Buffalo Pharmacy MAGAZINE

VOLUME 2 | 2019

Pharmacists: **Primary** to Primary Care

ON THE FRONT LINES OF HEALTH CARE DELIVERY **p10**

BuffaloPharmacy MAGAZINE

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Message From The Dean

Our 2019 Buffalo Pharmacy Magazine highlights the many impressive accomplishments of our faculty, staff, alumni and students. I am very proud of their creative efforts and the positive impact these new achievements have had on global health care.

We continue to work toward ensuring our leadership and expertise in high-impact pharmacy initiatives which are grounded in exceptional patient-centric pharmaceutical sciences research. This builds on the strengths of the school through enhanced program development in clinical pharmacy, biologically based therapeutics and the initiation of research training programs in pharmacometrics and personalized pharmacotherapy.

We are very fortunate to have excellent community clinical partners who provide us with high-quality experiential sites for students, clinical practice sites for faculty and opportunities for patient-centric research. Our curriculum, experiential opportunities and leadership experiences for our pharmacy and pharmaceutical sciences students are both comprehensive and innovative.

UB's comprehensive campaign, Boldly Buffalo, is underway to raise funds to support our vibrant programs and new initiatives. Our goal is to increase scholarship and fellowship support, allowing us to recruit the best students and faculty and provide them with the resources to excel. We also aim to expand opportunities for students, faculty, and staff to engage with the larger scientific and professional communities to positively influence Buffalo and Western New York.

Without a doubt, we are the best pharmacy school in New York State and among a relatively small group of elite, research-intensive schools in the United States

Without a doubt, we are the best pharmacy school in New York State and among a relatively small group of elite, research-intensive schools in the United States. Our pharmaceutical sciences program is internationally recognized for its contributions to the field and training of outstanding scientists. Our PharmD program graduates highly qualified pharmacists with strong patient care skills and the knowledge to practice advanced, evidence-based pharmacy. We are well-prepared to meet the changing health care environment and remain a leader in pharmacy and the pharmaceutical sciences.

Warm Regards,

James M. O'Donnell, PhD
Professor and Dean

In This Issue

COVER STORY

FEATURES

DEPARTMENTS

IN EVERY ISSUE

ON THE COVER: Illustration ©2019 Michael Austin c/o theispot

Welcome Class of 2022

One hundred and twenty-seven students took their first step toward becoming pharmacists at our Annual White Coat Ceremony, a symbol of passage into the profession of pharmacy practice and a commitment to excellence in providing compassionate patient care.

Patrick Comerford, PharmD '07, was the keynote speaker, and shared three points of wisdom with the incoming students: manage stress, be humble with patients, and keep an open mind about all areas of the profession.

CLASS OF 2022 BY THE NUMBERS

Middle 50th* Percentile of PCAT Composite Score: **60%–90%**

Middle 50th* Percentile Science & Math GPA: **3.2–3.8**

In-State: **85%**
Out-of-State: **2%**
Foreign Citizen: **12%**

Males: **43%**
Females: **57%**

Interviewed: **238**

Enrolled: **123**

Average Age: **21**

6
Number of U.S. States/Canadian Provinces/ International Countries Represented

*The middle 50th percentile reflects those between the 25th and 75th percentiles.

Partnering to Support the Best and Brightest

BY REBECCA BRIERLEY

The University at Buffalo has been the flagship New York State school of pharmacy since 1886 with a strong tradition of providing access to one of the highest caliber pharmacy programs in the country. Strong local and regional partnerships were fundamental in building this program and have grown to include region-wide educational partnership agreements. These partnerships span collegial connections with private colleges, as well as State University of New York (SUNY) four-year and two-year institutions, and provide students from all backgrounds with the advantage of completing a PharmD degree along with another college degree more efficiently and often with reduced time and significant cost savings.

2+4 Agreements: Give community college students the opportunity to streamline courses, better preparing them to enter the PharmD program.

3+4 Agreements: Allows four-year undergraduate college students the advantage of entering the PharmD program after completing three years of undergraduate study, completing both degrees in seven years (three years undergraduate, four years PharmD)

4+4 Agreements, like the 2+4 agreements, allow students to streamline course for admittance to the PharmD program.

College advisers from across New York State are very pleased have these enhanced opportunities to offer their highly motivated students.

"The affiliation agreement between Lehman College of CUNY and the UB School of Pharmacy and Pharmaceutical Sciences is already creating excitement among our students," Scott Calvin, PhD, senior pre-health adviser, Lehman College CUNY, states. "We are particularly proud this agreement allows students who might normally take five years to graduate Lehman to participate. This is important as many highly talented students from underrepresented communities have some catching up to do when they first come to college; this agreement gives them the space to do that while still pursuing their education at an accelerated pace."

Allyson Backstrom, PhD, director, Dr. George E. Schreiner '43 Pre-Medical Center, Canisius College, also values the educational partnership with UB. "Our 3+4 agreement with UB Pharmacy attracts highly talented students to Canisius College who want to take advantage of the strength of our research-intensive undergraduate science programs and robust co-curricular opportunities while preparing for their future profession at one of the top pharmacy programs in the country," she says. "I appreciate UB Pharmacy's willingness to partner with a full range of academic institutions allowing each individual future pharmacist to start their higher education journey in a setting where they can most readily thrive."

"UB Pharmacy's willingness to partner with a full range of academic institutions allow(s) each individual future pharmacist to start their higher education journey in a setting where they can most readily thrive."

Allyson Backstrom, PhD, Canisius College

With over 40 of these unique partnering agreements, we can offer diverse opportunities to competitive students from across the country. These agreements help strengthen and diversify our PharmD program and allow students to consider a career in pharmacy earlier in their decision-making process.

Celebrating 170 New Chapters

The University at Buffalo School of Pharmacy and Pharmaceutical Sciences held its Annual Commencement Ceremony on Saturday, May 19, 2018, where 170 PharmD, BS, BS/MS, MS and PhD students were recognized. Renee Rizzo Flemming, BS '83, president, PRN Managed Care, Consulting Services, LLC, was the commencement speaker.

Rachael Cardinal, PharmD '18, received the SUNY Chancellor's Award for Student Excellence, which honors students who have best demonstrated and been recognized for their integration of academic excellence with other aspects of their lives.

SUNY Honorary Doctorate of Science Bestowed on Prestigious Alumnus

BY KARA SWEET

Gordon L. Amidon, BS '67, received a State University of New York (SUNY) honorary doctorate of science at the University at Buffalo's 172nd Commencement.

Amidon's academic roots in his field began at UB, where he earned a bachelor's degree in pharmacy. During his time in Buffalo, he gained a passion for the study of pharmacokinetics, the convergence of pharmacy and mathematics.

Amidon, who currently serves as the William I. Higuchi Distinguished University Professor of Pharmaceutical Sciences and Charles R. Walgreen Jr. Professor of Pharmacy, University of Michigan, has been called a true visionary in the pharmaceutical sciences for his sophisticated research, most notably in the area of oral drug absorption.

Amidon is credited with developing the Biopharmaceutical Classification System, recognized and utilized worldwide to differentiate drugs on the basis of their solubility and permeability. Amidon's scientific achievements have greatly contributed to the pharmaceutical community's overarching understanding of drug absorption, and serve as guiding principles used by the U.S. Food and Drug Administration to determine generic drug bioequivalents.

Amidon's scientific achievements...serve as guiding principles used by the U.S. Food and Drug Administration to determine generic drug bioequivalents.

2018 COMMENCEMENT STATS

115
Doctor of Pharmacy degrees conferred

DUAL DEGREES:

6
Doctor of Pharmacy/ Master of Business Administration

6
Doctor of Pharmacy/ Master of Public Health

3
Doctor of Pharmacy/MS in Pharmaceutical Sciences

20
Bachelor of Science in Pharmaceutical Sciences degrees conferred

10
Master of Science in Pharmaceutical Sciences degrees conferred

10
Doctor of Philosophy in Pharmaceutical Sciences degrees conferred

Ten Years of Success in Protein Drug Development and Research Training

BY KARA SWEET

In 2006, Joseph Balthasar's laboratory began a collaboration with Novartis to evaluate the pharmacokinetics and pharmacodynamics (PK/PD) of therapeutic proteins.

Out of this partnership, the Laboratory for Protein Therapeutics was formed. This pharmaceutical sciences departmental center had a modest internal grant program that solicited grant applications from faculty, which were reviewed and prioritized in consult with Novartis. Over the next three years, ten projects were funded, each with a total cost budget of $100,000 per year.

The success of the Novartis collaboration led Balthasar and then-department chair William Jusko to pursue the development of a larger center, focused on the application of pharmaceutical science to the development of protein drugs. "The formation of the Center for Protein Therapeutics was a tremendous opportunity to advance understanding in the bioanalysis, formulation and PK/PD of protein drugs," says Balthasar, director of the center.

Information is shared between faculty at UB, members of the Center for Protein Therapeutics (CPT) and the industry through pre-competitive research projects, and then published in leading scientific journals.

Since its inception in 2008, the CPT has played a key role in the advancement of the application of liquid chromatography/ mass

"The formation of the Center for Protein Therapeutics was a tremendous opportunity to advance understanding in the bioanalysis, formulation and PK/PD of protein drugs."

Joseph Balthasar, PhD, CPT director

spectroscopy techniques for the measurement of therapeutic proteins in biological samples (largely through work conducted by Dr. Jun Qu), the development of mechanistic and semi-mechanistic mathematical models to characterize and predict the pharmacokinetics and pharmacodynamics of monoclonal antibodies (work conducted by Drs. Dhaval Shah, Donald Mager, William Jusko and Joseph Balthasar), and mechanistic evaluation of drug-drug interactions and drug-disease interactions involving monoclonal antibodies and other protein drugs (work performed by Drs. Marilyn Morris and Joseph Balthasar).

The most important accomplishment of the center, according to Balthasar, has been "the training of an outstanding cadre of young scientists." In ten years, the CPT has funded 116 research projects and has supported the education of more than 50 graduate students and fellows. The unique training environment enables trainees to receive a combination of didactic course instruction, application of theoretical models and hands-on experimentation.

Balthasar is confident about the future of the center. He anticipates more research and training in the prediction of target engagement and disposition of novel protein constructs, biologically based gene and drug delivery systems, and targeted immune-oncology therapies.

"Our research and trainees are highly valued by the pharmaceutical industry and academic institutions," Balthasar says. "The Center for Protein Therapeutics will continue to meet and exceed the rapidly increasing demand for the development of new knowledge and new methodologies."

Sharing Contemporary Research in Pharmaceutical Sciences

BY KARA SWEET

The University at Buffalo School of Pharmacy and Pharmaceutical Sciences hosted scientists and researchers from around the world for a series of pharmaceutical sciences symposiums: the Quantitative Systems Pharmacology Symposium, the Center for Protein Therapeutics Symposium and the Buffalo Pharmaceutics Symposium.

The Quantitative Systems Pharmacology (QSP) Symposium, launched in 2017, brought together scientists to discuss contemporary approaches, including the challenges and opportunities, for advancing the science and practice of quantitative systems pharmacology. Quantitative systems pharmacology represents an approach to translational medicine that combines computational and experimental methods to elucidate, validate and apply new pharmacological concepts to the development and use of small molecule and biologic drugs.

The 2018 QSP Symposium, titled "Pharmaceutical Sciences: In Pursuit of Excellence," was held in memory of UB Distinguished Professor Emeritus of Pharmaceutical Sciences Dr. Gerhard Levy, a pioneer and leading contributor in the areas of pharmacokinetics and clinical pharmacokinetics.

The Center for Protein Therapeutics (CPT) celebrated its tenth anniversary with faculty, postdoctoral fellows and graduate students presenting the results of CPT-funded research projects during the past year to other UB faculty and pharmaceutical scientists from across the nation.

The 14th Buffalo Pharmaceutics Symposium (BPS) joined alumni with internationally recognized faculty and invited researchers to exchange valuable scientific knowledge and showcase cutting-edge research in pharmaceutical sciences.

"Many of our alumni attending have gone on to highly successful careers in their field, having become leaders in pharmaceutical research."

Donald Mager, PharmD, PhD

"The symposium affords us the opportunity to invite our alumni back to the school to reconnect and to learn about their current research," said Donald Mager, PhD, PharmD, professor and vice chair, pharmaceutical sciences, and organizer of the 2010, 2014 and 2018 BPS symposia. "Many of our alumni attending have gone on to highly successful careers in their field, having become leaders in pharmaceutical research. This alumni-focused event greatly benefits our up-and-coming students, to inspire as well as to inform."

VINTAGE APOTHECARY

THE HISTORY BEHIND NOVEL ITEMS IN OUR SCHOOL'S APOTHECARY

Lockport Locks

BY KARA SWEET

In the late 1800s, seven daughters who grew up on a Lockport, N.Y., turkey farm became national sensations for their hair, which reached a collective length of 37 feet. Their popularity was noticed by Barnum & Bailey's, and soon they were touring the country as "The Seven Wonders," astounding audiences by letting down their magnificent manes, quite risqué for the time!

Their father, Fletcher Sutherland, capitalized on his daughters' widely envied locks and created a haircare product line, which included hair grower and hair and scalp cleaner (pictured). By 1900, over 2.5 million bottles of hair grower were sold. Their empire fell quickly due to poor management of their fortune and, perhaps even more devastating, the arrival of the Roaring Twenties and the shorter hairstyles of the flappers.

37ft.

The collective length of the seven Sutherland sisters' hair.

2018 Awards Ceremony

BY KARA SWEET

Spotlight on Alumni Honorees

Kimberly Zammit, BS '86 & PharmD '00, was honored with the Alumni Association's most prestigious award, the Willis G. Gregory Award, for her exemplification of the ideals of service, integrity and the profession of pharmacy.

Zammit is a clinical coordinator for critical care and cardiology and director of the PGY-2 Critical Care Pharmacy Residency Program at Kaleida Health. She holds board certifications in pharmacotherapy and critical care pharmacy through the Board of Pharmacy Specialties.

Since 1993, Zammit has been an adjunct assistant professor at School of Pharmacy and Pharmaceutical Sciences as well as an Advanced Pharmacy Practice Experience (APPE) preceptor, providing lectures and contributing to curriculum and experiential program development. Her leadership activities include service as president and a member of the board of directors of the New York State Council of Health-system Pharmacists.

Mark Stramaglia, BS '81, received the 2018 Orville C. Baxter Memorial Professional Practice Award, in recognition of his high ideals of professionalism and his genuine concern for patients.

Stramaglia is currently the director of process services and business development at Thermo Fisher Scientific. In this role, he is charged with impacting new product portfolio development decisions that lead to continued overall growth trajectory for the cell culture business. During his more than 20 years at the company, he has worked in various capacities, including marketing, business development, operations and R&D portfolio management.

Stramaglia has been a Dean's Alumni Ambassador and a Dean's Alumni Ambassador Mentor since 2009.

Award winners Mark Stramaglia and Kimberly Zammit

2018 Award Winners

Willis G. Gregory Memorial Award
Kimberly Zammit BS '86 & PharmD '00

Orville C. Baxter Memorial Professional Practice Award
Mark Stramaglia BS '81

Daniel H. Murray Memorial Professional Development Award
Nicholas Smith PharmD '18, MS '18 & PhD '20

Teacher of the Year
Calvin Meaney PharmD '11, Clinical Assistant Professor of Pharmacy Practice 2018

Outstanding Teacher Awards
Irene Reilly PharmD, Clinical Assistant Professor of Pharmacy Practice

Ashley Woodruff PharmD '09, Clinical Assistant Professor of Pharmacy Practice

Staff Member of the Year Award
Kara Sweet Project Manager, Office of External Affairs

United States Public Health Service Excellence in Public Health Pharmacy Award
Amy Shaver PharmD '18

View the complete list of 2018 award winners at pharmacy.buffalo.edu/awards.

2018 Award Recipients

Golfing For Scholars

The picturesque Lockport Town and Country Club hosted our 15th Annual Student Scholarship Golf Tournament, which raised over $13,000 for student scholarships. Since its inception in 2004, the tournament has provided over 75 students with the financial support necessary to be bold.

2018 Student Scholarship Recipients:

L-R: Lukas Brightman '19, Jess Greger '19, Megan O'Connor '19, Dean James O'Donnell, PhD, Ben Do '20, Jessica Swiderek '20, Syed Samad '19 (not pictured: Marissa Guszkowski '20)

Over **75** student scholarships awarded since 2004

Tournament Winners:

First Place Threesome (with a score of 64):
Kimberly Sunderland, PharmD '17
Andrew Depczynski,
Lukas Brightman '19

Second Place Foursome (with a score of 64):
Christopher Barry
Jim Bernitt
Gary Ritzman
Jay Shearer

Longest Drive, Hole 16:
Tanner Merchants '19
Kimberly Sunderland, PharmD '17

Closest to the Pin, Hole 6:
Michael Johnson, PharmD '07
Kimberly Sunderland, PharmD '17

Closest to the Pin, Hole 18:
Bob Heyert
Kimberly Sunderland, PharmD '17

Closest to the Line, Hole 4:
Christopher Banker '21
Kimberly Sunderland, PharmD '17

Ring of Gold:
Dean Salyer, BS '85

Tournament Sponsors:

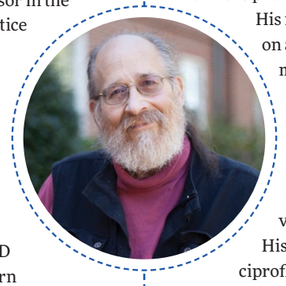
Grand Sponsor:
Rochester Drug Cooperative

Bronze Sponsors
Independent Health
J. Rutowski Pharmacies
Brian Loucks, BS '86, and
Dean Salyer, BS '85
Middleport Family Health Center
Rite Aid Pharmacy
Woodmark Pharmacy of New York

IN MEMORIAM

Dr. Alan Forrest: PK/PD Leader and Mentor

BY KARA SWEET



Dr. Alan Forrest (1952-2018) was a University at Buffalo faculty member and a research professor in the department of pharmacy practice and biostatistics from 1989 to 2015. He was renowned in the field of antimicrobial pharmacokinetics, pharmacodynamics and toxicodynamics (PK/PD/TD) as a researcher and educator for almost 40 years.

Forrest received his PharmD from the University of Southern California in 1979 and held a number of prestigious faculty positions at USC, the University of Maryland and then at UB. He served most recently as a clinical professor and director of the Center for Pharmacometrics at the University of North Carolina, Eshelman School of Pharmacy. He also worked as the senior director of pharmacometrics at the Institute for Clinical Pharmacodynamics and was an expert adviser to the Food and Drug Administration and the pharmaceutical industry.

His research primarily focused on aspects of translational medicine within the fields of anti-infectives and oncology, using pharmacometrics as a means of integrating preclinical and clinical data, including both healthy volunteer and patient data.

His landmark paper studying ciprofloxacin pharmacodynamics in seriously ill patients was paradigm-shifting. As a result of his work, exposure response analyses for antimicrobials have become standard practice in translational drug development.

Forrest mentored over 100 trainees and fellows, and in 2016 he received the 2016 Lewis B. Sheiner Lecture Award from the International Society of Pharmacometrics. Throughout his esteemed career, Forrest always maintained his focus in translating his research into clinical practice to improve the care of patients.

"I am forever indebted to Alan for everything he taught me," says Elizabeth Lakota, PharmD '15, who currently works as the assistant director of pharmacometrics at the Institute for Clinical Pharmacodynamics in Schenectady, N.Y. "He and I spent countless weekends in Kapoor Hall, working on projects side-by-side. I have heard dozens of Alan's former students say that they owe their career to him. I wholeheartedly agree—he was pivotal to my career."

Forrest is survived by his wife, Susan, and his children Ayelet and Liat.

MEMORIAL FUND:
http://buffalo.edu/campaign/forrest

UP CLOSE & PERSONAL
WITH OUR FACULTY

GET TO KNOW

Ashley Woodruff

PHARMD '09, CLINICAL ASSOCIATE PROFESSOR, PHARMACY PRACTICE

Dr. Woodruff, what is your favorite place in Kapoor Hall and why?

Dr. Nicole Cieri-Hutcherson's office. Always filled with gorgeous pics from her travels!

What is your favorite topic to teach and why?

Heart failure and cirrhosis. I love complicated pharmacotherapy topics that are rooted in pathophysiology. You can't understand one without the other. It separates students that are good memorizers from those that have taken the time to understand and learn the concepts.

What are the "hot topics" in pharmacy now and why do they interest you?

Many would be inclined to say cannabis or provider status for pharmacists but I would say transitions of care. Patients who are discharged from the hospital are frequently readmitted shortly after discharge because they fall through the cracks. No one helps them "transition" back to the community setting, making sure new and old medications are reconciled, follow-up appointments are made and kept, and education is provided about their chronic and new diagnoses and conditions. Pharmacists have been shown to help reduce readmissions in these transitional care roles and this need will continue to grow as hospital reimbursement is tied to keeping patients out of the hospital after discharge.

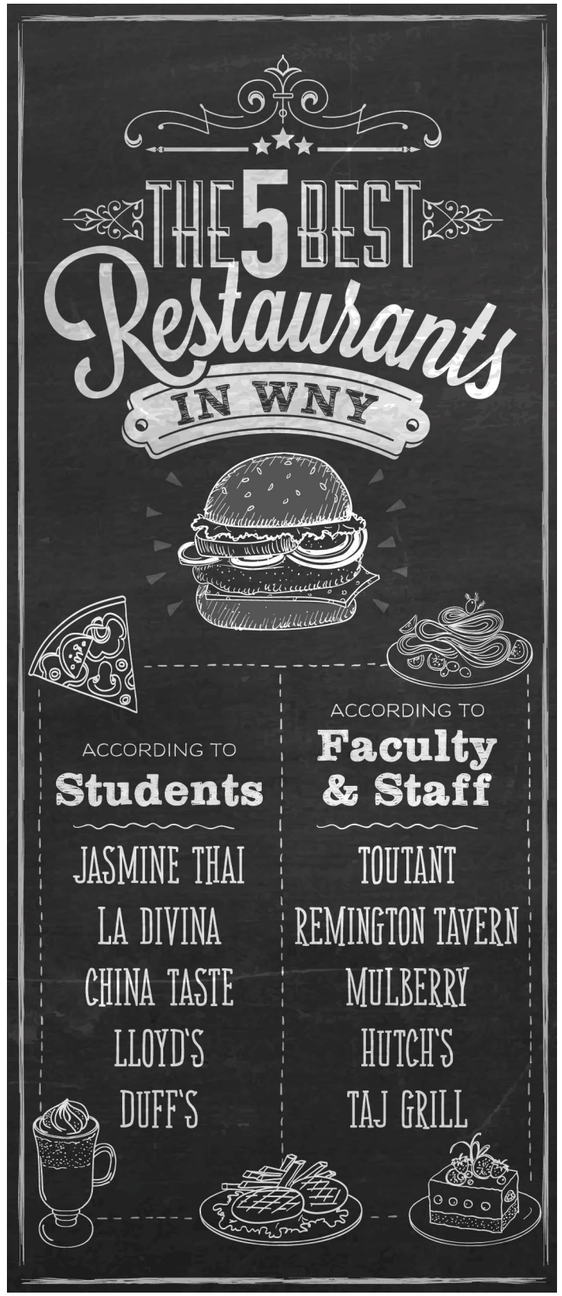
What has been your proudest professional accomplishment?

Teaching. I am proudest of my work in the classroom and rotation setting.

If you were stranded on a desert island and could only bring one book, one movie and one record what would they be and why?

Anything Disney to remind me of my family. I live in a house filled with Disney princess loving daughters.

TOP 5 LIST



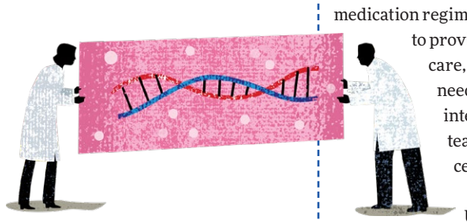
Pharmacists: **Primary** to Primary Care

BY GABE DIMAIO

ON THE FRONT LINES OF HEALTH CARE DELIVERY

Every day, pharmacists from the UB School of Pharmacy and Pharmaceutical Sciences are on the frontlines of health care delivery, working in clinical settings within physician provider groups across Western New York.

> "It's all a very collaborative environment. Often it is an exchange of ideas with the provider about what can we do for a patient as a team to really improve their care."
>
> *Erin M. Slazak, Pharm D*



Their knowledge and expertise as medication experts not only help practitioners provide better health outcomes for patients, but the information they provide is later transformed into research to make health care delivery more efficient and effective as measured by improved patient outcomes, increased patient satisfaction and decreased health care costs.

A pharmacist embedded in a clinical setting is especially important today as it is not uncommon for some patients to be on upwards of 15 medications, in addition to any herbals or other supplements. These complex medication regiments, along with the desire to provide effective continuity of care, further strengthen the need to provide patients with an interdisciplinary health care team, with pharmacy having a central role.

It's not only pharmacists. Using the team approach, any number of health care professionals such as dieticians and physical therapists can be involved depending on the practice.

Collaborative Practice Groups

"It's all a very collaborative environment. We educate the patients, review all of their medications, and send recommendations for therapy optimization to the referring provider. Often it is an exchange of ideas with the provider about what can we do for a patient as a team to really improve their care," said Erin M. Slazak, PharmD '04, clinical assistant professor in the Department of Pharmacy Practice. She practices at General Physicians, P.C., where she and several other pharmacists receive referrals from primary care providers. The pharmacists then work with these patients to better manage chronic conditions like diabetes, or to better manage complex medication regimens. The team has also implemented a transitions of care program in which the pharmacist completes a comprehensive medication review for patients transitioning from one health care setting to another, such as from the hospital to home.

Introducing pharmacists into physician provider groups has enhanced patient care services. Pharmacists know the latest drug research. They reconcile medications to ensure that dosages are correct or even if the patient should still be on a current regimen. They also provide the necessary follow-up to answer questions and make sure patients stay compliant with their care plans.

"We appreciate the state of health care today where doctors have very little time to accomplish a lot with a very complex patient. We want to be seen as an extender. We help doctors accomplish patient goals," Slazak adds.

The new health care professional in the room

Working for years with Buffalo Medical Group, P.C., Nicole P. Albanese, PharmD, clinical associate professor in the Department of Pharmacy Practice, has helped to solidify pharmacy's critical role in this physician provider group, but it wasn't always the case.

"When I first started here and I was sending recommendations to the doctor, they took half of them at best. Now, they take 99 percent," said Albanese.

However, this evolution to team-based health care delivery is not without its challenges, particularly disabusing patients of the notion that a pharmacist merely dispenses medications at their neighborhood drug store. For many, seeing a pharmacist in a clinical setting takes some getting used to.

PGY2 Ambulatory Care Resident Hailey Lipinski, PharmD; Clinical Associate Professor Nicole Albanese, PharmD; and Andrews Obeng-Ayawrkwah, Jr., PharmD '19, on-site at Buffalo Medical Group.

"I start all my patient appointments with, 'I'm a clinical pharmacist. I am not what a normal pharmacist is to you. We don't dispense medications here.' Every single person reacts with, 'Oh, OK. I was wondering who you were and what you are going to do for me,'" Albanese says. "I do a lot of education with every single patient that we see."

Albanese adds that many patients come into her office angry about why they're seeing her, but they oftentimes leave the meeting hugging her.

The value that pharmacists bring is especially important as compensation from insurance companies is gradually shifting to patient wellness outcomes. Essentially, when their patients do better, the practices are rewarded. However, primary care groups can't accomplish all that they need to by doing what they've always done.

Buffalo Medical Group is a large multispecialty medical group with approximately 200 hundred providers, including primary care and specialty physicians and advanced practitioners, behavioral health, dietetics and pharmacy. The majority of Albanese's referrals are for chronic disease state management such as diabetes, hypertension and cardiovascular risk reduction. Additionally, pharmacists can refer as needed to behavioral health or the dietician, further enhancing positive patient outcomes.

Christopher J. Daly, PharmD/MBA '12, is a clinical assistant professor in the Department of Pharmacy Practice and recently started working at UB Family Medicine on Sheridan Drive. He said primary care groups need to branch out and bring in different levels of expertise but do it cost effectively. This presents an opportunity for pharmacists to enhance improvements in interprofessional patient care as their scope of practice continues to expand and evolve.

"The opportunities for performance or value-based interventions are going to grow. Practices therefore need to position themselves more strategically to get to that upper echelon to return value to the practice while delivering better patient care. This is contingent on multidisciplinary team approaches and understanding how to best deliver patient care in the future," Daly said.

While Slazak, Albanese and Daly are on the front lines, there are researchers from the School of Pharmacy and Pharmaceutical Sciences who are looking at the data that's generated from clinical patient visits more strategically, evaluating the interactions that are most effective.

Analyzing health care

Crunching the numbers at that higher level is David M. Jacobs PharmD '11, PhD '18, assistant professor in the Department of Pharmacy Practice. He works closely with clinical pharmacists in primary care settings to design studies to explore the effectiveness of particular interventions. Together they figure out the objective, the sample, what will be included and excluded, and how the data will be analyzed. After the data is collected, they interpret it to see what worked and what might be improved in the clinical setting.

Jacobs also looks at data at the population level to try to get answers to more general questions.

"We utilize large databases to see, for example, 'What has been the change in readmissions in

As the battle plan for a multidisciplinary team approach in primary care is being written, it will be informed by the work done by researchers and clinicians from the UB School of Pharmacy and Pharmaceutical Sciences.

Full integration of a clinical pharmacist in primary care practices resulted in a

70%

IMPROVEMENT

in patient-centered clinical pharmacy services outcomes

[per Research in Social and Administrative Pharmacy, 2018, 14(3)]

a COPD or pneumonia population before and after the advent of this care transition?' or 'How does polypharmacy impact health care utilization?'" he said. "These are more general questions that we can look at with some of the large databases, using some big data analytics. It's a crossover with what we're doing in the clinic with the patients."

Jacobs said the ultimate goal from the researcher's standpoint is to publish in peer-reviewed literature to get feedback from other researchers. From a clinician's standpoint, it means improving the model, implementing it in the clinic and looking toward the next step to improve patient care. He added that there are an infinite number of primary care research opportunities in the future.

Transforming health care through research

Looking to the future is Collin Clark, PharmD '17. He's a freshly minted PharmD, who was recently awarded a prestigious National Research Service Award fellowship, with funding through the National Institutes of Health. Clark will be working out of the UB Department of Family Medicine's Primary Care Research Institute, which brings together a multidisciplinary team of researchers, clinicians and other health care experts to research ways to solve complex problems in health care.

Clark will be pursuing the practice transformation research track, focusing on changing health care team workflows, practice improvement science and implementing evidence into practice. He will develop scholarship and research techniques to better understand health disparity inequities in primary care related issues and apply these findings to further enhance leadership and care.

The fellowship is being used for postgraduate training that will help him become a better researcher in health services and the primary care arena. It's a program that allows him to work with mentors across the university to develop his research skill set. Currently, he's working with a multidisciplinary primary care research team that is focusing on medication safety for the elderly.

"We're trying to take what we know works and doesn't work from some of the more classic levels of evidence—things like randomized control trials—and trying to find ways to translate that evidence into practice within the Family Medicine department. We're working with the university's physician provider group, UBMD, to try to turn the evidence that we know from more rigorous trials into real-world studies that can hopefully provide better care for our patients," Clark said.

Specifically, Clark and his group are looking at the practice of "deprescribing" medicine: systematically removing medications that a patient no longer should have as they age because the risks outweigh any potential benefit, or because the medicine is no longer necessary. What they're trying to figure out is the best way for the health care provider and pharmacist to broker that with the patient.

Clark, Jacobs, Daly, Albanese and Slazak realize the work they are doing now will help further solidify the essential role of the pharmacist in the primary care arena. As the battle plan for a multidisciplinary team approach in primary care is being written, it will be informed by the work done by researchers and clinicians from the UB School of Pharmacy and Pharmaceutical Sciences.

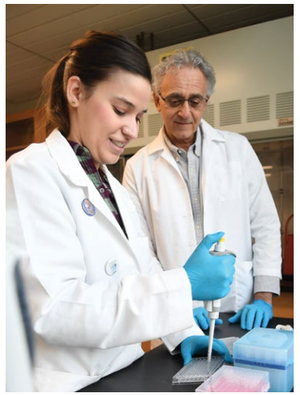
Collin Clark, PharmD, '17 at UB Department of Family Medicine's Primary Care Research Institute

New Faculty: Agents of Change

An agent of change is someone who promotes and enables change to happen within any group or organization. These strategic new hires are bringing exciting and innovative changes to our research and educational programs.

[BY GABE DIMAIO]

A renowned leader in quantitative systems pharmacology who does innovative work on brain tumors. **A UB alum** who does promising research on antimicrobial pharmacokinetics / pharmacodynamics. **A Canadian research professor** who investigates the side effects of anti-cancer drugs.



Mix the intellectual gravitas of these change agents with the dynamic academic environment of the university, and the results are helping to assure growth and success at the school for decades.

Empire Innovation Professors are senior faculty who have an established international reputation for leadership in their field and who are able to bring in external funding to support their body of research.

Innovative Mechanistic Models

JAMES M. GALLO, PharmD, PhD, was hired as an Empire Innovation Professor (EIP) to lead efforts in the emerging field of Systems Pharmacology, also called Quantitative Systems Pharmacology (QSP). Supported via a State University of New York strategic investment initiative, EIPs are senior faculty who have an established international reputation for leadership in their field and who are able to bring in external funding to support their body of research. For Gallo, his is an approach that uses computational models to describe dynamic interactions between a drug and pathophysiology to understand systems at the cellular and biochemical levels.

"They're considered...a mechanistic model that would characterize both the pharmacokinetics and the pharmacodynamics of a drug. They are, in a number of cases, a larger model in terms of the number of equations, the number of parameters, potentially the data that would support that type of model," Gallo said. "So going from traditional pharmacokinetics and pharmacodynamics to QSP is, I'd say, mostly a matter of scale. But there are some other attributes that get into the nitty-gritty of the modeling piece."

Gallo is the son of a pharmacist, but his pursuits extended beyond his father's Wisconsin pharmacy. Before coming to the university, Gallo was the chair of pharmaceutical sciences at the Albany College of Pharmacy and Health Sciences.

What sets him apart from contemporaries is his approach to obtain the answers to his research questions. While other researchers rely on theoretical work or access to public databases, his approach is a combination of both computational and wet lab experiments. This allows him to generate his own data to inform his model.

Of his current projects, three focus on the QSP of brain tumor drug therapy. The first relates to QSP of drug development, where collaborators would provide new candidate drugs that his team would evaluate for efficacy in a brain tumor model. The second is related to epigenetic modulation of drug resistance in brain tumors. What Gallo seems to be most excited about is the third, which involves intratumoral heterogeneity. Due to the complex nature of tumors, they cannot be classified as a single entity, which makes designing drug therapy difficult. However, it also presents an intriguing opportunity to do cell type-specific or single cell investigations, which are a significant focus in his lab.

"I think this will be a rewarding scientific experience," Gallo says.

Combating Antimicrobial Resistance

RAYMOND CHA, BS '97 & PharmD '00, originally came to the university to pursue his BS in pharmacy and then continued on to complete his post-baccalaureate PharmD. The New Jersey native's mom is a retired neonatal intensive care nurse and his dad is a retired reverend. This influenced his decision to find a career that included the theme of human service. Coupled with his interest in science, he saw pharmacy as an extension of those things.

"Immediately, the concept of the technical aspect of drug development and drug application...then also being able to have a health service component, at the time, really attracted me," said Cha. "I was able to witness the technical aspects of drugs from the standpoint of biochemical pharmacology and the technical science of molecular

"It's an incredible privilege to impart knowledge and wisdom on an individual because he or she can make bigger and lasting impacts on the community than he could make by himself."

structure activity relationships and, on the surface level, I knew that pharmacists were interactive with patients and that I'd be making impactful interactions with patients."

In the summer of 2018, Cha was hired as a clinical associate professor of pharmacy practice. The focus of his research is to understand and curtail antimicrobial resistance, which he describes as an uphill battle. He said that understanding the effect of antimicrobials has exponentially increased over the past few decades. Antimicrobial resistance allows an organism to stop an antimicrobial (antibiotic, antiviral) from working against it, which causes standard treatments to become ineffective, allowing devastating infections to persist. Combating this resistance is a major worldwide health focus.

"Understanding the kinetics and incorporating dynamic studies will help us to better optimize our current treatment options so that we try to contain antimicrobial resistance to preserve our therapeutic options," Cha added.

His goal is to build up his scientific body of work with the goal of providing data that are more meaningful to improve patient outcomes through better antimicrobial therapy.

As part of his clinical consultant activities, Cha is developing his clinical practice to enhance therapies for patients in the hospital and in specialized clinics with challenging infections.

He brings this clinical expertise to the classroom, where pharmacy students can learn from his interesting case studies and progressive research. He sees teaching as rewarding and fun. Cha states, "It's an incredible privilege to impart knowledge and wisdom on an individual because he or she can make bigger and lasting impacts on the community than he could make by himself."

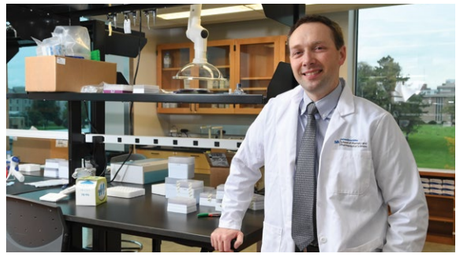
Targeting Cancer Cell Mutation

JASON SPROWL, PhD, was also brought onboard during the summer of 2018 as an assistant professor in the Department of Pharmaceutical Sciences. He came to UB from across town at D'Youville College, where he was an assistant professor of pharmaceutical, social and administrative sciences. Before that, he researched anti-cancer drugs at St. Jude Children's Research Hospital in Memphis.

"What really attracted me to UB was that the experience here is vast. Working with people who are at the cusp at new findings...it's incredible to be with these individuals, learn from them, and to contribute to what is being put out there was very attractive," Sprowl said.

An escape from the Canadian winter sparked Sprowl's career path. When it was too cold to be outside, he would spend time in the library; that's where he came across a journal article on genetics. He found it interesting that genetics could explain many different diseases, which led to his interest in cancer and his undergraduate degree in biochemistry.

Currently, he studies the toxicity and side effects of approximately 30 anti-cancer drugs, tyrosine kinase inhibitors, specifically designed to target a mutation in a cancer cell, and rendering it inactive. However, these inhibitors are not as target-specific as originally expected. Some side effects include changes in the concentration of other chemotherapeutic drugs or additional medications a patient might be taking. Before coming to the university, he published research on using one of these tyrosine kinase inhibitors to prevent neuronal accumulation of the anti-cancer drug, Oxaliplatin, which could reduce neurotoxicity.



"What really attracted me to UB was that the experience here is vast."

Over the next year, he will continue getting his lab staffed, writing studies, and applying for grants. After that, he'll add teaching to the mix.

"I've been really fortunate. I love working in this field, it's been incredible," said Sprowl.

While these innovative new faculty members have only been onboard for a few months, they have already started making great strides in their work–improving brain tumor drug therapies, improving infectious disease drug therapies, fighting antimicrobial resistance and improving cancer drug therapies. Their expertise in their collective fields will bring new ideas and new vitality to the School of Pharmacy and Pharmaceutical Sciences.

INTERPROFESSIONAL EDUCATION

BY GABE DIMAIO

Collaborative Campus Commitment

UB pharmacy and nursing students learn they had "saved" Patient X in an interprofessional escape room activity.

Imagine you're doing a major renovation on a home you've owned forever. You know what you want done and are ready to build. During the project, your architect doesn't talk to the contractor. The contractor talks to neither the electrician nor the plumber. The concrete guy comes and goes as he pleases. How confident would you be about the workmanship?

It's not a good idea for managing a major construction project. As it turns out, it isn't such a great idea for managing patients' health care either, so medical professionals throughout the country are increasingly using the team approach to solve patient health issues.

By removing themselves from their silos and collaborating with colleagues from other disciplines, professionals are giving their patients better, safer health care at a lower cost. Collaboration in health care closes communications gaps and promotes a patient-centered approach where health care professionals work as a team interprofessionally, instead of waiting their turn to care for a patient. According to the National Academies of Science, Engineering, and Medicine, merely reducing preventable medical errors alone could save up to $29 billion a year.

The University at Buffalo and the School of Pharmacy and Pharmaceutical Sciences embrace this national trend by providing students with learning opportunities in Interprofessional Education (IPE). This training provides students with core competencies that will help them work more effectively with other professionals in this new paradigm once they graduate and enter the workforce.

Campus Collaborative Commitment

While many universities provide training in IPE, UB recognized its importance with an institutional commitment and set up an office to coordinate education in this discipline across the university. The instruction extends to schools beyond the health professions and includes students in the schools of management, social work and law.

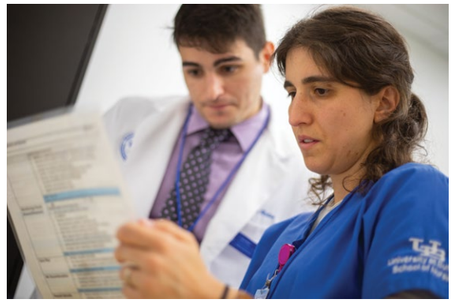
The students learn IPE by progressing through three levels. The first exposes them to the value of IPE and principles of interprofessional collaborative practice through interactive, online learning and group engagements. Here they also learn teamwork skills, the scope of practice of other professions, and the impact of culture on health care delivery. The second develops competency by immersing the students in interprofessional simulations and community-based service learning. The third continues student development in communication, leadership and teamwork while working with patients in interprofessional clinical teams.

"I think there was a realization that it had to be more deliberate so that all graduates were having entry-level competence in this area," said Nicholas Fusco, PharmD '10, interim director of the School of Pharmacy and Pharmaceutical Sciences' Office of Experiential Education. He's also a clinical associate professor and the school's representative on the UB IPE leadership team.

"Our feet are going to be held to the fire now with regard to integrating interprofessional education," says Fusco. "People are better understanding the value of these activities in the curriculum and the feedback from students has been pretty positive with regard to how they view the experiences and how they think it's influencing their training."

To achieve these core competencies, the university's IPE office and the school work together to ensure that students across the health science schools understand the scope of practice from other professions, communicate effectively to ensure high-quality patient care, and foster the ability to plan, deliver and evaluate patient-centered care. The university takes guidance from the Interprofessional Educational Collaborative (IPEC), a national organization dedicated to working with

According to the National Academies of Science, Engineering, and Medicine, merely reducing preventable medical errors alone could save up to $29 billion a year.



Nursing and pharmacy students receive escape room clues and collaborate to help save Patient X.

academic institutions to prepare students to work collaboratively with other professions.

Aside from classroom training and learning about the team-based approach as an abstract notion, the UB Office of Interprofessional Education integrates activities into student education with both large scale and smaller events.

IPE forums engage pharmacy students with students from across the university for an experience that is much more interactive than a traditional lecture. Each forum has a theme and keynote speakers to discuss an important issue and its implications. A recent forum involved confronting the nation's opioid crisis with Erie County Health Commissioner Dr. Gail Burstein and the Medical Director of Substance Abuse Services for Catholic Health, Dr. Paul Updike, as keynoters, which the school hosted in Kapoor Hall.

After the keynote, the student audience is broken down into smaller groups, each group having student representatives from each discipline. Here, a facilitator engages the students and has them offer solutions for care.

Pharmacy's Care Plan

"Once they get into the meat of the activities, they really start to realize how they can individually contribute to the team and also how each of the other individual team members contribute to the ultimate goal of a care plan for a patient," Fusco said. Pharmacy students bring a unique skill set to these direct patient care activities, providing education in pharmacology, pharmacotherapeutics and self-care.

Mason Chan, a third-year PharmD student, was enlightened after going through the forum. He said that he expected students would share things within their own scope of practice, but got more when his Interprofessional group was presented with a scenario to create a care plan for a hypothetical patient.

"It was a lot different than what I expected. [I was surprised by] how well we worked together and how much knowledge and different perspective we got from other health professions," Chan said. "Being able to see it through their eyes, sitting down with them and saying, 'Hey, this is how I would approach the problem…' helped us better understand and communicate with each other."

In addition to the training *en masse*, students get IPE experiences in smaller settings that are both fun and educational. Recently, pharmacy and nursing students met to participate in a unique escape room activity specially designed for IPE collaboration. Their mission: to unlock the mystery of a patient's ailment through solving medically based puzzles. However, in this situation they had to rely on one another's medical expertise to solve the riddle…just as they would have to do in real life.

"It was a fun time, I loved it!" said Jessica Swiderek, a third-year PharmD student. "All the clues were medically based. One clue was 'Find the dosing of this medication,' so that's where the pharmacy students would help out. There were other things that nursing students would know that pharmacy students wouldn't, and that's how we would help each other out. It was very interesting!"

During their first three years of the PharmD program student will engage in ten hours of IPE training, which prepares them for their final year of advanced experiential training. During their fourth year, students experience interprofessional collaborative practice in its real-world application as they immerse themselves in regional and national practice sites. All pharmacy students also have the opportunity to see

Spring 2018 Interprofessional Education Day

The instruction extends to schools beyond the health professions and includes students in the schools of management, social work and law.

interprofessional education "up close and personal" during medical mission trips, where they help the less fortunate throughout the world as part of an integrated health care delivery team.

Both Chan and Swiderek were able to apply their IPE skills while volunteering for the nonprofit Remote Area Medical (RAM) in rural Virginia. Chan also volunteered for Camp Affinity where pharmacy students worked together with nursing and medical students to monitor glucose levels of children with type 1 diabetes. Swiderek also went to the Dominican Republic where she worked side-by-side with other health science students and health care professionals. In these missions, SPPS students help by providing assessments, medication counseling, and preparing and packaging medications in rural medical clinics.

Microcredentialing

To further emphasize its interprofessional education commitment, UB just launched a micro-credential in Interprofessional Collaborative Practice (IPCP). A micro-credential is the university's official validation of a set of educational experiences pertaining to a certain area that falls outside of the curriculum. While it is doesn't rise to the level of an academic minor or even a certificate program, it's more flexible and easily customized, so it can be based on a student's particular needs. When a student accomplishes and documents a predetermined number of designated experiences, the university places the micro-credential on his or her transcript. It can also be digitally displayed on social media accounts, digital resumes and email signatures via a digital badge.

There is no additional cost to get a micro-credential, and it provides a unique selling proposition both academically and professionally. Fusco believes having an IPCP designation will help students when applying for a job or other training programs, as it is an attestation these students have worked effectively within an interprofessional team in a variety of practice settings.

"This takes it up a step, where the student went out

Nicholas Fusco, PharmD '10, interim director of the School of Pharmacy and Pharmaceutical Sciences' Office of Experiential Education.

on their own and did other activities that fall slightly outside of the curriculum; so they have to have some individual initiative," Fusco said. "It will hopefully give them a little bit of a leg up."

Through its emphasis on IPE, the university and the School of Pharmacy and Pharmaceutical Sciences are providing our students with the insights and training to be the leaders of integrated real-world health care delivery, resulting in improved patient outcomes and enhanced research collaborations.

Tornatore secures a new $3.5 million NIH grant to help unravel racial disparity in kidney transplant success

BY REBECCA BRIERLEY

A new study led by Kathleen Tornatore, PharmD '81, professor of pharmacy practice, is exploring the effects of age, race and gender on immunosuppressive medication and immune responses of renal transplant patients.

Kathleen Tornatore, PharmD

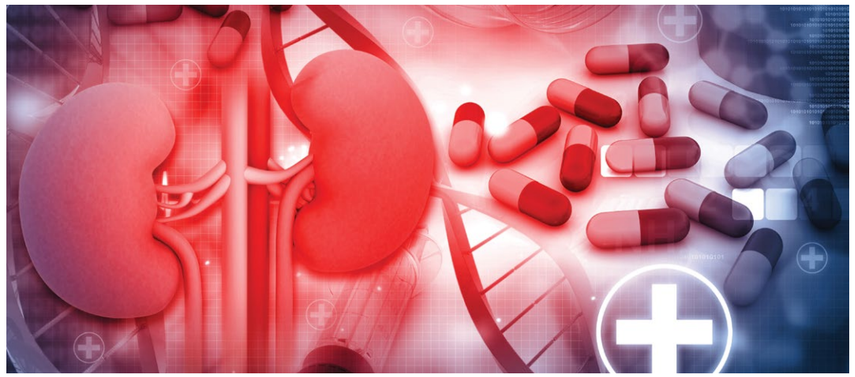
African-Americans are four times more likely to experience chronic kidney disease and kidney failure than Caucasians. From 2000-08, kidney transplants more than doubled in recipients above 65 years of age. According to the National Institutes of Health (NIH), the prevalence of end-stage renal disease in the United States has continued to increase, particularly among elderly patients and African-Americans. The disease—which has no symptoms in its early stages—is responsible for more deaths each year than breast or prostate cancer, according to NIH.

Funded by a five-year, $3.5 million grant from the National Institute of Aging, the study aims to bridge the gap between current, non-specific clinical methods and personalized medicine for high-risk patients to better understand why these differences exist. Tornatore is conducting the study with UB Nephrology and Transplant Divisions at Erie County Medical Center and the UB Clinical and Translational Science Institute. Co-investigators from UB Genomics and Bioinformatics Core at New York State Center of Excellence in Bioinformatics and Life Sciences; Flow Cytometry and Biostatistics at Roswell Park Comprehensive Cancer Center and Genomics Medicine at Marshall University will also participate. These partnerships allow access to core resources for clinical investigators and will increase research in health disparities in Western New York.

2x

From 2000-08, kidney transplants more than doubled in recipients above 65 years of age.

"This study will address the lack of clinical scientific knowledge that combines age, race and gender influences to personalize dosing regimens of immunosuppressive medications after kidney transplant. These may improve patients' responses contributing to long-term transplant survival and advance the development of personalized medicine for high-risk kidney transplant patients across the spectrum of aging," says Tornatore, also director of the UB Transplantation Immunosuppressive Pharmacology Research Program.



IonStar and UB Proteomics

Creating a New Direction for Clinical and Translational Research

BY REBECCA BRIERLEY

IonStar: Revolutionizing disease research and drug therapy via comprehensive, system-level understanding with near perfect accuracy

A new proteomic analysis tool developed by Jun Qu, PhD, professor, pharmaceutical sciences, has the real potential to increase and enhance the comprehensiveness and precision with which disease and drug effects are characterized. The IonStar protein analysis tool provides near perfect accuracy for quantifying and comparing a vast array of proteins allowing for increased accuracy and precision, with drastically lower missing data and false-positives.

The goal is to improve the quality of disease diagnosing, staging and treatment, and enhance drug development.

"IonStar will totally change the face of clinical and pharmaceutical research and industry, where large-cohort investigations on system-level are often critical," says Qu. This analysis tool is the first-ever proteomics quantification method that is capable of reproducible, high-quality measurement of a large number of proteins in large biological cohorts (e.g., cell conditions, animals or patients), which are crucial benchmarks for pharmaceutical and clinical investigations. The tool features excellent quantitative quality, low missing data and low false-positives. In the past, large-cohort investigation relied on piecing together data from many protein batches, which resulted in staggeringly high missing data and compromised statistical power.

The tool is composed of two components: an experimental component for highly efficient and reproducible sample preparation and LC-MS analysis, and a novel informatics component for accurate, precision quantification with low missing data and low false-discovery. Qu's many years of research in proteomics makes him confident his analysis method may revolutionize the way we investigate clinical and pharmaceutical proteomics systems.

"In clinical trials, comparing only a handful of patients gets you nowhere," says Qu. "If you can analyze a large number of patients with high-quality data, you can discover and track biomarkers much more accurately and reliably. The same is true for pharmaceutical investigations."

So far IonStar analysis has been used in more than 70 large scale proteomic investigations. Impressive advances have been realized in the discovery of novel mechanism to treat chronic heart disease, traumatic brain injury and pathways for drug development in cancer treatment. These promising results were recently released in the prestigious Proceedings of the National Academy of Science.

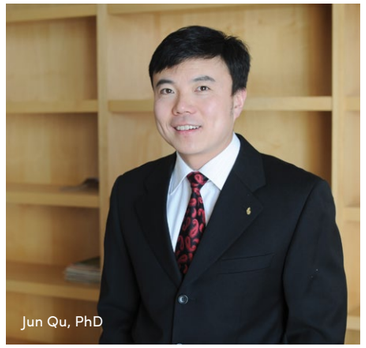
"IonStar will totally change the face of clinical and pharmaceutical research and industry, where large-cohort investigations on system-level are often critical."

Qu's early successes point to a bright future for IonStar's global impact on drug development and early treatment decisions for a variety of life threatening diseases.

UB: The Flagship Center for Proteomics

The concepts for IonStar were developed in collaboration with the other cutting-edge proteomics and protein therapeutics work being done in the Department of Pharmaceutical Sciences. Qu's lab, under the auspices of the school's Center for Proteomics, works closely with the UB SPPS Center for Protein Therapeutics (CPT) to conduct novel LC-MS-based investigations of bio-therapeutics and corresponding targets and biomarkers in a wide range of therapeutic systems.

The CPT and the Department of Pharmaceutical Sciences has pre-eminent researchers in the field of proteomics, mass-spectrometry-based protein analysis and systems pharmacology, outstanding discoveries are occurring which will improve diagnostic techniques, elevate treatment of disease and allow for cutting-edge drug development. Qu quickly acknowledges that access to the school's world-class computational facilities and collaboration with renowned faculty colleagues has allowed his research to flourish and evolve. He also credits all members of the UB pharmaceutical sciences faculty as well as university faculty: Timothy Murphy, MD, SUNY Distinguished Professor; Senior Associate Dean for Clinical and Translational Research, Jacobs School of Medicine and Biomedical Sciences; and John Canty, MD, SUNY Distinguished Professor, Albert and Elizabeth Rekate Professor and Chief, Division of Cardiovascular Medicine, Jacobs School of Medicine and Biomedical Sciences, as instrumental partners in his success.



Jun Qu, PhD

Qu states, "I am extremely privileged to be a member of UB SPPS, which allows me access to some of the greatest minds in pharmaceutical sciences in the world, a critical factor making our progress and success possible. Moreover, the university provided us not only abundant resources for our facility, but also a collaborative and supportive environment that is essential for our success."

Student Innovation Takes First Place

BY KARA SWEET

Students from the University at Buffalo School of Pharmacy and Pharmaceutical Sciences and Buffalo Academy of the Sacred Heart's STEM Honors Cohort were awarded first place in the American Association of Colleges of Pharmacy's (AACP) 2018 Pharm4Me Innovation Challenge.

The Pharm4Me Innovation Challenge is a nationwide competition in which high school and college pharmacy students work together to identify medication or health-related problems in their communities and create innovative solutions to solve them. Teams are critiqued on innovation, presentation, relevance and accessibility.

The UB and Buffalo Academy of the Sacred Heart team received the top prize for OpiEducate, an initiative that seeks to prevent opioid abuse and addiction through education. It serves as a resource for students across the country to promote opioid awareness. The program includes public service announcements, downloadable posters and brochures, educational quizzes and guidelines for hosting health fairs, all of which are available on the OpiEducate website and social media accounts.

To gauge the effectiveness of the program, the team tested the use of OpiEducate materials at a Buffalo Academy of the Sacred Heart health fair. Students completed surveys on their knowledge of opioids before and after the fair.

Prior to the event, 47 percent of students were unfamiliar with opioids. After the health fair, every student understood what opioids were, what they were used for, how addiction occurs and the pharmacist's role in opioid education.

Justin Bui '19, said the benefits to the high school students were twofold: "This community outreach initiative was a way to educate high school students on the opioid epidemic, as well as the important role pharmacists play in its treatment and prevention."

UB hopes the program is adopted by other schools seeking to increase opioid awareness, says Robert Wahler, PharmD '00, team faculty adviser and clinical assistant professor in the School of Pharmacy and Pharmaceutical Sciences, who was joined by School of Pharmacy and Pharmaceutical Sciences Associate Dean Jennifer Rosenberg, PhD, as a faculty adviser.

"The Innovation Challenge gave our students the opportunity to promote health and wellness through prevention, intervention and educational strategies for individuals and communities. These are essential learning objectives for our PharmD curriculum, which our group's high school students were able to observe firsthand," Wahler remarks.

The UB students received the award at the 2018 AACP Annual Meeting in Boston. The Buffalo Academy of the Sacred Heart also received a $1,000 prize to support science, technology, engineering and math (STEM) programs.

The Pharm4Me Innovation Challenge is part of Pharmacy is Right for Me, an AACP program that aims to stimulate interest in pharmacy careers among high school students to meet the growing demand for pharmacy and health care professionals.

Buffalo Academy of the Sacred Heart Head of School Jennifer Demert says the program succeeded.

OpiEducate team members Justin Bui '19, Gigi Yam '19, Esther Esada '20, and faculty adviser Robert Wahler, PharmD '00

"The young women who participated had an excellent experience and learned not only about the opioid epidemic in Western New York, but also how to work as part of a team to complete this impressive project. We are grateful to Pharm4Me and UB for offering us this opportunity."

PHARMACY Is Right For Me

OpiEducate Team Members

University at Buffalo School of Pharmacy and Pharmaceutical Sciences:

Justin Bui '19
Rachael Cardinal '18
Alice Chan '19
Melissa Dhanraj '20
Esther Esadah '20
Troy Hoelzl '18
Nabila Ismail '19
Edward Lee '20
Jasmine Nurse '19
Cynthia Szkutak '18
Gigi Yam '19
Dr. Jennifer Rosenberg (adviser)
Dr. Robert Wahler (faculty adviser)

Buffalo Academy of the Sacred Heart:

Sarah Campbell
Gianna DiPasquale
Claire Mastrandrea
Fiona Murphy
Olivia Zanelli

Northeast Pharmacy Students Shuffle Off to Buffalo

BY KARA SWEET

The American Pharmacists Association Academy of Student Pharmacists (APhA-ASP) holds an annual Midyear Regional Meeting (MRM) that is designed exclusively for student pharmacists, by student pharmacists.

For the first time in seven years, the Region 1 MRM was held in Buffalo, N.Y., coordinated by APhA-ASP regional officers (and our own PharmD students) Stephanie Lanza '20, and Laurie Diaz-Ordaz '21, and UB chapter president Johanna Sulesky '20.

Over 150 student pharmacists from Connecticut, Maine, Massachusetts, New York, Rhode Island and Vermont attended the three-day event, which focused on career development and leadership training.

Dean James O'Donnell, PhD, provided opening remarks and Edward Bednarczyk, BS '84, PharmD, director of the Center for Health Outcomes, Pharmacoinformatics and Epidemiology, hosted a Q&A session. A "Buffopoly" social event gave out-of-town attendees a chance to learn fun facts about the Queen City.

UB's APhA-ASP Patient Care Project Operation Heart received a regional award for exemplifying creative ideas to impact the community regarding cardiovascular health.

Regional exhibitors included Eli Lilly and Company, Walmart, Wegmans and the St. John Fisher College Wegmans School of Pharmacy, Phi Lambda Sigma and the Rutgers Pharmaceutical Industry Fellowship Program.

Back Row: Edward Pudim '21, Stephanie Lanza '20, Amy Drzewiecki '19, Sarah Pawlak '20, Baylie Slowik '21, Jinchan Yoo '21 **Front Row:** Heather Garr '21, Gisela Canales '21, Johanna Sulesky '20, Laurie Diaz-Ordaz '21, Rachel Mesina, Megan O'Connor '19, Kristen D'Angelo '21, Sasha Demenezes '22

What was your favorite IPPE experience?

"The IPPE experience which was most impactful on my pharmacy education was at the Wilmot Cancer Center at Strong Memorial Hospital in Rochester, N.Y. The field of oncology is constantly growing and changing. Pharmacists have an important role in the cancer center. I was able to observe a clinical pharmacist round with the medical team on their inpatient service and see clinical pharmacists provide education and counseling for their outpatient services. The collaborative efforts of doctors, mid-level providers, pharmacists and nurses working together to take care of their patients was what I found absolutely fascinating."

SYED SAMAD '19

What was your favorite APPE experience?

"My APPE rotation at Buffalo General Medical Center in the cardiac intensive care unit was by far the most unique and rewarding rotation I had as a pharmacy student. It was the first time I had the opportunity to follow patients from presentation in the emergency room, commonly for suspected heart attacks, through their intensive care stay, up to a regular medicine floor and finally to discharge. My role on the team was to counsel them at discharge on a number of medications patients are started on after experiencing a heart attack. It can be very overwhelming for a person to go from not taking any medications to suddenly being on four or five, each with different directions, side effects and important monitoring parameters. As pharmacists, I think we're in a unique position to improve patient outcomes by being intimately involved in a patient's transition from the hospital to home, as their medication regimen is often overlooked."

DOMINICK CARDEN '19

Dedication to the Profession

TINA FIEBELKORN, BS '79, AND KARL FIEBELKORN, BS '78. PHOTO COURTESY OF DONALD DALY, BS '79.

L-R: PAWNY INSTALLATION BANQUET CO-CHAIRPERSON TAMMIE LEE DEMLER, BS '92, PHARMD '02; CHRISTOPHER DALY PHARMD/MBA '12; AND PAWNY EXECUTIVE DIRECTOR DENNIS GALLUZZO, BS '76. PHOTO COURTESY OF DONALD DALY, BS '79.

BY KARA SWEET

Pharmacy practice faculty members Karl Fiebelkorn, BS '78 & MBA '88, and Christopher Daly, PharmD/MBA '12, were recognized by their Western New York peers for their dedication and service to the profession of pharmacy.

The Pharmacists' Association of Western New York (PAWNY), an organization of pharmacists and associated health care professionals dedicated to the advancement of the profession of pharmacy, honored both faculty members at their 2018 annual banquet.

Karl Fiebelkorn was inducted into the PAWNY Hall of Fame to honor his lifelong work in the profession and the community. A faculty member at UB SPPS since 1995, he teaches several subject areas, including pharmacy law, pharmacy management and administration, and pharmacist immunization. He also advises several professional student organizations.

Fiebelkorn has served on the Asthma Coalition of Western New York Board of Directors, the Responsible Tobacco Retailing Committee, and was a member of the Specialized Medical Assistance Response Team (SMART) Erie County First Response Bioterrorism Team.

"His attendance at evening and weekend events, organizing policy and legislative events, leading student wellness clinics, and organizing Pharmacy Legislative Advocacy Invitational Days has been exemplary," says Dennis Galluzzo, BS '76, executive director of PAWNY. "He has raised the bar so high that few can hope to achieve half of what he has contributed to this profession."

Christopher Daly was recognized as PAWNY's Pharmacist of the Year for his unswerving devotion and service to the profession.

> "Professor Fiebelkorn and Dr. Daly are helping to optimize the role of pharmacy in patient care," says Dean James O'Donnell, PhD. "Their efforts and training are truly impacting the health and well-being of countless members of our community."

"Dr. Daly is an outstanding pharmacist whose insight into our profession has benefited both academia and community," says Galluzzo. "We are forever grateful for his dedication to our members and the profession of pharmacy."

A third-generation pharmacist, Daly has been an active advocate for community pharmacy for over 10 years. His academic charge is to lead the innovation of new practice opportunities for advanced clinical outpatient pharmacy—his work seeks to establish a community pharmacy practice-based research network, developing various pharmacy models in the Western New York region.

Fiebelkorn was also honored for his commitment to substance abuse education with the 2018 Cardinal Health Generation Rx Award of Excellence from the Pharmacists Society of the State of New York (PSSNY).

In 1996, he began the UB SPPS Poison Prevention Program, which educated thousands of children about the hazards of poisoning across New York State. A few years later, he helped pioneer local drug take-back efforts—this model was used by the United States Drug Enforcement Administration as a framework for the current National Prescription Drug Take-Back Day. Fiebelkorn has also promoted student advocacy in the fight against opioid addiction through partnerships with Erie County Crisis Services, community health fairs and local drug take-back events.

"Professor Fiebelkorn and Dr. Daly are helping to optimize the role of pharmacy in patient care," says Dean James O'Donnell, PhD. "Their efforts and training are truly impacting the health and well-being of countless members of our community."

Juliane Nguyen, PharmD, PhD

A CAREER Milestone

> "If successful, our new drug carriers could allow diseases that are currently incurable to be treated in a safer and more effective manner."

BY KARA SWEET

In recent years, the University at Buffalo School of Pharmacy and Pharmaceutical Sciences has been successful in drawing some of the world's brightest young researchers to Western New York.

A perfect example is Juliane Nguyen, Pharm D, PhD, associate professor of pharmaceutical sciences.

In April 2018, Nguyen received a National Science Foundation (NSF) CAREER award, the agency's most prestigious honor for junior faculty who exemplify the role of teacher-scholars through research, education and the integration of education and research within the context of the mission of their organizations.

The award comes with a federal grant for research and education activities for five consecutive years—Nguyen received $500,000 to fund her research on novel drug delivery aimed at treating incurable diseases.

"We are developing a completely novel way to deliver macromolecules directly to the body of cells," says Nguyen. "It is an honor to have the National Science Foundation supporting our research and educational endeavors."

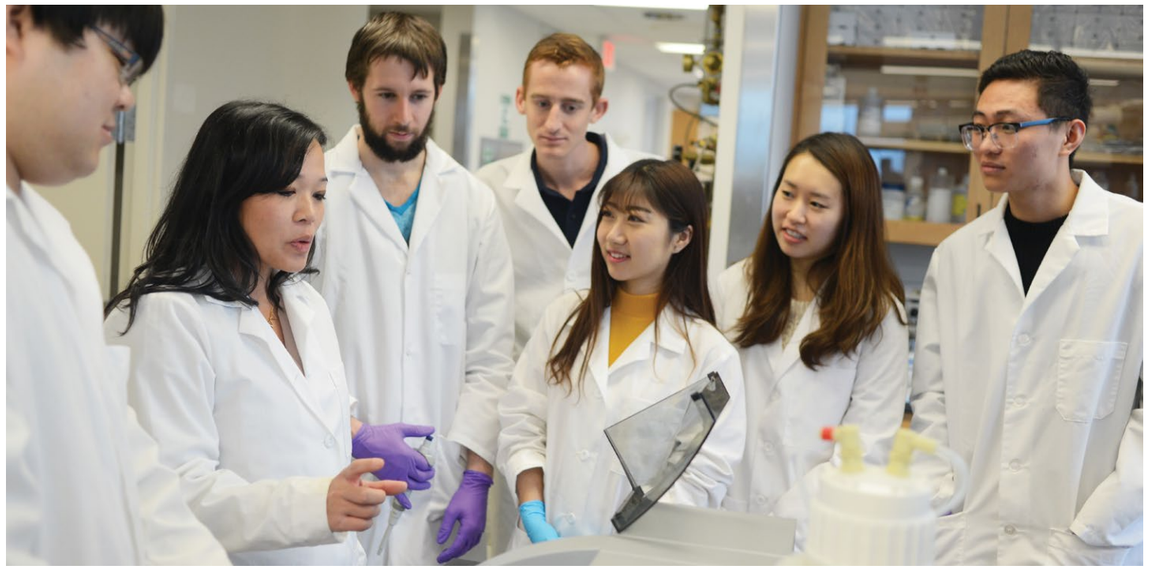
Nguyen is optimistic that her discoveries will result in safer and more effective drug therapeutics that will benefit patients.

"If successful, our new drug carriers could allow diseases that are currently incurable to be treated in a safer and more effective manner," she says. "I hope that collectively we will be able to develop better treatment options and improve the quality of life for patients suffering from those diseases."

As part of the CAREER award's educational component, Nguyen is also developing a new biomaterials curriculum for graduate students and interactive teaching modules for high schools. "I plan to establish a mentoring-intensive program that will foster biomaterials research for minority and female undergraduate students to increase diversity in STEM," she says.

Juliane Nguyen joined the UB Department of Pharmaceutical Sciences in 2013. Within her first three years, she obtained two NIH R21 grants to support her miRNA delivery work. Her exosome-focused research has been recognized with a 2018 UB Bruce Holm Memorial Catalyst Fund award, a 2017 UB Exceptional Scholar Award for Young Investigators and a $1.58 million National Institutes of Health grant. Her research has also been highlighted in the American Association of Pharmaceutical Sciences (AAPS) Journal's "Pioneering Pharmaceutical Science by Emerging Investigators" special issue and by the Institute of Physics.

Dr. Nguyen with her students and lab assistants



Recognizing Excellence

These faculty and staff members were recognized for their leadership and pioneering approaches to education and research in 2018

Nicole Paolini Albanese PharmD, clinical associate professor of pharmacy practice received a University at Buffalo 2018 Award for Teaching Innovation, for engaging students with new methods and approaches to teaching that have enhanced student-learning outcomes.

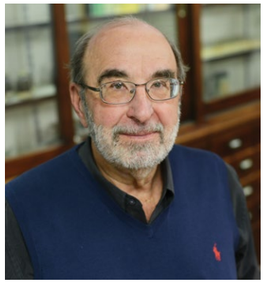
Edward Bednarczyk BS '78, PharmD was elected to the American Pharmacists Association Board of Trustees as president of the Academy of Pharmaceutical Research and Science for the 2018-19 term.

Calvin Meaney PharmD '11, clinical assistant professor of pharmacy practice, received a 2018 New Investigator Award from the American Association of Colleges of Pharmacy in support of his research project titled "Personalized Erythropoiesis in Hemodialysis Patients: The Novel PREDHICT Tool."

Scott Monte PharmD '06, clinical assistant professor, pharmacy practice, along with **Clinical Assistant Professor Robert Wahler**, was co-investigator on a $35,000 grant from the University at Buffalo Office of the Vice President for Research and Economic Development, Innovative Micro-Programs Accelerating Collaboration in Themes (IMPACT). The grant supports a multidisciplinary proposal titled "Collaborative Drug Safety Management with Frail Elders and Caregivers for Successful Aging."

Rebecca Brierley EdM, assistant dean of external affairs, received a 2018 State University of New York Chancellor's Award for Excellence in Professional Service. Brierley was also elected chair-elect for the American Association of Colleges of Pharmacy Administrative Services Section.

David Jacobs PharmD '11, PhD '18, assistant professor, pharmacy practice, received the Buffalo Translational Consortium Mentored Career Development Award for his project entitled "A pilot study to evaluate objective assessment tools to improve medication management in chronic obstructive pulmonary disease."



William Jusko BS '65, PhD '70, SUNY Distinguished Professor of Pharmaceutical Sciences, was the 2018 recipient of the Oscar B. Hunter Career Award in Therapeutics from the American Society for Clinical Pharmacology and Therapeutics.

Donald Mager BS '91, PharmD '00, PhD '02, professor and vice chair, pharmaceutical sciences, was elected president-elect of the American College of Clinical Pharmacology Executive Committee.

Marilyn Morris PhD '84, SUNY Distinguished Professor and chair, department of pharmaceutical sciences, received the 2018 American Association of Pharmaceutical Scientists (AAPS) Distinguished Service Award.

Gene Morse BS '80, PharmD '83, SUNY Distinguished Professor of Pharmacy Practice and director of the Center for Integrated Global Biomedical Sciences, received a $1.1M National Institute of Health Fogarty International Center grant to train 15 scientists from the Caribbean in viral infection research to improve the study of Zika, HIV, hepatitis and other viruses.

Juliane Nguyen PharmD, PhD, associate professor, pharmaceutical sciences, received a $33,000 Bruce Holm Memorial Catalyst Fund award for her project "EXO-Codes: A Highly Efficient Platform for Loading Exosomes with Chemical and Biological Agents."

She was also acknowledged by the American Association of Pharmaceutical Scientists (AAPS) for her manuscript, "The Phenotypic Effects of Exosomes Secreted from Distinct Cellular Sources: a Comparative Study Based on miRNA Composition", appearing in the themed AAPS Journal: "Pioneering Pharmaceutical Science by Emerging Investigators."

Robert Wahler PharmD '00, clinical assistant professor, pharmacy practice, was the recipient of a $20,000 (SUNY) Innovative Instruction Technology Grant (IITG) for his project, Development of a Micro-Credential on the Newly Developed Pharmacist Patient Care Process for Use in Pharmacy and Health Profession Programs: Promoting Patient-Centered Care.

Can't Be Grateful Enough

Mario Rocci Jr., BS '76, PhD '81, wants others to receive the support he received at UB

BY S. A. UNGER

Mario Rocci Jr., BS '76, PhD '81, an international leader in contract research, retired in late 2017, bringing to a close a career that provided him with what seemed like boundless opportunity. Now, with time to reflect on the circumstances that contributed to his success, Rocci and his wife, Donna, are gratefully acknowledging "the world-class education" he received at UB.

Recently the couple made a substantial commitment in their estate to fund two named endowments in the School of Pharmacy and Pharmaceutical Sciences: one that will provide scholarships for PharmD and graduates students; and another, to endow a department chair.

"I want to be able to help as many students as possible," says Rocci, "of course, with a soft spot in my heart for bright students who don't have the financial resources to go to school. They've worked hard all their lives, and I hate to think that money would keep them from fulfilling their potential."

By endowing a chair, Rocci wants "to help budding faculty get a start with early proof-of-concept research," the type of research outside funding agencies don't usually risk supporting. "We need to have these dreamers," says Rocci. "I have no problem funding ideas that are out of the box and that will probably fail; but in the event they succeed, they could be big."

Big ideas that fall outside the box are things Rocci knows about firsthand. A native of Utica, N.Y., he had a strong aptitude for science and mathematics as an undergraduate at UB, but wasn't sure what profession he wanted to pursue. A cousin 10 years older than he, and a UB alumnus, was a pharmacist and encouraged him to explore the field. Rocci did and his interest took off when he was introduced to his cousin's roommate in college, William Jusko, PhD, now a SUNY Distinguished Professor in the UB School of Pharmacy and Pharmaceutical Sciences. While a pharmacy student, Rocci began working in Jusko's lab and became motivated to pursue a PhD in pharmaceutical sciences as a result of the strong mentorship he received from Jusko and other prominent faculty in the school, including Milo Gibaldi, Gerhard Levy and Leung Fung.

> **"Throughout my career I felt I was very well prepared to interact with all my colleagues because my education was so rigorous."**

Following graduate school, Rocci took a position at Thomas Jefferson University in Philadelphia, Penn., where he was part of a team of clinical pharmacologists conducting first-in-man studies on drugs that today have become mainstays of therapy, such as statins, ACE inhibitors and ulcer medications. "It was a fantastic experience," Rocci recalls. "Our unit gave a statin for the first time to a human being! The pharmaceutical industry was beginning to boom, and I was very fortunate to be in the right place at the right time."

After eight years, Rocci had an opportunity to move back to Utica and develop from scratch an FDA- regulated drug development testing division within Oneida Research Services, a microelectronics testing company. The division was enormously successful and was later spun off into its own company, Prevalere Life Sciences, which Rocci headed as CEO for about six years. In 2008, Prevalere was sold to ICON, an Ireland-based contract research organization (CRO). "We were very proud of what we had done in the Utica area, and almost every large CRO wanted to acquire us," Rocci says, "so we were very careful to make sure we had a good fit, which we did with ICON."

Until his retirement, Rocci worked for ICON, where he held numerous prominent positions, including president of ICON Development Solutions, their early-phase clinical testing division, a role in which he supervised some 500 employees.

Over the last two decades of his career Rocci served a wide variety of professional associations, becoming president of the American Association of Pharmaceutical Scientists (AAPS) and the American Society for Clinical Pharmacology and Therapeutics (ASCPT)—the only person to serve both these associations in this capacity.

In looking back, Rocci says "Because of the scholarship assistance at UB, I got a world-class education and left school debt free. Now how many places does that happen?

"And I was always so amazed at the training I got at UB," he adds. "Throughout my career I felt I was very well prepared to interact with all my colleagues because my education was so rigorous. So it became a question of, well, if I don't give back, I limit the ability of this institution to continue doing the good things that it's doing. I can't be grateful enough for the opportunity folks at UB gave me, so Donna and I want to help extend this opportunity for others."

Fond Memories of UB

Linda Edelman, BS '66, PharmD, leaves a generous bequest

BY S. A. UNGER

Linda Edelman, BS '66, PharmD, knew from an early age that she wanted to be a pharmacist. Her father, Sam Edelman, graduated from the UB School of Pharmacy and Pharmaceutical Sciences in 1925 and opened a drugstore on Seneca Street in South Buffalo. When Linda was 10 years old and her sister, Sue, 12, their mother died and the girls spent most of their free time with their father at his store.

In 1966, Linda followed in her father's footsteps, earning her bachelor of science degree in pharmacy at UB, after which she worked at Prichard's Pharmacy on High Street for a short time before moving to California, where she lived until her death in 2016. In gratitude for the education she received at UB, Linda left a bequest that provides a generous, unrestricted endowment to the School of Pharmacy and Pharmaceutical Sciences.

"Her years at UB were happy times," her sister, Sue, recalls. "She lived at home, and her friends would come over, study in groups and sometimes be there all night."

Sam's mother and three of his siblings lived in Southern California, so Linda was surrounded by family, set down roots and earned a PharmD at the University of Southern California in 1985. She worked for many years at Pomona Memorial Hospital, preferring hospital work over retail. In her free time, she enjoyed skiing with friends, participating in a stock club and taking excursions to Las Vegas.

> **"Unrestricted gifts such as the one made by Dr. Edelman are compounded in their value by the flexibility with which they allow us to address both short- and long-term needs of the school."**
>
> *James M. O'Donnell, PhD*
> *Professor and Dean*

"Linda loved being a pharmacist," Sue says. "She was a very quiet, determined person, and even though she worked hard, saved a lot and had a talent for investing, she lived an unpretentious life."

"Unrestricted gifts such as the one made by Dr. Edelman are compounded in their value by the flexibility with which they allow us to address both short- and long-term needs of the school—whether they be for such things as faculty recruitment, scholarships or research," says James M. O'Donnell, PhD, dean of the School of Pharmacy and Pharmaceutical Sciences. "We are very grateful to Dr. Edelman for her generous gift and for the positive, lasting impact it will have on our programs."

The gifts described in these stories are part of Boldly Buffalo: The Campaign for UB.

Launched in 2017, the campaign seeks to raise $650 million to deliver transformative changes for the public research university, Western New York and the world. The portion of the campaign goal for our school is $31 million.

"Through this campaign, we want to increase scholarship and fellowship support for our students and to recruit top faculty and provide them with resources to excel," says Dean James O'Donnell. "We also want to increase opportunities for students, faculty and staff to engage the larger scientific and professional community, as well as to positively influence Buffalo and Western New York." To learn more, visit buffalo.edu/campaign or contact the SPPS University Advancement Office at (716) 645-3432.

"If you want to go fast, go alone. If you want to go far, go together." *Ancient Proverb*

In an interview with **Kayla Ann Andrews,** PharmD '14, MS '15, PhD '18, Translational Discovery, Bill and Melinda Gates Medical Research Institute, she discusses her unique educational and career journey, and how her UB training prepared her for a dynamic future working for the Bill and Melinda Gates Foundation (BMGF) and the Gates Medical Research Institute (MRI).

Tell us about your work at the Gates MRI.

Working for the Gates MRI, a new nonprofit biotech whose mission is to develop products to fight malaria, tuberculosis and diarrheal diseases, is a dream come true. All Gates MRI employees know their hire number, and as #31, I am a scientist on the translational discovery team. Alongside my colleagues, I help progress assets through discovery and preclinical development to the point of proof-of-concept studies in humans. My training as a pharmacometrician enables me to bring a model-informed drug development mindset to the preclinical development paradigm and my previous experience as associate director of global health initiatives allows me to bring project management skills to our translational discovery team. I primarily work in tuberculosis drug regimen development, and I am also part of the malaria vaccine product development team. I always joke that I have administered vaccines, but I have never developed one—working at the Gates MRI presents an incredible opportunity to work in new and exciting areas simultaneously. I love being part of a start-up organization and working closely with such a motivated group of individuals who all hold the mission close to heart. I am really excited to see where this organization takes me and what we can accomplish together in the future.

Tell us about your work as a consultant at BMGF and how this led you to the Gates MRI.

Jill Fiedler-Kelly, vice president, pharmacometric services, and other colleagues at Cognigen Corporation were a critical part of my success. When I started at Cognigen, I was the project lead for a BMGF grant to build a pharmacometrics communication platform for malaria drug development. Over time, I built on my PharmD/MS education and gained the basic technical skills required for a pharmacometrician. As a 1.0 FTE consultant through Cognigen, I became a BMGF Quantitative Sciences (QS) team member for two-and-a-half years prior to joining the Gates MRI. In this role, I was responsible for monthly updates to the QS team deputy director on the pharmacometric analyses and software development projects I led at Cognigen. I also worked with other BMGF QS team members to guide and implement antimalarial model-informed drug development strategies. This experience was truly a blessing and allowed me to learn from the world's experts in clinical pharmacology and antimalarial drug development. When I heard about the Gates MRI, I was sad to leave this team, but energized by the opportunity to work at the new nonprofit.

How do you think your unique PharmD/MS/PhD degree experiences have given you a professional advantage?

When asked about my background, I always begin with my training as a pharmacist, which provided me with seven years of patient interactions, strong problem-solving skills and the ability to possess a cool disposition in the face of adversity. Working as a pharmacist also required me to explain complex scientific concepts to people of all backgrounds and biases, a skill which allows me to anticipate questions and shape my strategic thinking. As a woman in science, this foundation has served me well in my career.

The dual training as a pharmacist and scientist has made me an effective clinical pharmacologist. The PharmD training allowed me to leverage my basic science and clinical science background to contribute to various drug development programs and hit the ground running at my current role at the Gates MRI. My PhD provided technical expertise in population pharmacokinetic and pharmacodynamic (PK/PD) modeling of clinical data, and it also helped develop my critical thinking skills—I view my PhD as an intellectual initiation into the scientific community. The in-depth background in pharmaceutical sciences and program rigor enabled me to learn to challenge the status quo and think creatively, essential skills when working for a start-up.

What were the biggest challenges you faced in completing multiple degrees?

I spent 10 years at UB and each degree earned was just as much of a personal triumph as it was a professional accomplishment. Like many women in science, I have had more than a few experiences where people assumed that, because of my age or my gender, I was not qualified to contribute scientifically. While some of these experiences have been infuriating at times, they have also been a great motivator for me to succeed. I am thrilled the Gates MRI has been at the forefront of addressing these issues, evidenced by the hire of a brilliant clinician scientist, Penny Heaton, as their chief executive officer. It is inspiring to go to work each day with Penny as our leader—seeing a woman in a position of leadership makes me feel as though those opportunities will be available for me too, one day.

Kayla Andrews, in Boston, stands next to Gates Medical Research Institute's mission statement.

Why did you choose to complete all of your degrees at UB?

I grew up in Buffalo and I only applied to UB. The cost of living was cheap enough for me to begin my career as an independent young woman and be on track to pay off my six-figure student loans within five years of graduating, which was very important to me. UB was flexible and allowed me to follow my dream by allowing me to finish my PhD part time, enabling me to take risks and ultimately land my dream job. I don't know if that would have been possible this early in my career if I pursued my degrees elsewhere. I've found that building my own opportunities at UB and in Buffalo—from spearheading a new academic program to championing a new grant proposal and crafting a new global health leadership position at a pharmacometrics contract research organization—was fun, meaningful and a wonderful way to grow as a leader early in my career.

Tell us about a memorable student moment.

Each pharmacy student must complete intermediate and advanced pharmacy practice experience hours (IPPE/APPE). In 2012, my church organized a medical mission trip to the Dominican Republic. I was energized by the opportunity to help those less fortunate and immediately signed up and wrote letters to family and friends to help sponsor my trip. That trip was the first international mission trip approved as a UB IPPE. I am excited to learn UB has expanded their participation in mission trips with numerous faculty and students now participating annually. This trip ultimately changed my life and the trajectory of my career, and I will be forever grateful.

Shortly after my second mission trip, I visited my now-husband David in Seattle. On that trip, I mentioned I wanted to work for a nonprofit either in drug development or health care, and David told me about BMGF, their mission and the work they fund. From that moment, I was determined to work for BMGF. Abraham Lincoln said the best way to predict the future is to create it, and that advice has been my compass on the road to the Gates MRI.

The in-depth background in pharmaceutical sciences and program rigor enabled me to learn to challenge the status quo and think creatively, essential skills when working for a start-up.

You can continue to follow Kayla's journey through LinkedIn: www.linkedin.com/in/kaylaannandrews/

Beta Phi Sigma: One of the First Pharmacy Fraternities in the US Reconnects Again...

BY REBECCA BRIERLEY

UB Pharmacy has many things to be proud of along with being able to state we are home to one of the first pharmacy fraternities in the country–Beta Phi Sigma!

Beta Phi Sigma stands for Buffalo Pharmacy School, with the first chapter (alpha chapter) founded here at UB in 1888. The fraternity grew in number over the years and saw a 'heyday' in the 1950s and 1960s.

In the 1970s pledges dropped off and in 1973 the fraternity officially ended. But the good memories and friendships formed through this society of fraternal brothers continue and were again celebrated during the 2018 UB Pharmacy Reunion. A BPS reception was held in Kapoor Hall where brothers talked about great memories, BPS events and insightful advice from Dean Murray as well as other members of the faculty.

Alan Levitt BS '68 was the driving force behind the 2018 BPS Reception He reached out to many former BPS brothers regarding the reception and reconnected many to the BPS motto of "To promote and provide for the social welfare of the student." Beta Phi Sigma greatly helped me both academically and socially. I was then able to help my other fraternity brothers during the course of my time in Beta Phi Sigma.

An active BPS brother from a decade before, Bruce Moden BS '57 remembers many good times, "In the 1950s fraternities were important to social life on the UB campus. At that time, UB was a private institution and not governed by the State University of New York. As students we were able to control social activities. So we had more off-campus activities."

Even though Beta Phi Sigma ended officially sanctioned activities in the early 1970s, the brothers look forward to more future get-togethers where they can continue the proud BPS tradition of honor and service to the profession of pharmacy.

l-r: Alex Cardoni BS '66, Anson Johnson BS '58, Bruce Moden BS '57, Alan Levitt BS '68, Paul Myka BS '59

BPS Brothers 1968

Beta Phi Sigma Brothers Song

Join hands again and sing for Beta Phi / and pledge anew our vows so firm and high

To stand for the right and to shun the wrong / forever in our hearts a song.

So now to thee oh Beta Phi we bring / our love and our most humble off-ring

As we answer the call we'll be true one and all / to the vows we made to thee oh Beta Phi

Reunion 2018

The classes of 1953, 1958, 1963, 1968, 1973, 1978, 1983, 1988, 1993, 1998, 2003, 2008 and 2013 were honored during year's alumni reunion activities which included: Beta Phi Sigma fraternity reunion, a continuing education program on FDA Black Box Warnings, tours of Kapoor Hall, dinner at the Embassy Suites and walking tour of downtown Buffalo mansions. Thank you to all alumni who attended and special thanks to all those who assisted as class representatives:

CLASS REPRESENTATIVES

Class of 1968:
Gail Black Proctor
Gary Reynolds
Stew Siskin
Alan Levitt

Class of 1978:
Karl Fiebelkorn
Nick Honcharik

Class of 1983:
Renee Rizzo Fleming

Class of 1988:
Linda Germain Equinozzi
Evelyn Schulenklopper Reda

Class of 1993:
Amy Burke
Kimberly Yunker Maier
Gerald Wemple

Class of 1998:
Paul Grew

Reunion Reconnection

BY KARA SWEET

Nancy Master Bapst, BS '68, and Janet Whalen, BS '68, were sorority sisters in Lambda Kappa Sigma and close friends during their time in pharmacy school. Shortly after graduation, Nancy got married, with Janet as her maid of honor. The day after the wedding, Nancy got on a plane to Denver, where her husband Jerry, an Air Force Lieutenant, was then stationed. The long distance caused the friends to fall out of touch. "In the 1960s, there was no quick, easy and inexpensive way to communicate," Nancy stated.

To their absolute delight and surprise, Nancy and Janet reconnected at their 50th reunion. "It was so easy to fall back into a conversation with Jan when we were at the reunion," Nancy said. Janet was similarly moved: "It seemed like 50 years apart simply disappeared."

L–R Janet Whalen and Nancy Master Bapst

Support

The Hayes Society

The Hayes Society honors individuals who have made legacy gifts to the School of Pharmacy and Pharmaceutical Sciences through a bequest or other method of deferred giving.

Allen Barnett ’65
Thomas Blanchard ’61
Daniel ’89 and Gayle Brazeau ’89
Alex Cardoni ’66
Raymond ’82, ’87 and Mary Anne Dannenhoffer ’81, ’87
Nina Doran ’53
Joseph Figlow ’70
Edward ’52 and Jean Frank ’54
Carol Gloff ’75
Florence Ho ’75 and Wing Fung
Ron ’56 and Gail Isaacs
Rose Mary Madejski ’59
DeWitt Niles ’62
James and Kimberly O’Donnell
Margaret Quinn ’60
Robert Ravin ’57
Mario ’76, ’81 and Donna Rocci
Irving Sultz ’55
Ralph Vescio ’55
Margaret Yang ’75

To learn more or notify the school of a legacy gift that you have planned, please call the SPPS University Advancement Office at (716) 645-3432 or visit our website at pharmacy.buffalo.edu.

416

The number of current Hayes Society members across the university who have remembered UB in their will or through another deferred gift.

Honorary and Memorial Gifts

IN MEMORY OF ALEXANDER AVERSANO ’63

Paul and Paula Aversano
Anthony and Camille Passarella

IN MEMORY OF THOMAS J. BARDOS

Vitauts ’61, ’64, ’74 and Brigita Alks
Wayne and Lorraine Anderson
Bruce ’82 and Judith Aungst ’77, ’80
Maria Bardos
Dennis Bogyo ’75 and Luana Goodwin ’71
Bristol Myers Squibb Foundation
David ’75 and Jane Chu ’75
Joseph Dunn ’81
Peter and Kathleen Forgach
Stephan ’76 and Arvela Heider ’78, ’84
Thomas Kalman ’68
Hung Le ’73, ’78
James Matson ’73
Millennium Pharmaceuticals
James and Kimberly O’Donnell
Michael Perlman ’82
A. Jere and Elma Solo
Agnes Szekeres

IN HONOR OF GAYLE BRAZEAU ’89

Fuxing Tang

IN HONOR OF SAMUEL BURSUCK ’34

Andrew and Bonnie Tangalos

IN MEMORY OF X. DAVE ’49 AND LOIS D’AMBROSIO

Tad D’Ambrosio
Robin DiFrancesco

IN MEMORY OF LORI ESCH ’97

Andrew and Andrea Esch
Coraline Esch

IN MEMORY OF EDWARD HEMPLING ’50

Margie Hempling McGlynn ’82

IN HONOR OF WILLIAM JUSKO ’65, ’70

Teijin Pharma Limited

IN MEMORY OF GERHARD LEVY

Lewis ’69 and Irma Amsel
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Susan Bell ’74
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Gail Coburn
William Evans ’26
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Eric Fung ’99 and Chantell Dalpe-Fung ’99
Leung and Sun Mi Fung
Vicki Fung
GlaxoSmithKline
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Xiling Jiang ’12
Johnson & Johnson
Hoi Kei Lon ’08, ’14
Leo ’82 and Kathleen Lucisano ’80
Michael Mayersohn ’71
Edward McNiff ’75, ’76, ’83 and Elizabeth Yamashita
Mark Milad
Sandra Miller
William and Marilyn Morris ’84
Edward Mroszczak ’67
Novartis
Svein Oie ’75 and Barbara Woodruff
Parke Davis Pharmaceutical Research
Robert ’62 and Karen Pompi ’65
The Procter & Gamble Fund
Iqbal Ramzan
Richard ’63, ’68 and Judith Reuning ’63, ’67
George Sciolino ’60
Lloyd ’81, ’84, ’87 and Jacqueline Stahl ’78
Robert ’77 and Nina Straubinger
Yu-Nien Tom Sun ’98 and Frances Tan
Stanley Szefler ’71, ’75
Alton Tower ’53
Robert Vacca ’66
Qi Wang ’07
Howard ’71 and Anita Weintraub
M. Guill Wientjes ’85 and Jessie Au
Fang Wu
Jian Xu ’03
Avraham ’75 and Diana Yacobi
Xiaoyu Yan ’12
Xinning Yang ’09 and Hongwu Shen
Lida Zaffaroni
Li ’15 and Ming Zhang
Baiteng Zhao

IN HONOR OF BRUCE ’57 AND BARBARA MODEN

Ty Andrews ’96 and Linda Moden Andrews ’97

IN HONOR OF THEODORE MROZINSKI

Kathleen Mrozinski ’80

IN HONOR OF JOSEPH RUTOWSKI SR. ’61

Timothy Lowmaster

“I want to thank every person who made a gift in the past year. You keep the UB Pharmacy reputation strong and allow us to continue to serve as a leading pharmacy school for the next generation.”

James M. O’Donnell, PhD
Professor and Dean

Donor Honor Roll

CLASS OF 1948

PATRON
Ruth Lindblad

CLASS OF 1951

ADVOCATE
Samuel Ferrara

PATRON
Kathleen Monachino

CLASS OF 1952

WILLIS G. GREGORY SOCIETY

GUARDIAN
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LEADER
Milner Forster
Joseph Sterman

PATRON
Marian Barnes
Robert Erisman
Walter Stanton Sr.

CLASS OF 1953

WILLIS G. GREGORY SOCIETY

GUARDIAN
Nina Doran

LEADER
Harold Ertman
Joseph Mroczynski

PATRON
David Fake
Frank Messore
Henry Raczka

CLASS OF 1954

PATRON
Melvin Brothman
Seymour Kugel

CLASS OF 1955

WILLIS G. GREGORY SOCIETY

LEADER
Irving Sultz

PATRON
Andrew Braunschweiger

CLASS OF 1956

WILLIS G. GREGORY SOCIETY

GUARDIAN
Ronald Isaacs
Nelson Torre

LEADER
Spencer Bickel

Class of 1956, continued

Joseph Chazan
Algirdas Gamziukas
Helaine Gamziukas

PATRON
Anne Allen

CLASS OF 1957

WILLIS G. GREGORY SOCIETY

GUARDIAN
Bruce Moden

PATRON
Anthony Barone
Robert Seigel

CLASS OF 1958

PATRON
Morton Abramson
Herbert Lubick
Ralph McGarrity
Carlin Parish
Richard Polakoff
Leonard Saran

CLASS OF 1959

WILLIS G. GREGORY SOCIETY

GUARDIAN
Rose Mary Madejski

LEADER
Mark Rosenfeld

PATRON
Marshall Cohen
Arthur Comisar
David Hammond
Joan Hector
Darrell Mantei
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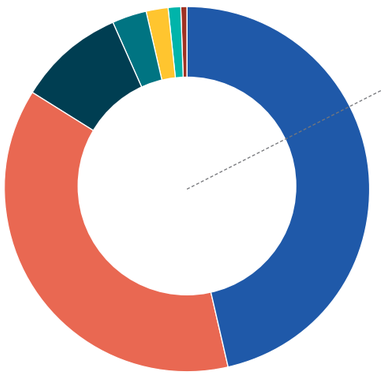

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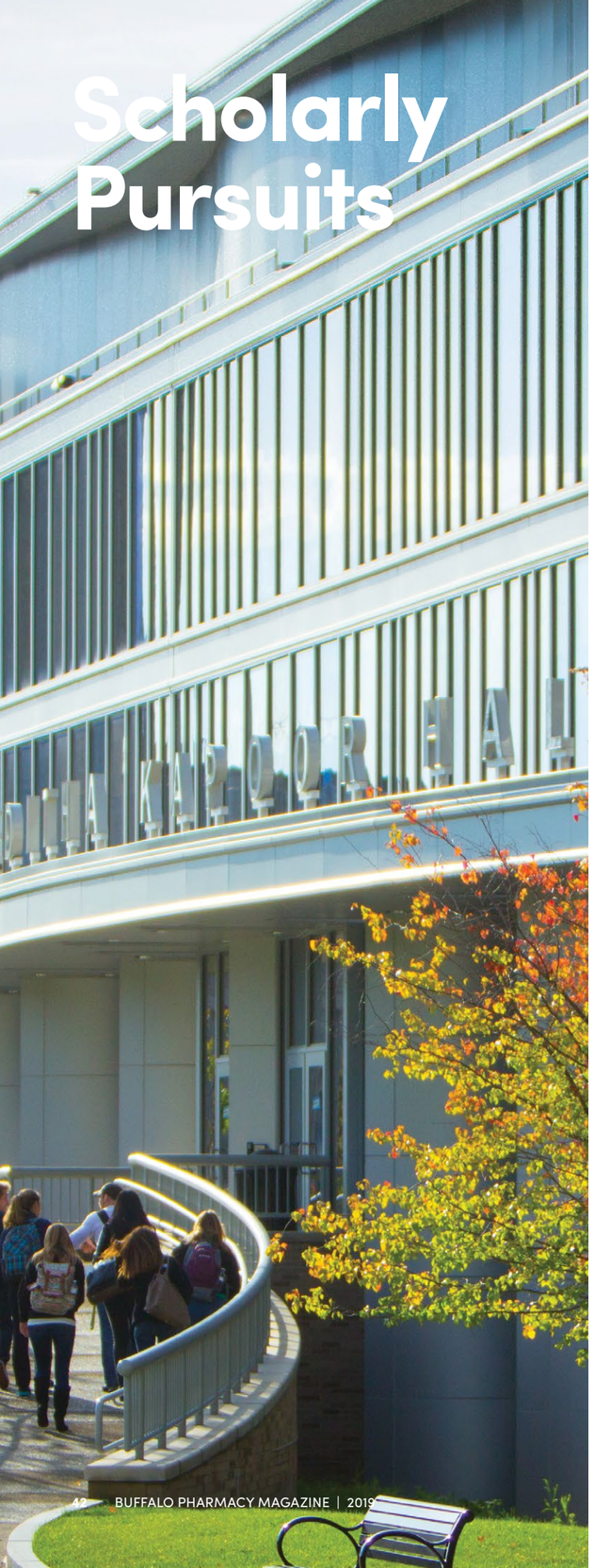

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JULY 1, 2017 – JUNE 30, 2018

PHARMACY PRACTICE

ALBANESE, NICOLE P

Woodruff, A. E., Albanese, N. P. & Prescott, W. A. (2018). Comparing Pharmacotherapy Instruction to the 2009 and 2016 ACCP Toolkit Recommendations. *Am J Pharm Educ, 82* (10), doi.org/10.5688/ajpe6771.

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Albanese, N. P. (2017). Systemic lupus erythematosus. In Schwinghammer, T. L. et al., eds. *Pharmacotherapy Casebook: A Patient-Focused Approach,* 10th ed. New York: McGraw-Hill.

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Sellick, J., Mergenhagen, K., Morris, L., Feuz, L., Horey, A., Risbood, V., Wojciechowski, A., Ruh, C., Bednarczyk, E., Conway, E. & Ott, M. (2018). Fluoroquinolone-Related Neuropsychiatric Events in Hospitalized Veterans. *Psychosomatics, 59*(3), 259-266.

Russak, E. M. & Bednarczyk, E. M. (2018). Impact of Deuterium Substitution on the Pharmacokinetics of Pharmaceuticals. *Ann Pharmacother, 53*(2), 211-216.

CHA, RAYMOND

Fava, J.P., Colleran. J., Bignasci, F., Cha, R. & Kilgore, P. E. (2017). Adolescent human papillomavirus vaccination in the United States: Opportunities for integrating pharmacies into the immunization neighborhood. Hum *Vaccin Immunother, 13*(8), 1844-1855.

CIERI-HUTCHERSON, NICOLE E.

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DESAI, KALPESH J.

Hatton, M. N., Desai, K. J., Le, D. & Vu, A. (2018) Excessive postextraction bleeding associated with Cordyceps sinensis: a case report and review of select traditional medicines used by Vietnamese people living in the United States. *Oral Surgery Oral Medicine Oral Pathology Oral Radiology, 126*(6), 494-500.

FUSCO, NICHOLAS M.

Jacobs, D. M., Holsen, M., Chen, S., Fusco, N. M. & Hassinger, A. B. (2017). Procalcitonin to Detect Bacterial Infections in Critically Ill Pediatric Patients. *Clin Pediatr (Phila), 56*(9), 821-827.

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Mtisi, T. J., Maponga, C., Monera-Penduka, T. G., Mudzviti, T., Chagwena, D., Makita-Chingombe, F., DiFranchesco, R. & Morse, G. D. (2018). Strategic establishment of an International Pharmacology Specialty Laboratory in a resource-limited setting. *Afr J Lab Med, 7*(1), 659.

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Jacobs, D. M., Leung, W. Y., Essi, D., Park, W., Shaver, A., Claus, J., Ruh, C. & Rao, G. G. (2018). Incidence and risk factors for health care utilisation among patients discharged on outpatient parenteral antimicrobial therapy. *Epidemiol Infect, 146*(6), 782-787.

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Fusco, N. M., Francisconi, R., Meaney, C. J., Duman, D., Frederick, C. A. &Prescot,t W. A. (2017). Association of Vancomycin Trough Concentration with Response to Treatment for Acute Pulmonary Exacerbation of Cystic Fibrosis. *J Pediatric Infect Dis Soc, 6*(3), e103-e108.

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MORSE, GENE D.

Kiser, J. J., Lu, D., Rosenkranz, S. L., Morse, G. D., DiFrancesco, R., Sherman, K. E. & Butt, A. A. (2017). Boceprevir and Antiretroviral Pharmacokinetic Interactions in HIV/HCV Co-infected Persons: AIDS Clinical Trials Group Study A5309s. *Drugs R D, 17*(4), 557-567.

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Faculty Publications

PRESCOTT, GINA

Prescott, G. M., Patzke, C. L., Brody, P. M., Prescott, W. A. (2017). Comparison of Prescribing Patterns between United States and Dominican Republic Prescribers on Short-Term Medical Mission Trips. *International Health, 10*(1), 27-32.

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Slazak, E. M., Kozakiewicz, J. T., Winters, N. S., Smith, J. R. & Monte, S. V. (2017). Statin adherence rates in patients using a patient-centered medical home-based pharmacy. *Journal of Pharmacy Practice, 30*(5), 516-520.

SWIATEK, DENISE

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BALTHASAR, JOSEPH P.

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MAGER, DONALD E.

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Faculty Publications

MAGER, DONALD E. (cont.)

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MORRIS, MARILYN E.

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Bryniarski, M.A., Yee, B.M., Jaffri, I., Chaves, L.D., Yu, J.A., Guan, X., Ghavam, N., Yacoub, R. & Morris, M.E. (2018). Increased Megalin Expression in Early Type 2 Diabetes: Role of Insulin Signaling Pathways. *Am J Physiol: Renal Physiol.*

NGUYEN, JULIANE

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NGUYEN, JULIANE (cont.)

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O'DONNELL, JAMES M.

Liu, L., Zheng, J., Huang, X.F., Zhu, X., Ding, S.M., Ke, H.M., O'Donnell, J.M., Zhang, H.T., Song, G.Q. & Xu, Y. (2018). The neuroprotective and antidepressant-like effects of Hcyb1, a novel selective PDE2 inhibitor. *CNS Neurosci Ther, 24*(7), 652-660.

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Shi, J., Liu, H., Pan, J., Chen, J., Zhang, N., Liu, K., Fei, N., O'Donnell, J.M., Zhang, H.T. & Xu, Y. (2018). Inhibition of phosphodiesterase 2 by Bay 60-7550 decreases ethanol intake and preference in mice. *Psychopharmacology (Berl), 235*(8), 2377-2385.

QU, JUN

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SPROWL, JASON A. (cont.)

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STRAUBINGER, ROBERT M. (cont.)

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Huang, X.F., Jiang, W.T., Liu, L., Song, F.C., Zhu, X., Shi, G.L., Ding, S.M., Ke, H.M., Wang, W., O'Donnell, J.M., Zhang, H.T., Luo, H.B., Wan, Y.Q., Song, G.Q. & Xu, Y. (2018). A novel PDE9 inhibitor WYQ-C36D ameliorates corticosterone-induced neurotoxicity and depression-like behaviors by cGMP-CREB-related signaling. *CNS Neurosci Ther, 24*(10), 889-896.

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Grants

JULY 1, 2017 - JUNE 30, 2018

PHARMACY PRACTICE

BEDNARCZYK, EDWARD

Health Research Inc
Buprenor-phine Academic Detailing

Health Research Inc
Opioid Prescriber Training Program

Island Peer Review Organization
Special Innovation Project 1 for Innovations that Advance Local Efforts for Better Care at Lower Costs

State University of New York
Evidence Based Clinical Research Collaboration Program

DUNN, TERRY

ASHP Research and Education Foundation
Evaluation of Health Outcomes Associated with a Pharmacist's Telephone Intervention in Transitions of Care in Underserved Populatons

JACOBS, DAVID

Astellas Pharma Global Development Inc.
A Multicenter Characterization of the Treatment of Candiduria

MA, QING

Elvitegravir (EVG) Cerebrospinal Fluid (CSF) Pharmacokinetics in HIV-Infected
Individuals University of California at San Diego

University of Rochester
University of Rochester Center for AIDS Research -Tenofovir and Emtricitabine in Dried Blood Spots: A Measure of adherence to Pre- exposure Prophylaxis

University of Rochester
University of Rochester Center for AIDS Research - Drug Interactions of Selective Serotonin Reuptake Inhibitors and Dolutegravir at the Blood-Brain Barrier

MEANEY, CALVIN

American Association of Colleges of Pharmacy
Personalized Erythropoiesis in Hemodialysis Patients: The Novel PREDHICT Tool

MORSE, GENE

Fogarty International Center
Global Infectious Diseases Research Training Program

University of Rochester
Center for Health + Technology

National Institute of Allergy & Infectious Disease
Clinical Pharmacology Quality Assurance

Fogarty International Center
HIV Research Training Program

Brigham and Womens Hospital
AIDS Clinical Trials Group (ACTG) - A5329, A5334s, A5335s Lab

Brigham and Womens Hospital
AIDS Clinical Trials Group (ACTG) - Administrative Supplement (Task Order 4)

Brigham and Womens Hospital
ACTG Pharmacology Specialty Lab

University of Rochester
University of Rochester HIV/AIDS Clinical Trials Unit

University of Rochester
Chronic Exposure to cART Predispose Older HIV Infected Individuals to CNS Injury

TORNATORE, KATHLEEN

Astellas Pharma Global Development Inc.
CYP3A5 and 3A4 Haplotypes and Relation to Tacrolimus Pharmacokinetics and Adverse Effects: Influence of Race and Sex

TSUJI, BRIAN

Archaogen Incorporated
Pharmacokinetic-Pharmacodynamic Evaluation of C-SCAPE against ESBL-producing Enterobacterfaceae in an In vitro One-Compartment Model

Duke University
Antibacterial Resistance Leadership Group (ARLG)

National Institute of Allergy & Infectious Disease
Novel PK/PD Strategies for Polymyxin Combination against Gram-negative Superbugs

PHARMACEUTICAL SCIENCES

BALTHASAR, JOSEPH

Center for Protein Therapeutics
Investigation of differences in the disposition of 8C2 mAb and scFv in select brain regions of control mice and in a mouse model of Alzheimer's disease

Center for Protein Therapeutics
Dynamic contrast enhanced magnetic resonance imaging for the prediction of monoclonal antibody tumor disposition

Center for Protein Therapeutics
Development of the Quantitative Relationship between Protein Size and Tumor Exposure

National Cancer Institute
Catch and Release Immunotoxins: CAR-bombs for Cancer

BALU-IYER, SATHY

NYS Department of Economic Development
UB Center for Advanced Technology in Bog Data and Health Sciences

Eli Lilly and Company
Investigation of formulation variables on sc bioavailability of monoclonal antibody therapeutics

National Heart Lung and Blood Institute
HL-development and Pharmacology of novel lipidic rAHF and biotherapeutics

BIES, ROBERT

Magee-Womens Research Institute and Foundation
Film Antiretroviral Microbicide Evaluation

U.S. Army Medical Research Acquisition Activity
Understanding the Relative Contributions of and Critical Enzymes for the Three Pathways for Intracrine Metabolism of Testicular Androgens in Advanced Prostate Cancer

BLANCO, JAVIER

Eunice Kennedy Shriver National Institute of Child Health and Human Development
Epigenetic Regulation of FcRn Expression in Human Lung and its Role in the Disposition of Monoclonal Antibody Drugs

BLANCO, JAVIER (Cont.)

National Institute of General Medical Sciences
Contributions of CBRs and AKRs to the Pharmacodynamics of Anthracycline Drugs

JUSKO, WILLIAM

National Institute of General Medical Sciences
Corticosteriod Pharmacokinetics and Pharmacodynamics

Eunice Kennedy Shriver National Institute of Child Health and Human Development
Molecular and Clinical Pharmacology of Retinopathy or Prematurity

Bristol Meyers Squibb
UB-BMS Training Program

KRZYZANSKI, WOJCIECH

Janssen Pharmaceutical
Fellowship in a novel method to optimize covariate testing in population analyses when covariates are missing

La Jolla Pharmaceutical
Corporation Master Services Agreement: MRI Quantification of Iron Overload in Belgrade Rats

MAGER, DONALD

University of Iowa
Neonatal Anemia and Thrombocytopenia: Pathophysiology and Treatment

F Hoffmann-La Roche Limited
Mechanistic Modeling in Hematology to systematically Explore Factors Contributing to Differences in anti-CD20 Therapy Outcomes and to Inform Optional anti-CD20 Combination Strategies

Center for Protein Therapeutics
Pharmacodynamics of checkpoint antibodies in combination with patient-derived melanoma specific CD8+ T-cells that are persistently activated in the microenvironment of melanoma tumor xenografts

MORRIS, MARILYN

American Foundation Pharmaceutical Education
AFPE Predoctoral Fellowship for Vivian Rodriguez Cruz

National Institute on Drug Abuse
Gamma-Hydroxybutyrate: Toxicokinetics, Toxicodynamics and treatment Strategies

MORRIS, MARILYN (Cont.)

Center for Protein Therapeutics
Role of Megalin in the Renal Clearance of Peptide Therapeutics

NGUYEN, JULIANE

National Institute of Biomedical Imaging and Bioengineering
RNA EXO-Codes: A novel way to reprogram pathological exosomes

National Science Foundation
CAREER: Active-Loadable Poresomes for the Cytoplasmic Delivery of Membrane-Impermeable

QU, JUN

AbbVie Incorporated
Proteomics Analysis using IonStar

Health Research Inc.
GMPS-GMPR Axis Melanoma Progression and Therapy

F Hoffmann-La Roche Limited
Technological advances and regulatory considerations for quantifying proteins and peptides in biological matrices using LC-MS

University of Rochester
Modeling Mechanisms of Adjuvanted Influenza Vaccine induced IgG Repertoire Diversity and Heterosubtypic Immunity URF

CH3 BioSystems LLC
STTR - Drug Discovery Platform for Protein Arginine Methyltransferase Inhibitors

UCB Biopharma SPRL
Novel Methods for Urine de-peptide biomarkers

Health Research Inc.
The Regulation of YAP Oncogenic Functions by PTPN14 and YAP tyrosine modification

Utah State University
Collaborative Research: Protein Arginine Methylation

Center for Protein Therapeutics
High throughput, spatially-resolved tissue micro-sampling coupled to sensitive nano-LCMS to determine the heterogeneous distribution of mAb and targets in bone marrow, lymph nodes and regions of brain

RAMANATHAN, MURALI

Otsuka Pharmaceutical Development and Commercialization Inc
Adherence Modeling of Digital Medicine Data

RAMANATHAN, MURALI (Cont.)

National Institute of Neurological Disorders & Stroke
Cholesterol Biomarkers and Oxysterols in Multiple Sclerosis Progression

SHAH, DHAVAL

Oncolinx LLC
Fellowship Agreement: Oncolinx

National Institute of General Medical Sciences
Translational Systems Pharmacokinetic Models of Novel Anticancer Biologics

Center for Protein Therapeutics
Development of the Quantitative Relationship between Protein Size and Tumor Exposure

Center for Protein Therapeutics
Endogenous T-Cell Redistribution in the Presence of Immuno-Oncology (I-O) Treatments

Center for Protein Therapeutics
Pharmacokinetics of Anti-TfR Antibody Affinity Variants in Rat Brain Using Microdialysis

Center for Protein Therapeutics
The Effect of Target Expression on the Efficacy of Bi-Specific T-cell Engaging Molecule

STRAUBINGER, ROBERT

Ipsen Bioscience Incorporated
Ipsen Es1e 2017-19

Center for Protein Therapeutics
Experimental validation of factors identified by modeling and simulation that control mAb penetration and efficacy in pancreatic cancer

Merrimack Pharmaceuticals Incorporated
M398/M310 Testing Services

National Institute of Biomedical Imaging and Bioengineering
Light-Triggered Drug Release in Primed Pancreatic Tumors

National Cancer Institute
Tumor priming sequences combined with novel nanoparticle drug carriers for enhanced therapeutic efficacy in pancreatic cancer

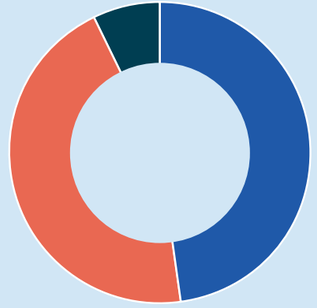
XU, YING

National Center for Advancing Translational Sciences
Buffalo Clinical and Translational Research Center

Tetra Discovery Partners
SBIR - Phosphodiesterase-4B (PDE4B) Inhibitors for Psychiatric Disease

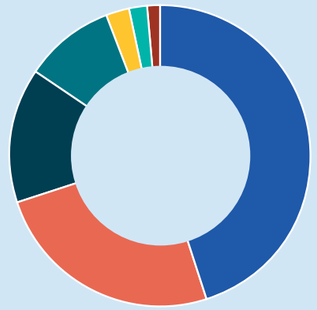
Buffalo Pharmacy
By the Numbers

$22 Million
TOTAL FUNDS, ACADEMIC YEAR 2017-2018



REVENUE SOURCES 2017-2018

$10,560,580	●	Grants and Contracts
$9,851,628	●	State Operating and General Use
$1,521,844	●	Foundations, Auxilaries and Other
$21,934,052		TOTAL



TOTAL USES 2017-2018

$5,001,995	●	Faculty Personnel
$2,757,123	●	Staff Personnel
$1,610,917	●	Supplies and Services
$1,069,499	●	Student Support
$263,404	●	Equipment, Repairs and Maintenance
$211,515	●	Overhead and Indirect Costs
$141,281	●	Employee Benefits

University at Buffalo
School of Pharmacy and
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