



UNIVERSITY of MARYLAND  
SCHOOL OF PHARMACY

# FROM THE CHAIR'S DESK

News from Peter Swaan, PhD  
*Chair, Department of Pharmaceutical Sciences*

Fall 2021

Dear alumni and colleagues,

It's been over a year since my last newsletter arrived in your in-box. During that year, the University of Maryland School of Pharmacy – like all of you – has adapted to a new way of working and learning in an effort to keep us safe and healthy during the COVID-19 pandemic. In the Department of Pharmaceutical Sciences, we pivoted our in-person PhD and MS programs to a fully online format, reconfigured our Doctor of Pharmacy courses and instruction to virtual, adapted our research to meet safety guidelines and protocols, and undertook COVID-19 research projects.



I am proud of our faculty, staff, and students for being flexible, adaptable, and committed to their work and academics. I also recognize the tremendous hardships the past 16 months have placed on all of us in a myriad of ways and am proud of how we have supported each other through this difficult time.

The University of Maryland, Baltimore and the School of Pharmacy are fully reopening for in-person activities for the fall 2021 semester. Many of us transitioned back to our offices this summer. It's wonderful to walk down our hallways and see students and colleagues back in action - collaborating, working, and learning together. I also hope to reconnect with many of you in the coming months as the world slowly and safely reopens.

Sincerely,

**Peter Swaan, PhD**

Professor and Chair

Department of Pharmaceutical Sciences

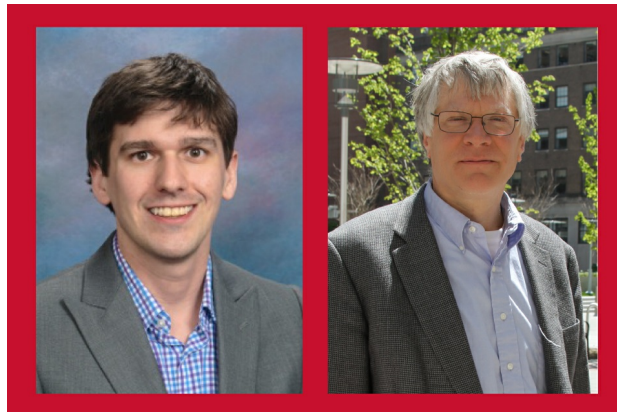
Associate Dean for Research and Advanced Graduate Studies

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News

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## UMSOP and KamTek Collaborate on Therapeutic Development to Treat Deadly Infections

Researchers from the School of Pharmacy and KamTek Inc., a biotechnology company, have partnered to address the major public health problem of primary and recurrent *Clostridioides difficile* (CD) infections. CD is the leading cause of hospital- and community-acquired deadly diarrhea in the U.S., and is an emerging pandemic threat. Scientists at KamTek recently discovered that clofazimine (CFZ) — a drug currently used to treat drug resistant tuberculosis, leprosy, and methicillin-resistant *Staphylococcus aureus* — has high potency against CD. The drug also does not inhibit the growth of most other gut microbes that are known to resist CD colonization, aiding in the prevention of CD relapse. KamTek scientists developed an enteric coated tablet formulation of CFZ, known as EK101, that offers low systemic absorption, minimal exposure to the small intestine, and quick release of the drug in the colon. Its scientists are partnering with [Stephen Hoag, PhD](#), professor and director of the [Applied Pharmaceutics Lab](#), and [Ryan Pearson, PhD](#), assistant professor, to further develop the EK101 formulation with support from a grant from the Maryland Industrial Partnerships (MIPS) program. [Read more here...](#)



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## Grant Increases Access, Safety of Generic Drugs



The School of Pharmacy (UMSOP) and University of Michigan College of Pharmacy (U-M) and have received a \$5 million grant from the U.S. Food and Drug Administration (FDA) to establish a joint [Center for Research on Complex Generics \(CRCG\)](#). The CRCG will increase access to safe and effective generic drugs through collaborative research, training, and exchange. The center will facilitate information sharing between graduate students, postdoctoral fellows, those working in industry, and faculty at both universities. A team of 24 investigators from UMSOP and U-M will allow the center to offer broad research capabilities from formulation development and analytical characterization to computer (in-silico) models and animal testing to clinical trials and post-market assessment of patient data. [Read more here...](#)

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## SOP Researchers Make Progress Toward Antiviral Treatments for COVID-19

COVID-19 is caused by a virus known as SARS-CoV-2, which is similar in structure to two other

viruses that have caused recent outbreaks: SARS-CoV, which caused an outbreak of SARS in 2003, and MERS-CoV, the cause of a 2012 outbreak of Middle East Respiratory Syndrome. In the *Journal of Chemical Physics*, scientists from the School of Pharmacy report molecular-level investigations of these three viruses, providing a possible pathway to new antiviral drugs to fight all three diseases.

**[Jana Shen, PhD](#)**, professor and co-director of the **[Computer-aided Drug Design Center](#)**, and Jack

Henderson, graduate student, looked at a viral

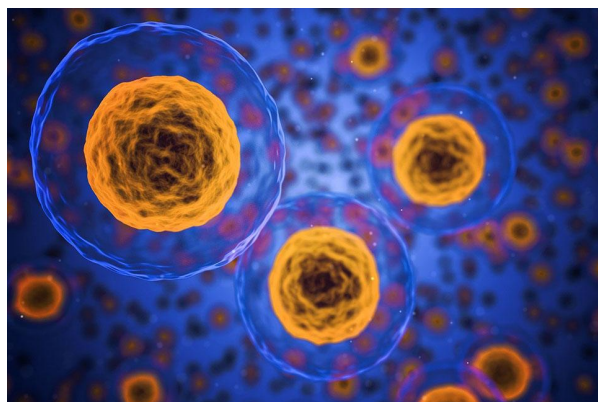
protein that plays a key role in the ability of the virus to replicate itself once inside the body.

This protein also plays a role in defeating the host's immune system, so it provides a particularly attractive target for potential drug treatments. **[Read more here...](#)**



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## M-CERSI Workshop Spotlights 3D Cell Culture Models for Drug PK, Safety, and Efficacy Assessment



The U.S. Food and Drug Administration (FDA) and the **[University of Maryland Center for Excellence in Regulatory Science and Innovation \(M-CERSI\)](#)** co-hosted the virtual “3D Cell Culture Models for Drug PK, Safety, and Efficacy Assessment” workshop in August 2020. The meeting drew 360 attendees, including stakeholders from the FDA, academia, and industry, as well as participants around the world. The meeting aimed to address an unmet need in developing better

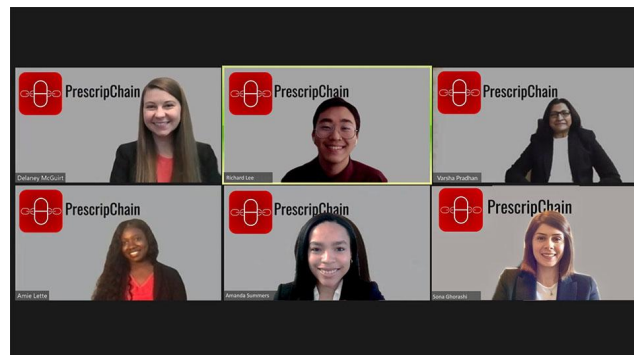
models to identify and accurately predict drug risks and efficacy. It was designed to help advance regulatory science by modernizing toxicology to enhance product safety, promote the use of novel cell and tissue models that better represent human drug responses, promote a better understanding of toxicity mechanisms by evaluating physiologically relevant 3D models at multiple molecular biological levels, and improve the ability of non-clinical models/tests for early risk assessment. **[Read more here...](#)**

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## Ninth Annual M-CERSI Regulatory Science Competition Goes Virtual

Each winter, the **[University of Maryland Center for Regulatory Science and Innovation \(M-CERSI\)](#)** hosts the “America’s Got Regulatory Science Talent” competition. This competition aims to promote student interest in regulatory science — the science of developing new tools, standards, and approaches to assess the safety, efficacy, quality, and performance of FDA-regulated products.

This year, students from the Baltimore and College Park campuses of the University of Maryland presented their innovation ideas to three U.S. Food and Drug Administration (FDA) judges virtually. Nine teams competed in this ninth annual competition on Jan. 15. Team





PrescripChain – a group of second-year student pharmacists and a MS in Regulatory Science graduate student from the School of Pharmacy was awarded first place in the 2021 competition. [Read more here...](#)

## SOP's Yu Leads Research to Assure Vaccine Quality at Point-of-Care



Analytical techniques to evaluate the condition of vaccine formulations are critical to quality assurance of these substances. Certain vaccines, including those with aluminum adjuvants, can be sensitive to freezing, which would damage the vaccine. Therefore, deviations from temperature ranges prescribed for storage and transport need to be monitored. A method for detecting freezing events of liquid vaccines is described in a recent publication in the journal *Vaccine*, featuring work by the

laboratory of [Bruce Yu, PhD](#), professor and director of the School's [Bio- & Nano-Technology Center](#). [Read more here...](#)

## KUDOS

**Our department's faculty, staff, and students are regularly recognized at the local and national level for their expertise. Here is a short list of recent accomplishments.**

[Andrew Coop, PhD](#), professor and associate dean for academic affairs; [Emily Gorman, MLIS, AHIP](#), research, education, and outreach librarian at HS/HSL; [Lisa Lebovitz, JD](#), assistant dean for academic affairs and assessment, and [Shannon Tucker](#), assistant dean for instructional design and technology, received the Best Leadership-related Poster Award at the American Association of Colleges of Pharmacy's Leadership Development Special Interest Group's Virtual Symposium.

[Natalie Eddington, PhD, FAAPS, FCP](#), dean and professor, was named by the *Baltimore Business Journal* as a Leader in Health Care in the category of Medical Cannabis.

[Jace Jones, PhD](#), assistant professor, was named the School of Pharmacy's American Association of Colleges of Pharmacy's Teacher of the Year.

[Alexander MacKerell, PhD](#), the Grollman-Glick Professor of Pharmaceutical Sciences and director of the [Computer-aided Drug Design Center](#), received a United States Patent for "Inhibitors of the Notch Transcriptional Activation Complex and Methods of Use of the Same" and received the 2020 International Society of Quantum Biology and Pharmacology (ISQBP) Award in Computational Biology.

[James Polli, PhD](#), the Noxell/Shangraw Endowed Chair in Industrial Pharmacy and Pharmaceutics and co-director of the [Maryland Center of Excellence in Regulatory Science and Innovation](#), has been elected president of the Association of Graduate Regulatory Educators.

[Sherin Thomas](#) and [Dongyue Yu](#), both PhD students, received the department's Dr. Gerald P. and Margaret M. Polli Graduate Student Travel Awards to present posters at the American Association of Pharmaceutical Scientists Annual Meeting in November in San Antonio, Texas.

## GRANTS AND FELLOWSHIPS

[Alexandria Chan](#), graduate student, received a one-year \$30,000 grant from the American

[Sarah Michel, PhD](#), professor, co-director of the [Metallotherapeutics Research Center](#), and

Chemical Society for “Polypharmacological Rescue of Proteasome Inhibitor Efficacy in Multiple Myeloma: Dual Inhibition of HDAC6.”

**Daniel Deredge, PhD**, assistant professor, received a two-year \$100,000 contract from Janssen Research and Development for “Blanket PO for HDX-MS” and received a one-year \$11,369 contract from the University of Kentucky for “Role of Poly (ADP-ribose) Polymerase 1 in Regulating RNA Polymerase II Elongation and mRNA Splicing.”

**Jack Henderson**, graduate student, received a one-year \$10,000 fellowship from the American Foundation for Pharmaceutical Education for “Unveiling Proton-Coupled Mechanisms of Malarial Proteases and Sodium-Proton Antiporters to Advance Structure-Based Drug Design.”

**Stephen Hoag, PhD**, professor and director of the **Applied Pharmaceuticals Lab**, received the following contracts:

- a four-year \$128,450 contract from Johns Hopkins University for “Stability Testing of Selected Drug Products”
- a two-year \$102,751 contract from the Battelle Memorial Institute for “The Human Dose-Response Effects of Methyl Salicylate in Smokeless Tobacco”
- a two-year \$62,278 contract from the U.S. Food and Drug Administration for “Manufacturing an In Vitro Component for Evaluating Generic and New Animal Formulations that are not Systemically Absorbed”
- a three-year \$330,799 contract from Rutgers University for “GMP Over-encapsulation of Commercial Ibuprofen, Acetaminophen, and Hydrocodone-acetaminophen Combination Tablets”
- an eleven-month \$41,250 contract from Johns Hopkins University for “Sustained Released Epinephrine Gel for Use in Gastrointestinal Endoscopy”
- a one-year \$99,999 contract from Maryland Industrial Partnerships for “Development and Testing of Nano Particulate Delivery System for HO Therapy”

**Dante Johnson**, graduate student, received a two-year \$69,746 grant from the National Institute of General Medical Sciences for “A New Platform for Studying Protein Folding in Live Cells.”

**Jace Jones, PhD**, assistant professor, received the following grants and contracts:

- a one-year \$10,000 grant from the American Association of Colleges of Pharmacy for “Sphingolipid Metabolism as a Diagnostic Marker of Hepatotoxicity in DILI”
- a one-year \$35,000 grant from the American Society for Mass Spectrometry for “Sphingolipid Metabolism as a Diagnostic Marker of Hepatotoxicity in Drug-Induced Liver Injury”
- a one-year \$30,000 grant from the

associate dean for graduate programs, received a four-year \$1,396,138 grant from the National Institutes of Health for “The Role of Zinc Fingers in H2S Signaling.”

**Amanda Oglesby, PhD**, associate professor, and **Angela Wilks, PhD**, the Isaac E. Emerson Chair of Pharmaceutical Sciences and co-director of the **Metallotherapeutics Research Center**, received a five-year \$2,411,578 grant from the National Institute of Allergy and Infectious Diseases for “Integration of Heme Acquisition and Signaling in Gram-negative Pathogens.”

**Ryan Pearson, PhD**, assistant professor, received a one-year \$35,000 Innovative Collaboration Pilot Grant from the University of Maryland, Baltimore’s Institute for Clinical and Translational Research for “Engineering B Cell Modulating Vaccines for T cell Cancer Immunotherapy” and received a one-year \$68,253 contract from Maryland Industrial Partnerships for “Target Site Distribution Kinetics of EK101.”

**Jordan Pritts**, graduate student, received a one-year \$10,000 fellowship from the American Foundation for Pharmaceutical Education for “Characterizing the CPSF30/NS1A Interaction: A Novel Influenza Drug Target.”

**Paul Shapiro, PhD**, professor, received a three-month \$46,752 contract from Gen1E Lifesciences, Inc. for “Preclinical Development of Function-selective p38alpha Inhibitors.”

**Jana Shen, PhD**, professor and co-director of the School’s **Computer-aided Drug Design Center**, received a three-year \$162,000 contract from the University of Maryland, College Park for “Electrofabricated Thin Films for Redox-linked Bioelectronics” and received a four-year \$1,419,276 grant from the National Institutes of Health for “A Multi-pronged Computational Approach to Advance Kinase Drug Discovery.”

**Hongbing Wang, PhD**, professor, received the following grants and contracts:

- a one-year \$100,000 grant from the Food and Drug Administration for “Metabolism-based DDI and Liver Toxicity of Drugs for COVID-19 Treatment”
- a two-year \$405,563 grant from the National Institutes of Health for “Human CYP2B6 in Alcohol Metabolism and Alcoholic Liver Injury”
- a three-year \$98,146 contract from Temple University for “Understanding the Pathogenesis of Elevated Androgen Induced Metabolic Dysfunction in Females”

**Angela Wilks, PhD**, the Isaac E. Emerson Chair in Pharmaceutical Sciences, and **Fengtian Xue, PhD**, associate professor, received a one-year \$115,000 grant from the Maryland Technology Development Corporation for “Antipseudomonal Agent GaSal: A Dual Inhibitor of Pseudomonas aeruginosa Heme Sensing and Iron Uptake”

University of Maryland, Baltimore's Institute for Clinical and Translational Research for "Rapid and Comprehensive Detection of SARS-CoV-2 Envelope Lipids"

- a one-year \$48,000 grant from Agilent Technologies for "Rapid and Comprehensive Detection of SARS-CoV-2 Envelope Lipids"
- a one-year \$67,965 contract from MassTech, Inc., for "Development of a Standard Protocol for COVID-19 Detection, Using Bio-Typing Through Viral Proteins"

**Lisa Jones, PhD**, associate professor, received a one-year \$52,500 contract from REGENXBIO, Inc. for "Research Services Agreement."

**Maureen Kane, PhD**, associate professor and director of the **Mass Spectrometry Center**, received a six-month \$1,480,224 contract from SRI International for "AXR SERIES: Biomarker to Clinical Output."

**Maureen Kane, PhD**, associate professor and director of the **Mass Spectrometry Center**, and **Sarah Michel, PhD**, professor, co-director of the **Metallotherapeutics Research Center**, and associate dean for graduate programs, received a five-year \$120,000 grant from Schwab Charitable for "ICP and MS analysis of Prostate Cancer Patient Clinical Samples."

**Alexander MacKerell, PhD**, the Grollman-Glick Professor of Pharmaceutical Sciences and director of the **Computer-aided Drug Design Center**, received an eight-month \$57,788 contract from Johns Hopkins University for "Development of GCPII Inhibitors for the Treatment of Age-related Cognitive Disorders."

**Patrick Wintrode, PhD**, associate professor, received a seven-month \$29,290 contract from Johns Hopkins University for "Toward Targeting Bacterial Metabolism: Relevance, Mechanism and Function of DXP Synthase."

**Fengtian Xue, PhD**, associate professor, received the following grants and contracts:

- a one-year \$424,875 grant from the National Institutes of Health for "Pseudomonas Aeruginosa Heme Sensing Inhibitors Targeting HasAp"
- an eight-month \$15,000 contract from Johns Hopkins University for "Developing Novel Drugs for Therapeutic Targets in Neurodegeneration"

**Bruce Yu, PhD**, professor and director of the **Bio- and Nano-technology Center**, received a one-year \$224,728 contract from the National Institute for Innovation in Manufacturing Biopharmaceuticals for "Noninvasive PAT for Aluminum-adjuvanted Vaccine and Lyophilized Biologics" and received a six-month \$24,000 contract from Merck, Sharp, and Dohme for "Evaluate wNMR Techniques by Utilizing a Model System for in situ Characterization of mAb Aggregation in High Concentration Formulations."

