From the Chair

A call to action! You have a role in our department’s future!

I am delighted to continue the tradition of the Department annual newsletter from the Chair. And as the new chair, I should have a lot of news to convey. It seems that my first three months in this new position have provided enough new experiences equivalent to an entire year: combinations of pleasure, exploration, discovery, along with some shock and bewilderment. Most of us have changed jobs at least once in our careers (including me) but the dimensionality of opportunities presented in this particular transition has taken me a bit by surprise. Orientation and transition best characterize my Utah experience to date. With that said, I am pleased to report that Steve Kern, as previous chair, has passed me a healthy department with vibrant faculty and staff, promising, capable students, and wonderful opportunities in interesting times at the University of Utah.

I am excited about prospects for continuing Utah’s outstanding tradition in the pharmaceutical sciences. As you will see below, I am asking you to get interested, get involved in our program!

I moved to Utah from my previous post in Colorado because of the numerous opportunities for professional growth and development I perceived at both a personal and programmatic level. As an alumnus of this program, I have come back, full circle. From my perspective, numerous challenges are apparent at both state and national levels. Increasing national academic competition and decreased research funding must be carefully addressed through active visibility and marketing, program distinctions and enhancements, partnerships and growth, and, simply, excellent science and training. Efforts to retain our faculty, recruit the best students, develop innovative research and teaching, and partner with clinical and basic science partners require resources and, importantly, the commitment from people at the top of the Utah organization who share this vision. I felt this top-down commitment from Utah leadership during my interviews and am pleased to
engage it to the department’s benefit.

There is a lot of work to do to maintain our department status and push our training programs forward. I hope to recruit each of you to engage and play a part in this effort! Faculty meetings have been active in addressing multiple issues and changes; students are involved – things are happening in this program. This newsletter should provide you with some details – I encourage you to read on but also consider your role in producing excellence at Utah. Here are some short-takes from me:

**Academic program.** I continue to hear from Utah alumni about the importance of training rigor in the fundamentals of pharmaceutics and I am a believer. The pharmaceutics program should not create technicians, but creative scientific leaders with versatile training and broad capabilities to adapt to modernization and change in the sciences and technologies they create. Building lasting value into an education is not a simple task. Enforcing rigor in the fundamentals presents an obvious challenge for any graduate degree program. Additionally, faculty teaching must be increasingly broadened to cover new, emerging areas of importance as pharmaceutics is involved more in bioengineering and clinical sciences. We have discussed as a faculty how to continually evaluate our teaching curriculum for this value. Our faculty have also sought continual alignment of our professional training program to the student employment opportunities and perceived technical challenges in the field.

Nationally, we observe the pharmaceutical sciences field to embrace increasing diversity of physical pharmaceutics, bio-pharmaceutics, and more complex clinical considerations. Our program should effectively address these issues with effective, innovative professional training and research. I personally believe that excellence here starts with a strong fundamental foundation with elements of physical pharmacy, medicinal chemistry, biomedical sciences and bioengineering. We have witnessed, as many of you know, a 30-year transition at Utah from exceptional physical pharmacy-oriented strength to more biopharmaceutical strength. This mirrors a national trend. I would prefer to see these Utah program strengths balanced and justified by what our students require for training in prospective careers, as well as extramural funding mechanisms. I also believe that many of our incoming students are not adequately prepared for rigor in these areas: we see the increasing need for remedial or regressive education of incoming students. Think back on your Ph.D. oral defense or research for a moment: many stumbling blocks are often the more basic science issues – not specific technical pillars of your research project per se. Importantly, what many people do in their jobs post-graduation is not what they did for their thesis work. Lasting training versatility is critical.

A colleague in a non-science department here asked me what single action might produce the greatest impact in our program. A new building? New computers? More faculty positions? Improved equipment?

My response: a significant number of *graduate student fellowships*, dedicated to dual-mentorship between a clinical department and a non-clinical science or engineering department, administered by an over-arching university program, would make the most immediate and profound impact on student training. I imagine sources of graduate student support where partnerships between clinical investigators and biomedical science, engineering or allied medical departments would provide a translational training experience. Specifically, under such a scheme, some of our pharmaceutical students would research solutions to problems in therapies and drug delivery encountered by co-mentors in real clinical scenarios. Fellowship support is extremely privileged to receive but provides the most rapid catalysis of program transformation. When people are productive in innovative teaching and research programs, great things will happen to provide further resources.

**Partnerships in teaching and research.** I was told that one appealing aspect of my interview at Utah last year was my desire to partner and leverage strengths at Utah and elsewhere. In summary, I believe in the power of teamwork and cross-department training, both in basic sciences and toward the clinical experience. This goes hand-in-glove, in fact, with the national funding roadmaps at many research organizations (e.g., NSF, NIH, DOE) that seek to support
broad-based programming, often teaming numerous researchers together. Some have said that the era of the individual investigator grant is fading – certainly there are many other modes of support now with real money attached. Of course, we continue to rely on the single-PI mode, but must now look to the next level to ensure stability and success in our research. I have spent substantial time in the past 3 months meeting with faculty and leaders across campus – everything from technology transfer and commercialization to the Huntsman Cancer Institute to Electrical Engineering, Cardiology, Chemistry, Biology, Pathology, Radiology, and Orthopedics. Campus-wide, I am seeking academic partners to provide dimensionality to our training program, new adjunct research and teaching expertise, and grant-writing opportunities. Bioengineering remains a major player, and I will ask my faculty to reach to the clinical and basic sciences for increased collaborations as well.

Significantly, the world continues to get smaller and international science partnerships also play a role in our program’s visibility and productivity. Student exchanges have played a valuable part of our department’s past training mission – I meet leaders world-wide who had a training experience in our department once upon a time. With the University of Utah currently placing a priority on academic ‘internationalization’, I would like to connect to appropriate science partners world-wide and develop training exchanges between groups. Traditional Utah pharmaceutics relationships with the Netherlands and Japan are good places to start.

**Industrial internships.** I wish to grow the number of short-term industrial research internships available to our doctoral students in pharmaceutics. One candidate criterion from many recruiters is previous industrial experience: internships provide this experience. We continue to receive accolades about our student performance in company research and development and this is great news demonstrating the value and versatility of our students. I would assert that this is also an excellent value for a company: the ability to screen potential employees through a temporary research experience with qualified trainees is an excellent value. I request your guidance and consideration to help us expand these opportunities for a win-win scenario. There is substantial upside for all parties involved with appropriate organization and ample placement opportunities in place. Contact me if you have ideas and opportunities.

**Alumni support.** I sincerely believe in the power of our alumni to enact change and to endorse excellence. I would like to reach each one of over hundreds of our pharmaceutics alumni. In this regard, I have embarked on an effort to update our alumni contact database – perhaps some of you have already seen these efforts. I kindly request you to assist us by notifying our office of your address or email changes, either on-line, or via mail. Your pro-action eliminates our need for reaction. I am interested in keeping you informed of events as they occur, receiving your feedback, encouraging your communication with us, your passive or active participation in our programs, learning of your successes and about opportunities that might help our department and our students.

*I view our alumni as a tremendous resource:* experienced, knowledgeable, advisory, seasoned, and distant enough from our daily routine to provide useful guidance, critique and wisdom. I will try to listen and consider your ideas about our programs, goals and structures. So, get engaged and learn about what we are doing. In my inaugural newsletter, *I would like you to entertain the idea of creating an alumni organization dedicated to helping us with off-campus partnering, more effective communication, and our professional development efforts* – to carry the Utah pharmaceutics flag “on the outside”. I would charge such an organization with helping us contact our alumni and friends, spearhead fund-raising on behalf of alumni, and provide a central organization for department interactions and information flow. Let’s plan to meet and discuss this at the annual Utah-sponsored AAPS alumni breakfast meeting at the AAPS meeting in 2007! (San Diego, CA).

**Contact me if you’re interested in leading this pioneering effort for the department alumni!**

**Alumni giving to Pharmaceutics.** Simply put, this effort needs substantial improvement. Regular department-based giving from rank and file pharmaceutics alumni, from students to post-docs, is irregular and heterogeneous. *We need
your assistance! Our faculty are consistently asked continually to do more with less. In a small department like Pharmaceutics, this risks dilution of faculty effort to frustrating levels. Across the country and in Utah, state financial support for education is a fraction of historical levels. Department financing is continually reliant upon outside resources: dwindling state support in many cases amounts to less than 25% of the operating budget. We approach this issue through focus on state funding priorities, redoubling innovative efforts to secure research grants, and, significantly, increasing efforts to secure private support. I emphasize the importance of alumni giving to supplement department resources for education and research. This giving can come in numerous forms, and I ask you to consider your contributions back to this department where you gained professional experience and training.

Many ways for you to give. You might consider a visit here to the department, or conducting a mock interview session with students, even present us a relevant seminar of your experiences in pharmaceutical sciences post-graduation. You might wish to present a specific lecture on a relevant graduate topic in modern pharmaceutics – we have several alumni and industrial colleagues who regularly volunteer these important expertise sets as lectures or seminars. You might consider gifting appropriate scientific equipment from your company to research labs, or donating relevant textbooks. Naturally, you can always gift money to the department at any time, and direct it to either general programming or to specific causes that you wish to support.

I assert that our alumni should be a visible, regular and reliable source of support for our program – you will continue to hear from me about this! Such professional development is a department priority in the current age. I recommend that you try to consider a budgeted contribution: a regular or annual giving schedule. Donations of cash or equipment to the department, as a 503(b) tax-exempt state organization, are tax-deductible charitable donations in many circumstances (although specific tax implications are case-dependent).

It is not too late to consider a gift in 2006! Our annual giving form is enclosed to contemplate such an important action! You can also call or email to arrange your annual contribution.

Substantial gifts to support major programming, facilities, an endowment, or student scholarships and fellowships are welcome, and a major component of any modern department resource development strategy. I encourage anyone with such aspirations to contact me personally for appropriate guidance. Many creative and impacting development projects are possible; creative funding ideas and solutions are encouraged.

Alumni and industrial student recruiting. Most of our alumni lead important, productive lives in the pharmaceutical and biomedical industry – the market for most of our graduates. Our contacts with you are wonderful places for us to start to place our graduates. I request your interest in interviewing our graduate students for positions at your places of employment or through your recruiting networks. Pre-screening of candidate dossiers can be arranged electronically; telephone or on-site arrangements for interviewing are readily accommodated.

I gratefully recognize student fellowship support from Novartis, the Patel family, and new alumni giving efforts, as well as the AAPS for our student chapter. Visibility and presence for our industrial supporters will remain a priority.

In summary, I anticipate a productive and creative experience in my return to Utah as faculty and Department Chair – I look forward to sharing these experiences with you as they occur. Part of the deal is your participation in kind: I will continue to encourage your engagement in different ways in moving this department forward to the next level. I will try to move forward an agenda of brokering partnerships for success through innovative programming and productive research. I invite
you to be part of it!

My best wishes for a wonderful 2007!

Sincerely,

Dave Grainger
Professor, Department Chair, and Inaugural George S. & Dolores Doré Eccles Presidential Endowed Chair of Pharmaceutics and Pharmaceutical Chemistry
David.Grainger@Utah.Edu
Tel: 801 581 4532

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Newsletter notes: Our department is active and visible on numerous fronts with research, training doctoral students inside and outside of the classroom, participating in the pharmacy professional training program, and in an assortment of professional service activities. We try to capture the diversity and depth of activity in some detail here to accurately portray our department impact and contributions in 2006. We hope this provides insight you might find interesting in following the Department of Pharmaceutics and Pharmaceutical Chemistry!

Pharmaceutics Donor Highlights

Your gifts and donations in various forms (see the Chair’s letter) are required to sustain and expand the excellence of our graduate program in Pharmaceutics. Your generous gifts to the department stay in the department! We are grateful for your continuing support – if you have not considered the Department of Pharmaceutics in your annual charitable giving plans, please do so. THANKS TO ALL WHO SUPPORT THIS EFFORT!!

GRADUATE STUDENT FELLOWSHIPS are essential for our entering first-year graduate students to fund their rotations through several laboratories as they decide on their dissertation topic and mentor. We are privileged to enjoy current support from these fellowships:

- Novartis Fellowship
- Dinesh and Kalpana Patel Fellowship
- Alumni and Friends Fellowship

We are actively seeking to expand fellowship support through new donations and gift opportunities. The Chair’s cover letter provides his plans and perspective. Thanks to all fellowship sponsors!

Recent contributions from individual donors—our alumni and friends—helped to establish the new Alumni and Friends Fellowship. To date these include:

- David Grainger
- Steven Kern
- William Lambert
- Sandra Sims
- Pfizer Foundation

This is a great kick-off effort to establish this new mechanism, but we are seeking and encouraging further contributions needed for full one-year student support. This represents another new giving opportunity, reliant on continued alumni support. Thanks for considering the department in your giving plans - we truly appreciate your contributions.

Events and Notes

Thirteenth International Symposium on Recent Advances in Drug Delivery Systems, Salt Lake City, UT, February 26-28, 2007. Co-chairs You Han Bae (Utah), Kinam Park (Purdue), Dave Grainger (Utah) have inherited the reins of the next Symposium from the original, long-standing organizing team, led by Profs. Kim and Kopecek, throughout its history. The Symposium program is largely in place (see http://www.drugdeliverysymposium.utah.edu/), promising a rich, diverse selection of topics and world-leading speakers. The general theme of the 2007 technical drug delivery conference is centered on “overcoming long-standing barriers”, more specifically focused on addressing molecular, cellular and tissue barriers to effective drug targeting, penetration, formulation, and efficacy. The program design maintains its highly regarded tradition with oral sessions comprising world-renowned pharmaceutical scientists, bioengineers, industrial scientists, and clinicians all seeking solutions to compelling drug delivery problems. The organizers seek to: 1)
provide a rich, diverse scientific program focusing on both fundamental and clinical phenomena that limit drug therapeutic efficacy in several important disease contexts (i.e., hurdles of translational research), as well as key areas of biotechnology where investigators are proposing solutions to drug delivery, imaging, tissue engineering problems; 2) gather a group of presenters and participants comprising widely acknowledged thought-leaders as well as younger, aggressive, and vibrant faculty and research trainees already noted for novel and quality work. Speakers and session chairs will represent both academic and commercial drug delivery efforts: perspectives and leadership from both fundamental research and clinical applications.

Join us in February, 2007, for this symposium! Registration now available on-line!

**New Auxiliary Faculty:** We welcome the addition of adjunct appointments for Dr. Guang Yan and Dr. Patrick Kiser (Assistant Professor of Bioengineering) to our department faculty!

**New Students**

We welcomed these new students to our department for Fall semester, 2006:

**Jonathan Brumbach:** Jon transferred from the Department of Pharmacology and Toxicology. He graduated in 2004 from the Lewis & Clark College with a B.A. in Biology. He is now working in the lab of Dr. Sung Wan Kim. Jon enjoys skiing and biking.

**Clinton Jones:** Clinton graduated in 2006 from Brigham Young University with a B.S. in Chemical Engineering. He is the recipient of the College of Pharmacy Eccles Fellowship which allows him to rotate through several labs his first year. Clinton enjoys snowboarding and music.

**Alamelu Mahalingam:** Alamelu graduated in 2006 from the University of Mumbai with a B. Tech. in Pharmaceutics and Fine Chemicals. She is the recipient of the Patel Fellowship which allows her to rotate through several labs her first year. Alamelu enjoys listening to music and reading.

**William Sanders:** William graduated in 2006 from Kansas State University with a B.S. in Chemistry. He is currently a student in Dr. You Han Bae’s lab. He enjoys aviation, the history of chemistry, reggae music, and college football, especially Nebraska football.

**Li Sun:** Li graduated in 2005 from Peking University with a B.S. in Biological Sciences and Mathematics. Li works in Dr. You Han Bae’s lab. She enjoys music, sports and social activities.

**Li Tian:** Li graduated in 2001 from Peking University with a B.S. in Pharmacy. She also received an M.S. from Peking University in Pharmacognosy. Li is a student of Dr. You Han Bae. She enjoys reading novels, listening to Beijing operas, and drawing.

**Recent Graduates**

**Jian Chen:** A student of Dr. Herron, Jian’s Ph.D. dissertation is entitled, “A Novel In Vitro Model of the Blood-brain Barrier for Studying the Transport Mechanisms of Dideoxynucleosides.” He is currently working at Tandem Labs in Salt Lake City, UT.

**Hui Ding:** Hui was a student of Dr. Kopeček. His Ph.D. dissertation is entitled, “Identification of Peptides Targeting CD21 Receptor and Investigation of the Binding Properties of HPMA Copolymer-Peptide Conjugates.” He is currently working at Sinai Medical Center, Los Angeles, CA as a post-doc.

**Aaron Mohs:** Aaron, a student of Dr. Lu, delivered his Ph.D. dissertation entitled, “Biodegradable Macromolecular Contrast Agents for Magnetic Resonance Imaging.” He is currently working at Emory University as a post-doc.

**Sivakumar Ramachandran:** Under Dr. Yu, Siva finished his Ph.D. dissertation entitled, “Design and Characterization of Peptide-based Biomaterials.” He is currently pursuing post-doctoral research opportunities.

**Chunyu Xu:** Chunyu was a student of Dr. Kopeček, producing a Ph.D. dissertation entitled,
“Protein-based Hydrogels Self-assembled from Genetically Engineered Triblock Polypeptides Containing Coiled-Coil Domains.” She is currently pursuing job opportunities in Houston, TX.


Recent Graduates from Allied Departments

Kevin Peterson: Kevin was a bioengineering student of Dr. Jim Herron, currently working at Merit Medical in Salt Lake City, UT.

Graduate Student Activities

Scientific conference participation and presentations, 2006:


"Steroid Receptors and Beyond -Harnessing Signal Sequences for Drug Delivery." APhA National Meeting, San Francisco, CA. Kakar M, Davis JR, and Lim CS. 2006 This poster received the “Basic Sciences Best Poster Award”.

Songqi Gao (PI: J. Kopecek), "Antitumor Efficacy of Colon-Specific HPMA Copolymer - 9-Aminocamptothecin Conjugates in Mice Bearing Human Colon Carcinoma Xenografts” S. Gao, Y. Sun, C.M. Peterson, P. Kopeckova, J. Kopecek, 33rd Annual Meeting of the Controlled Release Society, Vienna, Austria, July 2006


“Reducible Poly(amo)thlenimine)s for Nucleic Acid Delivery” Pharmaceutics and Pharmaceutical Chemistry Department Seminar, University of Utah, October 2006.


Sheffer J.W., Christensen L.V., Yockman J.W., Kim S.W. Nucleic Acid Delivery Using Reducible Poly(amo)thlenimine)s, Pharmaceutics Summer Undergraduate Research Fellowship Program, University of Utah, 2006.


Vijay A Sethuraman (PI YH Bae) “Design and optimization of systemically shielded TAT decorated micelles as delivery vehicle for acidic tumor cancer, AAPS annual meeting, San Antonio, TX
Han Chang Kang (PI: YH Bae) “Oligomeric sulfonamides as new endosomolytic agents for effective polymeric gene transfection” Han Chang Kang, You Han Bae*, 33rd Annual Meeting of the Controlled Release Society, Vienna, Austria.


AAPS student chapter. The AAPS student chapter at the University of Utah has focused on exposing new and current members to the range of opportunities that the Salt Lake City area offers: local industries, beautiful mountains, and our department’s multicultural community. Our chapter has also supported the exploration of life after graduate school by hosting discussions addressing the age-old question of “academics versus industry” while highlighting alternative career paths.

Each year our chapter visits local pharmaceutical and biotech companies to foster networking and provide insight into skills required and approaches that industry utilizes to maintain an edge in the market place. This year we visited ZARS Pharma, a company started by a University of Utah professor, focusing on transdermal delivery for pain management and dermatology. The tour highlighted how to find a niche market and create a successful start up company. Due to our department’s focus on innovative drug delivery, the demonstration of how novel approaches to delivery can result in improved efficacy and ease of patient use confirmed for many of us that our research does have the ability to improve treatment and impact lives.

Myriad Genetics, a company specializing in drug discovery and development in the areas of Alzheimer’s disease, cancer and antivirals, hosted a chapter seminar on the drug discovery, preclinical evaluation, and clinical processes. Discussion was led by alumni from the pharmaceutics department.

Novartis “visiting faculty” also hosted a shortcourse in the department on the importance of pre-formulation in the pharmaceutical industry.

“This course served as an eye-opening experience into a career in industry by introducing me to important concepts in pre-formulation” – Jeff Chang, AAPS chapter member. Students participating in past short courses have gone on to complete summer internships at Novartis. This short-course and internship alignment is becoming an increasingly important part of Utah’s industrial science out-reach efforts.

A roundtable discussion presented by Dr. James Dalton, a Ohio State University professor in the Department of Pharmacy offered his personal insights into a career in academia versus industry. He talked about his experience in starting the company, GTx Inc., as well as his successful academic career. Mudit Kakar, AAPS student chair for 2005-2006, felt that "Dr. Dalton's talk about career planning was highly encouraging. His vast experience in industry and academia helped students understand the needs of two different professional settings, and how they are inter-related. His talk was highly appreciated, especially by the senior students."

The AAPS Visiting Scientists Program funds assisted our chapter in hosting Dr. Srikumaran Melethil, Attorney at Law and Professor Emeritus, University of Missouri-Kansas City. His seminar was insightful, not only from a potential career perspective, but was also very informative for the students as many of us have innovative research ideas and are involved in writing patents with our advisors.

Our student AAPS chapter also takes advantage of the local Wasatch Mountains rising up immediately behind campus by hosting an end-of-summer hike. Furong Ye, a chapter member, enjoyed the afternoon, “The weather was very beautiful that day and the view was amazing. The most enjoyable part was having lunch on a huge rock facing the Great Salt Lake.” Students shared samples of home cooked Chinese dishes and snacks.

Other outside activities involve our chapter soccer team that competes in intramural indoor soccer matches in the Fall and outdoor matches in the Spring with other departments on campus -- a great way to relieve stress from work.

Several students from the chapter attended the
AAPS Biotechnology Conference in Boston this past June. Lane Christensen felt that it was “an eye opening conference introducing us to a lot of what the industry has to offer/what biotech is doing. The conference provided a non-traditional approach to pharmaceutics that was refreshing from my perspective. Boston was a great venue for the conference (good lobster, amazing sushi, tasty ballpark sausages).”

Our chapter recently welcomed the new Pharmacetics and Pharmaceutical Chemistry Chair, David Grainger, to the University of Utah. Grainger hosted the University of Utah AAPS Alumni breakfast at this year’s AAPS conference. Some Utah chapter students attended both the breakfast and other sections of the meeting, which Grainger feels “represents a very important time for our faculty and students to meet our alumni in academia and industry, discuss and compare notes on research and careers, and generally get re-acquainted.”

In the next year, our chapter hopes to recruit new members by being actively involved in new student recruitment to the Pharmacetics department, as well as reaching out to students in other departments on campus. We intend to continue networking members with local industry and alumni, inviting visiting speakers, as well promoting our research at upcoming conferences. The student action committee (SAC) has been active and important in providing student input at faculty meetings, representing the department at university recruiting events and in student representation in the faculty tenure and promotion process at the Department and College level.

Other student social events. The graduate students have been successful in obtaining ASUU money as an official Utah student organization. Some of this support was used to subsidize a department Halloween party at the Lim/Cheatham household, and Christmas party post-dinner gaming. Other support will go to inviting an outside speaker to the Department in the Spring.

Awards, Honors and Distinctions

Students

Amy Cadwallader (Pharmacology student of Dr. Carol Lim and Douglas Rollins): American Foundation for Pharmaceutical Education (AFPE) Predoctoral Fellowship.

Pad Chivukula: American Foundation of Pharmaceutical Education (AFPE) Predoctoral Fellowship for the 3rd year.

Clinton Jones: College of Pharmacy Eccles Fellowship, 2006-2007

Mudit Kakar: Basic Sciences Best Poster Award, American Pharmacists Association (APhA) meeting, 2006.

Todd Kaneshiro: American Heart Association Graduate Fellowship


Aaron Mohs: Fox Award, 2006; Wolf Award, 2006

Anagha Vaidya: Second place, Poster Award, 14th annual meeting, International Society for Magnetic Resonance in Medicine.

Faculty

You Han Bae: Fellow, the American Association of Pharmaceutical Scientists: Fellow, the American Academy of Nanomedicine: Co-chair, CRS annual meeting program (Bioactive materials division), 2007, co-chair, 13th International Symposium on Recent Advances in Drug Delivery Systems, Salt Lake City, UT, February 26-28, 2007

David Grainger: 2007 Clemson Award for Basic Research, Society for Biomaterials

Sung Wan Kim: Honorary Doctorate, University of Twente, The Netherlands

Jindřich Kopecěk: Busse Lectures, University of Wisconsin, May 2006; Distinguished H. Morawetz Lecture, Brooklyn Polytechnic University, October 2006; International Distinguished Scientist Award, Japanese Biomaterials Society, November 2006
Zheng-Rong Lu: Finalist, Biotechnology Category, 2006 Stoel Rives Utah Innovation Awards

Bruce Yu: Presidential Early Career Award for Scientists and Engineers

Professional Editorial Board Activity

You Han Bae: Journal of Controlled Release (editorial board), Pharmaceutical Research (editorial board)

Thomas Cheatham: Journal of Biomolecular Structure & Dynamics (editorial board), Molecular Modeling and Computational Chemistry Results (associate editor)


James Herron: Journal of Pharmaceutical Sciences (editorial board)

William Higuchi: International Journal of Pharmaceutics (editorial board)

Sung Wan Kim: Molecular Therapy (editorial board), American Journal of Drug Delivery (editorial board), Macromolecular Research (editorial board), Biomaterials Research (editorial board), Journal of Artificial Organs (editorial board), Bioconjugate Chemistry (editorial board), Artificial Organs, Japan (editorial board), Pharmaceutical Research (editorial board), Journal of Biomedical Materials Research (editorial board), Journal of Biomaterials Science (editorial board)


Carol Lim: Journal of Pharmaceutical Sciences (editorial board), Pharmaceutical Research (editorial board), Journal of Controlled Release (editorial board), Bioinformatics, Biotechniques (editorial board), Current Pharmaceutical Design (editorial board), Molecular Pharmaceutics (editorial board), Multiple Sclerosis (editorial board), Toxicological Sciences (editorial board)

Zheng-Rong Lu: Pharmaceutical Research (editorial board)

Research Grant Activity

You Han Bae
National Institutes of Health (1R01 CA101850) “Engineered Intelligent Micelle for Tumor pH Targeting”

National Institutes of Health (2R01 DK56884) “Bioactive Polymers for Effective Islet Delivery System”

National Institutes of Health (1R01 GM072612-01A1) “A Novel Approach for Long Term Protein Delivery”

National Institutes of Health (R01 1R01 CA122356) “Micelle Surface Engineering for Active Targeting by Acidic Tumor Extracellular pH”


David Grainger
National Institutes of Health (R01 EB001473) “DNA Microarray Surface Analysis to Optimize Detection”

National Institutes of Health (R01 EB000894)
“Validating Macrophage Foreign Body Inflammatory Response”

U.S. Dept. of Interior - National Park Service contract “Brucella Abortus Survivorship using Ballistic Vaccine Delivery in Bison”

National Institutes of Health (R13 CA128063) “Conference Support: The Thirteenth International Drug Delivery Symposium”

James Herron

National Institutes of Health Rocky Mountain Regional Center of Excellence for Biodefense and Emerging Infectious Diseases “Research Portable Rapid Diagnostics System for Category B Toxins”

William Higuchi

National Institutes of Health (DEO6569) “Quantitation of Enamel Demineralization Mechanisms”

National Institutes of Health (GM063559) “Methods to Control Transdermal Iontophoresis Variability” S.K. Li, P.I; W.I. Higuchi, Co-I.

National Institutes of Health (EY015181) “Methods and Noninvasive Pharmacokinetics Studies to Improve Iontophoresis” S.K. Li, P.I; W.I. Higuchi, Co-I.

Steven Kern

National Institutes of Health (U54 AI065357) “Translational Critical Path Initiative: Pharmacokinetics/Pharmacodynamics for the Development of Vaccines and Therapeutics”

Univ. of Utah Technology Commercialization Project “Spatial and Temporal Assessment of EEG for Anesthesia and Sedation Monitoring”

Sung Wan Kim

National Institutes of Health “Functional and Targeting Polymeric Gene Carriers”

National Institutes of Health “Functional Biomaterials for Antisense Delivery to Islet”

National Institutes of Health “RGD-Polymer Targeting Plasmid to Angiogenic Endothelium”

National Institutes of Health “Polymer Carrier for Ischemia-Inducible Gene Therapy” D. Bull, P.I.; S.W. Kim, Co-P.I.

Jindřich Kopeček

National Institutes of Health (R01 CA51578) “Polymeric Drug Delivery System for Cancer Therapy”

National Institutes of Health (R01 EB005288) “Hybrid Hydrogels Self-Assembled from Graft Copolymers”

National Institutes of Health (R01 GM069847) “Bone Targeted Delivery of Anabolic Agents”

DOD (CDMRP) (W81XWH-04-10900) “Double-Targeted Macromolecular Therapeutics for the Treatment of Ovarian Cancer”

National Institutes of Health/FIC (FIRCA) (TW006260) “Immunochemoetherapy for Ovarian Cancer”

National Institutes of Health (R21 GM072875) “Dynamically Crosslinked Hydrogels” R. Stewart, P.I; J. Kopeček, Co-P.I.

Multiple Myeloma Research Foundation (MMRF) “Development of Novel Targeted Therapy for Multiple Myeloma” R. Lee, P.I; J. Kopeček, Co-P.I.

Carol Lim

National Institutes of Health (R21 DK070060-01), “Controlled Targeting of Proteins to Cell Compartments“

University of Utah; Funding Incentive Seed Grant, D. Rollins, P.I.; C. Lim, Co-P.I.


Zheng-Rong Lu
Publications and Scholarly Works

You Han Bae


Thomas Cheatham


T. N. Truong, M. Nayak, H. Huynh, T. Cook, P.


David Grainger


James Herron


William Higuchi


Steven Kern


Sung Wan Kim


W.S. Shim, S.W. Kim, E-K. Choi, H-J. Park, J-S. Kim, D.S. Lee, “Novel pH Sensitive Block Co-

Jindřich Kopeček


Carol Lim


Zheng-Rong Lu


Y. Feng, Y. Zong, T. Ke, Z.-R. Lu, “Pharmacokinetics and Blood Pool Contrast Enhancement of Gd-DTPA Cystine Copolymers and Gd-DTPA Cystine Diethyl Ester Copoly-


Bruce Yu


Professional Travel and Presentations

You Han Bae

Dr. Bae made several trips to Washington D.C. to attend the NIH Developmental Therapeutics Study Section. One of those trips also included an invited talk entitled “Functional Polymeric Micelle Technology for Tumor Extracellular pH Targeting and Multidrug Resistance” at the 2nd Annual Meeting of American Academy of Nanomedicine. In June he presented an invited talk at the AAPS Biotechnology Meeting entitled “Biomaterials for Immunoisolation and Functions of Transplanted Cells and Tissues.” At the annual AAPS meeting in San Antonio, Texas, Dr. Bae presented three papers and received the AAPS Fellow award. Among his international travels, Dr. Bae traveled to Korea to attend the World Congress on Medical Physics and Biomedical Engineering to present a lecture on “Tumor pH Targeting.” He also attended the IUPAC International Symposium on Advanced Polymers for Emerging Technologies, Commemorating the 30th Anniversary of the Polymer Society of Korea in Busan, Korea. While there, he presented a lecture entitled “Ultra pH-sensitive Polymer Nanosystems for Tumor Targeting and Chemotherapy.” Finally, Dr. Bae attended the CRS meeting in Vienna, Austria for the JCR editorial board meeting.

Thomas Cheatham

In an effort to focus on research and garner financial support critically necessary to continue his active research program, Dr. Cheatham cut back on travel, teaching and service activities over the past year. In spite of the cutback, he served on NIH study sections (Computational Biophysics 3/06 and Biophysics Fellowships 3/06) and NSF review panels (3/06, 6/06, 9/06, 11/06), including new duties on the NSF Cyber-Infrastructure User Advisory Group. He also was nominated for the College of Pharmacy Teaching Award (2006). Research related travel included attending two "CECAM" (Centre European de Calcul Atomique et Moleculaire) meetings in Lyon, France on biomolecular simulation of DNA and RNA and also multiscale modeling. CECAM has a rich history in the field dating back to the 70’s and are small, invitation-
only, focused 3-day meetings of leaders in the field. Additionally, Dr. Cheatham attended the ISQBP president meeting in Strasbourg, France (leaving the day before the Tour de France started) and accompanied his wife and family to the Controlled Release Society meeting in Vienna in July (including visits to collaborators in the Czech Republic). Upcoming travel includes visits to Oak Ridge National Labs for a meeting on the future of biomolecular simulation, visits to various universities and organization of a physical chemistry / comp division seminar at the ACS national meeting in Chicago, March 2007 on measures of accuracy and reliability in molecular simulation.

David Grainger

Dave flew nearly 180,000 air miles in 2006, an effort he hopes not to repeat any time soon. He spent substantial time in advisory board activities in Switzerland for the Swiss Center for Materials Excellence, and the AO Research Foundation (Biotechnology Advisory Board). He serves on the Scientific Advisory Board, University of Wisconsin NSF MRSEC “Nanostructured Interfaces”, where he traveled in September, 2006. He also participated as an ad hoc NIH reviewer on three study section panels in Washington, D.C., as a mail-in reviewer on several more panels, and as well as the Chair of the recent NIH Heart, Lung and Blood Institute Advisory panel on “Nanotechnology in Blood” in October. He organized and chaired a session on “Stem cell therapies” at the Regenerate tissue engineering meeting in Pittsburgh in April.

Grainger presented invited research seminars at the University of Wyoming, Boston University, University of Wisconsin, Polytechnic University (NYC), University of Utah (Chemistry), Tsukuba University, Tokyo Women’s Medical University, and Waseda University, Japan, Tsinghua University and the Chinese Academy of Sciences, Beijing, China, EPFL-Lausanne, and the ETH-Zürich, Switzerland, and University of Paris XIII, Paris IX, and Faculté de Médecine Lariboisière-Saint-Louis, Paris, France. He also traveled to Mainz, Germany to meet his former postdoctoral mentor and Utah friend, Helmut Ringsdorf, an amazing, healthy, active professor in retirement, and scientific inspiration.

Grainger presented an invited talk “Comparing macrophage behavior on biomaterials” at the annual German Society for Biomaterials meeting in Essen, Germany in November, and was recently a discussion leader at the inaugural Gordon Research Conference on Biointerfaces, Switzerland (October) and an invited speaker at the inaugural NanoBio 2006 international symposium in Tokyo, Japan (December). Grainger was program chair for the 2006 53rd International AVS Symposium for the Biomaterials Interface Division (San Francisco, November) involving 5 days and 10 parallel sessions of presentations, and ran a one-day topical symposium on “DNA at Surfaces” on-site. He also co-organized a one-day symposium on “biotechnology in bone repair” in Lausanne, Switzerland in October.

To finish a busy travel year, Dave provided an invited lecture at Buddy Ratner’s 60th Birthday Festschrift symposium in Maui in December.

Grainger was recently featured on local public radio (KPCW) discussing the element, fluorine, in the consumer interest for the Science in Society series organized by fellow faculty, Joe Andrade.

James Herron

In January 2006, Prof. Herron chaired two sessions on point-of-care diagnostics testing at the Biomedical Optics Society’s annual meeting at Photonics West in San Jose, CA. He also presented a talk at this meeting entitled: “Rapid single nucleotide polymorphism detection for personalized medicine applications using planar waveguide fluorescence sensors”. In early February, he participated in an NIH-NIAID scientific panel reviewing collaborative research grants (U01) in the infectious disease and biodefense areas. In May, he presented two presentations entitled “Antibody Structure and Principles of Biodetection” and “Antibodies, Biodetection, and Mix & Read Assays” to the 3M Corporation in St. Paul, MN. In October, he presented a talk entitled: “Portable Rapid Diagnostics Systems for Category B Toxins” at the annual Rocky Mountain Regional Center of Excellence (RMRCE) for Biodefense and Emerging Infectious Diseases meeting in Salt Lake City. In December he visited collaborators at the RMRCE
headquarters at Colorado State University to discuss relevant animal models for clinical testing of toxin screening systems for triaging patients exposed to biological toxins.

Steven Kern

I traveled to Asia this past Fall to participate in the World Congress of Medical and Biological Engineering and Physics meeting in Seoul, Korea. This allowed me to also participate in the 1st International Mini-symposium for Nano-Bio Drug Delivery Systems hosted at Seoul National University organized by Utah alumnus, Youngro Byun. I also was able to meet with other former Utahns, now prominent scientists in Korea, including Drs. Yong-Hee Kim, Ick Chan Kwon, Seo Young Jeong, and Ki Dong Park. It was a great opportunity to meet, discuss, and socialize with department alumni. I then went on to Beijing where I lectured at Beijing Medical University on our work in pharmacokinetic optimization of local drug delivery systems.

Sung Wan Kim

On December 1, 2006, University Distinguished Professor Sung Wan Kim was awarded an honorary doctorate degree from the University of Twente, The Netherlands, presented by Prof. dr. W.H.M. Zijm, Vice-Chancellor. Due to Dr. Kim’s illness, Dean John Mauger traveled to the University of Twente and accepted the award on Professor Kim’s behalf. Dr. Kim also presented numerous plenary lectures throughout 2005/2006. In August, he presented at the Asia Biomaterials Meeting in JeJu, Korea and the IUPAC 130th Korea Polymer Society, during October, Busan, Korea. Prof. Kim presented the plenary lecture entitled “PEI modification for the delivery of antiangiogenic and IL-12 plasmids” at the 9th International Conference in Drug and Gene-based Therapeutics, Crete, Greece, on September 2nd.

Jindřich Kopeček

In January, Henry presented a lecture at the Cedars-Sinai Medical Center in Los Angeles. In February he visited the Academy of Sciences in Prague, Czech Republic and continued to Helsinki, Finland to teach in a graduate course “Nanotechnology in Drug Research and Development”. Henry was back in Prague in March to present an invited lecture at the European Society for Clinical Investigation Annual Meeting. In April Henry presented department seminars at Duke University and the University of Kansas. He also gave a track keynote at the 3rd Foundation of Nanoscience Meeting at Snowbird, Utah. In May Henry was selected to present two Busse Lectures at the University of Wisconsin; he also presented an invited lecture at the Canadian Biomaterials Society Meeting in Calgary and a seminar at the College of Pharmacy in Toronto. In July Songqi Gao, Pavla and Henry traveled to the Controlled Release Society Meeting in Vienna, Austria. In her oral presentation Songqi summarized recent results in oral delivery of anticancer agents. In August Jon Callahan and Henry took part in the Gordon Conference on Drug Carriers in Medicine and Biology at Big Sky, Montana. Jon presented a poster on the subcellular fate of polymeric drug carriers. There were seven former members of our laboratory at the conference. During an enjoyable lunch (see picture) we caught up with the most important events. In September, Henry presented a seminar at the Georgia Institute of Technology. In October he presented a seminar at the University of Delaware. Then Alexander Malugin, Huaizhong Pan, Pavla, and Henry took part in the 4th International Nanomedicine and Drug Delivery Symposium in Omaha, Nebraska. Sasha presented two posters on subcellular fate of macromolecular therapeutics and on the biological properties of retinoid-HPMA copolymer conjugates. Huaizhong presented results on bone-targeted prostaglandins. After the meeting we visited the laboratory of Dong Wang, our former member, an Assistant Professor at the University of Nebraska. At the end of October Henry delivered the Distinguished H. Morawetz Lecture at the Brooklyn Polytechnic University. Prof. Morawetz is one of the pioneers of polymer science. At 91 he is in amazing shape both physically and intellectually. It was inspiring meeting him, Dr. A. Reiser, my undergraduate teacher of physical chemistry in Prague in the late 50s, Dr. J. Mijovic, and all others. This lecture series is supported by former students of Dr. H. Morawetz. In November Henry traveled to Japan to present an award lecture at the Japanese Biomaterials Society meeting in Tokyo; he also presented lectures at
Setsunam University in Osaka; Sankyo Company in Tokyo; and Tokyo Women's Medical University. Finally, in December Henry presented an invited lecture at the Drug Delivery and Translational Research Symposium at the Polytechnic University in Brooklyn and an invited lecture at the "Biomaterials from 2D to 3D to Larger than Life: A Symposium on the Future of Biomaterials to Celebrate Buddy Ratner's 60th Birthday" in Maui, Hawaii. Henry also chaired two NIH Biomaterials and Biointerfaces Study Sections (February and June).

Carol Lim

Dr. Lim and two of her graduate students, Mudit Kakar and Rian Davis, attended the Controlled Release Society Meeting in Vienna, Austria this summer. In addition, Dr. Lim participated twice on the NCI study section, Applied Emerging Technologies for Cancer Research (June and October). Dr. Lim also traveled with student J. Rian Davis to the APhA meeting in March.

Zheng-Rong Lu

In April, Dr. Lu traveled to Dallas, TX to participate in a grant review panel for the American Heart Association. In May, Dr. Lu and his colleagues, Yi Feng, Anagha Vaidya and Furong Ye, attended the 14th Scientific Meeting and Exhibition of International Society for Magnetic Resonance in Medicine in Seattle, WA. In July, Dr. Lu participated in an NIBIB/NIH review panel for the NIBIB Quantum Program, and the following week, he gave an oral presentation at the 32nd International Symposium on Controlled Release of Bioactive Materials in Vienna, Austria. In August, Dr. Lu and his colleague Todd Kaneshiro drove to Big Sky, Montana to attend Gordon Conference on Drug Carriers in Biology and Medicine. In September, Dr. Lu was invited to give a lecture at Abbott Laboratories in Chicago, IL, and spoke at the XVI Annual International Workshop on MRA, Basel, Switzerland. In October, Dr. Lu presented a seminar at the University of Wyoming, Laramie, WY and also represented the Department at GPEN 2006 in Lawrence, KS. He co-organized the Symposium on Molecular Imaging in Drug Discovery and Development at the AAPS Annual Meeting and Exposition at San Antonio, TX in November. In December, Dr. Lu traveled to Dallas, TX to present an invited lecture at 2006 Nanomedicine Symposium and to San Diego, CA to present an invited lecture at 2006 International Conference on Bio and Pharmaceutical Science and Technology.

Bruce Yu

Dr. Yu traveled to Washington D.C. in July to receive the Presidential Early Career Award for Scientists and Engineers at a ceremony in the White House.

Teaching and Coursework

For details, please visit our website: http://www.pharmacy.utah.edu/pharmaceutics/