy Qualification and Diversity of Faculty 2015			
Clinical/Non-clinical	Female	Male	Total
Clinical Academic			
Hispanic or Latino	1	0	1
White	24	7	31
Total	25	7	32
Non-clinical Academic			
Asian	0	7	7
Black or African American	0	2	2
White	2	5	7
Total	2	14	16
Administrative			
Asian	0	2	2
Black or African American	0	0	0
White	2	4	6
Total	2	6	8
Grand Total	30	27	56
Race and Rank			
Asian			
Associate Research	0	1	1
Associate Professor	0	5	5
Professor	0	3	3

Total	0	9	9
Black or African American			
Associate Professor	0	1	1
Professor	0	1	1
Total	0	2	2
Hispanic or Latino			
Clinical Associate	1	0	1
Total	1	0	1
White			
Assistant Research	0	1	1
Clinical Assistant Professor	15	5	20
Clinical Associate	8	1	9
Clinical Professor	1	2	3
Assistant Professor	0	1	1
Associate Professor	1	1	2
Professor	3	5	8
Total	28	16	44
Grand Total	29	27	56

Full-Time Faculty. At the start of the 2015 fall semester, the School of Pharmacy had fifty-four (Division of Pharmacy Practice and Administration: forty, Division of Pharmacology and Toxicology: six, Division of Pharmaceutical Sciences: eight) full-time faculty. Thirty-four are clinical, non-tenure track appointees. Twenty are tenure track appointees. Seven faculty were located in Columbia and five were located in Springfield. The remainder were located in Kansas City.

Faculty Recruitment. In 2015, the school recruited for eight positions.

- Associate Dean for Academic Affairs.
- Assistant Clinical Professor for the Division of Pharmacy Practice and Administration at the Kansas City site.
- Two Assistant Clinical Professors for the Division of Pharmacy Practice and Administration at the Columbia site.
- Four Assistant Clinical Professors for the Division of Pharmacy Practice and Administration at the Springfield site.

Faculty Hires, Promotion and Turnover.

Faculty hires from 2010-2015.

- 2010: Russell Melchert, Eric Wombwell, Daniel Aistrope, David Phillips, Kelly Cochran, Lauren Odum, Mark Patterson.
- 2011: Lynn Anliker, Andrew Bzowyckyj, Angela Brownfield, Mark Sawkin.
- 2012: Amanda Stahnke.
- 2013: Kylie Barnes.
- 2014: Paul Gubbins, Heather Lyons-Burney, Diane McClaskey, Dominick Salvatore, Roger Sommi (promotion to Associate Dean at MU).
- 2015: Sarah Billings, Lisa Cillessen, Elizabeth Englin, Kendall Guthrie, Barbara Kasper, Jamie Koerner, Heather Taylor, Maqual Graham (promotion to Associate Dean for Academic Affairs).

Retention of new hires. From 2010 through 2015, there were 26 new hires, two of which were internal transfers. Twenty-two of the hires are still with the school for an 84% retention rate.

Progress toward promotion and tenure with award effective September 1, 2015. Two non-tenure track faculty members applied for and received promotions in 2015. The Promotion and Tenure Committee conducted an annual promotion and tenure review of one faculty member.

University of Missouri – Kansas City, School of Pharmacy Faculty Progress Toward Promotion and Tenure 2015				
Faculty Progress	2012	2013	2014	2015
Under Tenure Review	3	1		
Awarded Tenure	3	1		
TT Promoted	3	3		
NTT Promoted	1	2	3	2
TT Annual Reviews	4	1	1	0

Faculty turnover. From 2010 through 2015, 21 faculty members left the School of Pharmacy.

- 2010: (1).
- 2011: (1).
- 2012: (3; includes 1 retiree who is now emeritus faculty).
- 2013: (3).
- 2014: (5; one was an early retirement, one was an internal transfer).
- 2015: (8; two retirements, one internal transfer).

Faculty Certifications and Licensure Status. In the Division of Pharmacy Practice and Administration, 28 out of 41 faculty (68.3%) have board certifications; 39 out of the 41 faculty (95.1%) have active pharmacist licenses in one or more states.

In the Division of Pharmaceutical Sciences, one faculty member is a registered pharmacist–Thomas Johnston (Kansas active; Minnesota inactive). Ashim Mitra holds a State License for Bureau of Narcotics and Dangerous Drugs, Missouri Department of Health and Federal License for Controlled Substances/US Drug Enforcement Administration.

In the Division of Pharmacology and Toxicology, two faculty members are registered pharmacists–Orisa Igwe (Louisiana inactive; Minnesota inactive; Ohio inactive) and Russell Melchert (Arkansas active; Oklahoma active).

School of Pharmacy Staff Diversity.

Qualification and Diversity of the SOP Staff.

Staff Demographics.

University of Missouri – Kansas City, School of Pharmacy Staff Demographics 2015			
Race	Male	Female	Total
American Indian	0	0	0
Black	0	4	4
Hispanic	0	0	0
White	4	17	21
Asian	0	0	0
Not Reported	0	0	0
Total	4	21	25

Staff Recruitment. In the hiring of one staff member in 2015, UMKC Human Resources screened applicants and forwarded three applications to the school for the position. Interviews took place and offers were made to the most qualified candidates.

Staff Development. All staff (100%) completed professional development training in 2015. All staff (100%) participated in the development of the SOP strategic plan. The development process took place throughout the year with all school meetings, development sessions offered by Human Resources and through myLearn.

Staff Retention.

- 2012: 96% retention rate; twenty-three staff positions; one staff member left. Instructional technology support staff retired and the position was centralized. One position was added for the Springfield expansion.
- 2013: 96% retention rate; twenty-three staff positions. Division of Pharmacology and Toxicology staff left and was replaced. In addition, we had a shared advancement officer and a shared development officer.
- 2014: 84% retention rate; twenty-five staff positions; four staff members left. One new position was created in the Office of Experiential Learning to address a concern of the accrediting body. One position within the Office of Student Affairs was not recruited due to budgetary reasons and lack of need within the department. Three positions were recruited and filled. In addition, we had a shared advancement officer and a shared development officer.
- 2015: 88% retention rate; twenty-five staff positions; three staff members left. One position was recruited in 2015, remainder of positions were filled in 2016. The shared advancement officer and a shared development officer was terminated mid-year and the decision was made not to fill that position due to funding.

Staff Awards. In December 2015, the dean hosted a holiday luncheon for the faculty and staff in Kansas City. Staff awards were presented at the luncheon. The recipients were nominated and selected by a vote of all faculty and staff in the school. The names of the winners in each category were engraved on a plaque in the second-floor hallway of the Health Sciences

Building. The names were also submitted to the campus staff awards committee as the School of Pharmacy's nominees for the campus awards.

Human Resources Campus Collaboration Award.

- Tamica Lige, Office of Academic Affairs.

Chancellor's Education First Award.

- Shelly Janasz, Office of Student Affairs.

Chancellor's True Unsung Hero Award.

- Cindy Infranca, Division of Pharmacy Practice and Administration.

Student Mentor Award.

- Joyce Johnson, Division of Pharmaceutical Sciences.

Lead in Life and Health Sciences: Excel in Research and Promote Economic Development

School of Pharmacy Research.

Faculty Research Grant Institutional Ranking.

University of Missouri – Kansas City, School of Pharmacy American Association of Colleges of Pharmacy Data Fiscal Year 2015					
Scope of Funding Awards	Total Funded Faculty Investigators	National Average for Funded Faculty Investigators	Total Funding	National Average for Total Funding	Institution Rank
Total Extramural Research	7	12.8	\$2,779,370	\$5,525,182	46 (n=100)
Total National Institutes of Health Research	3	9.3	\$2,028,081	\$4,356,848	43 (n=83)
Total Other Federal Research	1	3.4	\$150,000	\$1,292,915	48 (n=65)
Total Research Funding Awards from Non-Federal Sources	4	7	\$601,289	\$1,308,438	39 (n=85)

School of Pharmacy Grant Proposals.

Active Grants. In 2015, faculty in the School of Pharmacy had thirty-three active grants: seven through the National Institutes for Health, one through the National Science Foundation, one through the United States Department of Defense, and twenty-four grants that are industry/foundation/other.

The University of Missouri-Kansas City Active Grants 2015				
Principal Investigator	Agency	Active Dates	Direct Costs	Indirect Costs
Hari Bhat	University of Missouri Research Board	1/14/2015-1/13/2017	\$40,000.00	
Kun Cheng	NIH National Institute on Alcohol Abuse and Alcoholism	9/15/2012–8/31/2017	\$957,984.00	\$396,850.00
Kun Cheng	American Cancer Society	7/01/2015-6/30/2018	\$111,647.00	\$21,547.00
Simon Friedman	University of Missouri Fast Track	7/1/2014–7/1/2015	\$50,000.00	
Simon Friedman	NSF Division of Chemistry	9/15/2011–8/31/2015	\$267,056.00	\$87,944.00
Simon Friedman	NIH National Institute of Health	8/1/2015-7/31/2019	\$154,897.00	\$66,284.00
William Gutheil	University of Missouri Research Board	6/01/2015-7/31/2016	\$26,000.00	
Orisa Igwe	NIH National Institute of Dental And Craniofacial Research	7/1/2011–6/30/2016	\$295,553.00	\$143,328.00
Anil Kumar	NIH National Institute on Drug Abuse	9/30/2008–3/31/2016	\$1,383,534.00	\$375,249.00
Anil Kumar	NIH National Institute on Drug Abuse	4/1/2009–3/31/2016	\$975,147.00	\$464,933.00
Anil Kumar	NIH National Institute on Alcohol Abuse and Alcoholism	9/10/2012–6/30/2016	\$813,660.00	\$350,504.00
Ashim Mitra	I-Novion, Inc.	5/14/2013–6/30/2015	\$73,470.00	\$32,230.00

The University of Missouri-Kansas City				
Active Grants				
2015				
Principal Investigator	Agency	Active Dates	Direct Costs	Indirect Costs
Ashim Mitra	University of KS Med Center Research Institute	3/1/2015 - 2/29/2016	\$10,000.00	
Mridul Mukherji	US Army Medical Research	6/20/2013–6/19/2017	\$281,758.00	\$88,623.00
Mridul Mukherji	St Luke’s Hospital	2/1/2013–01/31/2016	\$26,000.00	
Leigh Anne Nelson	The Feinstein Institute For Medical Research	9/21/2011–3/1/2016	\$75,949.00	
Leigh Anne Nelson	The Feinstein Institute For Medical Research	7/1/2013–9/30/2015	\$99,648.00	\$27,904.00
Leigh Anne Nelson	The Feinstein Institute For Medical Research	7/1/2013-9/30/2015	\$10,029.00	
Leigh Anne Nelson	The Feinstein Institute For Medical Research	4/1/2014-2/28/2017	\$8,385.00	\$2,180.00
Leigh Anne Nelson	The Feinstein Institute For Medical Research	1/1/2015-3/31/2016	\$15,402.00	\$4,005.00
Leigh Anne Nelson	Janssen Scientific Affairs LLC	12/21/2015-05/9/2018	\$2,500.00	
Leigh Anne Nelson	Janssen Scientific Affairs LLC	12/21/2015-05/9/2018	\$960.00	\$250.00
Leigh Anne Nelson	TEVA Pharmaceuticals	8/3/2015-12/31/2015	\$930.00	
Leigh Anne Nelson	TEVA Pharmaceuticals	8/3/2015-12/31/2015	\$15,863.00	\$4124.00
Mark Patterson	University of KS Medical Research Institute, Inc.	11/25/2013–03/31/2015	\$1,519.00	
Roger Sommi	Auspex Pharmaceuticals	8/1/2014–7/31/2017	\$34,597.00	\$10,725.00
Roger Sommi	Auspex Pharmaceuticals	1/21/2015-12/31/2016	\$3,500.00	
Roger Sommi	Auspex Pharmaceuticals	1/21/2015-12/31/2016	\$24,756.00	\$7,674.00
Roger Sommi	Florida Atlantic University	8/1/2015-7/31/2017	\$2,500.00	
Roger Sommi	Florida Atlantic University	8/1/2015-7/31/2017	\$9,196.00	\$2,391.00
Roger Sommi	Alkermes INC	1/11/2015-1/10/2016	\$3,500.00	
Roger Sommi	Alkermes INC	1/11/2015-1/10/2016	\$5,856.00	\$1,815.00
BiBotti Celestin Youan	NIH National Institute of Allergy And Infectious Diseases	8/20/2011–07/31/2016	\$1,013,786.00	\$371,081.00
TOTAL			\$6,795,582.00	\$2,459,641.00

Grants Submitted.

Number of Grant Proposals Submitted.

Division of Pharmaceutical Sciences (20).

- Kun Cheng – NIH Natl Inst of Gen Med Sci
- William Gutheil – NIH
- Chi Lee – American Heart Assn
- Chi Lee – NIH
- Chi Lee – NSF
- Chi Lee – NIH
- Ashim Mitra – NIH
- Ashim Mitra – NIH
- Ashim Mitra – NIH
- Ashim Mitra – NIH

- Ashim Mitra – NIH
- Ashim Mitra – Department of Defense
- Ashim Mitra – NIH
- Ashim Mitra – NIH
- Ashim Mitra – NIH
- Ashim Mitra – Dept of Defense
- Ashim Mitra – Pharmacenter LTD
- Mridul Mukherji – NIH Natl Cancer Inst
- Mridul Mukherji – NIH Natl Eye Inst
- Celestin Youan – Chemic Lab Inc

Division of Pharmacology and Toxicology (8).

- Hari Bhat – NIH Natl Cancer Inst
- Orisa Igwe – NIH Natl Inst. of Dental and Craniofacial
- Anil Kumar – NIH Natl Inst of Neurological Disorder
- Anil Kumar – NIH
- Anil Kumar – NIH Natl Inst on Drug Abuse
- Anil Kumar – NIH
- Anil Kumar – NIH Natl Inst of Neurological Disorder
- Jianping Wang – NIH

Division of Pharmacy Practice and Administration (12).

- Kelly Cochran – Health Res SVC Admin
- Kelly Cochran – University of NE Medical Research
- Leigh Anne Nelson – The Feinstein Institute for Medical Research
- Leigh Anne Nelson – The Feinstein Institute for Medical Research
- Leigh Anne Nelson – TEVA Pharmaceuticals
- Leigh Anne Nelson – TEVA Pharmaceuticals
- Leigh Anne Nelson – The Feinstein Institute for Medical Research
- Leigh Anne Nelson – The Feinstein Institute for Medical Research
- Leigh Anne Nelson – Janssen Scientific Affairs LLC
- Leigh Anne Nelson – Janssen Scientific Affairs LLC
- Mark Patterson – American Assn of Colleges of Pharmacy
- Roger Sommi – Florida Atlantic University

Grantsmanship Seminars and Workshops.

Faculty Participation.

- 2011: 42 School of Pharmacy faculty members participated in a grant writing seminar sponsored by the school and provided by David Morrison. The seminar addressed fundamentals of grant writing and the submission process. Dr. Morrison has a Ph.D. in molecular biology and biophysics from Yale University. He has received continuous funding from NIH since the early 1970s, and he provides grant-writing seminars and workshops for faculty at universities across the country.
- 2012: Erica Ottis
- 2013: Hari Bhat, Erica Ottis
- 2014: None
- 2015: None

School of Pharmacy Journal Research and Literature Review Articles.

Peer-Reviewed National and International Journal Research and Literature Review Articles. School of Pharmacy faculty names are bolded. The following are publications with a print date of 2015 including articles in peer-reviewed national and international journals, book chapters, and other scholarly work, such as viewpoints and brief research reports.

University of Missouri – Kansas City, School of Pharmacy Number of Scholarships Awarded By Class Fall 2015			
Division	Posters and Presentations	Manuscripts	Book Chapters
Pharmaceutical Sciences	21	20	3
Pharmacology and Toxicology	3	4	0
Pharmacy Practice and Administration	37	21	0

Note: Some publications and posters are cross-divisional.

Posters and Presentations at National and International Scientific Meetings.

Agrahari, V., Joseph, M., Patel, S., Vaishya, R., and **Mitra, A.K.** (2015, May). *Development, optimization and evaluation of biological activity of tailor-made pentablock copolymer based composite formulation for sustained delivery of protein therapeutics.* Annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.

Bhat, H. (2015, December). *SOD3: A potential gene with tumor suppressor characteristics.* Global Cancer Summit, Bangalore, India.

Bishop, R., **Liu, Y.**, and **Kuehl, P.G.** (2015, March). *Attitudes and barriers to sharing patient discharge medication reconciliation information with primary care physicians and community pharmacists.* Annual meeting of the American Pharmacists Association, San Diego, CA.

Brownfield, A.M. (2015, July). *Implementing and mapping of innovative IPPEs through the efficient use of experiential resources.* Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.

Bzowyckyj, A., Lindsey, C., Stahnke, A.M., Cochran, K.A., and Kassel, L.E. (2015, July). *Applying an adapted scoring matrix to evaluate diabetes topics across a doctor of pharmacy didactic curriculum.* Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.

Bzowyckyj, A., Lindsey, C.C., and Weide, L. (2015, July). *NPH insulin for prednisone induced hyperglycemia.* American Association of Colleges of Pharmacy, Washington DC.

Chatterjee, A., Ronghe, A., Padhye, S., and **Bhat, H.K.** (2015, April). *Novel resveratrol analog HPIMBD inhibits breast cancer cell metastasis by reversal of epithelial-mesenchymal transition.* Annual meeting of the American Association for Cancer Research, Philadelphia, PA.

Chen, Z., and **Cheng, K.** (2015, October). *Discovery of IGF2R specific peptide ligands for liver fibrosis using phage display.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

- Cholkar, K., Trinh, H., Vadlapudi, A., Wang, Z., **Pal, D.**, and **Mitra, A.K.** (2015, May). *Interaction studies of RX-10045 (Resolvin E1 analog) with efflux transporters*. Annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.
- Cholkar, K., Trinh, H.M., Vadlapudi, A.D., Wang, Z., **Pal, D.**, and **Mitra, A.K.** (2015, October). *Interaction between resolvin E1 analog (RX-10045) and efflux transporters*. Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.
- Coleman, C., **Mead, T.N.**, and **Knell, M.E.** (2015, July). *Student perceptions of a redesigned top 200 course series*. Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.
- Deffenbaugh, C., Gaul, M., Lam, C., Harrell, M., Ngugi, N., Williams, M., and **Smith, A.J.** (2015, December). *Evaluation of heart failure education consults at an urban safety net hospital*. Midyear clinical meeting of the American Society of Health-System Pharmacists, New Orleans, LA.
- Ellison, S., **Graham, M.**, McCunniff, M., **Ruehter, V.**, Amari-Vaught, E., Banderas, J., Garavalia, L., Litzau, M., (2015, April). *UMKC Health Professions' Interprofessional Education Class: A Two-Year Required Curriculum*. Interprofessional Education Collaborative (IPEC) Spring Institute, Herndon, VA.
- Forinash, A.B., Chamness, D.C., Yancey, A.M., **Koerner, J.**, Mathews, K., Miller, C., Thompson, J., and Myles, T. (2015, October). *Impact of clinical pharmacy on asthma in pregnancy in a maternal-fetal care clinic*. Annual meeting of the Central Association of Obstetricians and Gynecologists, Charleston, SC.
- Funkenbusch, K., **Cochran, K.A.**, Funkenbusch, K., Paul, K.B., and Cunningham, M. (2015, June). *Missouri AgrAbility and Pharm to Farm: Delivering unique on-site farmstead medication assessments for farmers and ranchers (AgrAbility clients) with chronic health conditions*. International Society for Agricultural Safety and Health Conference, Normal, IL.
- Gardner, K.N., Diefenderfer, L.A., Iuppa, C., Elliott, E., Kleinhesselink, K., Sass, D., **Nelson, L.A.**, **Winans, E.**, and **Sommi, R.W.** (2015, April). *Cost avoidance and qualitative analysis of clinical pharmacy interventions by psychiatry pharmacy residents at state psychiatric facilities*. Annual meeting of the College of Psychiatric and Neurologic Pharmacists, Tampa, FL.
- Giri, N., and **Lee, C.H.** (2015, October). *Effects of edaravone nanoparticles on oxidative stress*. Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.
- Graham, M.R.**, and Garavalia, L.S. (2015, July). *Promoting self-awareness in PI professional skills courses*. Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.
- Gubbins, P.O.** (2015, June). *Opportunities and challenges to point of care testing for infectious diseases in community pharmacies*. Global Technology Community Point-of-Care Diagnostics Conference, San Diego, CA.
- Gubbins, P.O.** (2015, October). *Re-engineering pharmacy education: How can we best*

prepare graduates for clinical pharmacy practice now and in the future? Innovations in Pharmacy Education, American College of Clinical Pharmacy Global Conference on Pharmacy, San Francisco, CA.

Hampton, J. (2015, December). *The use of bolus dose ketamine in the peri-intubation period to facilitate rapid postintubation sedation and analgesia in the emergency department.* Midyear clinical meeting of the American Society of Health-System Pharmacists, New Orleans, LA.

Harris, S.M., Harry, K.M., Clark, J.M.R., Eways, K.R., Waters, M.A., **Smith, A.J.**, and Bennett, K.K. (2015, April). *Barriers to completing cardiac rehabilitation among patients in an urban, safety-net hospital.* Annual meeting of the Society of Behavioral Medicine, San Antonio, TX.

Harry, K.M., Francisco, A.J., Marszalek, J.M., Clark, J.M.R., Eways, K.R., Harris, S.M., **Smith, A.J.**, and Bennett, K.K. (2015, April). *Examination of the reliability and validity of a cardiac self-blame attributions (CSBA) scale.* Annual meeting of the Society of Behavioral Medicine, San Antonio, TX.

Jain, A., Liu, H., and **Cheng, K.** (2015, October). *Exocytosis study of protein based siRNA nanocomplex.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Jin, W., Chen, Z., Liu, H., and **Cheng, K.** (2015, October). *Identification of PSMA-specific peptides for prostate cancer therapy.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Johnston, T.P., Korolenko, T.A., Pisareva, E.E., Filjushina, E.E., and Machova, E. (2015, October). *Serum cystatin C and chitotriosidase in acute poloxamer 407-induced dyslipidemia in mice: Can they serve as potential early biomarkers for atherosclerosis?* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Joseph, M., Patel, S.P., Vaishya, R., Agrahari, V., and **Mitra, A.K.** (2015, October). *Hydrophobic ion pairing strategy for long term delivery of octreotide from random triblock nanoparticles.* Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Kiersma, M.E., Chen, A.M.H., Blake, B., **Knell, M.E.**, Fusco, N.M., Kleppinger, E., Gillespie, M., Mody, V., and Zavod, R. (2015, July). *Pharmacy student perceptions of teaching award recipients and teaching excellence.* Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.

Korn, K., **Sperry, M.**, **Bryant, P.**, and **Pace, H.A.** (2015, March). *Survey of pharmaceutical companies' perspectives on medical writing and methods for competency assessment.* Drug Information Association Medical Affairs and Scientific Communications Annual Forum, Orlando, FL.

Korolenko, T.A., **Johnston, T.P.**, Goncharova, N.V., Pisareva, E.E., Filjushina, E.E., and Chrapova, M.V. (2015, October). *Intracellular lipid storage syndrome (lipidosis) following prolonged treatment of poloxamer 407 in mice.* 21st European Study Group on Lysosomal Diseases (ESGLD), Pozzuoli, Italy.

Korolenko, T.A., **Johnston, T.P.**, Tuzikov, F.V., Tuzikova, N.A., and Korolenko, Ts.P. (2015,

- July). *Serum lipoprotein fractions and subfractions in murine models of acute hyperlipidemia and atherosclerosis*. International Academy of Cardiology, 20th World Congress on Heart Disease: Annual Scientific Sessions, Vancouver, BC, Canada.
- Lam, C., Eaton, C., and **Wombwell, E.** (2015, December). *Evidence based review of probiotic efficacy in the treatment of antibiotic associated diarrhea to ensure appropriate product selection for hospital formulary*. Midyear clinical meeting of the American Society of Health-System Pharmacists, New Orleans, LA.
- Lindsey, C., Sawkin, M., Schauner, S., Bzowyckyj, A., Stoner, S., Ruehter, V., Graham, M., Kimble, S., Brommelsiek, M., and Gotham, H.** (2015, March). *Student pharmacist interventions during an interprofessional IPPE in underserved, culturally diverse community health clinics*. Annual meeting of the American Pharmacists Association, San Diego, CA.
- Mandal, A., Vaishya, R.D., Gokulgandhi, M., Patel, S., and **Mitra, A.K.** (2015, October). *Reversible hydrophobic ion-pairing complex strategy to minimize acylation of octreotide during long-term delivery from PLGA microparticles*. Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.
- McQueen, C., Buehrer, H., and Barton, M.** (2015, December). *Knowledge, beliefs, and attitudes of Kansas City metropolitan pharmacists, interns, and technicians toward cannabinoid medicines and medical marijuana*. Midyear clinical meeting of the American Society of Health-System Pharmacists, New Orleans, LA.
- Mitra, A.K.** (2015, July). *Novel therapeutic strategies for delivering therapeutics to brain—circumventing the efflux and permeability barriers*. Drug Discovery and Therapy World Congress, Boston, MA.
- Mitra, A.K.** (2015, March). *Novel aqueous nanomicellar topical drop strategy for anterior and posterior ocular drug delivery*. Ocular Diseases Drug Discovery Conference, San Diego, CA.
- Mitra, A.K.** (2015, May). *Strategies to circumvent barriers for ocular delivery of small and large molecules*. Annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.
- Mitra, A.K., Patel, S., Vaishya, R., and Agrahari, V.** (2015, May). *Biodegradable and injectable thermosensitive pentablock copolymers hydrogels for sustained delivery of proteins for posterior segment ocular diseases*. Annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.
- Mukherji, M.** (2015, October). *A mechanistic overview of TET-mediated 5-methylcytosine oxidation*. International Conference on Protein Engineering, Chicago, IL.
- Oh, B., and **Lee, C.H.** (2015, October). *Mannosylated-reduced graphene oxides (Man-rGOs) for a targeted carrier against atherosclerotic plaque*. Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.
- Parikh, T., **Sperry, M., Pace, H.A., and Bryant, P.** (2015, March). *Quality of health information on social media*. Annual meeting of the American Pharmacists Association, San Diego, CA.

- Patterson, M.E.**, and Andrews, S.A. (2015, October). *Implementation of electronic health record (EHR)-based medication management functionalities associated with decreased 30-day acute myocardial infarction (AMI) readmission rates*. American College of Clinical Pharmacy Global Conference on Clinical Pharmacy, San Francisco, CA.
- Patterson, M.E.**, Bogart, M.S., and Starr, K.R. (2015, June). *Associations between perceived crisis mode work climate and poor information exchange within hospitals*. Health Workforce Interest Group Meeting, AcademyHealth Annual Research Meeting, Minneapolis, MN.
- Patterson, M.E.**, Miranda, D., Eaton, C., **Smith, A.**, Homayouni, R., and Silver, B. (2015, September). *A pilot study assessing the feasibility and value of using automated case-finders to identify high-risk heart failure patients within an urban safety-net hospital*. Concordium 2015: Data and Knowledge Transforming Health, Academy Health, Washington, DC.
- Patterson, M.E.**, **Santee, J.**, and Simon, K. (2015, July). *Use of discriminatory validity, test content validity, and difficulty indices to determine test question appropriateness*. Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.
- Patterson, M.E.**, **Santee, J.A.**, and Simon, K. (2015, July). *Determining multiple choice question appropriateness using the RPBI index*. Annual meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.
- Ronghe, A., Chatterjee, A., Padhye, S., and **Bhat, H.K.** (2015, April). *Differential regulation of estrogen metabolizing CYP1A1 and CYP1B1 enzymes by novel resveratrol analogs in breast cancer cells*. Annual meeting of the American Association for Cancer Research, Philadelphia, PA.
- Sawkin, M.T.**, and Zakkour, S.A. (2015, November). *Pharmacist-managed HIV pre-exposure prophylaxis clinic: Preliminary outcomes from an urban community health clinic*. Annual meeting of the American Public Health Association, Chicago, IL.
- Sawkin, M.T.**, Kimble, S., and McCunniff, M. (2015, September/October). *Perspectives on interprofessional teamwork: Analysis of student and provider outcome data from a three-year interprofessional clinical practice (IPCP) team grant to develop effective IPCP teams*. Collaborating Across Borders V Conference, Roanoke, VA.
- Shah, J.S., Patel, S., Patel, A., and **Mitra, A.K.** (2015, May). *Novel targeted fluocinolone acetonide loaded aqueous micelles for the treatment of posterior uveitis*. Annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.
- Shealy, K.M., **Stahnke, A.M.**, **Bzowyckyj, A.**, and Reece, S.M. (2015, August). *Collaborative practice in the Pharmacy Community of Interest (COI)*. Annual meeting of the American Association of Diabetes Educators, New Orleans, LA.
- Smith, A.J.**, Smith, B.M., and Blackmon, B.L. (2015, October). *Expectations of professional students in a dental and pharmacy program*. American College of Clinical Pharmacy Global Conference on Pharmacy, San Francisco, CA.
- Stoner, S.C.**, **Patterson, M.E.**, **Smith, A.J.**, and Palmer, M.C. (2015, July). *Implementation of active learning strategies with clinical applications: Advanced pathophysiology*. Annual

meeting of the American Association of Colleges of Pharmacy, National Harbor, MD.

Strieter, J., Blom, J., **Liu, Y.**, and **Kuehl, P.G.** (2015, March). *Community pharmacist use of medication therapy management services to improve the outcomes of hepatitis C patients*. Annual meeting of the American Pharmacists Association, San Diego, CA.

Sumner, J., **Smith, A.J.**, and Huke, T. (2015, December). *Improving appropriate proton-pump inhibitor use in patients on dual antiplatelet therapy*. Midyear clinical meeting of the American Society of Health-System Pharmacists, New Orleans, LA.

Thurston, M.M., Gardner, K., Nguyen, E., dela Pena, L., Thiman, M., and **Smith, A.J.** (2015, October). *Ambulatory care PRN membership benefits survey*. American College of Clinical Pharmacy Global Conference on Pharmacy, San Francisco, CA.

Trinh, H., Cholkar, K., and **Mitra, A.K.** (2015, May). *Development and optimization of clear, aqueous triamcinolone acetonide eye drop*. Annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), Denver, CO.

Trinh, H.M., Cholkar, K., Yang, X., and **Mitra, A.K.** (2015, October). *Development and optimization of clear, aqueous triamcinolone acetonide eye drop*. Annual meeting of the American Association of Pharmaceutical Scientists, Orlando, FL.

Zakkour, S.A., and **Sawkin, M.T.** (2015, March). *Knowledge and attitudes about HIV pre-exposure prophylaxis (PrEP) and a pharmacist-led PrEP clinic of patrons at an urban health center*. Annual meeting of the American Pharmacists Association, San Diego, CA.

Zakkour, S.A., Dietz, C.A., Thedinger, B., and **Sawkin, M.T.** (2015, May). *Developing a pharmacist-led HIV pre-exposure prophylaxis clinic*. Virtual poster symposium of the American College of Clinical Pharmacy.

Faculty Publications in 2015.

Ade, A., McArthur, C., Ayuk, L., Awasom, C., Achu, P.N., Njinda, A., Nookala, A., Simon, S., **Kumar, A.**, and Kumar, S. (2015). Effect of mild-to-moderate smoking on viral load, cytokines, oxidative stress, and cytochrome P450 enzymes in HIV-infected individuals. *PLoS ONE*, 10(4), e0122402.

Burton, S.A., Amir, N., Asbury, A., Lange, A., and **Hardinger, K.L.** (2015). Treatment of antibody-mediated rejection in renal transplant patients: A clinical practice survey. *Clinical Transplantation*, 29(2), 118-123.

Chen, Z., Jin, W., Liu, H., Zhao, Z., and **Cheng, K.** (2015). Discovery of peptide ligands for hepatic stellate cells using phage display. *Molecular Pharmaceutics*, 12(6), 2180-2188.

Cholkar, K., Gilger, B.C., and **Mitra, A.K.** (2015). Topical, aqueous, clear cyclosporine formulation design for anterior and posterior ocular delivery. *Translational Vision Science and Technology*, 4(3), 1.

Cholkar, K., Gunda, S., Earla, R., **Pal, D.**, and **Mitra, A.K.** (2015). Nanomicellar topical aqueous drop formulation of rapamycin for back-of-the-eye delivery. *AAPS PharmSciTech*, 16(3), 610-622.

- Cholkar, K., Trinh, H.M., **Pal, D.**, and **Mitra, A.K.** (2015). Discovery of novel inhibitors for the treatment of glaucoma. *Expert Opinion on Drug Discovery*, 10(3), 293-313.
- Cholkar, K., Trinh, H.M., Vadlapudi, A.D., Wang, Z., **Pal, D.**, and **Mitra, A.K.** (2015). Interaction studies of resolvin E1 analog (RX-10045) with efflux transporters. *Journal of Ocular Pharmacology and Therapeutics*, 31(4), 248-255.
- Corrigan, M., Wilson, S.S., and **Hampton, J.P.** (2015). Safety and efficacy of intranasally administered medications in the emergency department and prehospital settings. *American Journal of Health-System Pharmacy*, 72(18), 1544-1554.
- DiDonato, K.L., **Liu, Y.**, **Lindsey, C.C.**, Hartwig, D.M., and **Stoner, S.C.** (2015). Community pharmacy patient perceptions of a pharmacy-initiated mobile technology app to improve adherence. *International Journal of Pharmacy Practice*, 23(5), 309-319.
- Gangwani, M.R., and **Kumar, A.** (2015). Multiple protein kinases via activation of transcription factors NF-kappaB, AP-1 and C/EBP-delta regulate the IL-6/IL-8 production by HIV-1 Vpr in astrocytes. *PLoS ONE*, 10(8), e0135633.
- Gaspar, J.L., Dahlke, M., and **Kasper, B.** (2015). Efficacy of patient aligned care team pharmacist services in reaching diabetes and hyperlipidemia treatment goals. *Federal Practitioner*, 32(11), 56-61.
- Green, A.I., Brunette, M.F., Dawson, R., Buckley, P., Wallace, A.E., Hafez, H., Herz, M., Narasimhan, M., Noordsy, D.L., O'Keefe, C., **Sommi, R.W.**, Steinbook, R.M., and Weeks, M. (2015). Long-acting injectable vs. oral risperidone for schizophrenia and co-occurring alcohol disorder: A randomized trial. *Journal of Clinical Psychiatry*, 76(10), 1359-1365.
- Griggs, S.K., **Patterson, M.E.**, Schafermeyer, K.W., **Liu, Y.**, **Brown, W.M.**, and Rasu, R. (2015). An analysis of the cost of dispensing prescriptions in Missouri. *Missouri Pharmacist*, 89(3), 20-25.
- Gubbins, P.O.**, and Li, C. (2015). Influence of influenza and pneumococcal vaccines on community-acquired pneumonia (CAP) outcomes among elderly patients. *Current Infectious Disease Reports*, 17(12), 49.
- Gubbins, P.O.**, Ragland, D., Castleberry, A., and Payakachat, N. (2015). Family commitment and work characteristics among pharmacists. *Pharmacy*, 3(4), 386-398.
- Gunda, S., Earla, R., Cholkar, K., and **Mitra, A.K.** (2015). Pharmacokinetic studies and LC-MS/MS method development of ganciclovir and dipeptide monoester prodrugs in Sprague Dawley rats. *European Journal of Drug Metabolism and Pharmacokinetics*, 40(3), 325-334.
- Hardinger, K.L.**, **Garavalia, L.**, **Graham, M.R.**, **Marken, P.A.**, **Melchert, R.B.**, **Stahnke, A.**, and **Nelson, L.A.** (2015). Enrollment management strategies in the professional pharmacy program: A focus on progression and retention. *Currents in Pharmacy Teaching and Learning*, 7(2), 199-206.
- Hong, L., **Liu, Y.**, Hottel, T.L., Hoff, G.L., and Cai, J. (2015). Neighborhood socio-economic context and emergency department visits for dental care in a U.S. Midwestern metropolis. *Public Health*, 129(3), 252-257.

- Huang, V., Klepser, M.E., **Gubbins, P.O.**, Bergman, S.J., Chahine, E.B., Halilovic, J., Hidayat, L.K., Matthias, K.R., and Tesh, L.D. (2015). Quantification of curricular content devoted to point-of-care testing for infectious diseases in schools and colleges of pharmacy in the United States. *Pharmacy Education*, 15(1), 1-6.
- Kerr, J.L., **Stahnke, A.M.**, and Behnen, E.M. (2015). Assessing empathy and self-efficacy levels of pharmacy students in an elective diabetes management course. *American Journal of Pharmaceutical Education*, 79(3), 42.
- Khurana, V., Vadlapudi, A.D., Vadlapatla, R.K., **Pal, D.**, and **Mitra, A.K.** (2015). Functional characterization and molecular identification of vitamin C transporter (SVCT2) in human corneal epithelial (HCEC) and retinal pigment epithelial (D407) cells. *Current Eye Research*, 40(5), 457-469.
- Koerner, J.**, and Yancey, A.M. (2015). Folic acid: A simple answer to a very large problem? *iForumRx*.
- Korolenko, T.A., Pisareva, E.E., Filyushina, E.E., **Johnston, T.P.**, and Machova, E. (2015). Serum cystatin C and chitotriosidase in acute P-407 induced dyslipidemia: Can they serve as potential early biomarkers for atherosclerosis? *Experimental and Toxicologic Pathology*, 67(9), 459-466.
- Lee, Y., Khemka, A., Acharya, G., Giri, N., and **Lee, C.H.** (2015). A cascade computer model for microbicide diffusivity from mucoadhesive formulations. *BMC Bioinformatics*, 16, 263.
- Li, C., **Gubbins, P.O.**, and Chen, G.J. (2015). Prior pneumococcal and influenza vaccinations and in-hospital outcomes for community-acquired pneumonia in elderly veterans. *Journal of Hospital Medicine*, 10(5), 287-293.
- Mitra, A.K.**, Agrahari, V., Mandal, A., Cholkar, K., Natarajan, C., Shah, S., Joseph, M., Trinh, H.M., Vaishya, R., Yang, X., Hao, Y., Khurana, V., and **Pal, D.** (2015). Novel delivery approaches for cancer therapeutics. *Journal of Controlled Release*, 219, 248-268.
- Mo, C., Zhao, R., Vallejo, J., **Igwe, O.**, Bonewald, L., Wetmore, L., and Brotto, M. (2015). Prostaglandin E2 promotes proliferation of skeletal muscle myoblasts via EP4 receptor activation. *Cell Cycle*, 14(10), 1507-1516.
- Oh, B., and **Lee, C.H.** (2015). Development of Man-rGO for targeted eradication of macrophage ablation. *Molecular Pharmaceutics*, 12(9), 3226-3236.
- Oh, B., **Melchert, R.B.**, and **Lee, C.H.** (2015). Biomimicking robust hydrogel for the mesenchymal stem cell carrier. *Pharmaceutical Research*, 32(10), 3213-3227.
- Patel, S.P., Vaishya, R., **Pal, D.**, and **Mitra, A.K.** (2015). Novel pentablock copolymer-based nanoparticulate systems for sustained protein delivery. *AAPS PharmSciTech*, 16(2), 327-343.
- Rangarajan, P., Subramaniam, D., Paul, S., Kwatra, D., Palaniyandi, K., Islam, S., Harihar, S., Ramalingam, S., **Gutheil, W.**, Putty, S., Pradhan, R., Padhye, S., Welch, D. R., Anant, S., and Dhar, A. (2015). Crocetin acid inhibits hedgehog signaling to inhibit pancreatic cancer stem cells. *Oncotarget*, 6(29), 27661-27673.

- Ray, A., Mandal, A., and **Mitra, A.K.** (2015). Recent patents in pulmonary delivery of macromolecules. *Recent Patents on Drug Delivery and Formulation*, 9(3), 225-236.
- Rianon, M., **Knell, M.E.**, Agbor-Bawa, W., Thlen, J., Burkhardt, C., and Rasu, R.S. (2015). Persistent nonmalignant pain management using nonsteroidal anti-inflammatory drugs in older patients and use of inappropriate adjuvant medications. *Drug, Healthcare and Patient Safety*, 7, 43-50.
- Salvatore, D.J.**, and Resman-Targoff, B.H. (2015). Treatment options for urinary tract infections caused by extended-spectrum β -lactamase-producing *Escherichia coli* and *Klebsiella pneumoniae*. *American Journal of Hospital Medicine*, 7(1).
- Sawkin, M.T.**, Deppe, S.J., Thelen, J., **Stoner, S.C.**, Dietz, C.A., and Rasu, R.S. (2015). Health literacy and medication adherence among patients treated in a free health clinic: A pilot study. *Health Services Research and Managerial Epidemiology*, 2.
- Sheng, Y., Yang, X., **Pal, D.**, and **Mitra, A.K.** (2015). Prodrug approach to improve absorption of prednisolone. *International Journal of Pharmaceutics*, 487(1-2), 242-249.
- Vaishya, R., Khurana, V., Patel, S., and **Mitra, A.K.** (2015). Long-term delivery of protein therapeutics. *Expert Opinion on Drug Delivery*, 12(3), 415-440.
- Vaishya, R.D., Mandal, A., Gokulgandhi, M., Patel, S., and **Mitra, A.K.** (2015). Reversible hydrophobic ion-pairing complex strategy to minimize acylation of octreotide during long-term delivery from PLGA microparticles. *International Journal of Pharmaceutics*, 489(1-2), 237-245.
- Vaishya, R.D., Mandal, A., Patel, S., and **Mitra, A.K.** (2015). Extended release microparticle-in-gel formulation of octreotide: Effect of polymer type on acylation of peptide during in vitro release. *International Journal of Pharmaceutics*, 496(2), 676-688.
- Wang, W., Lee, Y., and **Lee, C.H.** (2015). Review: Effects of nitric oxide on stem cell therapy. *Biotechnology Advances*, 33(8), 1685-1696.
- Wombwell, E.**, and Naglich, A. (2015). The role of aldosterone antagonism agents in diabetic kidney disease. *Journal of Renal Care*, 41(1), 9-18.
- Wombwell, E.**, Fangman, M.T., Yoder, A.K., and Spero, D.L. (2015). Religious barriers to measles vaccination. *Journal of Community Health*, 40(3), 597-604.
- Yang, M., Qian, C., and **Liu, Y.** (2015). Suboptimal treatment of diabetic peripheral neuropathic pain in the United States. *Pain Medicine*, 16(11), 2075-2083.
- Zhang, T., Cui, H., Fang, C., **Cheng, K.**, Yang, X., Chang, H., and Forrest, M.L. (2015). Targeted nanodiamonds and phenotype-specific photoacoustic contrast agents for breast cancer. *Nanomedicine (London)*, 10(4), 573-587.
- Zhang, Y., Karki, R., and **Igwe, O.J.** (2015). Toll-like receptor 4 signaling: A common pathway for interactions between oxidative stress and extracellular disulfide high mobility group box 1 (HMGB1) protein-coupled activation. *Biochemical Pharmacology*, 98(1), 132-143.

Book Chapters.

Johnston, T.P. (2015). Anatomy and physiology of the oral mucosa. In M. Rathbone, S. Senel, and I. Pather (Eds.), *Oral mucosal drug delivery and therapy* (pp. 1-17). New York, NY: Springer.

Korolenko, T.A., and **Johnston, T.P.** (2015). Aspartate protease cathepsin D in liver and heart injury, pathophysiology and therapy. In E.H. Bennington (Ed.), *Horizons in world cardiovascular research* (Vol. 8) (pp. 33-56). Hauppauge, NY: Nova Science Publishers.

Korolenko, T.A., **Johnston, T.P.**, and Kisarova, Y.A. (2015). Up-regulation of matrix metalloproteases in cancer and atherosclerosis: The role of inflammation. In J. Sullivan (Ed.), *Matrix metalloproteinases (MMPs): Classification, molecular mechanisms, and role in diseases* (pp. 1-28). Hauppauge, NY: Nova Science Publishers.

Patents.

Ashim Mitra.

United States Patent and Trademark Office

US Patent Issued: #US 8,980,839 B2

Inventors: Ashim K. Mitra and Sidney L. Weiss

Filed: August 23, 2013

Patent Issue Date: March 17, 2015

Assignee: Ocular Technologies SARL, Epalinges

Patent Title: "Topical Aqueous Nanomicellar, Ophthalmic Solutions and Uses Thereof".

Faculty on NIH and Other Review Panels in 2014-2015.

William Gutheil.

- 2015 MRC (Medical Research Council) Antimicrobial Resistance Collaborative Grant Program, February 2015.
- ZRG1 F13-C (20) L Infectious Diseases and Microbiology Fellowship Panel, March 2015.

Thomas Johnston.

- Serve as a study section reviewer for the National Institutes of Health (NIH), 2000-Present.

Ashim Mitra.

- Board Member, Science Moving toward Research Translation and Therapy (SMARTT) projects, National Heart Lung and Blood Institute, 2011-Present.
- NIH Study Section Service:
 - NIH, Seattle, Wash, ETTN-12 Review (Small Business) Aging and Development, Auditory, Vision and Low Vision Technologies Study Sections, November 4-6, 2015.
 - NIH, Washington, DC, 2015/10 ZRG1 ETTN-G (12) B, Small Business: Aging and Development, Auditory, Vision and Low Vision Technologies Study Sections, June 24-25, 2015.
 - NIH, Washington, DC, (2015/10 ZRG1 ETTN-B (53) R PAR 13-137) Neurotechnology and Low Vision Technology Bioengineering Research Grants and (2015/10 BNVT) Bioengineering of Neuroscience, Vision Technologies Study Section, June 4-5, 2015.
 - NIH, Bethesda, MD, 2015/05 ZCA1 SRB-2 (M1) S NCI Review Invitation –

- Omnibus SEP-4 Special Emphasis Panel, March 4-5, 2015.
- NIH, Bethesda, MD, 2015/05 GDD Gene and Drug Delivery Systems Study Section, February 4-5, 2015.

Editorial Boards for 2015.

Bhat, Hari.

- SOJ Pharmacy and Pharmaceutical Sciences (editor)
- Journal of Medical Hypothesis and Research
- Journal of Biochemical and Molecular Toxicology
- Advances in Medicine
- Journal of Pharmacology and Clinical Toxicology

Bzowycyk, Andrew.

- Currents in Pharmacy Teaching and Learning

Cheng, Kun.

- World Journal of Clinical Oncology (associate editor)
- BioMed Research International
- Journal of Pharmaceutics and Pharmacology
- UK Journal of Pharmaceutical and Biosciences
- Journal of NanoMedicine and Applications
- International Journal of Pharmaceutical Engineering
- International Scholarly Research Notices

Gubbins, Paul.

- Current Medical Research and Opinion (international advisory board)
- Antimicrobial Agents and Chemotherapy
- Pharmacology and Pharmacodynamics of Antifungal Agents, Current Fungal Infection Reports (section editor)
- Current Fungal Infection Reports (associate editor)
- International Journal Pharmacokinetics

Gutheil, William.

- UK Journal of Pharmaceutical Sciences
- Symbiosis Open Journal of Pharmacy and Pharmaceutical Sciences

Hardinger, Karen.

- Conference Papers in Medicine
- Dataset Papers in Medicine
- World Journal of Transplantation

Igwe, Orisa.

- SOJ Anesthesiology and Pain Management
- SOJ Pharmacy and Pharmaceutical Sciences
- UK Journal of Pharmaceutical and Biosciences
- Journal of Biotechnology and Cell Biology
- Journal of Toxicology

Johnston, Thomas.

- Journal of Pharmacy and Pharmacology
- Journal of Ocular Biology, Diseases, and Informatics

Kuehl, Peggy.

- Research in Social and Administrative Pharmacy

Kumar, Anil.

- Journal of Neurovirology
- Journal of Neuroimmune Pharmacology

Liu, Yifei.

- Research in Social and Administrative Pharmacy
- Advances in Therapy
- Journal of the American Pharmacists Association (editorial advisory board member)
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