

News Letter

Dear Alumni and Friends,

Happy New Year to all of you. It is time for our annual newsletter to update you with news from the Department of Pharmaceutical Chemistry and KU. We hope that everyone is doing well, and that we have the opportunity to meet as many of you as possible at various conferences and at some special events in 2017. First, in conjunction with his retirement in December 2016, we will honor Val Stella with a symposium, "Val Stella: Celebrating 43 Years of Innovation in Pharmaceutical Research", which will be held November 10-11, 2017, in San Diego, immediately before the AAPS Meeting 2017. Second, we will celebrate the 50th anniversary of the Department of Pharmaceutical Chemistry with a reception on a steam boat in the bay of San Diego on the evening of November 11, 2017.

There are many important news items to share. We are awaiting the arrival of our new faculty member, Brandon DeKosky, who will start at KU on January 16, 2017. Brandon will work in the area of vaccine development, and has recently obtained a prestigious 5-year Director's Early Independence Award from the NIH. In the spring of 2016, Michael Wang was promoted to Associate Professor with tenure, and in the fall of 2016, Teruna Siahaan was promoted to Aya and Takeru Higuchi Distinguished Professor. Congratulations to both! Professor Jennifer Laurence left the Department of Pharmaceutical Chemistry in May 2016 in order to pursue a career in the private sector.

The Department of Pharmaceutical Chemistry has initiated a search for recruitment of the Valentino J. Stella Distinguished Professor (for details, see: <https://employment.ku.edu/academic/7168BR>). We are grateful for the donations from pharmaceutical companies and Department alumni and friends, which have helped us to create this named professorship in honor of Val Stella.

In 2016, the Department of Pharmaceutical Chemistry admitted the second Distance Ph.D. student, Yi Yang (Genentech), and several additional prospective candidates have expressed interest to continue their education in our Distance Ph.D. Program after completion of a Distance Masters degree.

Continued ➔

**Note:** This issue covers the 2015-2016 academic year with several recent events added.

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The 11th Biennial Meeting of the Globalization of Pharmaceutics Education Network (GPEN) was held November 9-12, 2016, in Lawrence. About 300 attendees from 49 universities worldwide and a number of pharmaceutical companies enjoyed a superb program of scientific lectures, poster sessions, and social events, meeting old and new colleagues and friends, and the culture of Lawrence. Congratulations to the local organizing committee for a job well done! More details about the program of GPEN2016 are available at the following link: <http://gpenconference.com/>.

The Department of Pharmaceutical Chemistry is planning the construction of an 11,000 sq ft addition to the south-west corner of Simons Research Laboratories. This addition will house laboratories, meeting and class rooms, as well as offices for faculty and staff. At time of construction, we will also renovate the existing space in Simons Research Laboratories, including the construction of several specialty laboratories.

The Department continues to benefit from generous financial support for predoctoral fellowships and awards donated by many individuals and several pharmaceutical companies. In addition, our faculty continue to be well funded through private and federal agencies, and have received a series of awards, which will be detailed below in the individual faculty sections.

In the following, you will find updates on the individual faculty and their laboratories. We hope that you will enjoy this newsletter, and hope to see you at one of the upcoming meetings.

With best personal regards,

Christian Schöneich  
Professor and Chair



## GRADUATE PROGRAM

Several students have completed their degrees since the last newsletter and have moved on from the department to new positions:

- Ahmed Alaofi
- Nabil Alhakamy
- Jayant Arora
- Yao Chen
- Cavan Kalonia
- Laura Northrup
- Sharadvi Thati

Seven graduate students were recruited for Fall 2016 (see picture below):

- Ahmed Fahad, University of Toledo
- Peter Kleindl, University of Kansas
- Rukmini Ladi, Butler University
- Ruolin Lu, University of Minnesota
- Sam Peterson, University of Kansas
- Nishant Sawant, Campbell University
- Jason Stewart, Utah State University



Left to right: Ruolin Lu, Ahmed Fahad, Nishant Sawant, Rukmini Ladi, Sam Peterson, Peter Kleindl, Jason Stewart

Students who have completed their degrees in the Distance Masters Program are:

- Salina Liao (Wu) (Gilead)
- Zephania Kwong-Glover (Genentech)
- Yi Yang (Genentech) now in Distance Ph.D. program

Our current students in the Distance Masters Program come from various companies; they are:

- Edmond Bailey (Catalent)
- Kristen Forseth (Gilead)
- Ian Hartzel (Pfizer)
- Yuzhe Hu (Genentech)
- Sardar Jakaria (CML)
- Alisha Kellogg (Amylin)
- Stephanie Kishbaugh (BioMarin Pharmaceuticals)
- Jonathan Kretz (Amgen)
- Alex Langford (Pfizer)
- Kevin Lu (Genentech)
- Benjamin Mann (Celerion)
- Karina Padilla (Genentech)
- Stephanie Staub (Teva)
- Simon Tran (Gilead)
- Yue Wang (Genentech)
- Evelyn Yanez (Amgen, San Francisco)

Students currently in the Distance Ph.D. program are:

- Ming Lei (Genentech)
- Yi Yang (Genentech)



## Globalization of Pharmaceutics Education Network (GPEN)

(Reprinted from KU Today, Monday, November 07, 2016)

<https://pharmacy.ku.edu/gpen-conference-brings-scientists-around-world>

LAWRENCE — Scientists will gather in Lawrence this week for the 11th biennial conference of the Globalization of Pharmaceutics Education Network (GPEN), hosted by the University of Kansas School of Pharmacy's Department of Pharmaceutical Chemistry.

Close to 300 doctoral students, postdoctoral fellows, faculty members and industrial scientists in the pharmaceutical sciences representing 22 countries will attend the event, which kicks off Wednesday, Nov. 9, and runs through Saturday, Nov. 12.

Founded at KU in 1996, the concept of biennial GPEN Conferences was created primarily for the benefit of doctoral students and postdoctoral fellows in the pharmaceutical sciences. Recognizing the global nature of the pharmaceutical and biotechnology industry that hire so many of their graduates, then-department chair Ron Borchardt sought to give these young scientists increased exposure to the educational and scientific programs as well as the culture of countries around the world.

"At that time, the big pharmaceutical companies were merging, and the trend was toward globalizing operations," Borchardt said. "We needed a way to introduce our doctoral students and postdoctoral fellows to this global environment and give them a global perspective. Many of our doctoral students and postdoctoral fellows had never traveled outside of the United States."

Attending this year will be 165 doctoral students and postdoctoral fellows and 80 faculty members from 49 of the 52 universities that are members of GPEN, including 17 from North America, one from South America, 18 from Europe, 12 from Asia and four from Australia. About 40 scientists from the pharmaceutical industry will also attend. The conference is hosted every two years by one of the member universities, and this will mark the third time KU has hosted.

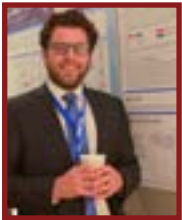
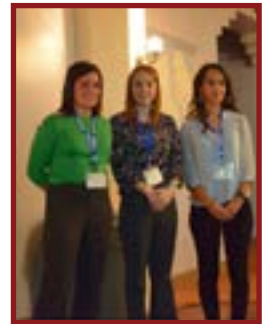
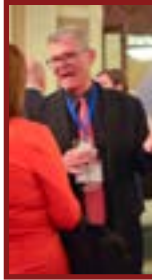
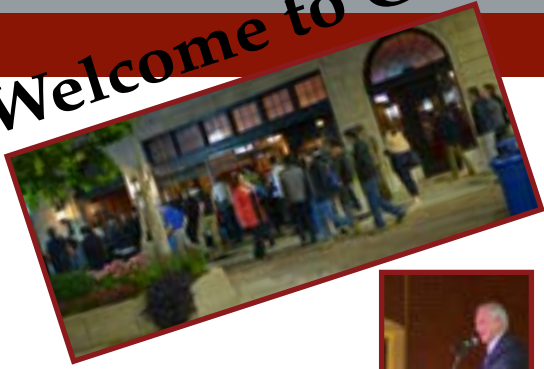
School of Pharmacy Dean Ken Audus attended his first GPEN event as a professor 20 years ago. Traveling with students to locations such as Zurich, Switzerland; Uppsala, Sweden; Kyoto, Japan; Leuven, Belgium; Melbourne, Australia, and Helsinki, Finland, Audus said he has seen Borchardt's vision realized.

"As educators, we must encourage students to think globally, beyond the labs where they spend so much of their time and the cities, states and countries where they live," Audus said. "Providing students opportunities to share their research with people from around the world and to do that in places that are often new and unfamiliar to them will make them better scientists."

GPEN2016 will include 49 podium presentations and 106 poster presentations by doctoral students and postdoctoral fellows and seven short courses taught by faculty members. Mike Powell of Sofinnova Ventures will deliver the keynote address, "Drug Discovery and Development: The Venture Capital Perspective." The agenda will also include tours of the Bioscience and Technology Business Center (BTBC). The BTBC, located along KU's West District, provides space and guidance for both large companies and startups. The conference events will also showcase historical sites in Lawrence, including Liberty Hall, The Eldridge Hotel and Abe & Jake's Landing, the School of Pharmacy Building in KU's West District and the Lawrence Arts Center in downtown Lawrence.

Welcome to GPEN2016!

GPEN PICTURES



Farewell GPEN!

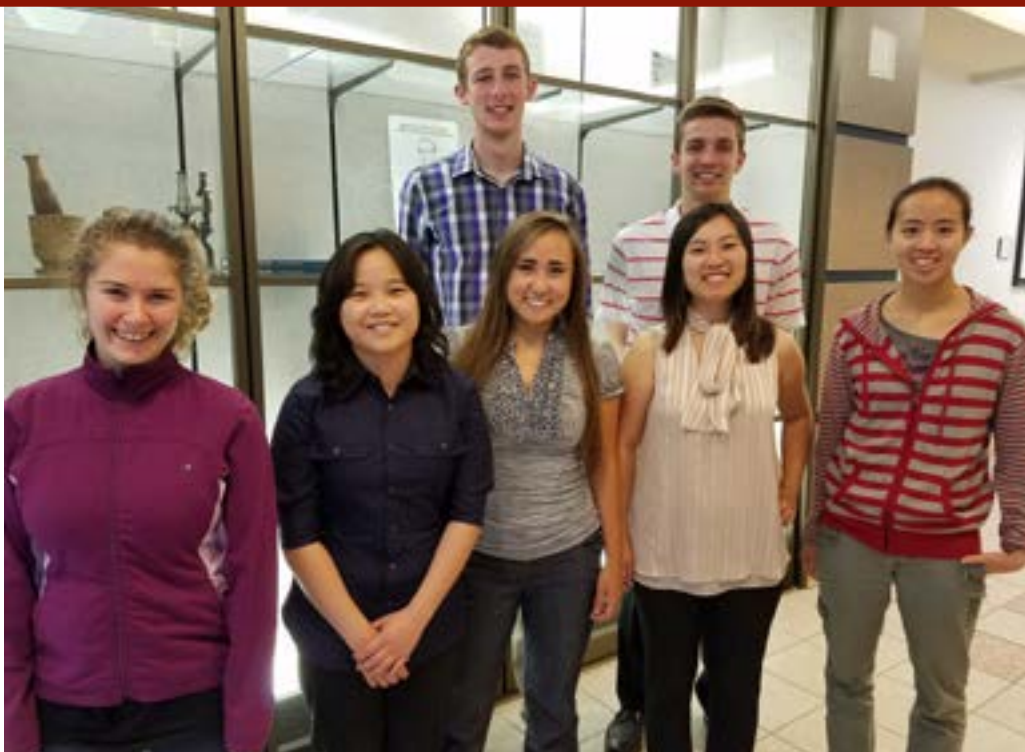


## SUMMER UNDERGRADUATE RESEARCH PROGRAM (URP)

The URP was successfully completed with poster presentations by our students on July 29, 2016. The program is directed by Dr. Cory Berkland with the assistance of Ann Heptig. This program is one of the recruiting tools to attract potential graduate students to the department. The 2016 summer URP participants were:

- Kyle Apley, Kansas State University. Lab: Dr. Cory Berkland
- Joan Si Cheng, Emory University. Lab: Dr. Michael Wang
- Samantha Farb, Lawrence University. Lab: Dr. Laird Forrest
- Benjamin Rajewski, Simpson College. Lab: Dr. Roger Rajewski
- Kelly Schwinghamer, Emporia State University. Lab: Dr. David Volkin
- Yurim (Rachel) Seo, Stanford University. Lab: Dr. Laird Forrest
- Ryan Skaar, Simpson College. Lab: Drs. Wendy Picking and Bill Picking
- Amy Zheng, University of Kansas. Lab: Dr. Michael Wang

Seventy-two undergraduate students from eleven different departments and programs on campus presented posters at the KU Summer Undergraduate Research Poster Session sponsored by KU's Center for Undergraduate Research. For a complete listing of participants, along with their hometown, home institution, project title, faculty mentor and department, please go to: <https://ugresearch.ku.edu/72-undergraduate-students-present-summer-research>



URP summer 2016 participants front row from left: Samantha Farb, Yurim (Rachel) Seo, Kelly Schwinghamer, Joan Si Cheng, Amy Zheng; back row from left: Kyle Apley and Ryan Skaar.

## DEPARTMENTAL STAFF

**Nicole Brooks** has been with Department since October, 2002. She still enjoys spending time with family and friends, cooking, gardening and traveling. She is still quilting with an occasional crocheting project. Her son, Jacob, will turn 13 next April and is in seventh grade. He played football in the fall and will play basketball this winter. He still loves playing video games.

**Tammy Dunning** has completed her twenty-fifth year in the Pharm Chem Department, and fifteenth year as Editorial Assistant for the Journal of Pharmaceutical Sciences. Her hobbies include quilting, reading, working in her yard and watching KU football and basketball games.

**Karen Hall** After almost 16 years with the department, I finally have something new to tell about. Yes, I still live in Eudora and yes, my cat family decreased – and then increased again. Big news last year was my planned trip to England during the summer – well I went. Saw places and things I never thought to see. I'll make another trip back someday . . . when they learn to drive on the correct side of the road.

**Nancy Helm** continues as the coordinator for the departmental graduate applications and was also involved this past year in helping to coordinate the GPEN2016 Meeting that was held in Lawrence in November. Her role in 2017 will continue as one of the coordinators for the upcoming Stella Retirement Symposium and the 50th anniversary of the department. Both of these functions will be held in San Diego, CA in November. However, her biggest role (and truly the one she loves the very most in the world!!!!) is Grandma (or Nana as she's referred to!). Cohen William Davis was born on March 15 and is the very delight of his Nana. He, along with his mommy and daddy, live only about 5 minutes away from Nan's office and that comes in very handy!

**Ann Heptig** has been with the Department since August, 2001. Ann and her husband, Dan, have two grandsons in Pennsylvania and a granddaughter in Lawrence. Ann's interests are quilting, working in the flower beds, reading and visiting her grandkids.

**Becky Whaley** continues to work with J. Pharm. Sci., which she has been doing since September, 2001. She keeps busy with her soap business, SallySueSoaps & Luxuries, "the Pink Goat soap company", making goat milk soaps and lotions. She and Karen Hall attend several shows around the area each year. Becky's last single daughter, Emily, was married last October. She's also enjoying her granddaughter, Kinley, grandsons, Kason and Hudson (just born this November).



## FACULTY UPDATES

**Professor Ken Audus'** interest continues in drug transport and permeability properties of the placenta and blood-brain barriers. When he has an opportunity, he continues collaborative work on various research projects with several colleagues at KU and KU Medical Center. KU Pharmacy is now integrated across three KU campuses (i.e., Lawrence, Kansas City, and Wichita) and each has unique resource needs for support of students, staff, and faculty. Ken has placed a priority on and is busy searching and planning for resources to provide new research laboratory spaces to allow relocation of all of the basic sciences in Pharmacy to modern facilities either on the West Campus or KU's Innovation Way currently under construction on Daisy Hill. The School also participates with the Schools of Medicine, Nursing, and Health Professions on the Medical Center campus in Kansas City in inter-professional education activities and supports the building of the modern Medical Education facility on that campus. As a consequence, Ken continues to spend a significant amount of time on the road for fund-raising and visiting alumni and friends of the School of Pharmacy at pharmaceutical companies around the country, and at many hospitals and community pharmacies across Kansas and surrounding states. On the personal side, Ken and Cheryl enjoy their grandchildren Luke, now 12 years old, and Mae, soon to be 9 years old. Ryan & Sarah live in Leawood, Kansas (Kansas City metro area), which means we (mainly Cheryl) get to see and watch the grandchildren often. Carly is working and living in Lawrence and spends a lot of time now with her significant other, Ben. Cheryl is "retired" but continues to landscape, decorate or remodel the home, spoil the grandkids, and travel with Ken when she can. In his "spare" time Ken mostly likes to find a golf course with friends, watch Luke play baseball and basketball, watch Mae play soccer, or do some research on his ancestry, or assist Cheryl in home projects, and has found these activities help him relax a bit.

**Professor Cory Berkland** was promoted to Solon E. Summerfield Distinguished Professor this year. Cory's lab currently includes about 10 graduate students from Pharmaceutical Chemistry and Bioengineering at KU. Several students have been on internships in the past few years including Laura Northrup (Gilead), Shara Thati (Genentech), Nabil Alhakamy (Merck), Chad Pickens (Merck), Brittany Hartwell (Gilead), Lorena Antunez (Genentech), Chris Kuehl (Genentech), and Connor Dennis (Gilead). Cory's lab appreciates the support of these companies and the opportunity to collaborate with industrial partners. Many lab members have recently moved to positions in industry including Connor Dennis (Cardinal Health), Chris Kuehl (Catalent), Laura Northrup (Merck), Shara Thati (Oak Therapeutics), and Brad Sullivan (Hospira). Joshua Sestak's (PHCH PhD) start-up company Orion BioScience received a grant from the Juvenile Diabetes Research Foundation in collaboration with KU. Other start-up companies that spun out of the lab continued to make steady progress as well. Savara Pharmaceuticals initiated a Phase 3 clinical trial on an inhaled antibiotic for the treatment of MRSA in Cystic Fibrosis patients. Savara also acquired the European company Serendex, which added several inhaled products to their clinical pipeline. Orbis Biosciences completed two clinical trials that demonstrated the foul tasting drug prednisone could be effectively taste-masked in a liquid suspension.

**Professor Laird Forrest's** forthcoming.

**Dr. Anna Hagen** is teaching three classes: "Writing and Communicating Science for Graduate Students" to second-year graduate students in the spring (in time for submitting and presenting their Ph.D. thesis proposals), "Pharmaceutical Calculations" to P1 Pharmacy students in the fall, and an elective for P3 Pharmacy students called "Scientific Writing for the Health Professional", which started in Fall 2014. She continues to explore new ways to teach writing and communication in professional contexts.

**Professor Jeff Krise** and his group continue to study how small molecular weight drugs localize and distribute within cells and how this impacts therapeutic outcomes. Our recent emphasis has been focused on the extensive accumulation of weakly basic drugs in acidic lysosomes. We are interested in understanding how



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the lysosomal entrapment of drugs observed in single cells grown in culture impacts whole body pharmacokinetic distribution behavior. In addition, we are interested in understanding how drug accumulation in lysosomes influences their normal structure and function. This research may ultimately lead to a better understanding regarding how drugs exert their desirable therapeutic effects as well as undesirable side effects. Jeff and his wife Joanna and their three children [Edward (2), Steven (9) and Abigail (11)] wish everyone the best.

**Professor Susan Lunte** forthcoming.

### MVSC

**Professor Russ Middaugh and Professor David Volkin**

The Macromolecule and Vaccine Stabilization Center (MVSC) continues to focus on a variety of research programs covering topics such as (1) physicochemical characterization of macromolecules, (2) inter-relationships between protein dynamics and stability, and (3) stabilization and formulation development of vaccine and biopharmaceutical clinical candidates. During 2015-2016, MVSC expanded its ongoing work with the Bill and Melinda Gates Foundation (BMGF), becoming a “key partner” for CMC development of several new vaccine candidates for the developing world. The center currently has multiple projects funded directly/indirectly by BMGF including a recently awarded research contract for developing a new rotavirus vaccine for Indonesia. The MVSC also continues to obtain funding from several research grants and numerous service contracts with industry clients and government agencies including the NIH and FDA.

As a reflection of this growth and diversity of projects, the MVSC underwent organizational changes including Dr. Sangeeta Joshi’s promotion to Director, Prof Middaugh becoming Scientific Advisor, and Prof Volkin becoming Head, of the MVSC. In addition, there were several well-deserved promotions for our scientific staff members: Dr. John Hickey was promoted from Sr. Research Associate to Assistant Director, Dr. Ozan Kumru from Sr. Research Associate to Research Assistant Professor, and Drs. Asha Patel, Ravi Shukla, and Jian Xiong from Postdoctoral Scientists to Research Associates. In addition, two new Postdoctoral Scientists, Drs. Vineet Gupta and Kawaljit Kaur recently joined the lab, along with Melinda Fish as Program Manager, MVSC, and Chris Bird, Research Assistant. Prof Middaugh took a new graduate student, Nick Larson.

Several exciting transitions occurred in the past year for MVSC staff members, post-doctoral scientists and graduate students including new opportunities in government, academia and industry. Dr. Jae Hyun Kim accepted a position as a scientist with the National Center for Toxicological Research, FDA, Dr. Newton Wahome became a Post-Doctoral Fellow at the University of Colorado, and Dr. Yu Wang joined industry as a scientist with Eli Lilly. Two of Prof Volkin’s graduate students, Jayant Arora and Cavan Kalonia, passed their PhD dissertation defense. Dr. Arora has accepted a scientist position with Regeneron Pharmaceuticals and Dr. Kalonia took a position as a Post Doctoral Fellow, NIST/MedImmune.

Overall, 2015-2016 was a very busy and productive year in the MVSC, with expanding numbers of personnel, projects and publications. We expect 2016-2017 to be a very promising year and wish you the same!

**Professor Bill and Wendy Picking** are now in year three in the Department of Pharmaceutical Chemistry at KU. Bill continues to serve as Director of the Higuchi Biosciences Center and Wendy is delving into the world of biotechnology start-ups as she continues in her vaccine development work. The group has changed a bit since our arrival. Our immunology core continues to be spearheaded by Francisco Martinez-Becerra who a Research Assistant Professor and Director of the Immunology Core Laboratory (ICL) of the KVI. The ICL is now an official core facility at the University of Kansas (<https://kvi.ku.edu/immunology-core-laboratory/>) and use of the facility is growing at a steady pace. Postdoctoral trainees in the laboratory now include Prashant Kumar and Olivia Arizmendi who work alongside graduate students Melissa Pressnall

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and Jason Stewart. Jason is the newest graduate student addition, being in his first semester, but we hope he finds us to be a suitable permanent lab home. Qi Zheng is a new research association in the lab and she is now our cloning and protein purification go-to person. And we now have Michael Barta as our new biochemist/structural biologist Assistant Research Professor who is doing nicely as our microbial pathogenesis expert.

We were fortunate to have Ryan Skaar as our summer URP student. Ryan was visiting from Simpson College in Iowa and he joined us again at the Great Plains Infectious Disease (GPID) Meeting (<http://kvi.ku.edu/GPID>). KU undergraduates in the laboratory include Cecilia Villanueva, Katherine Calhoun, Ellie Stewart Jones, Alex Kong, Sierra Layton and Julie Spangler. Alex is currently studying abroad in the United Kingdom, but he will rejoin us next Fall. Speaking of the GPID Meeting, we hosted it for the 15th time on November 4-5, 2016 (the week before the GPEN meeting) and had over 120 participants. The focus of the meeting was creating collaborations within the region and between scientists at all levels (high school to university to industry).

The laboratory continues to work on the molecular mechanisms by which *Shigella flexneri* causes human dysentery with the ultimate goal of identifying new treatment and prevention strategies. Bill presented some of this work at the "Type III Secretion Systems 2016" meeting in Tübingen, Germany. Bill and Wendy also edited a book entitled "Shigella: Molecular and Cellular Biology" which was published by Caister Press in 2016. On the research side, Wendy is continuing with the development of a broadly protective subunit vaccine against *Shigella* spp. With help from PATH and Wellcome, this vaccine is expected to go into phase 1 clinical trials in 2017. Other vaccines are now in the development pipeline as the group is now up and running.

**Professor Christian Schöneich** The year 2016 was an eventful and happy year for the entire family. On the personal side, we are excited to see the restoration of an old family residence in Italy, a Venetian villa, which is a few hundred years old, and once hosted the French commander, later emperor, Napoleon during his Italian campaign. In fact, having slept in the same room (and possibly bed) as Napoleon makes for an interesting connection to European history. The restoration was carefully planned and supervised by Elena's brother, and we are happy to provide whatever help possible either through visits to Italy or skype discussions. Our dog, a mix between a German shepherd and a pointer, will soon "celebrate" his second birthday, and we try to spend as much time as possible with him outdoors, specifically enjoying early morning walks through Lawrence or at Clinton Lake. Elena continues to teach Italian. Despite her very busy schedule attending to all the needs of the family, she is finding time to discover and try new Mediterranean recipes, which results in wonderful family dinners. The education of our children is reaching its final phase, with Sonia completing her junior year as a double major in Chemistry and Psychology, Antonio completing his senior year with a double major in Aerospace Engineering and Mathematics, and Sebastian completing his second year in Medical School. In addition, Sonia enjoys her research work in Professor Susan Lunte's laboratory and has given her first poster presentation at a regional meeting of the American Chemical Society in the fall of 2016. Antonio is preparing for his first real job as a (civilian) engineer on a large Air Force base. His major goal is to continue research on supersonic aircraft with the Department of Defense. Sebastian is preparing for a series of rotations through the KU Medical Center in the summer. As a result, scheduling a family vacation in summer is becoming rather difficult, and we decided instead to take the entire family (and dog) on a road trip to the Florida Keys in December 2016. Professionally, the year 2016 has been full of interesting scientific results and collaborations. We are eagerly awaiting results on the potential contribution of oxidative protein modifications to the immunogenicity of protein pharmaceuticals, and should know by the end of March 2017. In addition, the group continues to discover novel oxidative modifications resulting from the exposure of proteins to various oxidants and light.

**Professor Teruna Siahaan's** group is still working on utilizing cadherin peptides to modulate the blood-brain barrier (BBB) for improving in vivo delivery of molecules to the brain as well as using cell adhesion peptides to targeting molecules to antigen-presenting cells for controlling autoimmune. Recently, Dr. Siahaan has been promoted to the Aya and Takeru Higuchi Distinguished Professor. Dr. Paul Kiptoo (Research Associate) has accepted a Research Scientist position at Sekisui XenoTech, LLC in July 2016. Kavisha Ulapane, a

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graduate student, has passed her oral comprehensive exam in September 2016. Now, the group consists of four graduate students (Kavisha Ulpene, Brian Kopec, Stephanie Kishbaugh, and Michaela McNiff), an NIH IRACDA Postdoc (Dr. Mario Edgar Moral), an NIH PREP scholar (Verodia Charlestin), two NIH IMSD undergraduate scholars (Ricardo Gonzalez, Alisa Weatherman), and an undergraduate researcher (Jason Fredrick).

**Professor Valentino Stella** How does one say goodbye to something one has enjoyed and been doing for 46 years? With grace, I hope. I am fully retiring on December 31, 2016. While I miss lecturing and meeting the students in formal and informal settings, I have not missed setting exams and grading. I will miss the day-to-day collegiality of my colleagues but I will not miss faculty meetings (sorry Christian and Ken) and the greater University politics and those from this State that are making higher education a low priority. Thank you past and present Chairs and Deans for shielding the School of Pharmacy faculty from much of the crap that goes on. Will I miss research activities? Yes, very much, but while I will no longer have an active lab shortly after my last post-doc, Antonio, leaves, I will still enjoy contributing through my consulting activities and even expert witness work. It is amazing how the expert witness work requires the grey cells to function in hyper-drive answering scientific and legal questions, and, as important, how to communicate difficult concepts to a judge and/or jury. Stressful but fun!

I have continued to publish 2-3 papers per year in two major areas. The first is the use of  $\alpha$ -keto carboxylic acids as peroxide scavengers. We have three published papers and another two on the way, hopefully submitted by the end 2016. The second area is on the chemical and physical properties of aryl and alkyl boronic acids. Boronic acids have been minimally studied as it relates to their pharmaceutical properties and the results to date continue to intrigue.

Our family continues to do well. Cathy, our oldest, her husband and three grand kids are still in Sydney, Australia. Anne and Daniel are in Brooklyn, doing well and expecting their first child, a girl, in early November. The new addition, a girl, will bring the ratio of girl to boy grandchildren to 4/0. There is a lot of estrogen in our family. Anne is now an adjunct assistant professor at Kingsborough College in Brooklyn teaching public speaking and various theatre classes. She is loving it! Elise just completed an MS at the University of Toronto and is moving back to Vancouver. She is our Canadian anchor baby.



Receiving a medallion after being elected to the National Academy of Inventors

Beth and I enjoyed some great travel experiences at the end of last year and this year. Last November/December, we visited the family in Sydney, spending four weeks on the north and south islands of New Zealand, finishing with a week in Melbourne with my brother and his family before returning home. This year, we just completed a five week trip to Northern and Northwest Australia. What an amazing part of the Land Down Under.



Val and Beth at the top of Fanz Josef Glacier in NZ

I continue to keep myself busy and out of trouble, for the most part. I have helped complete fundraising for the extension to the Simons building to house our Global Health and Vaccine center efforts as well as future faculty growth including replacements for both Ron and I. Construction will begin in late Spring. We do have some naming opportunities for various new labs, conference rooms, a distance teaching classroom. Help anyone?

The department continues to do very well and I am optimistic about the future. We seem to be attracting good graduate students and many are performing very well.

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**Professor J. Stobaugh's** research group now consists of himself, as his last graduate student, Josh Woods, successfully defended his dissertation on August 21, 2014. In life without a graduate student, with the help of my son Jordan, I have assembled a nanoLC/MS system that is routinely performing complex separations at an operating pressure of 36,000 psi, which we refer to as Xtreme Ultra-Pressure Liquid Chromatography (XUPLC). The nano-XUPLC system utilizes a capillary column of 360  $\mu\text{m}$  OD  $\times$  75  $\mu\text{m}$  ID  $\times$  ~1 m in length, packed with sub-2 $\mu$  particles, which is interfaced to a HRMS (Waters Xevo G2 QToF). Another aspect is where does one obtain such columns? Of our own manufacture of course! This has resulted in the assembly of packing and washing systems wherein these columns are packed at 40K psi or sometimes higher. Occasionally one of the end-fittings lets go, resulting in a capillary launch in the laboratory! In any case, this activity is highly entertaining and certainly provides a great relief to the current environment in US academia. As to the future, the R-word is at least on my mind. I am currently busy managing the family farm back in Texas. A complete change over is underway, from crops to 100% grass, as I want to be in the beef cattle business there when I do retire.

**Professor Thomas Tolbert** and his group continue to study antibody glycosylation, the production of protein drug conjugates, and the use of antibody fragments as a model systems for understanding mAb function. The Tolbert lab in collaboration with the Volkin, Middaugh, and Schöneich labs published four papers in February of 2016 in the Journal of Pharmaceutical Sciences special issue dedicated to Professor Borchardt. These articles were the result of the work from several researchers, including graduate students Solomon Okbazghi, Derek White and Ishan Shah, and described the production and studies of IgG1 Fc glycoforms as a model system for biosimilar analysis. Studies of these IgG1 Fc glycoforms continues to better understand how mixtures can affect analysis of glycosylated protein drugs and to generate data to be used in the development of mathematical models for comparative characterization of complex drugs. In studies of human antibody subclasses other than IgG1, the Tolbert lab has also been studying how glycosylation affects the human IgG2 and IgG3 subclasses. Graduate student Khalid Al-Kinani presented an oral presentation on the impact of core fucosylation on IgG2 structure and function in November at GPEN2016 in Lawrence, KS. In studies of IgG3, graduate student Ishan Shah published a collaborative paper with the Desaire Lab on the determination of disulfide bonds in IgG3 using LC-MS and presented a talk in January 2017 at the Graduate Honors Symposium on the structure of human IgG3 Fc. Work on these projects is ongoing, look for more publications in 2017.

**Professor David Volkin** (see joint update with Professor Middaugh).

**Professor Zhuo (Michael) Wang** joined the department in August 2011 and he was promoted to Associate Professor with tenure in 2016. His group currently has three graduate students, Mei Feng (3rd year), Laura Drbohlav (3rd year) and Iris Qiu (2nd year). In addition, he advises three undergraduate students who routinely volunteer and conduct research in the lab. They are Amy Zheng (Chemical Engineering, senior), Parakh Mody (Biochemistry, senior), and Sarah Schaefer (Chemical Engineering, sophomore). His lab hosted a summer URP student, Joan Cheng (Emory University), this past summer. Yao Chen successfully defended his doctoral dissertation with honor on August 22nd, 2016 and became the first doctoral student graduated from Professor Wang's lab. Yao is now employed by Cook Pharmica in Bloomington, Indiana. Sihyung Yang completed his postdoctoral training in the lab and is now employed by QPS Holdings, LLC in Newark, Delaware. In 2016, Professor Wang received an NIH grant to develop quantitative proteomic methods to quantify drug-metabolizing enzymes on a proteome scale and a pilot project grant from the KU COBRE Protein Structure and Function to express and study an essential leishmanial sterol biosynthesis enzyme with a long-term goal to develop novel antileishmanial drugs that target this enzyme. In addition, his group is investigating exosomal expression of drug-metabolizing enzymes and continues to collaborate with Professor Werbovetz in the Ohio State University to develop azole-arylimidamide combination therapy against leishmaniasis. On the family

## FACULTY UPDATES

side, Jenny is now nearly 3 years old and Jacob is 8 years old in 3rd grade. His wife Judy continues to teach Medicinal Biochemistry (lecture and lab) and Pharmacy Skills in our Pharm. D. Professional Program.



Wang Lab

Back row: Iris, Laura, Parakh, Amy, Michael

Front row: Mei, Sarah, Haolin, Joan