

Department of Pharmaceutics and Pharmaceutical Chemistry University of Utah

# **Message from Department Chair**



Dr. Hamid Ghandehari

Welcome to our 2021 newsletter! This past year our department had significant growth. Two tenure-track faculty, Dr. Shreya Goel and Dr. Yue Lu, and two career-line faculty, Dr. Makoto Kondo and Dr. Alphonsus Ng joined our ranks. Another faculty search is underway for the endowed Sung Wan Kim position, the second faculty endowment in our department. Our faculty continued to receive grants and contracts from the National Institutes of Health, Department of Defense, foundations, companies, and other sources. Support from these sources under our faculty's leadership culminated in the publication of numerous manuscripts and authored by our trainees in high impact journals Communications, such as Nature Nature Regenerative Medicine, and Advanced Drug Delivery Reviews. In 2021 h-indices of several faculty members exceeded 65, and ranged up to 164. Our career-line faculty policy was updated to empower participation of career-line faculty in the day-to-day affairs of the department. Our graduate students received several awards from leading pharmaceutics and drug delivery organizations. We had seven incoming first year Ph.D graduate students, a higher number compared to recent years. New rotation program for incoming graduate students was established. This program allows the students to rotate in two labs during their first semester, learn about faculty's research interests, and make an informed decision in choosing a Ph.D mentor. The Department reinstated the summer undergraduate research program to introduce pharmaceutics and drug delivery to aspiring young students.

In 2021 the Department faculty voted on a change from **Pharmaceutics** and name Pharmaceutical Chemistry to Molecular Pharmaceutics. The name "Pharmaceutics and Pharmaceutical Chemistry" for our department was coined and approved in the early 1990s at a time when a significant number of faculty in the department focused on the physical chemistry and stability of pharmaceutical compounds in formulations. Since then the nature of our discipline as well as research in our department has evolved to include aspects such as antibody conjugates, vaccines and biologics, gene and cell delivery systems, molecular biology tools to develop novel drug carriers, better understanding of the biological barriers (tissue, cellular and subcellular levels), interface of materials with biology as it relates to drug delivery, and attempts for clinical translation of such technologies that

require molecular, cellular, organ and whole body level understanding of barriers for successful drug delivery to the target site. This name change is yet to be reviewed and approved by The University of Utah Graduate School and senior administration, to become official.

To commemorate the contributions of the late **Dr. Sung Wan Kim**, our faculty in collaboration with the international organizing committee members started the planning of the <u>18<sup>th</sup> International Symposium on Recent</u> <u>Advances in Drug Delivery Systems</u>, to be held in Salt Lake City, Utah on February 22-24, 2022 and available to participation in a hybrid format. These symposium series, inaugurated by the late Professor Kim, brought leading experts in drug delivery from across the globe to Utah for over a span of nearly four decades and played a significant role in training the young generation of scientists in the field. I look forward to your participation and support of this conference.

Beginning in 2020 our faculty met to update the Department's strategic plan which was discussed over several sessions and approved in August 2021. Over the next five years, the department will focus on several key strategic priorities:

- Developing a succession management plan to recruit and retain world class faculty.
- Maintaining and enhancing its profile to continue being at the leading edge of research.
- Creating new and sustaining existing partnership and collaboration opportunities locally, nationally, and internationally.
- Bolstering graduate student recruitment and retention in engaged research and education.
- Updating graduate curriculum.

- Developing clear branding and identity to articulate pharmaceutics to future generations of students and to more effectively promote the work and value of the department to wider audiences.
- Creating and nurturing an equitable, diverse and inclusive environment for faculty, students and staff.

To accomplish our goals, we need the support of alumni and friends.

In the coming pages you will find some of the highlights of the accomplishments and fun activities of our students, scholars and faculty in 2021, supported by our dedicated staff. I hope you enjoy reading this newsletter!

On a final note, I would like to thank our donors, alumni and friends for your generous support. I wish you happy holidays and look forward to hearing from you. I can be reached via email at hamid.ghandehari@pharm.utah.edu, on Twitter @H\_Ghandehari, or via LinkedIn. Visit our Department twitter account <u>@PHCEUutah</u>. To connect with us and with the alumni please visit the <u>department LinkedIn group</u>.

#### Yours,

Hamid Ghandehari, PhD Professor and George S. and Dolores Doré Eccles Presidential Endowed Chair, Pharmaceutics and Pharmaceutical Chemistry Professor, Biomedical Engineering Director, Utah Center for Nanomedicine https://pharmacy.utah.edu/pharmaceutics



18th International Symposium on Recent Advances in Drug Delivery Systems



# A TRIBUTE TO THE LATE SUNG WAN KIM



# FEBRUARY 22 – 24, 2022

Salt Lake City Marriott University Park Salt Lake City, Utah

Presented by the Department of Pharmaceutics and Pharmaceutical Chemistry The University of Utah

More information available at: https://na.eventscloud.com/ehome/radds2022/1152317/

We are honored to host the 18<sup>th</sup> International Symposium on Recent Advances in Drug Delivery Systems in Salt Lake City, Utah, held in tribute to the late Sung Wan Kim, pioneer in the field of pharmaceutics. Dr. Kim was a pillar of the University of Utah community, but his influence as a scholar, teacher, mentor, collaborator, and advisor was international.

# **Event information can be found here**

Get to know our new faculty! We are pleased to welcome Assistant Professors Drs. Shreya Goel and Yue Lu, and Research Assistant Professors Drs. Makoto Kondo and Alphonsus Ng to the department.

### Dr. Shreya Goel Assistant Professor



Please share about your professional background: My research program focuses on the development and implementation of advanced molecular imaging and nanobioengineering tools and technologies to refine the way we visualize, treat, and manage cancer and other diseases. A major research direction in my lab is to apply multiscale technologies imaging to 1) quantitatively visualize the pharmacokinetics and biodistribution of nano- and macromolecular therapeutics to better understand their in vivo interactions, and, 2) develop predictive and pharmacodynamic cues to improve treatment outcomes of nano- and macromolecular therapies through a personalized diagnostic approach.

#### Please share about your personal background:

I grew up in northern India and moved to the US to pursue my graduate studies in 2012. I spent about 5 years in Madison, Wisconsin and then lived in Houston, Texas for a while before moving to SLC. I've enjoyed my time in each of these places and look forward to putting our roots down here in Salt Lake. Where did you get your degree(s) and where were you working before this? I received my PhD degree in Materials Science and Engineering from the University of Wisconsin-Madison, while working with Dr. Weibo Cai in the Departments of Radiology and Medical Physics. I completed my postdoctoral fellowship at Houston Methodist Hospital with Dr. Mauro Ferrari and then transitioned to MD Anderson Cancer Center as a Research Investigator, working with Dr. Marty Pagel in the Department of Cancer Systems Imaging.

What excites you the most about getting started at the U and in our department? Starting my own research group in a leading research university is certainly very exciting and fulfilling; a dream come true. But working alongside so many luminaries whose work I've grown up reading since grad school is exhilarating! After few years working in hospitals and research institutes, I especially enjoy being back in the university academic life which just seems so much more vibrant and dynamic.

What attracted you to our department and to this position? The excellent reputation, resources, visionary leadership, and colleagues who are warm and collaborative, were important factors that attracted me to the department. The position comes with many exciting opportunities and challenges to establish and expand my research program, as well as the potential to collaborate widely with fantastic researchers across the campus, all of which I am looking forward to. What is something of value you bring to the department? My research program that integrates molecular imaging technologies with nano- and macromolecular medicine brings an exciting new direction to the already prolific research going on in the department. I hope that these tools and technologies will find applications and can integrate synergistically with the ongoing investigations. On a personal level, I look forward to building strong, collegial, and long-lasting working relationships with all the members.

Do you have any words of wisdom you would like to share with our students or recent graduates? Perseverance is the measure of your belief in yourself. Graduate school can be challenging. It is very different from the structured education that most students are used to, and for many it coincides with one of the more turbulent phases in their lives. It is easy and normal to get demotivated at times and feel like giving up. But the trick is to "Keep swimming, just keep swimming." – Finding Nemo

What is one thing you wish you had known or done differently when you were a graduate student? I wish I had known that it is okay to not know. It took me two years to realize that everyone feels like a fool at some (or most) point during their Ph.D. In fact, if you feel like you know it all, you're doing it wrong.

What is your favorite thing about living in Utah so far? I love that on most days I can just look outside my window and see the mountains. And I'm still coming to terms with the fact that I can wake up and decide to go hiking and skiing, and still be back home in time to do mundane stuff like grocery shopping and cooking dinner. I look forward to learning how to ski without giving up when I fall. When not working, what would we find you doing? Reading and yoga are very tightly integrated into my daily routine. On the weekends, I loved exploring farmers markets and local places for coffee and plants. Now that I am here, I'll probably switch to exploring new hiking trails.

#### Dr. Yue Lu Assistant Professor



Please about your professional share background: Looking back at my professional background, I came to realize that I have traveled through an unconventional path. At every transition in my career, I would make drastic change to my field of study, from polymer engineering in undergrad, to drug delivery, biomaterials, and nanomedicine in graduate school, to systems biology and immuno-oncology in postdoc. These changes were guided by my insatiable intellectual curiosity, and for personal reasons, my desire to step up to the challenges of cancer.

My current research interests lie at the intersection of controlled drug delivery, quantitative microscopy, and systems biology, aiming to develop effective therapeutic strategies and formulations for cancer and infectious diseases.

**Please share about your personal background:** I grew up in Hai'an, a small city on the east coast of China. Before moving to SLC, I lived in Seattle and

Los Angeles. At the moment, I am living close to the U at East Central, and I am looking forward to getting a dog and a cat.

Where did you get your degree(s) and where were you working before this? I received my B.S. degree in Chemistry from Nanjing University, and Ph.D. at the University of North Carolina at Chapel Hill and North Carolina State University, under the guidance of Dr. Zhen Gu in the Joint Department of Biomedical Engineering. I completed my postdoctoral fellowship with Dr. James R. Heath at the Institute for Systems Biology and Caltech.

What excites you the most about getting started at the U and in our department? I am excited about working with visionaries in pharmaceutical research and clinicians in the cancer center, as well as getting access to stateof-the-art research facilities on the campus.

#### Dr. Makoto Kondo Research Assistant Professor



**Please share about your professional background.** I finished my Ph.D work on epithelial cell biology and cell sheet tissue engineering as well as participating in practical cell sheet manufacturing for treating patients. I studied hematopoietic and mesenchymal stem cell niche at Karolinska Institute, Sweden.

My current research goal is to develop "sustainable" cell-based regenerative medicine. demonstrations Laboratory of tissue engineering and cell therapy concepts have rapidly advanced. However, unreliable, inconsistent clinical outcome and limited production scalability are critical barriers to bringing promising new cell therapies to the public at practical levels. Our research directly addresses this issue by using scalable allogeneic cell sources for reasonable target patient populations and by developing quality validation methods.

What is something of value you bring to the department? Global cell therapy market is largely growing, but stable safety and efficacy

with efficient cell delivery systems are still scope for improvement. With my expertise in stem cell biology and translational cell therapy including GMP facility operation, I would like to develop new methods to enhance safety and efficacy of cell sheet tissue engineering and accelerate clinical translation of cell sheet therapy as a practical "cellular drug" delivery method. Such an approach can bring additional pharmaceutical strategies.

What excited you the most about getting started at the U and in our department? I worked as a postdoc here, so I knew of the department's warm and encouraging environment where the chair, Dr. Ghandehari, neighbor labs, and staff are so close and always helpful. I also like that the U has many core labs that are facilitating creative research projects.

What is your favorite thing about living in Utah? Although I was an indoor enthusiast playing drums and searching for nice restaurants in Tokyo and Stockholm, the Utah environment naturally drives me to hiking, skiing, and paddle boarding, etc. Sumako and I are looking forward to enjoying these activities here together with our baby daughter, Sara, in the future. What attracted you to our department and to this position? The Department is a leader in drug delivery research and has a successful history of translation. There are also numerous collaboration opportunities through the College of Pharmacy, the Health Sciences Center, The Huntsman Cancer Institute, the Department of Biomedical Engineering, and the Utah Center for Nanomedicine.

What is something of value you bring to the department? My interdisciplinary training will bring new tools and a fresh perspective to the realm of pharmaceutics, integrating systems biology approaches and advanced molecular analysis techniques with drug delivery research. My research program will open up new opportunities for collaborations within and outside the department.

Do you have any words of wisdom you would like to share with our students or recent graduates? Do not be afraid to step out of your comfort zone. It's okay if things don't go as planned—always be opportunistic, open minded, and flexible.

What is one thing you wish you had known or done differently when you were a graduate student? Although persistence is important in research, there are also times when it makes sense to shelve a project and work on something else, especially when a new opportunity arises.

What is your favorite thing about living in Utah so far, or what do you look forward to doing the most in Utah? I look forward to exploring hiking trails and participating in winter activities in Utah.

When not working, what would we find you doing? When not working, I like exploring the local food scene, enjoying the outdoors, watching sports, and reading.

### Dr. Alphonsus Ng Research Assistant Professor



Please share about your professional background. I am a biomedical engineer that trained with Dr. Aaron Wheeler (analytical chemist, University of Toronto) and Dr. James Heath (nanochemist, Caltech & Institute for Systems Biology), both of whom have a penchant for developing technologies for medicine. This training has made me into a technology developer in research areas of microfluidics, point-of-care diagnostics, and single cell analysis, with applications in infectious diseases and cancer immunology.

What is something of value you bring to the department? I enjoy identifying bottlenecks in science and medicine and coming up with technological solutions that can make things easier, faster, and more scalable. I hope to contribute to the work of my colleagues and spread my love for technology to the students.

What excites you the most about getting started at the U and in our department? There is nothing more exciting than meeting new people and learning about their work. This inspires me to look for those bottlenecks and think of new ideas.

What is your favorite thing about living in Utah so far, or what do you look forward to doing the most in Utah? The mountain views of Utah often make me pause and look. They seem to change throughout the day, depending on the temperature, weather, and direction of light. I look forward to skiing on those mountains in the winter.

#### **Student Awards and Accomplishments**



Bhuvan Yathavan

drugs to treat chronic anti-inflammatory rhinosinusitis.



**Tommy Gambles** 

Bhuvan Yathavan, graduate student in the Ghandehari and Alt labs, received the 2021-2022 Skaggs Graduate Research Fellowship Award. His work involves the development of a nanocarrier drug delivery system to deliver

> At the (virtual) Annual Meeting of the Controlled Release Society, Tommy Gambles from the Kopecek lab delivered an oral presentation, "Crosslinking of CD38

receptors triggers

apoptosis of malignant B cells". He was also the recipient of the Travel Award from the Office of Graduate School for participating in the event.



Jason Grunberger

Jason Grunberger from the Ghandehari lab received the 2021-2022 Dr. Paul B. Myrdal Memorial Pre-Doctoral Fellowship in from Pharmaceutics the Foundation for American Pharmaceutical Education. This was awarded based on his academic performance, leadership, and description of

his research project.

Jason was also awarded a 2021-2022 University of Utah Graduate Research Fellowship. Jason's research focuses on designing a novel silica nanoparticle system for controlled drug delivery.









Ph.D graduate Jiawei Wang (Kopecek Lab) Spring 2021

Dissertation defense Jessica McCombs (Owen Lab) April 2021

Dissertation defense **Hallie Thorp** (CSETC) August 2021



**Congratulations!** 





Ph.D graduate Nitish Khurana (Ghandehari Lab) Summer 2021

Dissertation defense **Erica Vander Mause** (Lim Lab) October 2021

Dissertation defense Sophia Bou-Ghannam (CSETC) June 2021

#### 2021 Summer Undergraduate Research Program

The Summer Undergraduate Research Program students at the Department of Pharmaceutics and Pharmaceutical Chemistry successfully concluded their 10-weeks internship in August. The students presented the results of their research experience at an in-person poster presentation where they discussed their experience with other students and Pls.

The program, directed by **Dr. Paris Jafari**, offers four funded summer research internships for undergraduate students at US institutions majoring in science and engineering. It provides an opportunity for students to gain first-hand experience in scientific research under the mentorship of world-class scientists. Research areas in the department include drug delivery, gene therapy, cell-based delivery, immunotherapeutics and vaccines, precision medicine, and theranostics.

We look forward to the future of this program and the opportunity to provide more

students research and learning experience in our department!



2021 Summer undergraduate students Jaxon George, Tavie Parker, Christian Fielding, and Madison Parrot with program director Dr. Paris Jafari.

#### 2021 College of Pharmacy Summer Science Program



Summer 2021 high school students with Dr. Carol Lim

The University of Utah College of Pharmacy hosted the 12<sup>th</sup> annual summer science program for students from Juan Diego Catholic High School, Waterford High School, and West High School. This program, sponsored by the ALSAM Foundation, is a summer-long program for high-schoolers who are interested in pharmacy, chemistry, and science. This year was the largest cohort of students yet! The program is run by **Dr. Carol Lim** and Dr. Christine Celestino at JDCHS. Highlighted below are a sample of the impressive accomplishments from our team in 2020 and 2021, including some publication highlights. For a complete list of all department members' publications, please visit:

**Pharmaceutics and Pharmaceutical Chemistry Research: Publications** 

#### Cell Sheet Tissue Engineering Center

With successful progress of the collaboration work with SCM Lifesciences, the **Cell Sheet Tissue Engineering Center** (CSTEC) and SCM have extended their collaborative research agreement. The full story on this exciting news can be found <u>here</u>. From this, and other collaborations at The University of Utah School of Medicine (orthopedics, OB/GYN, dentistry, and hepatology), CSTEC has published 14 papers and submitted 3 provisional patents this year.

**Dr. Teruo Okano** was awarded The Japanese Society for Regenerative Medicine Achievement Award 2021 for his remarkable achievements regarding the progress of regenerative medicine and the development of the Society.

Drs. Makoto Kondo and Teruo Okano developing "sustainable" have been а regenerative medicine for joint cartilage injury using donor juvenile cartilage source with interdisciplinary collaboration with Department of Orthopaedics, University of Utah and Department of Orthopaedics, Tokai University, Japan. In contrast to order-made autologous cell therapy, their allogeneic cell sheet technology is a promising solution for treating a number of patients with lower cost. Their results show safety of the engineered cell sheets, and demonstrate native-like hyaline cartilage regeneration by the implanted human cell sheet in their animal xenograft model. This research was published in the October 2021 issue of npj Regenerative Medicine.

Additionally, CSTEC graduate students Hallie Thorp and Sophia Bou-Ghannam successfully defended their Ph.D. dissertations in 2021 under Dr. David Grainger's auspices, each generating numerous peer-reviewed publications on human mesenchymal stem cell properties relevant to improved human cell therapies.



Dr. Mingnan Chen and lab members

# Chen Lab

Dr. Mingnan Chen's lab received one of seven awards from the 2021 Skaggs Scholars Program. This award, sponsored by the University of Colorado Anschutz Medical Center and the ALSAM Foundation, supports a two-year research project that develops new therapeutics for type-1 diabetes. The project will be conducted through a collaboration effort between Dr. Chen's group and Dr. Shaodong Dai's group at the University of Colorado. Dr. Chen is grateful to the generous support from the ALSAM Foundation so that he and Dr. Dai are able to team up and explore a combination approach to suppress diabetogenic T cells and treat diabetes.

The Chen Lab celebrates their two new graduate students, Reza Moosavi and Yujia Zhai. Both students were admitted originally for Fall 2020. However, they had to postpone their program due to the COVID-19 pandemic and travel restrictions. The lab truly appreciates every effort that Reza and Yujia made to join the research team at the earliest time possible despite all the hurdles. Excitingly, Yujia and Reza turned their unplanned delay into something positive and solid: a paper! They coauthored a review article on the topic of therapeutic development for autoimmune disease, entitled *"Immune"* Checkpoints, a Novel Class of Therapeutic Targets for Autoimmune Diseases." The manuscript was published in Frontiers in Immunology. Kudos to Reza and Yujia, especially Yujia as the leading author of this review.

Chen's lab is continuing its endeavor of creating better immunotherapeutics for cancer and autoimmune disease patients and is grateful to the new funding supports from Huntsman Cancer Institute and the ALSAM Foundation received in 2021. Going forward, the lab continues its welcome to new members and the progression of licensing and translating therapeutics developed in-house.

#### Ghandehari Lab

**Dr. Hamid Ghandehari**, Dr. Jeremiah Alt (Otolaryngology), and their collaborative team received a School of Medicine Seed Grant based on their research for targeted delivery of antiinflammatory agents for treatment of chronic rhinosinusitis (CRS). The goal of this project is to design liposomal delivery systems to target the inflamed sinonasal tissue in CRS. This seed grant provided the foundation for an NIH Ro1 grant under review. A manuscript from this grant, first authored by **Dr. Nitish Khurana** was featured on the cover of *Nanomedicine*, *Nanotechnology*, *Biology and Medicine* (N. Khurana, B. Yathavan, J.



Ghandehari lab members in October 2021

Jedrzkiewicz, A.S. Gill, A. Pulsipher, J.A. Alt\*, H. Ghandehari\*. Vascular Permeability in Chronic Rhinosinusitis Enhances Accumulation and Retention of Nanoscale Pegylated Liposomes, Nanomedicine, 38:102453, 2021).

In collaboration with Dr. Robert Judson-Torres (Huntsman Cancer Institute), Drs. Hamid Ghandehari and Paris Jafari were granted a Research Award from HCI for their project "Development and preclinical assessment of local transdermal delivery for systems chemoprevention of nevus formation and melanoma initiation." The one-year, \$35,000 pilot grant from the HCI Melanoma Center intends to support collaborative research resulting in published manuscripts and melanoma-related grant submissions. This seed grant provided the data for an NIH Ro1 grant that was funded entitled "Nevus associated microRNAs as mediators of BRAF-induced growth arrest and biomarkers of melanoma progression" (PI Judson-Torres, Co-Investigator Paris Jafari)

**Dr. Jafari** was awarded an ALSAM research foundation grant on her topic "3D bioprinting of organoids." **Paul Williams**, a student member of the recently established Post-Baccalaureate Research Education Program at the University of Utah, works on this project.

**Nitish Khurana,** pharmaceutics graduate student in the lab successfully defended his Ph. D

dissertation, and **Matthew Talbot** received his Master's degree in Biomedical Engineering. Ph. D. student **Douglas Steinhauff** was awarded the second-place prize for his oral presentation at the 2021 Utah Biomedical Conference. Steinhauff's research funded by an NIH NCI Ro1 focuses on silk-elastinlike protein polymers to develop a thermoresponsive enema system to enhance the bioaccumulation of an anti-inflammatory semisynthetic glycosaminoglycan.

Blair Armstrong a Biomedical Engineering undergraduate student in the Ghandehari Lab was awarded the Outstanding Undergraduate Researcher Award. New graduate students Tanya Chibber and Ethan Griswold joined the lab. PharmD students Justin Nielsen, Shirley Luo, and Alexa Ellis continued their PharmD project in the lab.

The group received funding from J<sub>3</sub> Biosciences for contract work on controlled delivery from a vaginal ring. In 2021 the Ghandehari team published 8 manuscripts and one book chapter. Another 4 manuscripts are under review.

#### Kopecek/Yang Lab

September Since the 2020, Kopeček/Yang Lab published four articles: Yachao Li et al., "Dendronized polymer conjugates with amplified immunogenic cell death for oncolytic immunotherapy" in Journal of Controlled Release; Lian Li, J. Wanget al., "Combination Treatment with Immunogenic and Polymer-Drug Conjugates Anti-PD-L1 of Advanced Tumors in a Transgenic MMTV-PyMT Mouse Model of Breast Cancer." in Journal of Controlled Release. M.T Gambles et al., "Crosslinking of CD<sub>3</sub>8 Receptors Triggers Apoptosis of Malignant B Cells" in Molecules. J. Wang, et al., "Nanomedicines in B-Cell Targeting Therapies" in Acta Biomaterialia.

**Dr. Jiyuan (Jane) Yang** (PI) and her coworkers successfully finished the first year of



Kopecek lab members on a trip to Yellowstone National Park in June 2021

her Department of Defense supported grant (\$1,509,750), "KT-1 Paired with Multivalent Polymer-anti-PD-L1 Peptide Hybrid: A Synergistic Chemoimmunotherapy for Treatment of Triplenegative and Metastatic Breast Cancer".

Additionally, **Dr. Yang** (PI) received a Seed grant from PIVOT on the evaluation of biological properties of new antibody-drug conjugates (\$34,600).

The NIH supported project "Drug-free Macromolecular Therapeutics" (**Dr. Jindřich** (Henry) Kopeček, PI) is moving well in the second year of a 5-year grant (\$1,744,220).

The new immune checkpoint inhibitor "Multivalent Polymer-Peptide Antagonist" was accepted by the National Characterization Laboratory (NCL) at the Frederick National Laboratory for Cancer Research (NCI) for preclinical evaluation. The award will focus on combination chemotherapy and immunotherapy of breast cancer. Our lab will provide the conjugates and the in vitro and in vivo testing at NCL will be free of charge.

Graduate student **Jiawei Wang** defended her Ph.D. dissertation "Drug -Free Macromolecular Therapeutics as a B Cell Depletion Strategy" on January 26<sup>th</sup>, 2021. Upon her completion of the program, she accepted a

teaching." Dean Peterson's entire announcement

Scientist position with Sorrento Therapeutics in San Diego.

The lab recently welcomed several new members: Dr. Inush Kalana, postdoctoral fellow, Dr. Aparna Shukla, postdoctoral fellow, Jiahui Li, PharmD/Ph.D. student, Yunyue Zhang, undergraduate student.

#### Lim Lab

**Dr. Carol Lim** received an NIH R21 grant and a NIH R01 grant from the National Cancer Institute, National Institutes of Health, both of which started in February 2021.

The first grant, the NIH R21, is a collaboration with the Huntsman Cancer Institute members Dr. Kimberley Evason and Dr. David Lum, entitled "Re-engineered Mitochondrially Targeted p53 Gene Therapy in Liver Cancer." This project uses a novel p53-Bad hybrid for gene therapy of cancers (with application to many other types of cancers as well). It is the brainchild of graduate student **Phong Lu** who pioneered the work in vitro in ovarian cancer and is being tested in liver cancer by post-doc **Katherine Redd Bowman**.

The second grant is a NIH RO1 for \$1.25 million, "A Leukemia Cell-Specific Coiled-Coil Protein for Treatment of Chronic Myeloid Leukemia (CML)." This is a collaborative effort with Dr. Lim and Dr. Thomas Cheatham (Medicinal Chemistry), Dr. Michael Kay (Biochemistry) and Dr. Michael Deininger (formerly at the HCI). This Ro1 project will design and test a new protein therapeutic for CML.

Effective January 2021, Dr. Lim was named Associate Dean for Research for the College of Pharmacy. In his announcement of this new role, College of Pharmacy **Dean Randy Peterson** highlighted Dr. Lim's research and qualifications for this role, specifically as an "exceptional mentor and educator, having mentored numerous students, postdocs, and junior faculty members and received awards for both mentoring and Owen Lab

can be found here.

**Dr. Shawn Owen** and his collaborator Dr. Vedran Radojcic, M.D. (Hematology/Internal Medicine) were one of four recipients of the College of Pharmacy's Seed Grants. Their research aims to develop antibody-drug conjugates to prevent graft-vs-host disease in allogeneic transplantation.

Dr. Owen has been collaborating to develop an innovative COVID-19 antibody test with a research team from the University of Toronto led by Igor Staglier, Ph.D. This assay reliably shows antibodies but can also indicate how levels change over a period of time. It is less expensive than current tests and provides results quicker. This collaboration has resulted in a prestigious Nature Communications publication and has been highlighted by various platforms (Very Well Health and Nature - Bioengineering Community). Dr. Owen has been very proactive in finding science-based solutions to the COVID-19 pandemic and his team is completing the iteration of their assay to measure neutralizing antibodies against all of the major COVID-19 variants.



Owen lab members in September 2021

# 2020 Holiday party

The department's annual holiday party looked different in 2020, but our SAC officers did an admirable job keeping it festive and delicious! They provided boxed dinners for pick up and organized fun games and activities over Zoom. It was a wonderful way to celebrate the end of a most unusual year!



# Meet our 2021-2022 Student Advisory Committee

The purpose of SAC is to promote communication and interaction among students, faculty, staff, and administrators.



#### <u>Pahweenvaj (Sake)</u> <u>Ratnatilakanabhuket</u>



Reza Moosavi



Tanya Chhibber (Chair)

# Fall 2021 Welcome Back Picnic

Our new graduate students were welcomed on August 12, 2021, with an all-day orientation that culminated in an End of Summer picnic with department friends, family (and even some dogs!). In addition to delicious food, there were games of cornhole, a three-legged race, and even a student vs. faculty tug-of-war competition! The faculty won this year, but a rematch is planned for 2022!



# Please welcome our new graduate students!

#### **Braxten Hornsby**

B.S., Idaho State University Areas of interest: varied

#### Morgan Marsh

B.S., University of Oregon Areas of interest: Protein engineering for therapeutic or diagnostics

#### Thomas McPartlon

B.S., SUNY Binghamton Areas of interest: the design and characterization of drug delivery systems using new biomaterials

#### **Neetu Singh**

B Pharm, Pune University, India M.S., Creighton University Areas of interest: controlled drug delivery, nanomedicine

#### Yujia Zhai

B.S., China Pharmaceutical University Areas of interest: cancer immunotherapy

#### Tianxiao "Terry" Zhang

B.S., Shenyang Pharmaceutical University M.S. University of Southern California Area of interest: molecular biology and biotherapeutics

#### Jiahui Li

Currently in the PharmD program at the University of Utah, expecting to graduate Spring 2022

Area of interest: I am interested in drug development, working on the drug-free delivery system.

#### Welcome our 2021 - 2022 GPEN exchange students!

Global Pharmaceutics Education Network, GPEN, Inc. was established to foster scientific exchange in the field of pharmaceutics at an international level, and to facilitate the exchange of students and faculty between GPEN institutions for the purpose of enhancing the educational and research experiences of predoctoral and postdoctoral students.

The Department of Pharmaceutics and Pharmaceutical Chemistry at the University of Utah and the Department of Pharmaceutics and Biopharmacy at Philipps-University Marburg (Germany) have a collaborative program for the promotion of cooperation on research in novel drug delivery systems.

In Fall 2021, two GPEN exchange students joined our department for six months visits!



**Till Suenner** Ghandehari Lab Working on a micelle-based drug formulations



Marin Wahler Chen Lab Researching immunotherapeutics to treat autoimmune diseases or cancer

# WE ARE HIRING!

The University of Utah Department of Pharmaceutics and Pharmaceutical Chemistry seeks excellent, diverse applicants for the Sung Wan Kim endowed faculty position at the associate or full professor levels.

The Faculty Position in Drug and Gene Delivery is supported by an endowment honoring Dr. Sung Wan Kim, a pioneer in drug delivery and biomaterials research who was Distinguished Professor of Pharmaceutics and Pharmaceutical Chemistry and Distinguished Professor of Biomedical Engineering until his untimely passing in 2020. Dr. Kim's intent for the endowment was to support a leader in drug and gene delivery. The Department and the University of Utah offer unparalleled opportunities for interdisciplinary collaborations and actively encourage translational research with clinicians and scientists in the Health Sciences Center and the Huntsman Cancer Institute.

More information can be found here

# The Gregory Bae Travel Award

Established by Karen and John Mauger in memory of Gregory Bae, son of Dr. You Han and Joon Bae.

**Prize Purpose**: Gregory was known for his compassionate mentorship and care of his students. In this spirit, the purpose of this prize is to help a graduate student with travel costs to attend a conference where they will be presenting their research. Presenting one's research at a national/international conference is one of the requirements for graduation.

**Prize Details:** The Gregory Bae Award consists of a \$500 award to be put towards travel expenses not covered by another means.

**Application Process:** Nomination packet will be developed by the candidate and submitted to their Department Administrator Manager as a single pdf. The packet should include:

- Conference abstract.
- A copy of your CV.
- Brief letter of support (minimum 1 paragraph maximum 2 paragraphs).
- Conference information and estimated cost of travel expenses.

**Applications will need to be received by January 31, 2022**. Awards will be available for Spring or Summer conferences.

# Say hello to youngest members of the Department!



Post-doctoral fellow **Sumako Kameishi-Kondo** and Research Assistant Professor **Makoto Kondo** welcomed baby Sarah Emilia on July 2, 2021.



Department Project Coordinator Hallie McCarthy and husband Brendan welcomed baby Esther Hortensia on February 25, 2021.

# **Department Staff Members**

Our staff members are always available to answer your questions and act as a resource to our alumni and friends. Please do not hesitate to reach out if you ever need us!

> <u>Dalynn Berglund</u> Administrative Manager <u>Jing Zhou</u> Accountant <u>Hallie McCarthy</u> Project Coordinator

### Connect with us!

**Department Homepage:** <u>https://pharmacy.utah.edu/pharmaceutics/</u>

Twitter: <u>@PHCEUutah</u>

LinkedIn: https://www.linkedin.com/groups/3373662/

# Help our Department Grow!

### **Donor Opportunities**

We welcome contributions to make a difference in our department. Please consider donating to the department in the following ways:

**Graduate Student Emergency Health Fund**: Student health insurance is not adequate if students have a major health crisis, such as emergency surgery. We would like to have an emergency reserve fund available to students for catastrophic situations.

StudentRotation,SummerUndergraduateProgram and Scholarships:Please consider donating towards graduatestudentrotationfunds,summerundergraduateinternship, andscholarshipsfor exceptional students in our department.

**Fox Award donations:** Each year, we honor the memory of Dr. Jeffrey Fox with this award. The award is intended to recognize an outstanding graduate student based on the recommendation of his or her peers. Award recipients are selected based not only on academic merit, but also on service to the Department, the University, and to fellow students.

**Department development account:** Funds to be used at the department's discretion. We particularly need your support to help continue our *Summer Undergraduate Research Program, first semester graduate student rotations*, and our *Biennial Symposia*.

**Other donation opportunities**: Be creative in helping our department thrive! Please contact us if you have other donation ideas. Thank you to our 2020 - 2021 Department supporters

George S. and Dolores Doré Eccles Foundation Endowed Chair

> Sung Wan and Hee Kyung Presidential Endowed Chair

Dinesh C. and Kalpana D. Patel Endowed Fellowship

> Pad Chivukula (Arcturus Therapeutics)

Carolyn Asbury You Han & Joon Bae Dalynn Berglund Lisa Chandler Mingnan Chen & Shuyun Dong Anil Chhettry David & Anna Dong Hamid Ghandehari & Mitra Javdan David Grainger Jindrich (Henry) Kopecek & Pavla Kopeckova William Lambert John & Karen Mauger Sandra Sims & Benjamin Maxey Monika Sima **Rachel Talney Brook Walton** Kevin Warner Jiyuan Yang