

# IPPH NEWSLETTER

## Faculty Spotlight: Dr. Young Jeong

Professor Hyunyoung (Young) Jeong is the newest member of our IPPH Faculty. Dr. Jeong's research interests include identification and characterization of factors that modulate drug disposition and drug responses to provide a knowledge base for precision medicine. She has studied the effects of pregnancy and genetic polymorphisms on drug metabolism and pharmacokinetics. Her most recent work focuses on how gut microbiota (a collection of trillions of microbes in the intestine) affects host responses to drugs. In close collaboration with Dr. Hyunwoo Lee (a microbiologist), Jeong lab has been identifying genetic/biochemical factors involved in gut bacterial drug metabolism and the alteration of host physiology, by using experimental tools in pharmacology, molecular biology, and bacterial/eukaryotic genetics.



Dr. Jeong grew up in South Korea where most students focused on getting good grades throughout all years of school and on the college entrance exam. She was one of them, spending little time to dream about what you want to do when you grow up. "I chose to go to pharmacy school, thinking that it would provide a "secure" job" she states. Naturally, quickly after she started college, she recalls, "I got lost and started wandering, thinking aimlessly what I wanted to do with my life and career". What awakened her was a lecture by a professor of clinical pharmacy about acid-base imbalance and how to use drugs to treat the diseases. Looking back, the topic does not excite her much, but at that time, the idea of integrating physiology, pharmacology, and chemistry to make a decision for a patient fascinated her. So, she decided to pursue a PharmD degree to become a "drug therapy" expert and came to the US.

*Continued on page 3*

## Seventeenth Annual Garnet E. Peck Symposium

***"New Therapeutic Frontiers: Immunotherapies  
from Genes to Cells"***

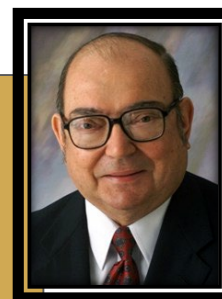
**April 7, 2022**

Purdue University, West Lafayette, Indiana

The Peck Symposium is hosted by the Department of  
Industrial and Physical Pharmacy

<http://www.ipph.purdue.edu/peck/>

Registration questions? Email Cynthia Everhart, IPPH  
Communications Coordinator [ceverha1@purdue.edu](mailto:ceverha1@purdue.edu)



# GREETINGS FROM THE HEAD

Dear Alumni and Friends,

It is great to be back in touch with our Alumni and friends. COVID-19 has been a huge challenge for us. It began with the university going entirely online in Spring of 2020, followed by a Fall 2020 and Spring 2021 of hybrid classes, social distancing and masks. We had a brief reprieve in July 2021 with no masks, only to be followed up with the return of masks in the Fall of 2021.



Also, it has proven to be the time of great sadness as many people have lost parents, siblings, friends and even children to COVID-19. My greatest sympathies go out to those who have lost someone.

COVID-19 has also been a time of change. Just as the pandemic was beginning Jen Gray (our Communications & Events Coordinator) and Nancy Cramer (our Administrative Assistant) were promoted to other positions on campus, leaving only Mary Ellen Hurt and myself to manage the operations of IPPH. Without Jen to create the newsletter we were on hold. Fortunately, we were able to hire Cindy Everhart who has done a wonderful job of helping us manage by taking over Jen and Nancy's responsibilities, including creating this newsletter.

We are very excited to have added Dr. Young Jeong to our faculty. She came to us from UIC and is an expert in pharmacokinetics and gut metabolism. We have also added twelve new graduate students, which is possibly a record number for IPPH. We look forward to teaching them and shaping them into effective researchers and teachers.

Happy Holidays and Boiler Up!

Eric Munson  
Dane O. Kildsig Chair and Department Head

## Industrial and Physical Pharmacy Thinking of the Future

IPPH is in the process of revising our strategic plan. As we think about the future we have to think about what we would like to do, why we should do it, and how we are going to do it. The what is described in the strategic plan, which we are in the process of revising. We have to ask why we are doing what we are doing. This requires self-reflection and hopefully a grasp of what will be relevant in 10-20 or even 30 years from now. How we do it is dependent upon the faculty, staff, students and alumni as we try to implement the vision, mission and plan of the department.

As always, we challenge everything.

As I mentioned previously, we are still in the process of discussing changing the name of the department to better reflect both our expansion into biologics as well as providing some clarification to people outside our discipline about what we do as a department.

If you have any thoughts or feedback on this initiative, please feel free to email me at [munsone@purdue.edu](mailto:munsone@purdue.edu) or call 765-494-1450.

## Faculty Spotlight: Dr. Young Jeong

*(Continued from front page)*

She joined the PharmD program at the University of Illinois at Chicago (UIC) where she had ample exposure to pharmacotherapy, which she thought was great. Ironically, as she got to learn more about drugs, she began wondering about where and how the knowledge all came from. Soon, she ended up applying for a graduate program. She chose pharmacokinetics as a major because the research area felt closest to clinical pharmacy that excited her in the beginning. "Getting a PhD wasn't as much fun as I initially thought (e.g., most experiments are supposed to not work), but the reward of getting things to work after a long struggle felt very sweet" she says smiling. Importantly, it also provided an opportunity for her to work with Hyunwoo Lee, a graduate student at that time and now her husband and indispensable collaborator.



**Dr. Jeong's Group 2021**

Some professional societies Dr. Jeong is active in includes the American Society of Pharmacology and Experimental Therapeutics (ASPET) and International Society for the Study of Xenobiotics (ISSX). She attends the annual meetings every year and proposes ideas from symposiums held during the meetings. "The annual meetings provide opportunities to put faces to the work I read about in journals (so cool!)." Also, she makes friends who speak the same "research language" and share similar concerns about research and academic life. They have become invaluable part of her research career.

About 5 years ago, she started a close collaboration with Hyunwoo on the topic of gut microbiota and drug therapy. "We were having lots of fun, but soon realized that we need certain resources for the research (e.g., a gnotobiotic animal facility)" says Dr. Jeong. Purdue happily filled that need for a fresh start on that research.

When asked what she finds most gratifying about her research, she stated that she loves having the freedom to follow her own curiosity and discovering something new!

With regard to her students, Dr. Jeong enjoys watching them grow as scientists. PhD students spend about 5 years in a research lab. She believes the 10,000-hour rule applies here in that growth in scientific thinking occurs very slowly during this time. Sometimes, it feels like a continuous struggle for both the student and the advisor. Sometimes, she comes across a moment during discussion when a student shows an improvement in critical thinking. Those moments feel like a payday for all the time of struggle.

I asked Dr. Jeong for any "aha" moments she might have experienced while on her path to which she replied "Looking back, I think there were more of slow realizations of things than "aha" moments. For example, I learned that short cuts typically do not work when doing research. Many times, I had to come back to the starting point because I took short cuts in designing experiments, writing grants, and submitting manuscripts.

Outside of work she enjoys growing vegetables in her backyard. She even plans to expand the garden area next year.

Thank you Dr. Jeong for the important research you do and we look forward to more interesting discoveries.

# Faculty Updates

**Dr. Stephen Byrn** and collaborators continue to utilize PDF patterns derived from Synchrotron radiation available at Argonne National Laboratory to reduce risk of formulation failure as well as accelerate development and increase formulation innovation.

**Dr. Young Jeong** and collaborator Hyunwoo Lee were awarded a NICCIH R21 grant.

**Dr. Gregory Knipp** is part of a collaborative, multi-institutional investigative team that was recently awarded U54 funding on a project entitled "Advancing Cyanide Counter Measure" from the National Institute of Neurological Disorders and Stroke-CounterACT Centers of Excellence for his role as a Co-Investigator on the Pharmaceutical Sciences Core (V. Jo Davission-Purdue PI). In a separate project from Dr. Davission's laboratory, Dr. Knipp will serve as a Co-PI on a R01 entitled "Antiviral Lead Identification to Treat Filovirus Infections." He has also received an EPA grant.

**Dr. Tonglei Li** was named the Editor-in-Chief of Pharmaceutical Research as of July 1, 2020.

**Dr. Sandro Matosevic** received an NIH R21 award from the National Cancer Institute to develop immunotherapies on brain cancer with engineered natural killer cells. He published a paper in the *Proceedings of the National Academy of Sciences of the USA* titled: "Multispecific targeting of glioblastoma with tumor microenvironment-responsive multifunctional engineered NK cells." He will be chairing the next Peck Symposium, titled "Novel therapeutic frontiers: Immunotherapies from Genes to Cells."

**Dr. Eric Munson** was awarded an FDA grant and he will be serving on the 2022 AAPS Nominations Committee. He serves on the USP Council of experts. He also received the Ralph Shangraw Memorial award from the IPEC Foundation.

**Dr. Kinam Park** has been developing injectable, long-acting formulations for delivery of naltrexone for treating opioid addiction. The work is supported by the National Institute of Drug Abuse.

**Dr. Lynne Taylor** is continuing her membership by invitation on the Scientific Advisory Board of the SSPC, Science Foundation Ireland Research Centre for Pharmaceuticals. She received the AAPS Dale E. Wurster Award in Pharmaceutics as well. Feeling stressed? Read the editorial from editor-in-chief of Molecular Pharmaceutics, Lynne Taylor, on Work-Life Balance  
[https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.1c00679?ref=vi\\_journalhome](https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.1c00679?ref=vi_journalhome)

**Dr. Elizabeth Topp** was honored as the 25th John G. Wagner Lecturer at the University of Michigan in Fall 2020.

**Dr. Yoon Yeo** received an R01 award as the Principle Investigator with a total \$2,368,366M support. The NIH National Cancer Institute project titled "Systemic delivery of siRNA by Nanosac for checkpoint blockade immunotherapy of head and neck squamous cell cancer" aims to deliver siRNA therapeutics systemically using a new carrier called Nanosac for therapy of head and neck cancer. She published in both *ACS Nano* and *Science Advances*. She received the 2021 Controlled Release Society Samyang Award, and she was an 2021 AAPS Invited speaker. She will be serving as a 2021-2025 NIH Nano study section standing member.

**Dr. Qi (Tony) Zhou** He received a 2021 AAPS Emerging Leader Award, a Purdue Faculty Scholar Award, and got a Purdue COVID Support Teaching Award. He serves on the editorial board of the *European Journal of Pharmaceutical Sciences*. He wrote a cover article for *Pharmacological Reviews*, and also served as a guest editor of *Advanced Drug Delivery Reviews*.

# Faculty Updates

*continued*

We are proud to announce that IPPH has two of the nine Clarivate highly cited researchers at Purdue University.

Thank you to Professor Kinam Park and Professor Lynne Taylor for your hard work and dedication to our field. We appreciate all that you do.




**Clarivate™**

## Highly Cited Researchers

2021 recipients   Methodology   FAQs

Recognizing the true pioneers in their fields over the last decade, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in the Web of Science™. Of the world's scientists and social scientists, Highly Cited Researchers truly are one in 1,000.

FULL NAME	CATEGORY	PRIMARY AFFILIATION
 <a href="#">Anasori, Babak</a>	Materials Science	Indiana University-Purdue ...
AB <a href="#">Boltasseva, Alexandra</a>	Cross-Field	Purdue University
LD <a href="#">Dou, Letian</a>	Cross-Field	Purdue University
DL <a href="#">Lynam, Donald R.</a>	Cross-Field	Purdue University
KP <a href="#">Park, Kinam</a>	Pharmacology and Toxicol...	Purdue University
VS <a href="#">Shalaev, Vladimir M.</a>	Physics	Purdue University
LT <a href="#">Taylor, Lynne S.</a>	Pharmacology and Toxicol...	Purdue University
LT <a href="#">Tay, Louis</a>	Cross-Field	Purdue University
JZ <a href="#">Zhu, Jian-Kang</a>	Plant and Animal Science	Purdue University



## IPPH Holds Fall '21 PhD Orientation



The department welcomed 12 new students to our PhD program on August 18th. They were welcomed by Danzhou Yang, College of Pharmacy Associate Dean for Graduate Programs, Eric Munson, IPPH Department Head, and Rodolfo Pinal, Director of the IPPH PhD Program. During August and September the students were busy attending faculty welcome/lab recruiting sessions and meeting with individual faculty who were interested in taking a new PhD student. Lab assignments were made in October so they are settling into their new IPPH labs.

### Staff Highlights

Congratulations to Mary Ellen Hurt for receiving a 2021 Bravo Award.  
Thank you for taking such great care of us and all you do to keep IPPH moving forward!

# Graduate Student & Postdoc Highlights

*Continued on page 8*



**Daniel DeNeve is presented with the  
2021  
Dr. Herbert A. Lieberman Award by  
Dr. Eric Munson**



# Graduate Student & Postdoc Highlights

**Lia Bersin (Topp group)** received a Fall 2021 Bilsland Dissertation Fellowship

**Sonal Bhujbal (Zhou and Taylor group)** her research on drug stability was a feature cover story in *InnovatED*, the Purdue Graduate School's research magazine

**Tram Ngoc Dao (Matosevic group)** was selected to receive a 2022 McKeehan Graduate Fellowship

**Van Tu Duong (Taylor group)** was awarded an AAPS Travelship, an AAPS Best Poster award, an AAPS Best Abstract award and was an AAPS Invited speaker

**Kyle Lupo (Matosevic group)** received a 2021 Jenkins-Knevel Research award and a 2021/2022 Ross-Lynn Fellowship

**Hytham Gadalla (Yeo group)** was selected for a 2021-2022 Ronald W. Dollens Graduate Scholarship

**Tze Ning Hiew (Taylor group)** was selected for the 2020 DeLuca Emerging Researcher award from the IPEC Foundation

**Soonbum Kwon (Yeo group)** received both a 2021 Chaney Graduate Research award and a 2022 McKeehan Graduate Fellowship

**Fanfei Meng (Yeo group)** received the Bergstrom Research award 2020-21 from the Purdue Center for Cancer Research

**Tarun Mutukuri (Zhou group)** received a PGSG Professional Development grant

**Dana Moseson (Taylor group)** was awarded a PhRMA Foundation Postdoc Fellowship

**Valeria Tellez Gallego (Pinal group)** was the recipient of a 2021 Kienly Teaching award from the College of Pharmacy

**Peace Umoru (Li group)** was selected to receive a 2021-2022 Ronald W. Dollens Graduate Scholarship

**Ruochen Yang (Taylor group)** was the recipient of a 2021 AAPS Best Abstract award and was an AAPS Invited speaker

**Xue (Shirley) Yao (Matosevic group)** received a Fall 2021 Lilly Graduate Fellowship



Congratulations to all!





# Graduate Student Spotlight



## Tram Ngoc Dao

You can find 4th year graduate student Tram busy performing research in the Matosevic Lab.

Tram grew up in Ha Noi, Viet Nam, and when she was 14 years old, she moved to New Hampshire to start high school. She has been studying in the US ever since.

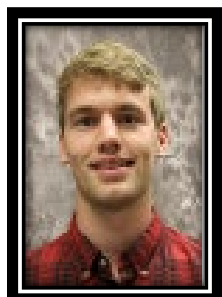
"Living in New Hampshire was my first time seeing snow, and by my third year I was able to spend 11 days in the White Mountains winter backpacking, complete with pitching my own tarp and starting my own fire" says Tram.

She decided to go into pharmacy because she wants to do more translational research that can have an impact on human health.

Tram's research area is NK cell-based immunotherapy for glioblastoma. "I think a lot of people have a personal story with cancer, and so do I. I lost somebody whom I deeply respected to cancer, so I pursue this area of research in hope that someone somewhere won't have to experience the same thing" she explains. Hopefully the result of her research will provide the strategy to design NK cells as therapeutics for glioblastoma, a cancer type that currently has no applicable immunotherapy.

She enjoys studying here at Purdue due to the wide variety of subjects that Purdue offers, and in her group, she has the flexibility to take courses in and outside of the field while doing research.

Tram shares that some of her hobbies, interests, and involvement include: attending webinars, especially interactive ones, on the current state and future of cell therapy to keep up with the community; and collecting fountain pens, practicing her penmanship and learning calligraphy.



## Nicholas Huls

Nick is a home grown Indiana guy from Crown Point. He is in his 5th year and is a member of the Li lab.

He grew up playing soccer and swimming. He also was a member of the marching band in high school and here at Purdue as an undergrad.

When asked why he went into pharmacy, he replied "When I was younger, I had a condition that put me in the hospital for a week and have been interested in pharmaceuticals ever since. As I went into undergraduate studies in chemical engineering, my goal was to work in the pharmaceutical industry. The research projects I had the opportunity to do impacted my decision to pursue a Ph.D. in pharmaceutical sciences".

Coming from a chemical engineering background, he was always fascinated by how a drug is made. He started his graduate work by producing organic crystals and determining their solid-state and solution properties. He is now focusing on developing deep learning to model and predict solid-state properties, including solubility, from the intrinsic electronic characteristics of a crystal or molecule. Nick explains "We hope to uncover underlying connections between the electronic structure of a molecule and its tendency or selectivity to interact with peer molecules". Deep learning can take advantage of the rich information of crystal structures discovered to date (1 million in Cambridge Structure Database). The research will sharpen his skills in data mining and chemical computation, solid-state organic chemistry, and coding. In addition, it will broaden his understanding of drug development and prepare him for many years to come.

This past summer Nick worked at Alexion Pharmaceuticals, which became AstraZeneca Rare Disease unit during his time there. He worked on a process modeling project as a development intern in the Injectable Drug Product Development group.

# Graduate Student Spotlight

*continued*



**Valeria Tellez  
Gallego**

Valeria is a Colombian pharmaceutical scientist in her 3rd year of graduate school in the Pinal lab.

Valeria grew up in Bogota, the capital city of Colombia, loving the diversity and opportunities found in a big city. One of the facts Valeria cherishes the most about Colombia is its biodiversity. "Colombia is the second most biodiverse country in the world with unique and splendid organisms like the Golden Poison Frog or the Caquetá Titi Monkey" Valeria boosts.

She was mesmerized with life sciences since the first time she had the opportunity to look through the microscope. She was fascinated by how complex and magnificent life is even for the 'tiniest' organism and wanted to explore more. Her interests matured in her final years of high school where she was captivated by chemistry. Later, she found that pharmacy was the marvelous choice for her as it offers diverse career options involving life and physical sciences.

Right before the completion of her undergraduate degree, Valeria came to Purdue in Fall 2018 as the recipient of the Undergraduate Research Experience Purdue-Colombia (UREP-C) scholarship. During this experience, her project was focused on protein stability. She obtained the basis for future development and research of prefabricated dosage forms for proteins by maintaining the activity of the protein in the solid state at room conditions.

"Being at Purdue, and in the Pinal lab during UREP-C truly changed my life" Valeria states. She found her passion as a formulation scientist and decided to take a giant leap and apply to the PhD program in IPPH. Nowadays, her research focuses on understanding the stability mechanisms of proteins with several formulation excipients. She really enjoys working with Dr. Pinal and will always be grateful for all his mentorship, guidance, and support through these years.

Valeria holds the treasurer position in the AAPS Student Chapter and is the graduate student council representative for IPPH in the College of Pharmacy.

# IPPH News and Events

## 2021 IPPH PhD Graduates

**Andrea  
Chambers  
PhD**

**Matosevic  
Group**

**Spring  
2021**



**Fudan  
Zheng  
PhD**

**Li-PULSe  
Group**

**Spring  
2021**



**Eunbi  
"Iris" Cho  
PhD**

**Topp  
Group**

**Summer  
2021**



**Yue  
Li  
PhD**

**Li-PULSe  
Group**

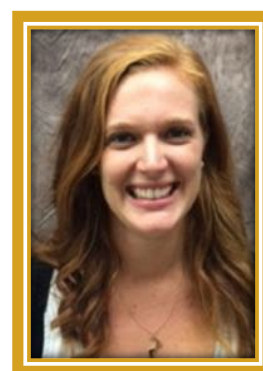
**Summer  
2021**



**Lia  
Bersin  
PhD**

**Topp  
Group**

**Fall  
2021**



**Sonal  
Bhujbal  
PhD**

**Zhou  
Group**

**Fall  
2021**



**Clara  
Correa  
Soto  
PhD**

**Taylor  
Group**

**Fall  
2021**



**Rishabh  
Tukra  
PhD**

**Topp  
Group**

**Fall  
2021**



**Congratulations** to our 2021 new PhD's



# Alumni and Friends Focus

## Dr. Haichen Nie



Current Photo



Purdue Graduation Ceremony 2016

Dr. Nie, a 2016 IPPH graduate, is an Associate Principal Scientist at Merck's Center for Materials Science and Engineering. Before joining Merck in 2019, he also worked for Teva pharmaceuticals and AbbVie as a Senior Scientist. His current work and research are directly related to the late-stage pharmaceutical drug product development and manufacturing. "I feel very rewarded and fulfilled to work in such an impactful area where a small amount of progress can significantly change a patient's life" he states.

Apart from his routine work, he serves as the Chair of AAPS excipient community, being a member on doctoral students' dissertation committees and on editorial boards of pharmaceutical journals. "I am proud to have such precious opportunities to work together with peers and leaders in both pharmaceutical industry and academia". "Besides, I love to share my experience and to mentor/help graduate students".

He shared two critical spiritual lessons he learned while studying in the IPPH department at Purdue.

1) The education I received from IPPH built up my confidence and made me firmly trust that what I am working on is significant and truly meaningful. Bearing this in mind, I view my work as a pleasure. It reflects on my work attitude, and positively influences people around me.

2) I learned the importance of taking action. Successfully executing an idea into practice is way more valuable than thinking about hundreds of possibilities. Although I admit planning is important, it can never replace action. I still vividly remember Prof. Lynne Taylor's words when I reached out to her for advice, and she said, "you can never be fully prepared, the only moment that you are ready is to get started". I benefit from these golden words in my daily life and keep remind myself in work and life: "without action, nothing will happen".

Dr. Nie shared that he had many stories and special memories at Purdue IPPH. One special moment that came to mind was his graduation ceremony. Professor Byrn told him that he had been at Purdue for 40+ years, and it was his first time coming to a doctoral hooding ceremony. He shared a picture of when Professor Byrn hooded him in 2016.

When asked "What do you hope will be the "big picture" result of your research?" he responded, "I hope that, in the near future, the fancy drug products I am working on can help more people in the world especially for people in development countries. I think Purdue IPPH certainly takes the lead and sets the tone on this front. For instance, I admire that Professor Stephen Byrn has put forth tremendous efforts to improve the pharmaceutical research and manufacturing in Africa".

His current hobby is to spend time with his family in Pennsylvania. "I have two boys and I love to coach them playing soccer, teach them painting, spend time with them in their karate classes". His family loves hiking on the PA trails and doing outdoor activities in Spring and Fall. "The fresh air, the burbling river, and the twittering of birds always remind me of the happy days in Indiana when I was jogging along the Wabash River and tubing down the Sugar Creek with my friends".

# Alumni and Friends Focus

## Dr. Peter Wildfong

Dr. Peter Wildfong was a graduate student at Purdue from June 2000-December 2004 under Professor Ken Morris.

His current area of research/influence is solid state materials science. "My IPPH advisor (Ken Morris) trained me as a researcher in this area, and mentored me as I became a new faculty member, interested in further pursuing this research." The over-arching theme of his research is developing phenomenological models that predict how solid organic materials will behave in a processing or formulation environment. His big picture result of research: materials-sparing models that can be used in early pre-formulation when not much drug substance is available, but key decisions about development are made.



**IPPH 2003 Group Members**

I asked Dr. Wildfong for some funny stories from his IPPH days. He shared a couple with me.

- 1) As graduate students with prior industry experience, David Engers and I re-developed the lab portion of IPPH 562 (the manufacturing course) and wrote a lab text for it, which I think may still be used (in whole or in part)
- 2) Was a founding member of the Purdue AAPS Student Chapter
- 3) During my third year in IPPH, we convinced the school's Development Office that it would be great to add IPPH graduate students to foursomes in the annual Pharmacy School Golf Tournament. The foursome I was added to included the Dean (at the time) for the Duquesne University School of Pharmacy. As we were playing golf together, he encouraged me to consider academia as a career, and to consider Duquesne. He was very pleasantly surprised when I showed up for an interview 1 year later for a faculty position at Duquesne –he was so excited that I'd followed up with his encouragement that he immediately called the other members from that golf foursome and said, "You'll never guess who just walked into my office!" The rest of the interview consisted of them teasing me about how badly I played golf that day (I got the job).

Dr. Wildfong enjoys playing the guitar. "I started learning when I was a graduate student at Purdue, and have continued ever since". He also plays golf. He explains that the student discount at the Purdue courses were so good that he would often play there; Ken Morris used to join them frequently and hold informal "group meetings" between shots on the fairway.

He is also on the current chair-elect of the faculty committee of NIPTE; Ken introduced him to NIPTE during its founding, while he was a senior graduate student at Purdue.

Dr. Wildfong says the time he spent at Purdue and in IPPH was the best time of his life. "I loved every minute of it" he boasts. The friends he made here are lifelong. Dr. Wildfong and his wife (also a Purdue alumna) can't wait to bring their son to Purdue for Homecoming or Bug Bowl....possibly both!!



## Highlights

The Advanced Lyophilization Technology Hub (LyoHUB - <http://www.lyohub.org>) is a university-industry center at Purdue University whose goal is to advance the science and technology of freeze-drying/lyophilization as applied in pharmaceutical, food, bio- and nano- technology manufacturers.

LyoHUB led the effort in developing **the first recognized consensus standard for pharmaceutical lyophilization** through ASTM. LyoHUB first helped establish in December 2017 a subcommittee on Lyophilization of ASTM E55 Committee on Manufacture of Pharmaceuticals and Biopharmaceuticals. Through a series of workshops including a joint event with ASTM at Purdue in October 2018, LyoHUB facilitated the development of the first standard based on LyoHUB Recommended Best Practices for Pharmaceutical Freeze-Drying Process Instrumentation <https://link.springer.com/article/10.1208/s12249-017-0733-1> (>15,000 accesses, one of the most accessed articles in AAPS *PharmSciTech* since publication in 2017).

In 2021 ASTM officially issued ASTM E3250-21, **"Standard Practice for Product Temperature and Equipment Pressure Instrumentation in Pharmaceutical Freeze Drying"**  
<https://www.astm.org/Standards/E3250.htm>



Free online Lyophilization Short Course  
featuring eight online lyophilization 101 learning modules, together with assessment tools and instructions for a virtual laboratory exercise. There is no fee to take this course thanks to a grant from the National Institute for Innovation in Manufacturing (NIIMBL)

<https://pharmahub.org/courses/lyo101>

For the latest news from LyoHUB, you can visit their website <http://www.lyohub.org> and follow them on Twitter at <http://twitter.com/lyohub>

## Webinar Series

Purdue University and the US Pharmacopeia launch a webinar series on  
**Pharmaceutical 3D Printing Technology**

Register Here: <https://www.aprecia.com/events>

The educational webinar series will bring together leading 3D-Printing experts from around the globe to discuss exciting technological advancements, applications for pharmaceutical product development, and commercial manufacturing. Building on the USP and International Association for Pharmaceutical Technology (APV) event held previously, this webinar series will explore the use of various 3DP technologies to support new indications, improved formulations, or new delivery systems. The series will provide examples — including case studies for pharmaceutical scientists and executives on how 3DP manufacturing can accelerate clinical development, enhance the innovation value of novel molecules, and extend the life cycle of approved products.



# Faculty Opening in IPPH: Assistant Professor/Associate Professor

The College of Pharmacy at Purdue University is seeking applications to fill a faculty position in the Department of Industrial and Physical Pharmacy in the general area of **Pharmaceutical Biotechnology and/or Advanced Manufacturing**.

The position is for a full-time tenure-track Assistant Professor or Associate Professor. The faculty member is expected to establish an externally funded research program and will teach courses in the undergraduate, graduate and professional (PharmD) programs. It is expected that the individual will collaborate on various research activities within the department and in multidisciplinary research throughout the University. This is a nine-month (academic year) appointment. The candidate must have expertise in fundamental and applied research related to the development, design, evaluation and manufacturing of biopharmaceutical products. Representative areas of expertise include, but are not limited to:

- Formulation-manufacturing interface (e.g., stability, analysis, and/or manufacturing) of peptide, protein, cell-based and/or nucleic acid-based therapeutics, vaccines, and/or immunotherapeutics
- Advanced manufacturing approaches using novel technologies such as (but not limited to) continuous manufacturing, drying technology, aseptic processing, and 3D printing

For instructions on how to apply, visit [ipph.purdue.edu/about-IPPH/open-positions](http://ipph.purdue.edu/about-IPPH/open-positions)



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