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/or our annual reception at the AAPS Meeting later this year.

There are many important news items to share. The Kansas Vaccine Institute (KVI) is up and running under the direction of Professor William (Bill) Picking, and you can read more about this Institute on http://kvi.ku.edu. As mentioned in our previous newsletter, this Institute is the result of a cluster hire, which allowed us to recruit Professors William (Bill) Picking and Wendy Picking as Foundation and Full Professor, respectively, and Professor Brandon DeKosky as an Assistant Professor. Brandon is currently completing his postdoctoral research at the National Institutes and will arrive at KU in January 2017.

In January 2015, the Department of Pharmaceutical Chemistry admitted the first Distance Ph.D. student, Ming Lei (Genentech), and two additional Distance Ph.D. students have joined/will join in spring and summer 2016, respectively.

In May 2015, Ron Borchardt transitioned to Professor Emeritus. To honor Ron’s many contributions to the Department, the School of Pharmacy, KU and the pharmaceutical sciences, the Department of Pharmaceutical Chemistry hosted about 300 attendees at A Tribute to Ronald T. Borchardt - Teacher, Mentor, Scientist, Colleague, Leader and Friend, held in Lawrence during October 21-23, 2015. This symposium brought together many of Ron’s former students, postdocs, faculty colleagues and collaborators and was a great success. During the banquet of the Tribute, we informed the attendees that David Volkin was named Ronald T. Borchardt Distinguished Professor in the Department of Pharmaceutical Chemistry. Please remember that Val Stella plans to retire in 2016. We have started the planning process for a symposium in honor of Val, which will likely be held immediately prior to the AAPS Meeting 2017.

Note: This issue covers the 2014-2015 academic year with several recent events added.

INSIDE THIS ISSUE

Chair’s Note ............................................................... 1
Graduate Program ..................................................... 3
Borchard Tribute ....................................................... 4
Department News ..................................................... 5
Fall Retreat News ..................................................... 6
Undergraduate Research Program (URP) .............. 7
Staff News ................................................................... 8
Faculty Updates .................................................... 9-14
As of January 2016, we have a new Distinguished Professor in the Department: Cory Berkland was promoted to Solon E. Summerfield Distinguished Professor.

Planning for the 11th Biennial Meeting of the Globalization of Pharmaceutics Education Network (GPEN) is in full swing. This meeting will take place in Lawrence during November 9-12, 2016. Further details about the program of GPEN2016 are available at the following link: http://gpenconference.com/.

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. We will continue our format of an evening reception at the upcoming AAPS National Meeting in Denver. Details about this event will be provided to you by Nancy Helm later in 2016.

With best personal regards,

Christian Schöneich
Professor and Chair
Several students have completed their degrees since the last newsletter and have moved on from the department to their current positions:

- Christopher Asmus
- Jessica Bane
- Matt Behymer (MS)
- Chris Kuehl
- Srivalli Telikepalli
- Qiuhong Yang
- Ti Zhang

Six graduate students (pictured below) were recruited for Fall 2015:

- Huan Kang, Brigham Young University
- Brian Kopec, Colorado College
- Nicholas Larson, University of Colorado
- Xiazi (Iris) Qiu, Wittenberg University
- Jimmy Song, McMaster University
- Natalia Subelzu, University de la Republica, Uruguay

Front row: Iris Qiu, Natalia Subelzu
Back row: Jimmy Song, Huan Kang, Brian Kopec, Nicholas Larson

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

- Ming Lei (Genentech) (now in Distance PhD program)
- Zephania Kwong-Glover (Genentech)
- Kirsten Phizackerley
- Christopher Woods (Amgen, Seattle)

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

- Edmond Bailey (Catalent)
- Kristen Forseth (Gilead)
- Ian Hartzel (Pfizer)
- Sardar Jakaria (CML)
- Alisha Kellogg (Amylin)
- Stephanie Kishbaugh (BioMarin Pharmaceuticals)
- Jonathan Kretz (Amgen)
- Kevin Lu (Genentech)
- Benjamin Mann (Celerion)
- Ester Ndambiri (Nairobi)
- Karina Padilla (Genentech)
- Whitney Shatz (Genentech)
- Stephanie Staub (Teva)
- Josh Toschi (Gilead)
- Simon Tran (Gilead)
- Yue Wang (Genentech)
- Stephanie Whisenant (Janssen)
- Salina Wu (Gilead)
- Evelyn Yanez (Amgen, San Francisco)
- Yi Yang (Genentech)
A special meeting entitled, “A Tribute to Ronald T. Borchardt-Teacher, Mentor, Scientist, Colleague, Leader and Friend” to honor Ron’s transition to Distinguished Professor Emeritus was recently held in Lawrence from October 21-23, 2015. This event was held to honor Ron’s many contributions to the Department of Pharmaceutical Chemistry, The University of Kansas, and the Pharmaceutical Sciences. The keynote lecture was presented by Dr. John Martin (Chairman and CEO, Gilead Sciences) entitled, “Three Decades of Advances in Nucleotide Antivirals: From Research to Expanding Access”. The Scientific Program encompassed the many scientific areas that Ron has impacted throughout his scientific career. Ron’s former graduate students, postdoctoral fellows, visiting scientists, collaborators, colleagues and friends made the podium presentations. Approximately 300 participants attended this event.

For more information from the meeting, please see the following links which include: (i) a link to a website which contains all the photos taken during the Tribute to Ron Borchardt; and ii) a link to a recent editorial in the Lawrence Journal World. This editorial gives you a nice view on the outstanding reputation of the Department of Pharmaceutical Chemistry within KU and the local community. It is very important to hear such words from a very influential individual in Lawrence and in the State of Kansas (Dolph Simons Jr, Editor of the Lawrence Journal World), who can put the outstanding reputation and significant contributions of the Department’s research and educational programs into perspective for the residents of Lawrence and surrounding communities.

Link to Tribute photos: http://trinabakerphotography.pass.us/borchardt

Our graduate students have been successful in acquiring awards, fellowships and training grants:

- **Samantha Pace** received the Biotech Training Grant
- **Michaela McNiff** received the Dynamic Aspects of Chemical Biology Training Grant
- **Laura Northrup** received the AFPE Fellowship
- **Yangjie Wei and Iris Qiu** received University Fellowships
- **Laura Drbohlav and Jimmy Song** received Stella Fellowships
- **Indira Prajapati and Natalia Subelzu** received Waugh Fellowships
- **Mei Feng** received the Rytting Fellowship
- **Ninad Varkhede** received the Higuchi Fellowship
The Department of Pharmaceutical Chemistry along with the Department of Medicinal Chemistry held the annual Fall Retreat on October 13, 2014 in the School of Pharmacy building. The focus this year was on “Vaccines and Innate Immunity.” Dr. William Picking, Foundation Distinguished Professor, Department of Pharmaceutical Chemistry, gave the opening remarks and Dr. Wendy Picking, Professor, Department of Pharmaceutical Chemistry, gave the closing remarks of the seminar. Six experts in this area and four graduate students were invited to give their perspective and current research findings. Thirty-four posters were presented by students/postdocs in the poster session. Below is the list of the oral presentations:

Invited Speakers:

- **Danilo Casimiro**, Ph.D., Executive Director, Vaccine, Discovery Operations, Merck Research Laboratories. **Title:** Fundamentals of Vaccine Discovery and Development.
- **Robert Coffman**, Ph.D., Senior Vice President and Chief Scientific Officer of Dynavax Technologies Corporation. **Title:** Development of Toll-like Receptor-9 Agonists as Vaccine Adjuvants.
- **Lisa Kueltzo**, Ph.D., Director, Formulation Development, Vaccine Production Program, VRC/NIAID/NIH. **Title:** Challenges in Pre-Clinical and Phase I Vaccine Formulation.
- **Luis Brito**, Ph.D., Head of Formulation Science at Novartis Vaccines. **Title:** The key role of formulation science in maintaining and enhancing immune responses to vaccines.
- **Jishu Shi**, Ph.D., Professor of Immunology, Director of U.S.-China Center for Animal Health and Special Assistant to the Provost for China Affairs at Kansas State University. **Title:** Development of Vaccines for Animals: Challenges and Opportunities.
- **Mark Papania**, M.D., MPH, Medical Epidemiologist, Division of Viral Diseases, NCIRD, CDC. **Title:** In Search of the Practically Ideal Vaccine Delivery System.

Student Speakers:

- **Euna Yoo**, Department of Medicinal Chemistry, University of Kansas. **Title:** Determinants of Activity at Human Toll-like Receptors 7 and 8: Quantitative Structure Activity Relationship (QSAR) of Diverse Heterocyclic Scaffolds.
- **Laura Northrup**, Department of Pharmaceutical Chemistry, University of Kansas. **Title:** Development of a tolerogenic vaccine for multiple sclerosis.
- **Alex Salyer**, Department of Medicinal Chemistry. **Title:** Selective Generation of Antigen Packed Monocyte-derived Microparticles by a Dual Toll-like Receptor 7/8 Agonist.
- **Kelly Harrison**, Department of Pharmaceutical Chemistry, University of Kansas. **Title:** Protective Efficacy of SPI-1 and SPI-2 Proteins in a Mouse Salmonella Model.
The URP was successfully completed with poster presentations by our students on July 31, 2015. 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 2015 summer URP participants were:

- Drew Cesta, Elmhurst College. Lab: Dr. Teruna Siahaan
- Eva Mohr, University of Kansas. Lab: Dr. Laird Forrest
- Samuel Peterson, University of Kansas. Lab: Dr. Cory Berkland
- Gladys Saruchera, Mount Holyoke College. Lab: Dr. Laird Forrest
- Diana Schreier, Drake University. Lab: Dr. Michael Wang
- Katie Smith, University of Utah. Lab: Drs. Wendy Picking and Bill Picking

Eighty-four 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://news.ku.edu/84-undergraduate-students-present-summer-research

URP summer 2015 participants from left: Sam Peterson, Olivia Arizmendi (mentor), Yao Chen (mentor), Diana Schreier, Drew Cesta, Eva Mohr, Gladys Saruchera, and Katie Smith
Nicole Brooks has been with Department since October, 2002. She still enjoys spending time with family and friends, cooking, gardening and traveling. She traveled to Seattle last September to visit her brother and went to the Dominican Republic with her sisters. She is still quilting with an occasional crocheting project. Her son, Jacob, will turn 12 in April and is in sixth grade. He played baseball over the summer and decided to play football again last fall. He still loves playing video games.

Tammy Dunning has completed her twenty-fourth year in the Pharm Chem Department, and fourteenth 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. But my big news is that I’m going to England this summer for a 3 week vacation. Since I HATE flying and I didn’t have a passport, this is going to be a great adventure for me. Maybe next year’s letter will have all kinds of fun details in it.

Nancy Helm has had a very busy year with coordinating the Borchardt Tribute that was held in October, 2015. She enjoyed seeing and reconnecting with numerous alumni and friends of the department during this event! Her only regret is that she didn’t get to spend much time with all these folks because of being the coordinator. She will also be busy this next year with helping to coordinate the upcoming GPEN2016 Meeting which will be held in Lawrence in November, 2016. However, her role there will be much less as the graduate students are the organizers for that meeting. From a personal point (and the most important one!!), Nan will become a grandma this year (in March!!!). We know it is a boy!!! The name is still to be disclosed, so, check back next year for that information!! Amanda continues to teach at Auburn-Washburn Rural Middle School and Kyle is working for a marketing firm in the Kansas City area (DEG Marketing). They live in Lawrence, so, they (and the future grandson!!) are close by for Nan.

Ann Heptig has been with the Department since August, 2001. Ann and her husband, Dan, have two grandchildren in Pennsylvania and a granddaughter in Lawrence. Ann’s interests are still quilting, reading and spending time with 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 and will be welcoming another grandchild the end of January.
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 on the West campus in Lawrence. 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 a 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 11 years old, and Mae, now 8 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 he mostly likes to find a golf course with friends, watch Luke play baseball and basketball, watch Mae play soccer, 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 spent the second half of 2014 on sabbatical at Sofinnova Ventures in Menlo Park, CA working with Mike Powell, a long-time friend of the Pharmaceutical Chemistry Department. Cory and his family lived in Woodside, CA from July-December. He had the opportunity to evaluate more than 100 companies and to lead due diligence for several companies seeking investment from Sofinnova. The experience provided great contacts and a broad perspective of the Biotech industry. Cory’s lab currently includes about 10 graduate students from Pharmaceutical Chemistry and from Bioengineering at KU. Several students have been on internships in the past few years including Laura Northrup (Gilead), Shara Thati (Genentech), Nabil Alhakamy (Merck), Brittany Hartwell (Gilead), Lorena Antunez (Genentech), Chris Kuehl (Genentech), and Connor Dennis (Gilead). Connor Dennis (BioE PhD) recently joined Orbis Biosciences in Kansas City. Joshua Sestak’s (PHCH PhD) start-up company Orion BioScience received a small business grant from the NIH to develop therapeutics to treat an autoimmune disease, Neuromyelitis Optica. Also, a spin-out from the lab, Savara Pharmaceuticals, completed a Phase 2 clinical trial on an inhaled antibiotic for the treatment of MRSA in Cystic Fibrosis patients.

Professor Ron Borchardt will in 2015 have successfully completed his GHS (Graceful, Honorable, and Systematic) Plan that was designed to enable him to “transition” from his very hectic and stressful professional life, which lasted >44 years, to a more relaxing, less stressful, family-oriented private life. On August 1, 2015, Ron will officially retire from his tenure-track faculty position at KU to assume a Distinguished Professor Emeritus position. Over the past five years, Ron has modified his behavior so that he now spends more time with Pam and with their children and grandchildren, more time working in Pam’s beautiful gardens in Lawrence, KS and Lac Du Flambeau, WI, and more time relaxing at their Summer home in Northern Wisconsin. Unfortunately, Ron is still working on the third goal of his GHS Plan, which was “to develop new interests outside of his professional life”. This goal has been a challenge for Ron since he chose to remain very active professionally while he was part of KU’s Phased Retirement Program (2010-2015). However, as Ron moves into the next phase of his professional life (Distinguished Professor Emeritus, 2015-?) on August 2nd, he plans to limit himself to activities that he will really enjoy and activities that he can really impact in meaningful ways. For the next 5-7 years, Ron plans to focus his professional activities primarily on: (i) enhancing the reputation and the
impact of the Journal of Pharmaceutical Sciences in his capacity as Editor-in-Chief of this international journal; (ii) advising faculty members and graduate students at The University of Kansas and National University of Singapore, which will host GPEN2016 and GPEN2018, respectively; (iii) advising the GPEN leadership about potential sites for GPEN2020 and GPEN2022 and other strategic issues important to the future success of this international organization; and (iv) consulting with pharmaceutical and biotechnology companies about scientific issues within his areas of expertise. Ron is looking forward to seeing many KU alumni and friends at the Tribute in his honor in Lawrence on October 21-23, 2015 and in the future at national (e.g. AAPS) and international (e.g. GPEN) scientific meetings.

Professor Laird Forrest’s group continues their work in drug formulation, primarily looking at the development of formulations for improved penetration into the lymphatic bed of tumors. We continue to have good success in veterinary clinical trials in curing advanced head/neck cancers. This year Ryan Moulder joined the Biotechnology Training Grant; Ryan is developing improved adjuvants for vaccination by incorporating polymers for controlled antigen display. Also, Jordan Hunt moved over from Medicinal Chemistry, and he is developing improved TLR agonists for vaccination. We have been very encouraged this year by the number of pharmacy students that are taking active interests in research. Abby Petrulis is a 2nd year pharmacy student who hopes to be our first combined PharmD/MS (in Pharm. Chem) student. She’s greatly enjoying a full pharmacy course load, Pharm. Chem graduate load, developing a new imaging agent for parathyroid disease (her project) while occasionally working at the Haskell Indian Health Center Pharmacy, in return for the support of her tribe in pharmacy school. Another two pharmacy students recently joined our lab, Hollie Wickham and Kristen Fischer, who developing new drug products for the treatment of irritable bowel disease. At home, we have a 20 month old whose favorite words are “Mine” and “No.” I’ve been told that it won’t change much for the next 15 years.

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 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 (1), Steven (8) and Abigail (10)] wish everyone the best.

Professor Jennifer Laurence 2015 brought many exciting opportunities as well as some tough loses. Our research on the metal abstraction peptide technology was highlighted in the Kansas City Public Television special presented in connection with the release of “The Emperor of All Maladies” Ken Burns’ documentary on cancer. The interview process was quite an intense experience and the students enjoyed planning all the experiments for the film crew to capture. We also continue collaborative research projects focused on understanding protein behaviors, including elucidating mechanisms responsible for protein adhesion to polymers and ligand selectivity among closely related P450s. We celebrated Michaela McNiff being awarded a spot on the NIH Chemical Biology Training Grant, Dr. Fernando Estrada’s receipt of a K99 award and my promotion to full professor. Sadly, my sweet, loveable Otis and our pal Lucky cat passed away this year.
Professor Susan Lunte  On April 13th, 2015 my husband, best friend and favorite research collaborator died of a heart attack at the age of 57. My family, myself, his friends and colleagues all miss him immensely. I want to thank through this newsletter everyone for their tremendous show of support over the last 9 months. I want to thank all of you who came to the funeral, called, sent emails and cards. It means a lot. Thank you too for all the flowers, gifts and contributions to the KUEA Craig Lunte International Travel Fund for Graduate students and the American Heart Association. Words do not do justice in expressing the gratitude that I feel for all the support our alumni and KU colleagues have provided my family and myself. Since his funeral, I have had the opportunity to talk to and see many of our group alumni who I had not seen or talked to in a long time. It has been great to catch up and see how well everyone is doing. I hope to see many more of you this year in Lawrence or at various meetings throughout the year. We are having a symposium in Craig’s honor at Pittcon in Atlanta on Wednesday March 9th with a reception at an Irish pub that evening. If you are attending Pittcon this year, please attend. It would be great to see you there.

Professor Russ Middaugh and Professor David Volkin  The Macromolecule and Vaccine Stabilization Center (MVSC) continues to focus on (1) physicochemical characterization of macromolecules, (2) stabilization and formulation of vaccines and biopharmaceuticals, and (3) inter-relationships between protein dynamics and stability. Four new Postdoctoral Scientists, (Drs. Ravi Shukla, Ying Wan, Jian Xiong and Neil Whitaker) joined the MVSC in 2015. Dr. Brittney Mills, Postdoctoral Scientist, left the group to take a position as a scientist in the pharmaceutical industry with AbbVie. Dr. Ron Toth was promoted to Research Associate. Naoki Mori joined our lab as a visiting scientist. Naoki is from Mitsubishi Tanabe Pharma Corporation in Japan.

Two of Dr. Volkin’s graduate students, Srivalli Tellikapalli and Ranajoy Majumdar passed their PhD dissertation defenses. They have both accepted scientist positions, Dr. Majumdar with Eli Lily, and Dr. Tellikapalli with The National Institute of Standards and Technology (NIST), a federal agency in the US Commerce Department. Dr. Volkin took two new graduate students, Sanjeev Agarwal and Yu Hue, and Dr. Middaugh took a new graduate student, Yangjie Wei. Overall, 2014-2015 was a busy year in the MVSC, with expanding numbers of personnel, projects and publications. We expect 2015-2016 to be a very promising year and wish you the same!

Professor Bill and Wendy Picking  returned to KU in 2014 to join the department. Bill was named Foundation Professor, one of the first three, and is the director of the newly established Kansas Vaccine Institute (KVI). After arrival he was also named director of the Higuchi Bioscience Center. Wendy returns as Professor. Very happy to be home, Bill and Wendy continue to work with the mechanisms of infection by Shigella flexneri, the causative agent of bacillary dysentery that results in high morbidity and mortality in children of low income countries. They also are developing a broadly protective subunit vaccine against Shigella spp. As expected, the move was more of an adventure than anticipated and the laboratory renovation in August 2014 took longer than expected, but the lab was up and running by mid-September.

They brought several of their Oklahoma State University staff who continue to be with them today. Francisco Martinez-Becerra is a Research Assistant Professor and is the director of the Immunology Core Laboratory of the KVI. He is the trained immunologist of the group and he continues to run the Shigella vaccine project and is developing his own research program. Olivia Arizmendi is a graduate student in Molecular Biosciences and continues her work on the molecular mechanisms of Shigella pathogenesis. She expects to graduate in May 2016 and take on a post-doctoral position while she completes her MPH at KUMC. Our post-doctoral fellows, Shyamal Choudhari and Xiaotong Chen, moved into industrial jobs but we thank them for their help in building the new lab home! Several new faces joined us in 2015. Prashant Kumar came to use from India and has been a fabulous addition to the lab. He is patient with everyone, always has time for everyone and can purify proteins like a wizard. He is learning biophysics from the Middaugh/Volkin group members and loves every minute. Michael Barta has joined us as a Research Assistant Professor with the goal of getting the structure of IpaB, the
Holy Grail of the type III secretion system. It is a lofty goal, but Michael can do almost anything once he puts his mind to it! Vikalp Vishwakumar joins us from KUMC. Vikalp has experience with Salmonella vaccines and walked in to a 300 mouse experiment. (That’s a lot!) Melissa Pressnall joined the laboratory in 2015 and she is coming into her own. She is a chemist by training and is spreading her wings by learning immunology and microbiology. Kaela Clabaugh and Stephanie Villanueva do undergraduate research as time permits.

Pickingland staff has traveled to meetings and training workshops throughout the year. Equipment training for the FACS and CD instruments were essential. Since we are microbiologists, we try to attend the American Society of Microbiology each year, but of course it helps when the meeting is in New Orleans. It was great meeting with food, fun and science. One of the highlights of our year was the return of the Great Plains Infectious Disease meeting to KU. Bill and Wendy started the meeting 13 years ago when in Molecular Biosciences and it was very rewarding to take the meeting back from Mizzou and host it in the School of Pharmacy building. We had 120 participants this year! Many more than in the first year! This coming year will be our crystal anniversary!

Professor Christian Schöneich The year 2015 has brought some important changes and many lasting memories. First of all, we added a dog, “Napoleon”, to our family, and training of the young puppy did take time and effort. He is now a strong one year old, and enjoys chasing around the dog park and pretty much every other open field In Lawrence. Second, Antonio, Sebastian and Christian embarked on a bicycle tour across the Alps, traveling first through Southern Germany, and then from Germany to Italy. The bikes are now resting in a family residence in Italy, ready to be picked up next summer for yet another ride. Subsequently, the family met in Europe for visits of Vienna and Salzburg. By chance, we arrived at Salzburg Cathedral just in time to listen to a performance of parts of Mozart’s Requiem, easily a highlight of this visit! In fall, Elena accompanied Christian to a meeting in Lisbon, and both enjoyed exploring the city on a trip, which was the first one to Europe just for the two of them in 22 years. The children are growing up! In fact, Sonia has started her second year in the KU Honors Program, double majoring in Chemistry and Psychology. She is currently working on a project with psychologists at the KU Medical Center. This summer, she joined a study abroad program in England and Scotland, and is still telling us stories on adventures in the Scottish Highlands. Antonio is in his junior year in the Honors Program at KU, completing a double major in Aerospace Engineering and Mathematics. Sebastian is completing his first year at KU Medical School, and is thinking about internship programs in the coming summer. Professionally, the year 2015 has been full of interesting scientific results and collaborations, and numerous papers are in various stages of completion for submission. Christian has traveled to speak at various conferences in the US, England, Austria, Poland, Germany, and Portugal. Soon we expect to publish our first collaborative results on the resolution of protein degradation products on nano-columns as long as 1.15 m. These columns are packed in-house by our colleague John Stobaugh and are providing fantastic resolution and completely new insights on the formation of protein degradation products upon storage, accelerated stability testing and/or forced degradation.

Professor Teruna Siahaan’s group is still working on utilizing cadherin peptides to modulate the blood-brain barrier (BBB) for improving drug delivery to the brain and targeting molecules to antigen-presenting cells for controlling autoimmune diseases. In 2015, the group had published papers to show that cadherin enhanced brain delivery of molecules in vivo and to understand the mechanism of binding between cadherin peptides and the EC1 domain of E-cadherin. We also continue to work on targeting antigenic peptides to antigen presenting cells (APC) for suppressing autoimmune diseases by altering the commitment of T cells from inflammatory phenotypes (Th1 and Th17) to regulatory/suppressor T cell phenotypes (T-reg and Th2). In 2015, the group published 8 papers in peer-reviewed journals. Ahmed Alaofi graduated with a PhD degree and returned back to teach at the King Saud University, Saudi Arabia. Kayann Tabanor and Matthew Behymer graduated with Masters degrees and they are currently working at XenoTech Inc. and Hospira Inc., respectively. Now, the group consists of two graduate students (Kavisha Henakankanamage and Brian Kopec), an NIH IRACDA Postdoc (Dr. Mario Edgar Moral), and a Research Associate (Dr. Paul Kiptoo).
How does one adjust to phased retirement? Gradually. I still enjoy contributing to the graduate Equilibria and Stability classes, and supervising my one post-doc, Antonio. Antonio and I continue to publish 2-3 papers per year in two major areas. The first is the use of α-keto carboxylic acids as peroxide scavengers. We have one paper in press and a few under review and in preparation. The second area is on the chemical and physical properties of aryl and alkyl boronic acids. We recently found some fascinating results on the unpredictable nature of these molecules when it comes to forming esters with 1,2-diols and 1,2-polyols, such as mannitol. Boronic acids have been minimally studied as it relates to their pharmaceutical properties and the results to date continue to intrigue. I continue to consult with both big and small pharma. I also am doing a modest amount of expert witness consulting but am now limiting my effort to prodrugs and drug stability issues.

Cathy, our oldest, her husband and three grand kids are still in Sydney, Australia. Beth and I are personally keeping the Trans-Pacific route economically viable with our travels to grandmother/father the three grandkids, Stella, Zoe and Lila. Cathy and Greg are now talking about returning to the USA sooner rather than later, but one never knows. Anne and Daniel are in New York and recently purchased a condo in Brooklyn near the Barclay Center. Anne is in the theatre/acting business and has found a niche working with child actors and working with the Brooklyn Children’s Theatre. As well, she returned to school and is completing an English degree at Hunter College and has been accepted into the Masters of Education and teaching certification program in Theatre and English at Hunter. With Anne and Daniel’s help, Beth and I are now proud grand-dog-parents to Ajax, a Boston terrier. What a handsome young male dog, soon to transition. Elise had been working in NYC but went back to Canada to work on her Masters of Information at the University of Toronto so that she can do archival work in a museum or for a foundation. She is enjoying Toronto despite a fairly rough winter.

Beth and I enjoyed some great travel experiences last year to SE Alaska and NW British Columbia. What an amazing part of the world. If you have an opportunity to visit and see, up close, the whale, black and grizzly bear population, salmon runs and glaciers, I highly recommend a visit to the area. This year we have yet to take off. That will change by the time you receive this update. On June 30, Beth and I are doing a mega-road trip to the Pacific NW, USA and British Columbia. We will be traveling to the Columbia River gorge, Cannon Beach (OR), Victoria and the East coast of Vancouver Island, an inter-waterway ferry from Port Hardy to Prince Rupert, a bear watching excursion out of Prince Rupert, to and from Haida Gwaii to view art and first nation culture, to Lake Louise in the Canadian Rockies, to Glacier National Park in MT, to Crazy Horse Memorial in SD to home over 31-33 days. In November, we are visiting 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.

I managed to keep myself busy and out of trouble, for the most part. I have helped complete fundraising for both a Distinguished Professorship in Ron’s and my name. Currently, I am in the home stretch helping to raise the money necessary to fund an 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. We are close but about $1.5-2 million short of our goal as of the end of June. Help anyone?

Adjusting to 50% time at KU is going well. My garden is looking much, much better this year. In fact, it is so nice, (how nice is it?) that our home was on the Lawrence Master Gardeners garden tour this year. On June 6-7 we had 450-500 people visit our garden. We had a great time explaining the unusual trees, shrubs and flowers. Yes, I am still a researcher but in a different media. I am reminded of a quote I saw in front of a Marriott hotel, “Gardening, the slowest of the performing arts.” My cooking skills are also improving and thus the extra 10 lbs. I am carrying around.

In my eyes, the department is doing very well and the young and the mid-career faculty are taking ownership, it is their department now. People like Ron and I now provide guidance when asked but we mostly try to stay out of the way.
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 µm OD x 75 µm ID x ~1 m in length, packed with sub-2µ 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.

Professor Thomas Tolbert and his group continue to study antibody glycosylation, the production of protein drug conjugates, and developing antibody fragments as a model system for understanding mAb function. Postdoc Zahra Khedri left the lab in the Fall of 2014 to start a second postdoc at UC San Diego. In the Spring of 2015 Dr. Tolbert and former lab members Brian Hamilton and Rui Chen were contributing authors on a Nature paper (Nature, 520, 165, 2015) describing bacterial metabolism of yeast glycans using N-linked glycans produced in the Tolbert lab. At the end of the Summer of 2015, Kevin Hutchison graduated with a masters degree and returned to the Pacific Northwest. Postdoc Shaofeng Duan also left the lab at the end of the summer to begin work as a Professor in the Pharmaceutical Chemistry Department at the Pharmaceutical College of Henan University in Henan, China. The Fall of 2015 was busy with Professor Tolbert presenting about glycopeptide synthesis and studies at the Boulder Peptide Symposium and of course the Borchardt Tribute (Congratulations Professor Borchardt!). The Tolbert lab in collaboration with the Volkin, Middaugh, and Schöneich labs contributed four papers in the Fall of 2015 to the Journal of Pharmaceutical Sciences special issue dedicated to Professor Borchardt describing production and studies of IgG1 Fc glycoforms as a model system for biosimilar analysis (to be published in early 2016).

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

Professor Zhuo (Michael) Wang joined the department in August 2011. His group currently has four members, Yao Chen (graduate student), Mei Feng (graduate student), Laura Drbohlav (graduate student) and Sihyung Yang (PhD). Amy Zheng (undergraduate student) also volunteers in the lab. His lab hosted a URP student, Diana Schreier, this past summer. Yao presented a poster at ASMS and AAPS meetings this year. Michael received a pilot research grant from KUMC Liver Center and COBRE to develop liver-on-a-chip technology to study liver diseases and predict human pharmacokinetics. In addition, Michael received a KU GRF Award to develop a novel approach to enhance the GI absorption of parenterally administered drugs. The group is continuing their research on developing mass spectrometry-based quantitative proteomic approach to quantify drug-metabolizing enzymes and transporters; and developingazole-arylimidamide combinations to treat leishmaniasis in collaboration with the Werbovetz group from Ohio State University (funded by US Department of Defense). On the family side, Jenny is now 22 months old and Jacob is a 7-years old 2nd grader, who are keeping Michael and Judy busy at home.