

The background of the report cover is a photograph of a modern building with red brick and large glass windows. A prominent feature is a large, circular, metallic sculpture with a textured surface, mounted on a tall, rectangular, metallic pedestal. The building's facade is a mix of brick and glass, reflecting the sky and clouds. The overall color palette is dominated by the red of the brick, the blue of the sky, and the metallic tones of the sculpture.

# 2022 ANNUAL REPORT

DEPARTMENT OF  
PHARMACEUTICAL  
OUTCOMES AND  
POLICY



# LETTER FROM THE CHAIR

Dear POP family and friends,

As we have been slowly recovering from what was hopefully the worst of the COVID-19 pandemic, we are looking back at another successful year. Although COVID-19 has impacted us in so many different ways, surprisingly, we have had growth in almost every aspect of our academic work. We graduated a record number of Ph.D. students in this past academic year, continued our growth in faculty and research funding and have an incredible 45 peer-reviewed manuscripts that were published by our graduate students.

The university's AI initiative, which included 32 new positions for faculty with expertise in artificial intelligence, has allowed us to add three new faculty. This has enhanced the diversities of our faculty in many ways including first-time representations of researchers with backgrounds in computer and industrial engineering. Please check out the profiles of Mahmud Hasan, Masoud Rouhizadeh and Tianze Jiao as our three new AI experts on faculty. We also expanded our collaboration with UF Health Physicians and welcomed Rachel Reise to our faculty. We also welcomed new postdoctoral fellows and research faculty, along with a great new cohort of Ph.D. and residential M.S. students. And while it is always hard to say farewell after such cherished time together, we are extremely pleased that all of our graduates found positions of their first choice in academia, industry and government.

Both our residential and online graduate programs are in great shape, as we are logging record numbers of extremely competitive candidates who are just an incredible joy to watch as they grown in our program. A special recognition goes to Haesuk Park who won our college dissertation mentoring award this academic year!

Our research focus continues to build around several areas of excellence in pharmacoeconomics, pharmacoepidemiology and pharmaceutical health services research with an added emphasis on the application of artificial intelligence methods in POP research. Our faculty evaluated the safety and effectiveness of drugs, examined the quality of medication use and the impact of regulatory efforts to improve health care quality and designed prediction models that can help guide patient and provider decision-making for more effective and safer use of medications. Our clinical areas of emphasis have retained a focus on the opioid epidemic and mental health, geriatrics and dementia, diabetes and cardiovascular disease, infections and cancer, and pregnancy and pediatrics. Our Consortium for Medical Marijuana Clinical Outcomes Research, which involves nine universities in the state, held its second conference in May and has launched its first prospective cohort study. Finally, the Center for Drug Evaluation and Safety, or CoDES, has grown to 30 members, all sharing our growing data infrastructure. The new home for POP, CoDES and the Medical Marijuana Consortium — Malachowsky Hall for Data Science & Information Technology — will be ready for us in summer 2023!

I hope you agree these are exciting news and you have the opportunity to hear about some of these directly from our "POPers." I hope you stay close to our department, and if you have not been in Gator country for a while, please consider visiting us, virtually or in person.

Sincerely,



ALMUT WINTERSTEIN, R.PH., PH.D., FISPE

Dr. Robert and Barbara Crisafi Chair and Distinguished Professor  
Director, Center for Drug Evaluation and Safety (CoDES)

*We would like to acknowledge and thank Dr. Nicole Smolinski for her editorial work on this report.*

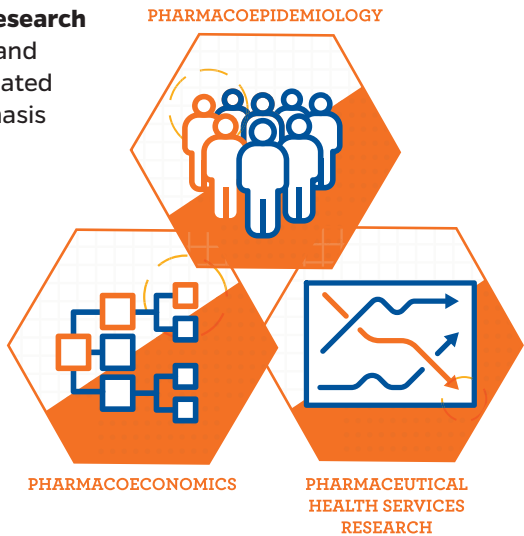


PUBLIC HEALTH IMPACT SPANNING OVER 30 YEARS  
OF GRADUATE TRAINING, RESEARCH AND SERVICE

# WHAT IS POP ABOUT?

**The department of pharmaceutical outcomes and policy excels in three areas of specialization in both research and training. Each area employs its own set of methodological approaches, but all utilize the vast array of big data sources available in the department.**

- 1. Pharmacoepidemiology and Safety Sciences** applies epidemiologic methods and knowledge to the study of uses and effects of drugs in populations after drug approval. Important research areas include causal inference studies on postmarketing drug safety and comparative effectiveness and predictive models of drug outcomes and use.
- 2. Pharmacoeconomics and Outcomes Research** assesses the value (clinical and economic) of pharmaceutical products and related services in the delivery of health care. It aims to provide patients, providers and payers with evidence to inform decision-making. Important research areas include economic evaluations, budget impact analysis, multicriteria decision analysis and policy evaluations related to drug formulary, reimbursement and pricing.
- 3. Pharmaceutical Health Services Research** examines the quality, accessibility and delivery of pharmaceuticals and related services. The program places emphasis on vulnerable populations, such as children, elderly, minorities and persons with high-burden diseases and disabilities. Examples of research include the development of quality measures or assessment of disparities and determinants of appropriate therapy.



**In this report, Dr. Jenny Lo-Ciganic shines a spotlight on the department's new emphasis in Artificial Intelligence Research.**

## SPOTLIGHT ON

# ARTIFICIAL INTELLIGENCE IN RESEARCH AND TRAINING

Artificial Intelligence, or AI, research involves developing and applying methods that enable a computer to understand, analyze and learn from high-dimensional structured and unstructured data. In our AI-focused training in the Department of Pharmaceutical Outcomes and Policy, available to support research and training in all three of our specializations, we arm students and trainees with the tools needed to understand, use, apply and evaluate AI and to incorporate ethics and ensure equity and fairness in AI. We strive for interdisciplinary excellence and therefore, our students take classes in biomedical engineering and biomedical informatics as well as POP. Students and trainees can engage in AI research with accomplished faculty who are experienced in a variety of areas, including enhanced cohort identification and measurement, outcome prediction and forecasting, data mining and information extraction, bias mitigation and fairness evaluation, descriptive decision analytic modeling and applying AI algorithms in real-world health care data.





# WHO WE ARE

16

FACULTY

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STAFF

34

PH.D.  
STUDENTS

5

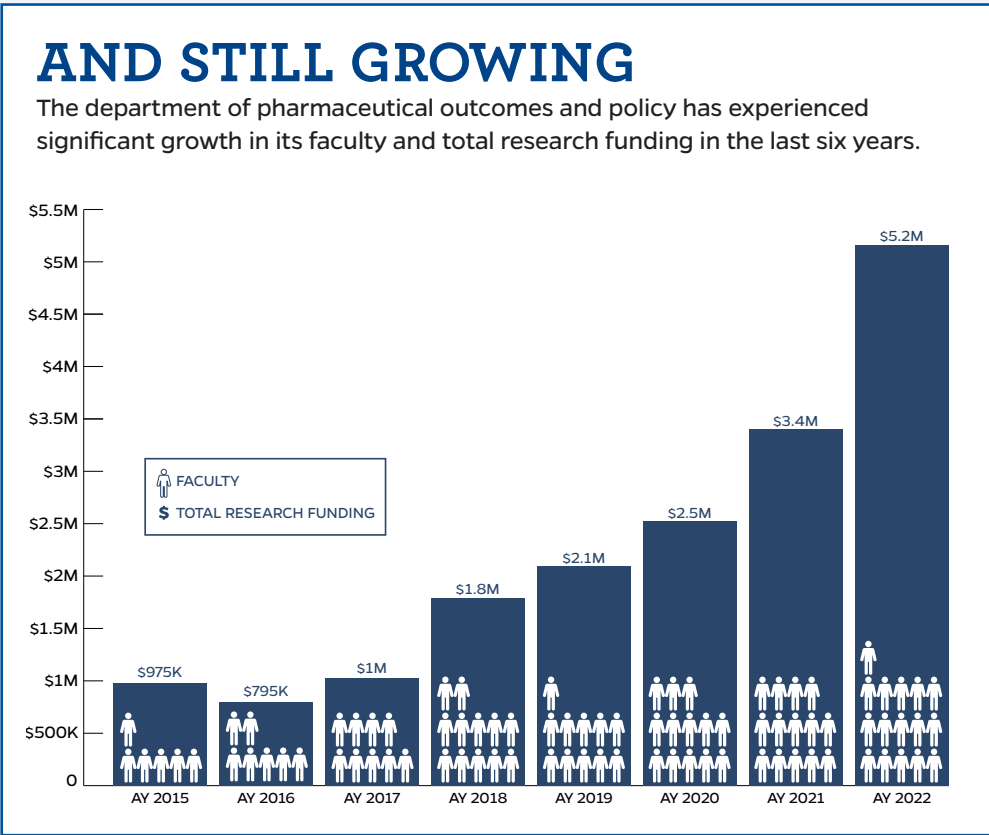
POSTDOC  
FELLOWS &  
RESEARCH  
SCIENTISTS

8

RESIDENTIAL  
MASTER'S  
STUDENTS

# RESEARCH & GRADUATE FACULTY

Bolstered by the university-wide investment in faculty who specialize in artificial intelligence we were able to secure three new faculty lines, one shared within an innovative collaboration with Information System and Operations Management in the Warrington College of Business. In addition, we increased our faculty through our collaboration with UF Health Physicians.



FOR ALL DEPARTMENT NEWS IN THE PAST YEAR, VISIT  
[POP.PHARMACY.UFL.EDU/CATEGORY/RECENT-NEWS/](https://pop.pharmacy.ufl.edu/category/recent-news/)

# NEW FACULTY IN 2021-22



**MD MAHMUDUL HASAN, PH.D.**

Assistant Professor

Dr. Hassan’s research focuses on leveraging advanced Artificial Intelligence/Machine Learning , and management science techniques to contribute to health care decision-making, policy and management. He conducts data-driven interdisciplinary research in pharmaceutical outcomes and health service utilization with a focus on substance use and mental health disorder, opioid-related adverse drug events and chronic diseases.



**TIANZE JIAO, PH.D.**

Assistant Professor

Dr. Jiao’s research focuses on investigating and applying innovative and rigorous epidemiologic, economic and comparative effectiveness research methods to identify and apply the precision medicine approach that will result in optimal outcomes for each patient in a resource-efficient manner.



**RACHEL REISE, PHARM.D., M.S.**

Clinical Assistant Professor

Dr. Reise’s research focuses on evaluations of outcomes relating to transitions of care, access to care and medication safety. She is also involved with a number of projects aimed at improving quality within UF Health Physicians outpatient practices.



**MASOUD ROUHIZADEH, PH.D., M.SC., M.A.**

Assistant Professor

Dr. Rouhizadeh’s research focuses on applying machine learning and natural language processing methods for identifying clinical concepts from unstructured text and converting them into structured data. Another major part of his research has been developing clinical ontologies and lexical resources, as well as computational models for identifying social and behavioral determinants of health.

# CURRENT FACULTY IN 2021-22



**ALMUT WINTERSTEIN, R.PH., PH.D., FISPE**

Dr. Robert and Barbara Crisafi Chair and Distinguished Professor

Dr. Winterstein’s research program focuses on the evaluation and prediction of drug safety and effectiveness in real-world populations and on devising ways to improve medication use. Clinical areas of interest include pediatrics and pregnancy, psychopharmacology and treatment and prevention of infectious disease.



**JOSHUA BROWN, PHARM.D., PH.D., M.S.**

Associate Professor and Associate Graduate Program Director

Dr. Brown’s research is in the field of comparative effectiveness and safety research focusing on anticoagulants, hematology and cardiology, and in health care policy evaluation. His research also focuses on medication effects on mobility and aging in older adults and developing real-world evidence for generic drugs and biosimilars.



**AMIE GOODIN, PH.D., M.P.P.**

Assistant Professor

Dr. Goodin’s research focuses on policy evaluation through the lens of health services research, incorporating mixed-method approaches to assess the impact of policy changes on populations that face health disparities. Specific interests include substance use disorders, particularly opioids and tobacco cessation during pregnancy.



**JINGCHUAN “SERENA” GUO, M.D., PH.D.**

Assistant Professor

Dr. Guo’s research is built at the intersection of epidemiology and pharmaceutical health services and outcomes research, with focus on diabetes, cardiovascular health and social determinants of health. She uses large health care databases and advanced methods (e.g., machine learning, causal mediation analysis) to study the equitable delivery of high-quality care, individualized effectiveness and safety of treatment and interventions, and fairness and bias in algorithmic decision-making.



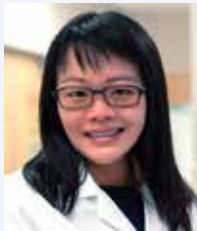
# CURRENT FACULTY IN 2021-22



**LAURA E HAPPE, PHARM.D., M.S.**

Clinical Associate Professor, Director of The POP Online M.S. Program

Dr. Happe is an editor, professor and author who specializes in using data to aid in decision-making. Laura leads the online master’s degree program with approximately 150 students and 50 graduates annually. Dr. Happe is also the Editor-in-Chief of the Journal of Managed Care and Specialty Pharmacy (JMCP), the official peer-reviewed journal of the Academy of Managed Care Pharmacy. Her first book, If You Give an Ox an Oxy, is an educational resource for parents to teach their adolescents about the hazards of opioid use.



**WEI-HSUAN “JENNY” LO-CIGANIC, PH.D., M.S., M.S. PHARM**  
Associate Professor

Dr. Lo-Ciganic’s research program focuses on the evaluation of treatment effectiveness and safety, the application of advanced predictive analytics, the and improvement of prescribing quality and health disparity, especially among vulnerable populations. Areas of research interests include medication adherence, prescription drug abuse, treatment for substance use disorders, chronic diseases management and oncology.



**HAESUK PARK, PH.D.**  
Associate Professor

Dr. Park’s research program focuses on the evaluation of economic and health outcomes of medication and pharmaceutical care services, as well as policy associated with the use of pharmaceuticals.



**RICHARD SEGAL, R.PH., PH.D., M.S.**

Professor and Graduate Program Director

Dr. Segal’s research focuses on improving the quality and safety of the medicines use process, with a particular emphasis on improving prescribing practices and in creating collaborative practice models to improve medication use by patients.

# CURRENT FACULTY IN 2021-22



**HUI SHAO, M.D., PH.D.**

Assistant Professor

Dr. Shao's research interests include predictive modeling, using advanced machine learning, microsimulation, and econometrics method to build valid predictive models to resolve real-world issues. He is one of the original developers of the Building, Relating, Assessing, and Validating Outcomes (BRAVO) diabetes model, which is the first person-level microsimulation model predicting the progression of diabetes based on individuals' characteristics and treatment regimen, in the U.S. Hui is currently working with the Centers for Disease Control and Prevention on multiple projects, oversees the development process of several national diabetes/ prediabetes predictive models.



**STEVEN SMITH, PHARM.D., M.P.H.**

Assistant Professor

Dr. Smith's research is in the area of cardiovascular pharmacotherapy and hypertension and is funded by the National Heart, Lung, and Blood Institute of the National Institutes of Health. He is a member of the American Heart Association, American College of Cardiology, American College of Clinical Pharmacy, the American Association of Colleges of Pharmacy and the International Society for Pharmacoepidemiology. He is an Assistant Professor in the Departments of Pharmacotherapy and Translational Research and Pharmaceutical Outcomes and Policy.



**SCOTT MARTIN VOURI, PHARM.D., PH.D., BCGP**

Assistant Professor and Assistant Director of Pharmacy Services–UF Health Physicians

Dr. Vouri's research interests include pharmacoepidemiology and pharmaceutical health services research related to the fields of inappropriate medication prescribing/deprescribing, geriatrics, urology and medication utilization following bariatric surgery.



**YU-JUNG "JENNY" WEI, PH.D.**

Assistant Professor

Dr. Wei's research programs focus on questions surrounding the effectiveness, safety and quality of medication use in elderly patients with chronic conditions, especially those in nursing home settings

# POSTDOCTORAL FELLOWS & RESEARCH FACULTY



**ADENIYI JEREMIAH IDIGO, B.PHARM., PH.D., M.P.H.**  
Postdoctoral Fellow

Dr. Idigo is a postdoctoral fellow and works with Dr. Winterstein.



**HYERIM KANG, PH.D.**  
Postdoctoral Fellow

Dr. Kang is a postdoctoral fellow and works with Dr. Park.



**KELLY MA, PHARM.D.**  
Postdoctoral Fellow

Dr. Ma is a postdoctoral fellow and works with Drs. Vouri and Reise.



**HYUN JIN SONG, PH.D.**  
Postdoctoral Fellow

Dr. Song is a postdoctoral fellow and works with Dr. Park.



**THUY THAI, PH.D., M.P.H.**  
Assistant Scientist

Dr. Thai is an assistant scientist and works with Dr. Winterstein.



# AWARDS, HONORS & APPOINTMENTS

## DR. SCOTT VOURI HONORED WITH 2022 HEALTH IN AGING FOUNDATION NEW INVESTIGATOR AWARD



The American Geriatrics Society presented Scott Vouri, Pharm.D., Ph.D., BCGP, an assistant professor of pharmaceutical outcomes and policy in the University of Florida College of Pharmacy, with a 2022 Health in Aging Foundation New Investigator Award at the organization's annual meeting in Orlando on May 13. The honor recognizes individuals whose original research reflects new and relevant insights in geriatrics and who are committed to a career in aging research. He is only the fifth pharmacist to receive the award out of more than 70 recipients.

Vouri joined the UF College of Pharmacy in 2018 and has established a successful research program around medication prescribing and older adults. He and his research team use a variety of pharmacoepidemiology, pharmacovigilance and health-services research approaches to study geriatric patients and vulnerable populations. They aim to develop processes or interventions to translate their research into clinical practice and improve the safety and well-being of older adults.



# DR. HAESUK PARK WINS DOCTORAL DISSERTATION MENTORING AWARD



Haesuk Park, Ph.D., an associate professor of pharmaceutical outcomes and policy, was selected as the University of Florida College of Pharmacy’s Doctoral Dissertation Mentoring Award winner for 2022. The award recognizes excellence, innovation and effectiveness in mentoring doctoral students throughout their dissertation project.

Since joining the college in 2013, Park has chaired nine dissertation supervisory committees and served on 12 other dissertation supervisory committees. She has shown a thoughtful, comprehensive and compassionate approach to mentorship. Her style has been informed by participation in the UF Clinical and Translational Science Institute Mentorship Academy early in her career, and she has applied the skills and tactics learned in the academy toward mentorship excellence.

Park’s former students appreciate her encouragement and desire for them to “find their own passion” by developing research interest areas. She guides them in knowledge, in developing critical thinking skills, and in understanding necessary methodologic skills for success. Her students all present at national and international meetings during their doctoral training and have multiple publications resulting from their doctoral research.

“It is very rewarding to watch my students grow through the work we accomplish together, and to see them become independent scholars and achieve success in their careers,” Park said. “This award means a lot to me, and I am grateful that I have had the opportunity to inspire and help my graduate students. I’ve passed along my knowledge, experience and expertise, knowing they will do the same for subsequent generations.”

Park joined the UF College of Pharmacy in 2013. She graduated with a Ph.D. from the University of Texas at Austin and earned her bachelor’s and master’s of pharmacy at Chung-Ang University in Seoul, South Korea.

**JOSHUA BROWN, PHARM.D., PH.D., M.S.**  
Associate Professor and Associate Graduate  
Program Director

- University of Kentucky College of Pharmacy  
Young Alumni Award, 2022
- UF College of Pharmacy Teacher Service  
Award, 2021

**AMIE GOODIN, PH.D., M.P.P.**  
Assistant Professor

- Appointed as Fellow for Center for Public  
Health Law Research, 2022-2024
- Editorial board member for the journal Pain  
Medicine, 2021-2022
- Editorial board member for the journal  
Medical Cannabis & Cannabinoids, 2021-2022

**JINGCHUAN “SERENA” GUO, M.D., PH.D.**  
Assistant Professor

- Advisor, American Diabetes Association  
(ADA) Public Health & Epidemiology Interest  
Group Leadership Team, 2022
- Lead, Social Determinants of Health  
Work Group, International Society of  
Pharmacoepidemiology (ISPE) Health Equity &  
Diversity Special Interest Group, 2022

**WEI-HSUAN “JENNY” LO-CIGANIC, PH.D.,  
M.S., M.S. PHARM**  
Associate Professor

- University of Florida College of Pharmacy  
Research Impact Award, 2022
- Young Outstanding Alumni Award of National  
Cheng-Kung University, Taiwan, 2021

**HAESUK PARK, PH.D.**  
Associate Professor

- UF College of Pharmacy Dissertation  
Mentoring Award, 2022

**MASOUD ROUHIZADEH, PH.D., M.SC., M.A.**  
Assistant Professor

- Scientist Merit Reviewer, Patient-Centered  
Outcomes Research Institute (PCORI), 2021-  
2022
- Adjunct Assistant Prof., Biomedical  
Informatics and Data Science, JHU School of  
Medicine, 2021-2022

# CONGRATULATIONS

TO DR. JOSHUA BROWN  
FOR PROMOTION TO  
ASSOCIATE PROFESSOR WITH TENURE!



**JOSHUA BROWN PHARM.D., PH.D., M.S.**  
is now an Associate Professor

**STEVEN SMITH, PHARM.D., M.P.H.**  
Assistant Professor

- UF College of Pharmacy Teaching and Service  
Excellence Award, 2021
- Member of the CDC’s National Hypertension  
Control Roundtable

**SCOTT MARTIN VOURI, PHARM.D., PH.D.,  
BCGP**

Assistant Professor and Assistant Director of  
Pharmacy Services — UF Health Physicians

- UF College of Pharmacy - Teacher Service  
Incentive Award, 2021
- American Geriatrics Society — 2022 Health in  
Aging Foundation New Investigator Award
- International Society of  
Pharmacoepidemiology Mid-Year Virtual  
Meeting 2022 — Conference Co-Chair

**ALMUT GERTRUD WINTERSTEIN, RPH,  
PHD, FISPE**  
Distinguished Professor and Chair

- International Society of  
Pharmacoepidemiology Mid-Year Virtual  
Meeting 2022 — Conference chair
- UF College of Pharmacy Teaching & Service  
Award



# POP RESEARCH

GUIDING CLINICAL CARE AND POLICY DECISIONS  
WITH REAL-WORLD EVIDENCE

## UF STUDY FINDS 1 IN 16 WOMEN TAKE HARMFUL DRUGS DURING PREGNANCY

In a review of more than 3 million pregnancies, University of Florida researchers found 1 in 16 women were exposed to harmful teratogenic drugs — medications that can cause pregnancy loss, birth defects and other health problems for the unborn child.

The study published in the American Journal of Obstetrics and Gynecology highlights the need for women and their providers to carefully examine medications taken during pregnancy.

“If you are pregnant, planning to become pregnant, or sexually active you must understand the risks involved with taking teratogenic drugs,” said Almut Winterstein, Ph.D., R.Ph., an author of the study and distinguished professor and chair of the department of pharmaceutical outcomes and policy in the UF College of Pharmacy, part of UF Health.

“Talk with your provider about your medications and review drug labels to ensure the medications you are taking are not putting your unborn child at risk,” added Winterstein, who also directs the UF Center for Drug Evaluation and Safety.

A teratogen is a substance that interferes with the normal development of a fetus. Hundreds of such drugs have been identified, including medications to treat seizures, migraines, obesity, acne, hypertension, bipolar disease and cancer.



UF researchers investigated more than 200 teratogenic drugs and evaluated their exposure among 3.4 million pregnancies identified in a national private insurance database from 2006 to 2017. Prenatal exposure was defined by the mother taking at least one teratogenic drug during pregnancy.

Using teratology drug databases, the medications were separated into two classes based upon their known teratogenic effect. About 140 drugs were known to have definite teratogenic effects, and another 65 were identified as having potential teratogenic effects. The proportion of pregnancies with exposure to definite teratogens decreased slightly over the 12-year study period from 1.9% to 1.2%, while exposures for potential teratogens increased from 3.4% to 5.3%.

“While declining exposure rates among teratogenic drugs with definite risk are encouraging, the rising prenatal exposure to drugs with potential risk calls for more assessment,” Winterstein said. “To have 1 in 16 women and their unborn baby exposed to a teratogenic medication is simply too high, and we must identify strategies to improve pregnancy outcomes.”

The study also examined age and risk for prenatal exposure to teratogenic drugs and found teenagers and women in their 40s had the greatest risk. Winterstein said both of these groups are known to have more unintended pregnancies and the drug exposure may have been accidental, which points to the need for more information about effective birth control and family planning when using teratogenic drugs.

UF researchers were particularly interested in prenatal exposure during more recent years, following the enactment of the FDA Amendment Act of 2007. That legislation allowed the U.S. Food and Drug Administration to require drug manufacturers to implement a risk evaluation and mitigation strategy for certain medications with serious safety concerns. Those mitigation strategies are designed to reinforce safe medication-use behaviors, such as a pregnancy test before a teratogenic drug is started, and only a few medications require this extra safety precaution.

The 12 drugs with mitigation protocols in the study were found to be used infrequently and contributed to only a small portion of prenatal exposures. The study’s authors concluded more research and regulatory action are needed to optimize the use of medications during pregnancy.

“There is much to do to address the evidence available regarding the risk-benefit of many drugs during pregnancy, and the availability of adequate risk-mitigation programs that ensure pregnancies are not unnecessarily exposed to teratogenic drugs,” Winterstein said. “In the meantime, women and their providers must rely on the written information that is provided about the teratogenic risk for drugs during pregnancy.”

The study “Prenatal Exposure to Teratogenic Medications in the Era of Risk Evaluation and Mitigation Strategies (REMS),” was published in the American Journal of Obstetrics and Gynecology. Amir Sarayani, Pharm.D., M.P.H., a doctoral candidate in the UF College of Pharmacy under Winterstein’s mentorship, served as the lead author of the paper. Additional contributions were made by Sonja Rasmussen, M.D., M.S., a professor in the departments of pediatrics and epidemiology in the UF College of Medicine.

# GRANTS

DEPARTMENT FACULTY ARE STEADILY INCREASING THEIR EXTRAMURALLY FUNDED RESEARCH PORTFOLIO AND ARE LEADING, OR ACTIVELY INVOLVED, IN OVER 50 GRANTS AND CONTRACTS

## Advancing Personalized Hypertension Care through Big Data Science

NHLBI/NIH (K01HL138172) Research Scientist Development Award  
PI: Steven Smith  
Mentor: Almut Winterstein  
07/2018-06/2023

This project seeks to use large-scale EHR data to better understand current prescribing patterns for new antihypertensive use, to identify treatment effect modifiers of antihypertensive response, and ultimately to develop prediction models for optimal antihypertensive selection following hypertension diagnosis.

## Applying big data to improve mental health outcomes with restless legs syndrome treatment

National Institute of Mental Health (NIMH). R36  
PI: Brianna Costales  
Mentor: Amie Goodin  
08/2021-08/2022

This dissertation grant examined pharmacotherapies prescribed for the treatment of restless legs syndrome and evaluated mental health and safety outcomes resulting in those treated with gabapentinoids versus dopamine agonists.

## Assessing the Burden of Diabetes by Type in Children, Adolescents and Young Adults (DiCAYA)

CDC U18DP006512-01-00  
PI: Hui Shao  
09/2020-08/2025

This study will build a surveillance system in Florida to monitor the prevalence and incidence of diabetes among children and adolescents in an accurate, cost-effective and timely fashion.

## Assessing Prevalence, Maternal Perceptions, and Fetal Development Outcomes of Perinatal Marijuana Use

University of Florida Research Opportunity Seed Fund  
PIs: Amie Goodin, Dikea Roussos-Ross, Deepthi Varma, Bruce Goldberger  
06/2022-05/2024

This study examines cannabis use behaviors and perceptions of health risk among women of reproductive age and those who are currently pregnant or

lactating, and initiates development of a home test for screening for the presence of detectable THC and CBD in breastmilk.

## Application of Physiologically Based Pharmacokinetic Models to Inform Dosing Recommendations for Hormonal Contraceptives Co-administered with Other Medications

Bill & Melina Gates Foundation (OPP118545)  
PI: Stephan Schmidt  
Co-Investigators: Joshua Brown, Almut Winterstein  
11/2017-10/2022

This project aims to develop pharmacological and pharmacoepidemiological evidence to inform treatment decisions for hormonal contraceptives and interacting medications by integrating real-world outcomes research, model-based meta-analytic approaches and physiologically based pharmacokinetic modeling and simulations.

## A Behavioral Economic Intervention to Reduce Marijuana Use in Truant Youth

NIH/NIDA K23DA046565 (K23) Research Project Grant Award  
PI: Ali Yurasek  
Co-Investigator: Haesuk Park  
04/2019-03/2024

The aim of this proposal is to adapt a brief behavioral economic intervention to reduce marijuana use that involves truant youth and their parents. This project will examine the acceptability, feasibility and initial efficacy of this intervention with adolescents referred for services as part of a juvenile specialty (truancy) diversion program.

## CDK 4/6 Inhibitors Use Among Metastatic Breast Cancer Patients: Early Discontinuation and Management of Adverse Events

Pfizer, Inc.  
PIs: Karam Diaby, Richard Segal  
07/2021-06/2022

The primary objective of this proposal is, in the first-line treatment of women with HR-positive/human epidermal receptor (HER2)-negative mBC, to examine factors associated with early discontinuation (Aim 1) and develop best practices for the management of side effect profiles of CDK 4/6i (Aim 2).

## Characterizing Adverse Drug Events Reports Involving Cannabis and Cannabinoids

Consortium for Medical Marijuana Clinical Outcomes Research  
PI: Joshua Brown  
07/2021-06/2022

This study aims to evaluate FDA Adverse Event Reports to identify types of safety concerns reported with cannabis and to identify potential for drug interactions leading to adverse events.

## Collaboration on Joint Research to Train the Next Generation of Pharmacoepidemiologists

Merck and Company Inc  
PI: Almut Winterstein  
12/2019-12/2021

In collaboration with Merck epidemiologists, UF will nominate senior graduate students to conduct pharmacoepidemiologic research on specific topics identified by Merck.

## Community Health Workers Practice Improvements

Florida Department of Health (COWH3)  
PI: Richard Segal  
05/2019-06/2023

The overall goal of this project is to develop a critical mass of medication therapy management workforce who will effectively address medication therapy disparities in Florida.

## Consortium for Medical Marijuana Clinical Outcomes Research

Florida State University System Board of Governors  
PI: Almut Winterstein  
Co-Investigators: Amie Goodin, Joshua Brown  
07/2019-06/2023

This state appropriation funds the consortium for medical marijuana clinical outcomes research, charged to generate and disseminate evidence on the outcomes of the medical use of marijuana to inform clinical and policy decisions. The Consortium includes nine Florida universities.

## COVID-19 Pandemic and Atrial Fibrillation Care

NIH/NHLBI R01HL15705  
PI: Inmaculada Hernandez  
Co-Investigator: Serena Jingchuan Guo  
07/2021-06/2025



This study aims to quantify changes in the incidence rate of new AF diagnoses, determine whether the COVID-19 pandemic was associated with decreased oral anticoagulation (OAC) initiation among newly diagnosed AF patients, quantify changes in adherence and monitoring of OAC therapy among established AF patients and in the incidence rates of stroke, bleeding, cardiovascular hospitalization, and death among established AF patients.

**Developing a Real-Time Trajectory Tool to Identify Potentially Unsafe Concurrent Opioid and Benzodiazepine Use Among Older Adults**

NIH/NIA AG060308 (R21) Exploratory/ Developmental Research Grant Award  
PI: Wei-Hsuan “Jenny” Lo-Ciganic  
Co-Investigators: Almut Winterstein  
05/2019–01/2022

This project aims to develop an innovative, real-time “Predicting Risky Opioid-Benzodiazepine Trajectory e-Care Tool (PROTECT)” for identifying and predicting subgroups of older adults with potentially unsafe patterns of concomitant use of opioids and benzodiazepines, in order to better guide clinical care and inform related policies and interventions.

**Developing and Evaluating a Machine-Learning Opioid Prediction & Risk-Stratification E-Platform (DEMONSTRATE)**

National Institute of Drug Abuse  
(1R01DA050676 - 01A1)  
PI: Wei-Hsuan “Jenny” Lo-Ciganic  
Co-Investigator: Scott Vouri, Masoud Rouhizadeh  
07/2021-04/2026

The study aims to develop, test, and assess a digital platform named ‘DEMONSTRATE’ with the overarching goal of helping healthcare systems identify patients who may be at high risk for opioid overdose and opioid use disorder. The proposed e-platform will utilize machine-learning and risk-stratification.

**Development, Piloting and Dissemination of an Integrated Clinical and Social Multi-level Decision Support Platform to Address Social Determinants of Health Among Minority Populations in Baltimore City**

NIH-NIMHD (1R01MD015844)  
PIs: Jonathan Weiner, Elham Hatef-Naimi  
Co-Investigator: Masoud Rouhizadeh  
07/2021-03/2023

The study aims to develop, pilot, evaluate, and widely disseminate a multi-level EHR-integrated clinical decision support system to help identify, manage, and refer patients with high chronic disease burden who also have high levels of modifiable SDOH challenges.

**Diagnosing Suicidal Behaviors in Postpartum Mothers Using Natural Language Processing**

University of Florida Informatics Institute  
PI: Joshua Brown  
06/2022-05/2023

This study aims to develop natural language processing algorithms to identify suicidal behaviors in postpartum mothers to better understand the epidemiology of these behaviors and inform future interventions.

**Diversity supplement for Joshua Brown to Parent R01**

NIH National Institute on Aging  
(1R01AG068128-Diversity Supplement)  
PI: Melissa Armstrong  
Co-Investigator: Joshua Brown  
06/2021-05/2024

This project uses Medicare data to evaluate the end-of-life experiences of people with dementia with Lewy bodies to better inform care planning and family education.

**Epidemiology and Cost of RSV Infections in Infants and Toddlers**

Merk and Company Inc  
PI: Almut Winterstein  
05/2020-09/2022

This study will estimate the number and proportion of children <5 years of age with RSV-associated inpatient admissions or outpatient visits, and estimate RSV related costs, considering relative contributions of RSV infections to the overall burden of lower-respiratory tract infections and variation in disease incidence and cost across strata defined by chronological and gestational age, key risk conditions, plan type, and RSV season and geographic region.

**Evaluation of Utilization Patterns of Cough Medications in the United States**

Merck Sharp & Dohme Corp  
PI: Wei-Hsuan “Jenny” Lo-Ciganic  
05/2021-12/2022

The goal of the study is to (1) estimate changes in the trend in chronic cough medication (CCM) use over time in the US ambulatory care settings, and (2) to

identify and characterize the distinct CCM utilization trajectories and associated factors using Medicare and OneFlorida data.

**External Advisor on Microsimulation and Machine-Learning Methods for Program Evaluation**

CDC U18DP006523  
PI: Hui Shao  
07/2020-06/2022

This inter-agency agreement requests Dr. Shao’s expertise as an external advisor in developing AI-driven prediction models and microsimulation algorithms and designing simulation experiments to support the CDC’s program evaluation.

**The External Exposome and COVID-19 Severity and Mortality**

NIH/NIEHS R21  
PIs: Hui Hu and Jian Bian  
Co-Investigator: Jingchuan “Serena” Guo  
07/2021-06/2023

This study will fill important knowledge gaps by providing timely information to understand how environmental exposures may impact COVID-19 severity that will improve identifications of high-risk COVID-19 patients and inform the design of future precision interventions.

**Identifying and Characterize Prep Users from OneFlorida Electronic Health Records and Explore Provider’s Insights on a PrEP Related Clinical Decision Support Tool**

UF CTSI Precision Medicine  
PI: Khairul Siddiqi  
Co-Investigator: Haesuk Park  
07/2021-06/2022

This study aims to develop and validate an HIV risk prediction model to identify women at risk of HIV in Florida.

**Identifying Suicidal Behaviors Using Natural Language Processing in Patients with**

Alzheimer’s Disease and Related Dementias  
OneFlorida Alzheimer’s Disease Research Consortium  
PIs: Joshua Brown, Masoud Rouhizadeh  
06/2022-05/2024

This project aims to develop natural language processing algorithms to identify suicidal behaviors in people with dementia to better understand the epidemiology of these behaviors and inform future interventions.

## UF HEALTH STUDY SHOWS YEARS OF LIFE GAINED BY IDEAL TYPE 2 DIABETES CONTROL

A person struggling to control their Type 2 diabetes might understand in the abstract the impact of the disease on their health. A doctor, for example, might tell them they are two to four times more likely to die of heart disease.

Telling a patient, however, that better controlling blood sugar, or glucose, could add nearly four years to their life — or conversely, that failing to control it will cut life short by four years — packs an emotional punch in its specificity.



University of Florida Health researchers in a modeling study published last month in JAMA Network Open estimates the years that might be added to the life span of someone with Type 2 diabetes with improved control of the disease. The findings, they hope, might motivate patients to follow a healthier lifestyle and help clinicians prioritize interventions, researchers said.

The study focused on four measures commonly used to monitor patients with diabetes: hemoglobin A1c, a measure of blood glucose; body mass index; blood pressure; and low-density lipoprotein, or LDL, cholesterol, also known as “bad” cholesterol.

“Better control of biomarkers can potentially increase the life expectancy by three years in an average person with Type 2 diabetes in the U.S.,” the study said. “For individuals with very high levels of A1c, systolic blood pressure, LDL cholesterol and BMI, controlling biomarkers can potentially increase life expectancy by more than 10 years.”

Someone, for instance, who is severely obese with a BMI of 41.4 can extend their life 3.9 years if they drop to a BMI of 24.3, the largest increase in life expectancy among the four measures, according to the model. That BMI improvement is the equivalent of someone who stands 5-foot-10 dropping from about 288 pounds down to 160.

Life expectancy is increased 3.8 years for someone with poorly controlled diabetes as reflected by an A1c of 9.9% improving to a normal level of 5.9%.

But people with diabetes can extend their life span even if they don’t hit their optimal treatment goals, Shao said. Generally, more modest improvement also extends life, albeit to a lesser extent.

The study’s authors note that the U.S. health care system is facing a diabetes epidemic. An estimated 37 million Americans have diabetes, about 95% of them Type 2.

“The hope is to show people with Type 2 diabetes in an easily understood way the benefits of controlling their disease,” said study co-author Hui Shao, M.D., Ph.D., an assistant professor in the UF College of Pharmacy’s department of pharmaceutical outcomes and policy and primary developer of the microsimulation on which the research

is based. “It’s important to optimize treatment and motivate patients to succeed. Despite improvements in diabetes care and technology, diabetes control is worsening in the U.S. The average A1c is increasing over time.”

The findings were generated by a microsimulation that is optimized using data from a clinical trial involving patients with Type 2 diabetes at increased risk of cardiovascular disease. Called the Building, Relating, Assessing and Validating Outcomes model, or BRAVO, it uses a patient’s risk profile to project long-term health outcomes, including diabetes complications and life expectancy.

Even longer life expectancy is possible when the impact of improving multiple biomarkers is combined, hence the finding that someone can bank an extra decade by vastly improving all measures. Shao noted BMI is the most important measure, since losing weight can have a positive effect on the others.

“Discussing life expectancy gains as a positive effect of metabolic control can improve conversations about diabetes management by focusing on this important patient outcome,” said Naykky Singh Ospina, M.D., an associate professor in the UF College of Medicine’s division of endocrinology, diabetes and metabolism.

It’s also hoped the work will help tailor treatment to each patient and avoid overtreatment, all the while offering a vivid picture of the benefit of ideal diabetes management.

“Individualizing treatment goals is vital for achieving optimal health outcomes while avoiding overtreatment,” said study co-author Serena Jingchuan Guo, M.D., Ph.D., an assistant professor in the UF College of Pharmacy’s department of pharmaceutical outcomes and policy. “By measuring the potential health benefits for treatment, we hope this helps improve diabetes care in the United States.”

Other study co-authors include researchers at Tulane University, Imperial College London, the University of Pittsburgh School of Medicine and the Centers for Disease Control and Prevention.

**Improving Medication Adherence with Telehealthcare Medication Therapy Management to Change Health Outcomes in Adolescents and Young Adults with Asthma (MATCH)**  
NIH/NHLBI R01HL136945 (R01)  
Research Project Grant Award  
PI: Kathryn Blake (Nemours Children’s Clinic)  
Co-Investigators: Haesuk Park, Almut Winterstein  
05/2018-03/2023

This project aims to use video telemedicine to improve medication adherence in adolescents and young adults with poorly controlled asthma by monitoring improvements in asthma outcomes through adherence counseling with a pharmacist via telehealth in a convenient and private location.

**Integrative and Multidisciplinary Pain and Aging Research Training (IMPART)**  
NIH/NIA AG0049673-01 (T32) Award  
PI: Roger Fillinim  
Developmental Mentor Investigator: Yu-Jung “Jenny” Wei  
08/2020-08/2025

The overall goal of the IMPART program is to develop outstanding independent investigators capable of sustaining productive clinical and translational research careers addressing the biopsychosocial mechanisms underlying age-related changes in the experience of pain and/or designing clinical interventions to ameliorate acute and chronic pain among older adults. I am one of the developmental mentors who will serve as a co-mentor and member of mentoring teams of trainees who would like to develop skills in pharmacoepidemiology.

**Linking VA and non-VA Data to Study the Risk of Suicide in Chronic Pain Patients**  
Voices of Hope National Institute of Mental Health/Cornell University  
PI: Jyotishman Pathak  
Co-Investigator: Wei-Hsuan “Jenny” Lo-Ciganic  
09/2020-05/2025

The study aims to integrate large-scale VA and non-VA data to study the risk of deaths (suicide and accidental opioid overdose), and suicidal ideation and attempts in Veterans on chronic opioid therapy using innovative machine learning and data mining approaches.

**Louisiana Experiment to Address Diabetes: Zero-Dollar Copayment (LEAD-ZDC) for Improving Disease Management**  
CDC U18DP006523-01-00  
PI: Lizheng Shi  
Co-Investigator: Hui Shao  
09/2020-09/2025

This project seeks to examine if a zero-dollar copayment program in Blue Cross Blue Shield of Louisiana will improve the care among patients with Diabetes and if it is cost-effective in a long run.

**Medicaid Prior Authorization Policies for Chronic Hepatitis C Treatment in Vulnerable Populations**

NIH/NIDA K01DA045618 (K01)  
Research Scientist Development Award

PI: Haesuk Park  
Mentor: Almut Winterstein  
05/2018-04/2023

This award supports the PI's career development in viral hepatitis and health policy for individuals with substance use disorders and HIV co-infection. The project will advance the understanding of the consequences of Medicaid policies for hepatitis C treatment on accessibility, quality of care, and clinical outcomes critical to improving access to care and health equality in underserved and vulnerable populations.

**Medication Adherence and Cardio-Metabolic Control Indicators among Adult American Indians Receiving Tribal Health Services**

National Institute of Nursing Research (1R01NR020386-01)

PI: Lisa Scraton  
Co-Investigator: Richard Segal  
03/2022-12/2025

This study aims to investigate the relationship between medication adherence and cardio-metabolic control indicators (C-MCI), to develop models that predict future C-MCI, and identify facilitators to and barriers of medication adherence.

**Nursing Unit Design and Hospital Falls**

Veterans Affairs Merit

PI: Ron Shorr  
Co-Investigator: Wei-Hsuan "Jenny" Lo-Ciganic  
03/2021-09/2022

The study aims to identify unit design factors contributing to inpatient falls within the Veteran Health Administration (VHA) using a mixed qualitative and quantitative methods.

**Operationalizing High-Throughput Screening Prescription Sequence Symmetry Analysis to Discover New Prescribing Cascades**

University of Florida College of Pharmacy (PROSPER Award)  
PI: Steven Smith, Scott Vouri  
01/2021-12/2021

This project seeks to apply high-throughput screening using the sequence symmetry analysis framework to identify prescribing cascade signals among patients starting statin medications.

**Opioid Disposal in Post-Surgical Patients Using an At-Home Drug Disposal Delivery**

Rx Abuse Leadership Initiative (RALI)  
PIs: Amie Goodin, Scott Vouri  
04/2021-03/2022

This study examines use outcomes for a prescription opioid disposal intervention in post-surgical patients.

**A Personalized Dynamic Blood Pressure Control Plan for Cardiovascular Disease Prevention Among Patients with Hypertension at Low Cardiovascular Disease Risk**  
Canadian Institutes of Health Research (CIHR) — Project Grant  
PI: Kristian Filion, Tianze Jiao  
04/2020-03/2022

This study aims to identify the optimal approach to the management of hypertension for the prevention of heart diseases in patients at low risk, a large yet understudied population.

**Pharmacological Management of Pain in Alzheimer's Disease and Related Dementia (ADRD)**  
NIH/NIA 1K01AG054764-01A1 (K01) Mentored Research Scientist Development Award  
PI: Yu-Jung "Jenny" Wei  
Mentor: Almut Winterstein  
08/2017-05/2022

This project aims to provide preliminary data that improve our understanding of current pain medication prescribing and potential discrepancies between practices and pain guidelines, and to formulate hypotheses for future research regarding the role of pain control in reducing mental health problems in ADRD.

**Administrative Supplement for K01 Pharmacological Management of Pain in Alzheimer's Disease and Related Dementia (ADRD)**  
NIH/NIA 3K01AG054764-04S1 K01 administrative supplement  
PI: Yu-Jung "Jenny" Wei  
08/2020-05/2022

This supplement is used to support the PI's transition from mentored career development to research independence after a critical life event.

**Precision Antiplatelet Therapy After Percutaneous Coronary Intervention**  
NIH/NHLBI R01HL149752  
PI: Larisa Cavallari, Craig Lee  
Co-Investigator: Almut Winterstein  
07/2020-06/30/2025

This study aims to establish optimal strategies for individualized antiplatelet therapy prescribing decisions that improve outcomes and can be feasibly applied in a diverse, real-world population.

**Place-Based Disparities in Glucose-Lowering Drugs Use among Medicare Beneficiaries with Type 2 Diabetes**

University of Florida College of Pharmacy PROSPER Seed Award  
PI: Jingchuan "Serena" Guo  
07/2021-06/2022

This study aims to identify spatial disparities in newer glucose drug adoption in the U.S.

**Predicting unmet social needs of Heart Failure Outcomes**

UF Research Opportunity Seed Fund Foundation Research Starter Award  
PI: Jingchuan "Serena" Guo  
06/2022-06/2024

This study aims to develop individualized polysocial risk score (iPsRS) to predict unmet social needs associated with treatment adherence and clinical outcomes among patients with heart failure.

**Prescription Opioid Use Trajectories and Risk Factors Associated with Opioid-Related Hospitalizations in Older Adults**

AHRQ 1R03HS027230-01 (R03) Award  
PI: Yu-Jung "Jenny" Wei  
09/2019-08/2021

This study aims to assess elderly high-risk prescription opioid use patterns and risk factors that are associated with opioid-related hospitalizations among older adults.

**Preventing the Calcium Channel Blocker- Lower Extremity Edema — Loop Diuretic Prescribing Cascade in Older Adults**

NIH/National Institute on Aging (K08AG066854)  
PI: Scott Vouri  
Mentor: Almut Winterstein  
05/2021-03/2025

This project aims to assess the incidence and downstream consequences of a prescribing cascade and assess the potential impacts of a prescribing cascade intervention.



**Program Evaluation and Analytic Support Services for a Substance Use Disorders Recovery Community Center**

*Voices of Hope, Inc.  
PI: Amie Goodin  
01/2019-12/2022*

This project creates a measurement framework consisting of clinical and process outcomes measures used by a network of substance use disorder recovery community centers.

**Quality Assessment of Electronic Prior Authorization (ePA) and Real-Time Pharmacy Benefits (RTPB) and Program Expansion**

*Shands Quasi-Endowment Funds  
PIs: Scott Vouri, Rachel Reise  
07/2021-12/2022*

This study aims to evaluate the utility and outcomes of introducing ePA and RTPB in UF Health.

**Reducing Maternal Morbidity and Mortality in the COVID-19 Era**

*Florida Department of Health  
PI: Dikea Roussos-Ross  
Co-Investigator: Amie Goodin  
07/2021-06/2022*

This study develops and pilots a smartphone-based application (app) known as “MOMitor” to monitor maternal physical and mental health symptoms in the six weeks following hospital discharge for childbirth.

**Sentinel 2014: Treescan in Pregnancy — Maternal Outcomes**

*Harvard Pilgrim Healthcare  
PI: Almut Winterstein  
12/2020-09/2022*

This study aims to assess the performance of the TreeScan method to identify signals for maternal and obstetric adverse outcomes occurring from 20 weeks of gestation to 30 days after delivery among women with live births exposed to oral macrolides compared to oral penicillins.

**Social Determinants of Health and Newer Antidiabetic Use among Real-World Patients with Type 2 Diabetes in OneFlorida Network**

*University of Florida CTSI Pilot Award  
PI: Jingchuan “Serena” Guo  
07/2021-12/2022*

This study aims to identify the interactions of contextual and person-level social determinants of health in association with newer glucose drug use and hospitalization risk among patients with type 2 diabetes.

**Sparkling Advancements in Genomic Medicine**

*NIH/NHGRI U01HG007269 (U01)  
Research Project–Cooperative Agreements Grant Award  
PI: Julie Johnson  
Co-Investigators: Almut Winterstein  
07/2020-06/2023*

This project aims to address the significant burden of both pain and opioid use in the U.S. by testing the hypothesis that CYP2D6 genotype-guided pain management leads to improved patient-reported outcomes for pain control and is cost-effective in a real-world setting.

**Teratogenic Risk Impact and Mitigation (TRIM): An Evidence-Based Decision Framework**

*Food and Drug Administration  
PI: Almut Winterstein  
09/2021-09/2023*

This study aims to provide FDA with comprehensive evidence on prenatal exposure to teratogenic drugs to evaluate the current public health impact and the need for enhanced risk mitigation.

**Trajectories of Apixaban for Extended Treatment of Recurrent Venous Thromboembolism: A Retrospective Cohort Study**

*American Thrombosis Investigator Initiated Research Program (ARISTA)  
PI: Haesuk Park  
Co-Investigators: Wei-Hsuan “Jenny” Lo-Ciganic  
06/2020-06/2022*

To investigate the effects of extended use of apixaban or warfarin beyond six months of initial treatment on the risk of recurrent venous thromboembolism and major bleeding events among patients with a history of venous thromboembolism.

**Translational Examination of the Pharmacological Interactions of Medical Marijuana with Neuropathic Pain Analgesics in Both Young and Older Adults**

*Consortium for Medical Marijuana Clinical Outcomes Research  
PI: Jenny Wilkerson  
Co-Investigator: Joshua Brown  
07/2021-06/2022*

This study aims to evaluate the impact of use of multiple medications for analgesia and their cumulative impact on adverse effects in animal models and using real-world data.

**Using Machine Learning to Predict Problematic Opioid Use**

*NIH/NIDA 1R01DA044985 (R01)  
Research Project Grant Award  
Consortium PI: Wei-Hsuan “Jenny” Lo-Ciganic  
09/2017-06/2022*

The purpose of this study is to apply machine learning to develop two distinct prediction algorithms that can identify patients at high risk of problematic opioid use and overdose among Medicaid beneficiaries in Pennsylvania and Arizona.

**Using PCORnet to Compare Blood Pressure Control Strategies**

*Patient-Centered Outcomes Research Institute (PaCR Grant Administrative Supplement for COVID-19)  
PIs: Rhonda Cooper-DeHoff, Mark Pletcher  
Co-Investigator: Steven Smith  
07/2020-06/2022*

This project seeks to employ the BP Control Lab, a PCORI-funded project that uses PCORnet data, to study relationships between COVID outcomes and antihypertensive exposures among individuals with hypertension.

**Utilizing Artificial Intelligence to Identify Bleeding Risk Predictors with Newer P2Y12 Receptor Inhibitors**

*University of Florida SEED Fund  
PIs: Caitrin McDonough, Larisa Cavallari  
Co-Investigator: Masoud Rouhizadeh  
05/2022-05/2023*

This project aims to identify patient-specific factors predictive of bleeding risk with prasugrel or ticagrelor after PCI through AI approaches; and to derive a novel score for predicting bleeding risk with prasugrel and ticagrelor that could be integrated into the her to provide point-of-care risk assessment.

## UF HEALTH RESEARCHERS USE ARTIFICIAL INTELLIGENCE TO BETTER PREDICT HEPATITIS C TREATMENT OUTCOMES



HAESUK PARK, Ph.D.

When hepatitis C treatments fail, patients can face major health risks and the expense of a second therapy. Now, University of Florida Health researchers have developed algorithms that use artificial intelligence to accurately predict when treatment won't work.

The algorithms use machine learning, a type of artificial intelligence, to produce treatment-failure predictions that are more accurate than current statistical models, the researchers determined. Their findings were published recently in the journal *Hepatology*.

Successful hepatitis C treatment is an imperative for patient and payer alike, said Haesuk Park, Ph.D., a UF College of Pharmacy associate professor and the study's lead researcher. The hepatitis C virus causes inflammation that can lead to serious liver damage. Treatment failure also has a large price tag: Two common generic hepatitis C antivirals had a list price of \$24,000 when released in 2019.

"No one wants the treatment to fail, least of all the patient," Park said. "We wanted to find a better way."

To establish their findings, Park and her colleagues developed four machine-learning algorithms to predict direct-acting antiviral treatment failure among hepatitis C patients. Nearly 5,000 patient samples from a national hepatitis C registry were used for algorithm training, a process that is used to "teach" the algorithms to make proper decisions. Another 1,631 patient samples were used to separately validate the algorithms' effectiveness. Patients in the study were treated with one of seven oral hepatitis C medications between February 2014 and 2018.

The algorithms were developed and identified using 41 factors that put patients at risk for treatment failure, Park said. Some of the research was carried out with HiPerGator, the most powerful supercomputer in Florida and one of the world's fastest supercomputers.

After developing and testing four common machine-learning algorithms, a technique known as gradient boosting machine, or GBM, was found to be the most accurate. All four of the machine-learning techniques outperformed multivariable logistic regression, the previously developed statistical technique for predicting treatment failure, the researchers determined.

GBM also stood out for its ability to identify the patients at highest risk of treatment failure and segment them into different risk groups. Identifying those risk groups may one day be valuable for physicians treating hepatitis C patients, the researchers noted.

Machine learning also allowed the researchers to distinguish a host of conditions associated with treatment failure, including tobacco and alcohol use, diabetes, high blood pressure and certain non-prescription medications used to treat acid reflux disease. Some of those factors — especially smoking, drinking and acid-reflux pills — are potentially modifiable to improve patients' success with hepatitis C treatment, the researchers said.

While direct-acting antiviral treatments have initial cure rates of 95% or more, even a small percentage of failures can have a significant impact: The World Health Organization estimates there are 58 million global cases of chronic hepatitis C, with about 1.5 million new infections per year.

Machine learning, the researchers noted, is a strategic advancement that can help physicians make crucial decisions. While further refinement and more work are needed to understand how their findings can be deployed in the clinic to improve patient outcomes, the researchers envision it becoming part of electronic health records that would generate alerts for high-risk patients before hepatitis C treatments are started.

“This is the first AI model developed to predict direct-acting antiviral treatment failure,” Park said. “This is a good foundation for future research.”

Funding from the National Institutes of Health and UF’s Informatics Institute and Clinical and Translational Science Institute supported the research. UF College of Medicine and Johns Hopkins School of Medicine researchers collaborated on the work. Patient data for the research were obtained from the Hepatitis C Therapeutic Registry and Research Network, known as HCV-TARGET. It maintains a national registry to observe patients undergoing hepatitis C treatment and coordinates real-world monitoring on a national scale for new therapies. HCV-TARGET is co-led by David R. Nelson, M.D., Ph.D., UF’s senior vice president for health affairs, president of UF Health and a professor of medicine specializing in liver disease.

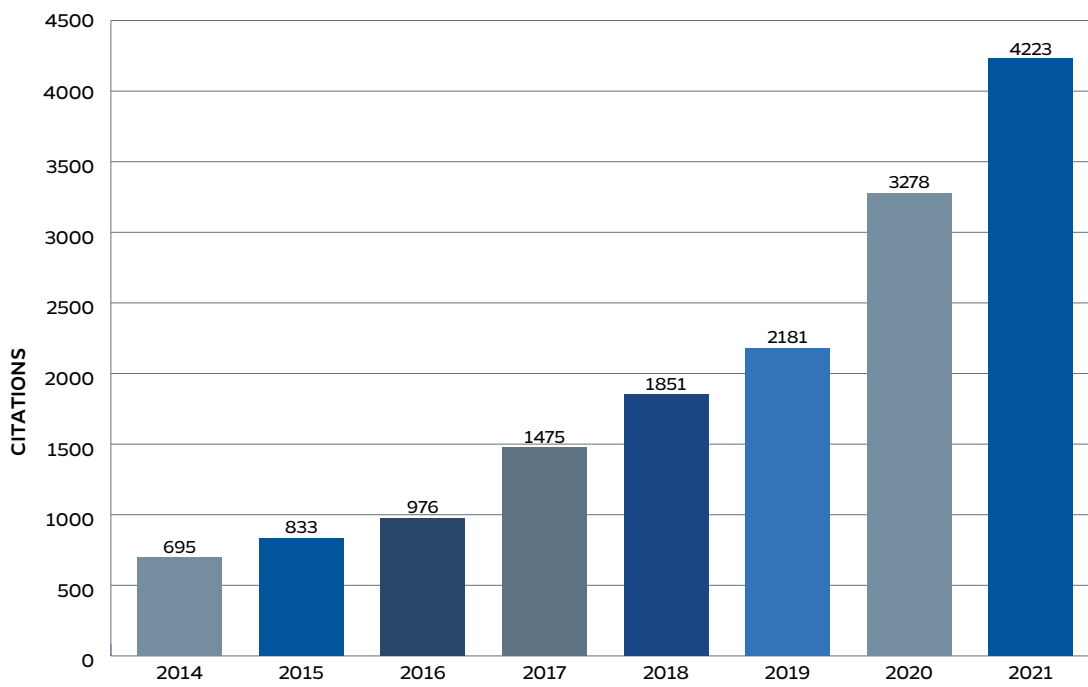


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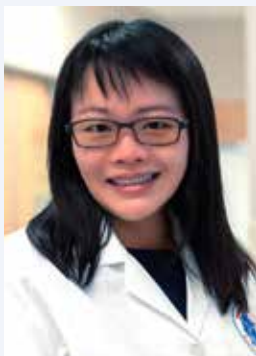
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## NEW AI TOOL WILL PREDICT PATIENTS AT HIGH RISK FOR OPIOID USE DISORDER AND OVERDOSE



**DR. JENNY LO-CIGANIC**  
Ph.D., M.S., M.S.Pharm.

University of Florida researchers are developing a new artificial intelligence tool that will help clinicians identify patients at high risk for opioid use disorder and overdose.

The tool will use data from patients' electronic medical records to guide clinicians in safely and effectively prescribing opioid medications. The project is supported by a five-year, \$3.2 million grant from the National Institute on Drug Abuse, or NIDA, and aims to reduce the unprecedented rise in opioid overdose and opioid use disorder in the United States.

"In 2019, almost 12 million Americans reported misuse of prescription opioids, and this public health crisis is placing a substantial burden on individuals, families, society and our health care system," said Wei-Hsuan "Jenny" Lo-Ciganic, Ph.D., M.S., M.S.Pharm., an associate professor of pharmaceutical outcomes and policy in the UF College of Pharmacy and the principal investigator of the NIDA grant. "If we can more accurately identify patients who are at a high risk for opioid use disorder and overdose, then we can better allocate resources and provide timely and targeted interventions."

For UF researchers, identifying high-risk patients begins by leveraging ongoing NIDA-funded work and an analysis of health care claims data using a type of AI called machine-learning. This NIDA grant will use electronic health records or integrated health care data to help clinicians identify patients most susceptible to opioid use disorder and overdose. The data analysis requires advanced AI technology, which UF provides researchers through its HiPerGator AI supercomputer.

"Machine-learning is an innovative analytic technique that handles complex interactions in large data, discovers hidden patterns through modeling and generates more accurate prediction algorithms in real-time that are often superior to traditional statistical techniques," Lo-Ciganic said. "Although AI techniques are widely used in activities from fraud detection to genomic studies, this is one of the first examples where machine learning will be applied and implemented in a clinical setting to address the nation's opioid epidemic."

Lo-Ciganic estimates the new algorithm will accurately identify between 70-90% of high-risk patients. The algorithm will exclude the large majority of prescription opioid users with negligible opioid use disorder or overdose risk while evaluating the benefits and risk tradeoffs of prescription opioid use for high-risk patients.

The second part of the NIDA grant involves designing and developing a clinical decision support tool that integrates AI-based risk scores to warn clinicians about high-risk patients. The tool will be integrated into patients' electronic health records and provide clinicians with early warnings and risk mitigation strategies. UF researchers, in collaboration with primary care providers and information technology experts at UF Health, will create the dashboard that lives in the electronic health record and provides real-time information to clinicians.

“We want the tool to help clinicians, but the ultimate goal is to improve patient outcomes and care,” Lo-Ciganic said. “Usually, patients need opioids because they are in pain. If our platform can better inform strategies around pain management and not increase the risk of a bad outcome, like overdose or addiction, then we have accomplished our goal.”

When fully developed, the new clinical decision support tool will be piloted at three UF Health primary care clinics. UF researchers will study its usability, accessibility and feasibility in deciding whether the tool warrants broader use.

The research team supporting the NIDA grant includes faculty from the UF colleges of Pharmacy and Medicine, as well as collaborators from the University of Pittsburgh, the University of Utah, the University of Arizona and Carnegie Mellon University.



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# FAST FACTS FOR 2022

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ACTIVE  
FUNDED  
PROJECTS

\$5.2M

EXTRAMURAL  
FUNDING IN AY 21  
LED BY DEPT.  
FACULTY

141

PEER-REVIEWED  
MANUSCRIPTS

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**PUBLICATIONS  
FIRST AUTHORED  
BY GRADUATE  
STUDENTS**

# 165

**TOTAL NUMBER  
OF TRAINEES**

# 35

**NEW  
GRADUATES**

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# POP'S GRADUATE PROGRAM

## LETTER FROM THE GRADUATE DIRECTOR

As the department's graduate director, I am delighted to share information about the state of our graduate program and the many accomplishments of our students. During the past academic year, 43 graduate students have been part of our residential graduate program, with almost all working on a doctoral degree. Ten doctoral students completed their degree program, moving on to positions in the pharmaceutical industry, the FDA, academia, and postdoctoral fellowship programs. And another four students completed their master's degree and have started their doctoral studies in the department or at another university. And our program continues to grow with 12 new students beginning during the 2022-23 academic year. Further, our students represent a diverse mix of 15 nations.

The residential graduate students first authored 48 papers in peer-reviewed journals during the past year, including papers published in high-impact journals such as the Journal of Obstetrics and Gynecology, Diabetes Care, Medical Care, and Pharmacoepidemiology and Drug Safety. Students have started to travel again, giving more than 20 presentations at national or international research and professional meetings. We also recognized nine graduate students who have been particularly meritorious in critical scientific skills, including research, leadership and service. Golnoosh Alipour Haris received the Student Community Award from the American Public Health Association, and Brianna Costales received a Mental Health Research Dissertation R36 Grant from the National Institutes of Health. At the departmental level, Earl Morris and Huilin Tang received the "POP Graduate Student Publication Award." Sebastian Jugl was the recipient of the "Leadership Service Award," or the "POP Star" award and Piaopiao Li received the "POP Programming Award."

The online M.S. program, and related graduate certificate programs, have offered state-of-the-art learning experiences to more than 175 students in the past year. This program provides coursework tailored for working professionals, including specialty tracks in applied pharmacoeconomics, managed care pharmacy systems, pharmaceutical regulation and pharmaceutical value assessment and communications. I encourage you to check out some student testimonials about how the program has impacted them professionally.

As you can tell, we are so proud of our students and graduates. They have accomplished a great deal during the past year, and, most importantly, are making significant impacts on society through their research and professional achievements. Finally, the graduate program underwent an extensive review, including an external review by Professor Todd Lee from the University of Illinois Chicago. I will leave you with his overall summary remarks — "The Department of Pharmaceutical Outcomes and Policy (POP) is a very strong concentration within the Ph.D. program at the University of Florida College of Pharmacy. The concentration is highlighted by an incredibly strong faculty and high-quality students."



**RICHARD SEGAL, R.PH., PH.D., M.S.**

Professor, Associate Chair and Graduate Program Director



## 2022 PH.D. GRADUATES



**ARAM BABCOCK, PHARM.D., PH.D.**

Dissertation: Evaluation of her2-directed Therapies in her2+ non-metastatic Breast Cancer in Women

Advisor: Vakaramo Diaby

First position after graduation: Rutgers/HOPE Post-doctoral Fellow/Real World Value & Evidence, Janssen Pharmaceuticals, Cardiovascular/Metabolic & Infectious Disease/Vaccines Fellow



**CHING-YUAN "PEGGY" CHANG, PH.D., M.S.**

Dissertation: Endocrine therapy, prescription opioid, and antidepressant use among breast cancer survivors

Advisor: Jenny Lo-Ciagnic

First position after graduation: Vertex Pharmaceuticals

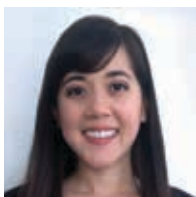


**ZIYAN CHEN, PH.D.**

Dissertation: Real-world Treatment Patterns, Effectiveness and Cost-effectiveness Associated with Palbociclib Use in Women with HR-/HER2- Metastatic Breast Cancer

Advisor: Vakaramo Diaby

First position after graduation: Amgen HEOR manager



**BRIANNA COSTALES, PH.D.**

Dissertation: Utilization and Safety of Pharmacological Treatments for Early-Onset Idiopathic Restless Legs Syndrome

Advisor: Amie Goodin

First position after graduation: Postdoctoral Fellow, Kaiser Permanente Northern California



**RAJ DESAI, PH.D., M.S.**

Dissertation: Optimization of medication regimen in adults with treated hypertension: Polypharmacy, effectiveness and safety, and potential drug-drug interactions

Advisor: Steven Smith, Haesuk Park

First position after graduation: Associate- Health Care, Analysis Group



**PHUONG PHAM, PH.D.**

Dissertation: Comparative Safety of Selective Serotonin Reuptake Inhibitors among Patients with Depression

Advisor: Joshua Brown

First position after graduation: ORISE Fellow at the U.S. Food and Drug Administration



**AMIR SARAYANI, PHARM.D., M.P.H., PH.D.**

Dissertation: Real-World Evidence for Obesity Medicines: Evaluation of Safety and Risk Minimization Strategies

Advisor: Almut Winterstein

First position after graduation: under negotiation

## 2022 PH.D. GRADUATES



**PATRICK SQUIRES, PHARM.D., PH.D.**

Dissertation: Impact of Oral Oncolytic Parity Legislation on Treatment Patterns and Patient Out-of-Pocket Costs in Patients with Multiple Myeloma

Advisor: Joshua Brown

First position after graduation: Associate Director, Global Outcomes Research and Strategic Evidence Generation, Oncology, Merck



**THUY THAI, PH.D., M.P.H., B.S.PHARM.**

Dissertation: Utilization and Safety of Prescription Antiemetic Drugs during Pregnancy

Advisor: Almut Winterstein

First position after graduation: Assistant Scientist in POP



**CHING-YU "JESSIE" WANG, PH.D.**

Dissertation: Developing Real-world Clinical and Economic Evidence for Biosimilar Filgrastim and Pegfilgrastim

Advisor: Joshua Brown

First position after graduation: Research associate at Evidera

## 2021 M.S. GRADUATE



**AIMALOHI ROSEMARY AKPEKU, M.S.**

Thesis Title: 30-Day Cause Hospital Readmission Risk among People Living with HIV by Mental Health Condition and Substance Use Disorder Status

Advisor: Amie Goodin

First position after graduation: Virginia Commonwealth University



**GOLNOOSH ALIPOUR HARIS, PHARM.D., M.S.**

Thesis Title: Medication regimen complexity among Medicare beneficiaries newly diagnosed with Alzheimer's Disease and Related Dementias

Advisor: Joshua Brown

First position after graduation: Ph.D. Program in POP



**DAWEI "DAVID" GUAN, M.S.**

Thesis Title: Individualized cost-effectiveness assessment of sodium-glucose cotransporter-2 inhibitors versus sulfonylureas as add-on therapy in people with inadequately controlled type 2 diabetes under metformin monotherapy.

Advisor: Hui Shao

First position after graduation: Ph.D. Program in POP



**SHAILINA KESHAWANI, M.S.**

Thesis Title: Buprenorphine Use Trends Following Prior Authorization Policy Change for the Treatment of Opioid Use Disorder in the State Medicaid Programs, From 2013 to 2020

Advisor: Juan Hincapie-Castillo

First position after graduation: Ph.D. Program in POP

# TRAINING THE NEXT GENERATION OF SCIENTISTS

## CURRENT PH.D. STUDENTS



Sumaya Abuloha,  
M.S.c.



Mohannad Elkhider,  
M.S., B.S.Pharm.



Celeste Ewig,  
Pharm.D.



Golnoosh Alipour  
Haris, Pharm.D., M.S.



Maria Pilar  
Hernandez-Con, M.D.



Shu Huang, M.S.,  
M.P.H.



Yushi Huang,  
Pharm.D.



Piaopiao Li, M.S.



Sebastian Jugl,  
B.S.Pharm., R.Ph.



Shailina Keshwani,  
M.S.



Motomori Lewis, B.S.



Earl Morris, Pharm.D.,  
M.P.H.



Matthew Muschett,  
M.S., Pharm.D.



Asinamai Ndai, M.S.



Munaza Riaz,  
Pharm.D., M.Phil.



Yun Shen, M.P.H.



Nistha Shrestha,  
M.P.H., B.S.Pharm.



Nicole Smolinski,  
Pharm.D.



Phuong "Phoenix"  
Tan Tran, M.P.H.,  
B.S.Pharm.



Huilin Tang, M.Sc.

CURRENT PH.D. STUDENTS



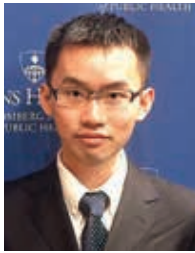
Ikenna Francis  
Unigwe, B.S.,  
Pharm.D., M.S.



Hsin-Ming "Grace"  
Wang, M.S.



Yanning Wang, M.S.



Yehua Wang, M.S.P.H.



Seonkyeong Yang,  
M.S., B.S.Pharm.

THESIS M.S. STUDENTS



Alaa Abdullah  
Alshehri, Pharm.D.



Khalid Alkhuzam,  
M.S.Pharm.



Rupal Aroza,  
Pharm.D.



Shao Husan  
"Brendan" Chang



Wei-Han "William"  
Chen, B.S.



Wenxi Huang, M.S.



Shu Niu, B.E.

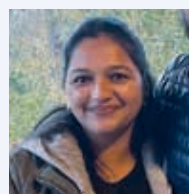
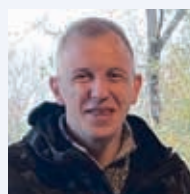
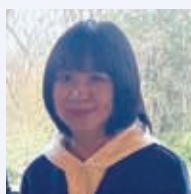


# CONGRATULATIONS TO OUR GRADUATES

IN ACADEMIC YEAR 2021-22



# STUDENT AWARDS



## POPstar AWARDS

Each year the department recognizes the hard work of our graduate students. We announced the winners of our 4th annual POP Star Awards at our POP Winter Reception in February 2022.

Three different awards were presented to graduate students:

- **POPSTAR GRADUATE STUDENT PUBLISHING AWARD** recognizes a graduate student for contributions to the department and science through demonstrated excellence in publishing research and scholarly work for either a single research article or a body of work
- **POPSTAR LEADERSHIP SERVICE AWARD** recognizes a graduate student who stands out in Leadership Service to the department, college and profession
- **POP PROGRAMMER HALL OF FAME AWARD** recognizes a graduate student for contributions to the department and science through developing a novel computer program/tool that can assist in improving the efficiency and quality of conducting research

### BRIANNA COSTALES

- Mental Health Research Dissertation R36 Grant, National Institutes of Health, 2021

### RAJ DESAI

- POP Programming Hall of Fame Runner-Up, 2022
- Certificate of Outstanding Merit, 27th Annual International Student Achievement Award, 2021

### GOLNOOSH ALIPOUR HARIS

- Student Community Award, American Public Health Association, 2021

### SEBASTIAN JUGL

- POPStar Leadership Service Award, 2022

### SHAILINA KESHWANI

- POP Programming Hall of Fame Runner-Up, 2022

### PIAOPIAO LI

- POP Programming Hall of Fame, 2022

### EARL MORRIS

- POPStar Graduate Student Publishing, 2022

### AMIR SARAYANI

- Certificate of Outstanding Merit, 27th Annual International Student Achievement Award, 2021
- Student and Trainee Abstract Award, American College of Clinical Pharmacology, 2021

### HUILIN TANG

- POPStar Graduate Student Publishing, 2022

# ONLINE GRADUATE PROGRAMS



**POP'S RESIDENTIAL GRADUATE PROGRAM** is complemented by its online graduate program focused on working professionals. The program includes graduate certificates and a non-thesis M.S. degree in five areas of specialization.



## APPLIED PHARMACOECONOMICS

Applied pharmacoeconomics centers on the conversion of pharmacoeconomic principles, methods and theories into practice to assess the value of pharmaceutical products and services used in real-world settings. Pharmacoeconomic studies provide scientifically grounded data to inform the optimal allocation of health care resources.

## MANAGED CARE PHARMACY SYSTEMS

Managed care is a defined structure and process of designing and delivering covered health care benefits that balances clinical outcomes with access and costs. When applied to pharmacy, the result is optimized pharmaceutical treatments at a price that patients can afford. The curriculum in this program is an in-depth analysis of the structure, set-up, management and delivery of benefit coverage for medicines, as well as current innovations such as risk-sharing, drug pricing reform, and coverage of digital therapeutics.

## MEDICATION SAFETY AND QUALITY SYSTEMS

This program focuses on the design and evaluation of quality improvement initiatives aimed at improving medication safety, as well as the systems used to advance medication use quality. Intended primarily for pharmacists and other clinicians familiar with the drug use system, the curriculum is designed to focus on competencies and skills needed by those acting as patient or medication safety officers or working in quality divisions in health systems or clinical operations.

## PHARMACEUTICAL REGULATION

Pharmaceutical regulation is an essential, global and diverse field that is tasked with ensuring safe, effective, and high-quality health care through regulatory compliance. The curriculum in the pharmaceutical regulation track is designed to give students a firm grounding in the regulatory framework around the manufacturing, distribution, dispensing and use of pharmaceutical products, and to place pharmaceuticals in a large context of health care.

## PHARMACEUTICAL VALUE ASSESSMENT AND COMMUNICATION

In the Pharmaceutical Value Assessment and Communications program, students develop applied skills to translate clinical, economic and patient-reported data into accurate and compelling communication tools to improve decision-making and health outcomes. Students combine a scientific approach to pharmaceutical evidence assessment with effective communications for specific stakeholders.

## FAST FACTS FOR 2022



**110**

*new matriculated students*



**209**

*students taking courses*



**56**

*certificates awarded*



**25**

*faculty taught courses*



**50**

*M.S. graduates*



# 2022 PHARMACEUTICAL OUTCOMES & POLICY SEMINAR

## “RACIAL INEQUITIES IN MEDICATION USE”

The department hosts an annual Pharmaceutical Outcomes and Policy Seminar for students in the residential and online graduate programs. The 2022 POP seminar, “Racial inequities in medication use,” examined how optimal medication use differs by race and ethnicity and what underlying factors confound this relationship. Distinguished speakers from the University of Pittsburgh, the University of Southern California, PhRMA, CMS, AbbVie, PQA, the University of Tennessee, and the University of Florida discussed imperatives for increasing diversity in clinical trials, removing access barriers, and enhancing data and measures.



**2 DAYS / 11 SPEAKERS**

**53 GUEST ATTENDEES**

**85 GRADUATE STUDENTS**

**SOCIALLY DISTANCED VIA ZOOM**

**>500 PHARMACIST CEUs AWARDED**

**#PHARMACOEQUITY**

**SAVE THE DATE: MARCH 4-5, 2023**  
**“PRICE CHECK: PAYMENT, PRICING AND AFFORDABILITY OF PRESCRIPTION DRUGS”**

# POP'S NEW HOME



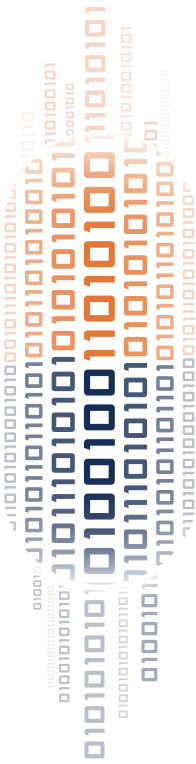
Construction is underway on the Malachowsky Hall for Data Science and Information Technology building, POP's new research home. The sixth floor will house POP, CoDES and the Consortium for Medical Marijuana Clinical Outcomes Research. We were able to visit our new home this past academic year and look forward to our final move in July 2023.



For more information, visit us at <https://pharmacy.ufl.edu/malachowsky-hall/>

## WE ARE HIRING

POP IS HIRING FACULTY,  
POSTDOCTORAL FELLOWS AND ANALYSTS.  
PLEASE SPREAD THE WORD AND CONTACT US IF INTERESTED!



# INTRODUCING CoDES

## CENTER FOR DRUG EVALUATION & SAFETY

Established in 2019, the University of Florida Center for Drug Evaluation and Safety, or CoDES, aims to improve public health by enhancing and disseminating evidence on the safety and value of medications in real-world populations. CoDES unites a multidisciplinary group of big data researchers in epidemiology, health economics, health services research and decision-sciences who evaluate and project drug outcomes to guide policy and clinical and personal decision-making. In addition to delivering new actionable evidence, CoDES fosters the development of new methods and analytic tools to enhance drug evaluation and regulatory science.

### FOCUS

CoDES develops and integrates resources on the assessment and improvement of drug use locally, nationally and internationally through five distinct research programs:

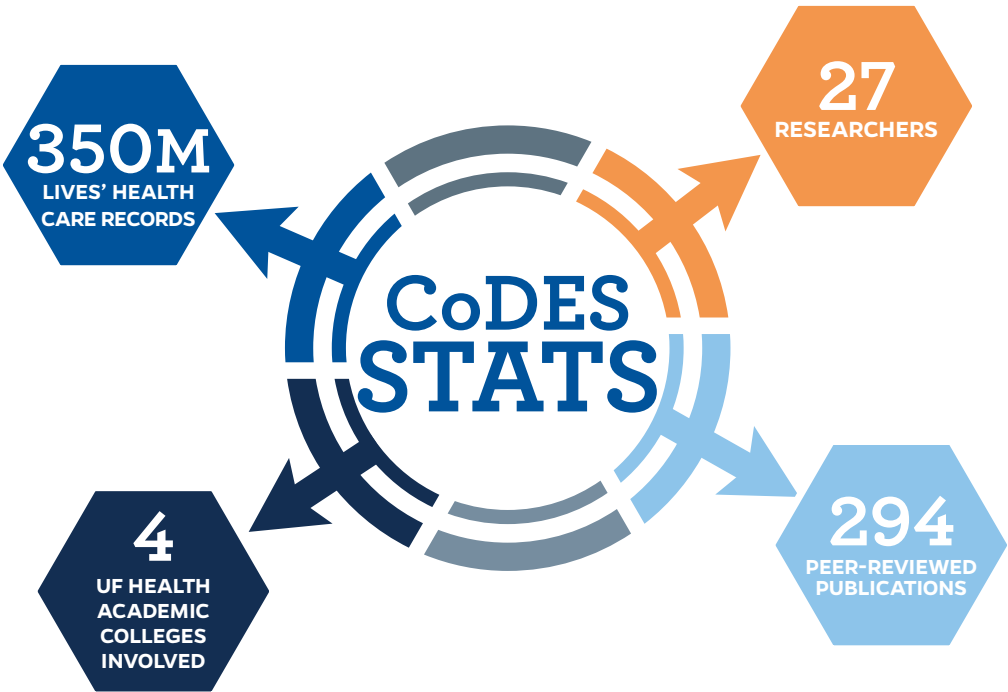
- **PHASE IV STUDIES** evaluate drug safety and effectiveness in real-world populations to enhance pre-approval evidence.
- **PHARMACOECONOMIC STUDIES** assess the value of drugs and related programs to guide the investment of personal, payer and societal resources.
- **MEDICATION USE QUALITY STUDIES** evaluate the quality and determinants of medication use to direct the allocation of programmatic resources and policy.
- **PHARMACEUTICAL PREDICTIVE ANALYTICS STUDIES** develop predictive tools for drug response and adverse events to support clinical care and related policy.
- **PHARMACEUTICAL POLICY STUDIES** evaluate policy surrounding medication use to enhance programmatic efforts aimed to improve access and quality of drug therapy.



## CoDES FEATURES

Activities at CoDES aim to build a foundation for real-world data research.

- **BIG DATA INFRASTRUCTURE** — CoDES has access to health care records for more than 350 million lives.
- **BIG DRUG DATA ANALYTICAL SUPPORT** — CoDES provides expertise in the measurement of drug exposure and outcomes/phenotypes, causal inference and predictive design and analysis.
- **RESEARCH EXCHANGE** — CoDES maintains an email listserv, website, Twitter account and seminar series.
- **POSTDOCTORAL FELLOWSHIP PROGRAM** — CoDES has introduced a postdoctoral fellowship program that capitalizes on the interdisciplinary nature of its researchers, with the goal of training the next generation of researchers.



FOLLOW CoDES ON TWITTER  
[@UFCODES](#)

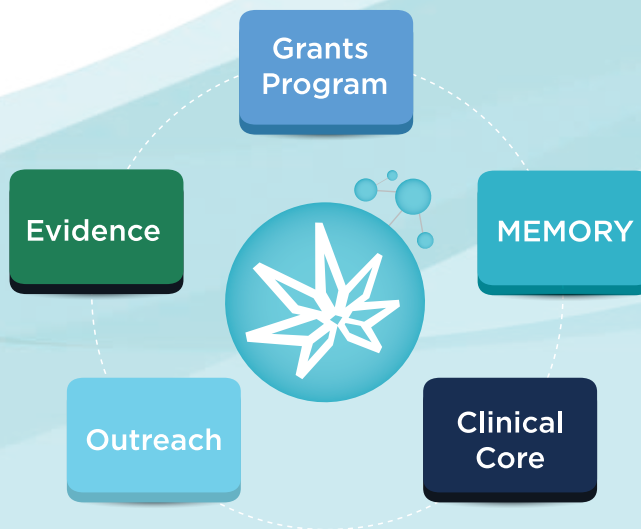




## Consortium for Medical Marijuana Clinical Outcomes Research

The Consortium for Medical Marijuana Clinical Outcomes was founded by the state of Florida in June 2019 to conduct, disseminate, and support research on the use and effects of medical marijuana on patient outcomes.

The Consortium’s efforts and programs support medical marijuana clinical outcomes research through five pillars aimed at establishing an effective infrastructure for re-search and evidence dissemination: a Grants Program, the Medical Marijuana Clinical Outcomes Repository, or MEMORY, which will link medical marijuana dispensing data with our existing data resources, a clinical research core which supports and conducts prospective studies, an evidence core, and an outreach core.



AMIE GOODIN,  
PH.D., M.P.P.  
CCORC Chair and  
Scientific Program  
Committee Chair

The Consortium engages public and private universities across Florida, including Florida Atlantic University, Florida A&M University, Florida Gulf Coast University, Florida International University, Florida Memorial University, Florida State University, the University of Central Florida, and the University of Miami, with leadership housed in the University of Florida.

POP department chair Almut Winterstein serves as the consortium director and Robert Cook, from the UF College of Medicine and College of Public Health and Health Professions, Department of Epidemiology, serves as the consortium associate director. Other UF faculty members with Consortium leadership roles include: Joshua Brown (POP department) as MEMORY lead, Yan Wang (epidemiology department) as the clinical core lead, and Amie Goodin (POP department) as the evidence core lead.

Now in its fourth year of existence, the Consortium has funded 38 pilot grants, which have resulted in 25 peer-reviewed publications, 1 patent and 14 new extramural grant applications, two of which have been awarded. Noteworthy, 50 trainees including 12 identifying as under-represented minorities have been involved in or supported by Consortium-funded research grants. For the latest news and information about the Consortium, see [www.mmjoutcomes.org](http://www.mmjoutcomes.org), where you can also access a host of resources about medical marijuana clinical outcomes research as well as opportunities for research involvement for patients, practitioners, researchers, and industry.

## THE 2ND ANNUAL CANNABIS CLINICAL OUTCOMES RESEARCH CONFERENCE (CCORC)



In April of 2021 the Consortium for Medical Marijuana Clinical Outcomes Research hosted the inaugural Cannabis Clinical Outcomes Research Conference, or CCORC. This year’s conference was held virtually. CCORC 2021 was organized as a scientific meeting to foster and disseminate research on medical marijuana clinical outcomes, while promoting engagement among medical marijuana researchers, patients, clinicians, policymakers and industry partners. Key conference themes included: (a) the disconnect between policy, practice and evidence and steps towards reconciliation, (b) approaches to overcome common barriers to medical marijuana research, and (c) the use of focused translational approaches utilizing both mechanistic and clinical research methodology to tackle the complexities of medical marijuana outcome assessment.

### CCORC HIGHLIGHTS INCLUDE:

**125 registrants | 35 abstracts presented as posters or oral presentations**

Three keynote speaker presentations from internationally renowned cannabis researchers, including members of the National Academies of Sciences, Engineering, and Medicine:


- Dr. Staci Gruber • Dr. Kent Hutchison • Dr. Samer Narouze

## SAVE THE DATE

CCORC 2023 is planned for spring 2023 and we hope to see you there!  
For the latest updates and for more information about the scientific program of previous CCORC meetings, visit:

**[www.ccorc.mmjoutcomes.org](http://www.ccorc.mmjoutcomes.org)**





# WE TRANSLATE BIG DATA INTO EVEN BIGGER, HEALTHIER and SAFER OUTCOMES

It's no secret drugs can do amazing, positive things for your health. But real-life medical miracles can turn into health threats. Many drugs have raised serious safety concerns after FDA approval, often because they were tested on only small samples or patients different than you.

At the University of Florida College of Pharmacy, we are working hard to gather and translate literally millions of real-life results into effective knowledge that can catch harmful side effects before they hurt you or your family. For us, this isn't just a numbers game. It's an opportunity to combine comprehensive data and proven expertise into a whole new way for pharmacists to improve and save patients' lives.

To learn more about how you can invest in our efforts to make drugs safer for you and your loved ones, please contact Elizabeth Zipper at 325-273-6605 or [ezipper@cop.ufl.edu](mailto:ezipper@cop.ufl.edu)



Department of Pharmaceutical  
Outcomes & Policy  
UNIVERSITY of FLORIDA