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ABOUT

ECP MISSION
The mission of the Department of Experimental and Clinical Pharmacology (ECP) is to discover, disseminate, and apply new knowledge related to safe, effective, and economical medication use in patients. ECP will educate students of pharmacy, post-graduate trainees, and others for careers in pharmacy and health care with the ultimate goal of improving health. The ECP faculty and staff actively engage in teaching and conduct research pertaining to experimental and clinical pharmacology and patient outcomes to identify and promote the use of the best therapies. Together, ECP strives to advance the science of human pharmacology and therapeutics, while maintaining the highest standards of ethics in research and education.

DATA COLLECTION
Note that financial data is reported by fiscal year (2023: July 2022-June 2023). All other data uses the calendar year. These parameters continue to be the standard since 2019.

UNIVERSITY OF MINNESOTA MISSION
The University of Minnesota, founded in the belief that all people are enriched by understanding, is dedicated to the advancement of learning and the search for truth; to the sharing of this knowledge through education for a diverse community; and to the application of this knowledge to benefit the people of the state, the nation and the world. The University's threefold mission of research and discovery, teaching and learning, and outreach and public service is carried out on multiple campuses and throughout the state.

EQUAL OPPORTUNITY STATEMENT
The University of Minnesota shall provide equal access to and opportunity in its programs, facilities, and employment without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression.

Inquiries regarding compliance may be directed to the Director, Office of Equal Opportunity and Affirmative Action, University of Minnesota, 274 McNamara Alumni Center, 200 Oak Street S.E., Minneapolis, MN 55455, (612) 624-9547, eoaa@umn.edu. Website: eot.umn.edu/home

This publication/material is available in alternative formats upon request. Please contact Zack McGough, Experimental and Clinical Pharmacology, 612-626-4677.

DISABILITY ACCESS STATEMENT
This publication/material is available in alternative formats upon request. Direct requests to Zack McGough, Experimental and Clinical Pharmacology, 612-626-4677.
LETTER FROM THE DEPARTMENT HEAD

Dear Colleagues and Friends,

In this 2023 annual report, I once again take pride in highlighting the numerous achievements by members of our Department of Experimental and Clinical Pharmacology (ECP).

Our ECP department continues to achieve significant accomplishments while demonstrating our collective commitment to the research, education, and service missions of our College. We continue to adapt our respective expertise to the ever-changing environment, student body and novel research approaches that emerge, while tackling some of the key questions and challenges facing our profession and healthcare needs of society. These are indeed significant tasks which we take on while maintaining our focus on conducting quality research, innovative educational models, and service to our profession and the broader community. This can only be done with respect for the importance of self-care for all members of our community. As always, our key strengths remain the quality of our faculty, students and staff and leveraging our collaborations with others to achieve our collective successes.

The efforts and commitments made by ECP faculty, staff, and students over the 2023 calendar year are reflected by our strong performance research metrics:

- sponsored award expenses remained consistent from 2022 numbers at ~$4 million in 2023
- a consistent 23% faculty salary offset in 2023
- 73 peer-reviewed articles were published by ECP faculty in 2023
- a further increase in new grants received in 2023 to 60 (up from 46 in 2022)

These key indicators of progress, along with our strong record of contributions to the teaching and service missions of our college, reflect well on the exceptional dedication of our faculty, staff, and students. Even in the setting of various forms of economic and demographic challenges confronting higher education, geopolitical affairs, and even stresses on our environment, ECP’s faculty, staff and students remain focused on our mission and are proud of our accomplishments. ECP’s contributions to the College’s re-imagining of our new professional program continues as we embark on year two of the new MNSpire curriculum. We are also proud of our successful Collegiate accreditation visit which took place this past Fall 2023. It is important for all of us to take stock in the outstanding record of achievements our students, staff, and faculty have realized. These things are not achieved without strong leadership at the department level and throughout the College.

Since our 2022 report, the personnel changes we have realized include the retirement of ECP’s Dr. Susan Marino. We wish her the very best and thank her for their service and dedication to the department and college over her years of tenure. Looking forward, 2023 marked the successful completion of our search for a new tenure track faculty position in pharmacometrics, which I can proudly announce resulted in the hire of Dr. Shen Cheng- a former Ph.D. graduate from our own program. We are very excited about our new hires and look forward to reporting on their progress and contributions in next year’s annual report. ECP continues to look ahead to meet new challenges and create opportunities as they arise. Personally, I have great confidence that our department will continue to excel and I take great personal pride in sharing this report as testimony to what our faculty, students, and staff have accomplished to advance the science of our discipline and support a new generation of students from our ECP graduate program.
Finally, I wish to acknowledge and thank all alumni, donors, and friends of the department for their continued support, engagement, and ongoing pride for the things we do for our global community.

With warm regards,

Robert J. Straka  
Department Head

NEW FACULTY & PROMOTIONS

Reena Kartha, MS, PhD, was promoted to Associate Professor in May 2023. Her expertise in translational research exploring the roles of therapeutic agents which modulate oxidative stress and inflammation represents important work to advance therapies to treat select rare diseases. Her scholarly achievements include over 35 refereed research publications, many as senior or corresponding author in high-impact journals, and recipient of national grants from NIH and other sources that fuel new discoveries in her field. Dr. Kartha’s teaching contributions are significant at each of the undergraduate, professional, and graduate levels of instruction—noting her recognition as an “outstanding junior mentor award from the CTSI in 2017” and offering of a “Grand Challenge Honors Course on Rare Diseases” in particular. Her recognition on a national and international basis continues to grow as is evident from her invited speaking engagements as well as her service commitments to the field of rare diseases and her leadership in advancing diversity, equity and inclusion initiatives at the College of Pharmacy and beyond.
DEPARTMENT MEMBERS

FACULTY

Angela K. Birnbaum, PhD, FAES
Professor; Director of Graduate Studies

Jeffrey Bishop, PharmD, MS, BCPP, FCCP
Associate Professor

Scott A. Chapman, PharmD
Professor

James C. Cloyd, PharmD, FCCP
Professor, Weaver Endowed Chair in Orphan Drug Development

Lisa Coles, PhD
Research Assistant Professor

Jeannine M. Conway, PharmD, BCPS
Associate Professor; Associate Dean for Professional Education (Until November, 2023); MNSpire Block Lead (As of January, 2023)

Elizabeth Hirsch, PharmD, BCPS
Associate Professor

R. Stephanie Huang, PhD
Professor

Pamala A. Jacobson, PharmD, FCCP
Distinguished Professor; Associate Department Head

L'Aurelle A. Johnson, PhD
Assistant Professor; Associate Director of Graduate Studies (Until June 30, 2023); Director of Diversity

Reena Kartha, PhD
Research Associate Professor

Michael Kotlyar, PharmD
Associate Professor

Ilo E. Leppik, MD
Professor

Ling Li, PhD, DVM
Professor, VFW Endowed Chair in Pharmacotherapy for the Elderly; Associate Department Head

Susan E. Marino, PhD (Retired February, 2024)
Associate Professor

Melanie R. Nicol, PharmD, PhD
Associate Professor; Associate Director of Graduate Studies (As of July 1, 2023)

Leo J. Sioris, PharmD
Professor

Robert J. Straka, PharmD, FCCP
Professor; Department Head

Lynda Welage, PharmD, FCCP
Professor; Dean

Beshay Zordoky, PhD
Associate Professor

ADJUNCT FACULTY

Mahmoud Al-Kofahi, DDS, PhD
Assistant Professor

Josiah Allen, PharmD
Assistant Professor

Kyle Baron, PharmD, PhD
Assistant Professor

Alexander Berg, PharmD, PhD, FCP
Associate Professor

Ashley Brown, PharmD
Assistant Professor

Samuel Callisto, PhD
Assistant Professor
Jason Chittenden, PhD  
Assistant Professor

Casey Dorr, PhD  
Assistant Professor

David Gregornik, PharmD  
Associate Professor

John Gualtieri, PharmD  
Assistant Professor

Serge Guzy, PhD  
Professor

Silvia M Illamola, PharmD, PhD  
Assistant Professor

Mutaz Jaber, PhD  
Assistant Professor

John Jancik, PharmD, BCCCP  
Associate Professor

Jeanine Jarnes, PharmD  
Assistant Professor

Nitin Kaila, PhD  
Assistant Professor

Daniel E. Keyler, PharmD  
Professor

Richard Kingston, PharmD  
Assistant Professor

Frank N. Konstantinides, MT, MS  
Professor

George Konstantinides, PharmD  
Assistant Professor

Edris Kosar, PharmD  
Assistant Professor

Robert Kriel, MD  
Research Professor

Smita Kshirsagar, PhD  
Assistant Professor

Marie D. Kuker, RPh  
Assistant Professor

Richard L. Lalonde, PharmD, FAAPS, FCP, FCCP  
Professor

Stephen H. LeMaster, PharmD  
Associate Professor

Ramaiah Muthyala, PhD  
Associate Professor

David Parra, PharmD  
Associate Professor

Pamela A. Pawloski, PharmD  
Assistant Professor

Cristina Peterson, PhD  
Assistant Professor

Mark Robbins, PhD, JD  
Associate Professor

Samuel Roiko, PhD  
Assistant Professor

Ahmed H. Salem, PhD  
Professor

Kyriakie Sarafoglou, MD  
Professor

Robert J. Schumacher, PhD  
Assistant Professor

Catherine Sherwin  
Associate Professor

Kelly M. Sioris, PharmD  
Assistant Professor

Catherine St. Hill, DVM, PhD  
Associate Professor

John V. St. Peter, PharmD  
Associate Professor

Sean Stewart, PharmD, BCACP, CLS  
Associate professor

Takuto Takahashi, MD, PhD  
Assistant Professor

Mary A. Ullman, PharmD  
Associate Professor
Brian Van Ness, PhD
Professor

Orly Vardeny, PharmD, BCPS, FHFSA
Associate Professor

Ya-Feng (Jay) Wen, PhD
Assistant Professor

STAFF

Sandra Bowers
Lindsey Brewers Collins, MS
Sheena Dufresne
Lori Endsley
James Fisher
Katherine Goffin (Until August, 2023)
Marianne Grant
Silvia M. Illamola, PharmD, PhD
Alyssa Johnson
Minwoo Kim
Adam M. Lee, PhD
Zack McGough, MEd
Usha Mishra, MS
Becky Palapala
Marcia Terluk, PhD
Josslen Thieschafer
Susan Williford, MEd

Researcher, Birnbaum Research Program
Junior Scientist, Nicol Research Program
Study Coordinator, Kotlyar Research Program
MTRF Administrator
Technical Director, CPAS Laboratory
Administrative Specialist, ECP Office
Lab Manager, Zordoky Research Program
Research Associate, Birnbaum Research Program
Research Professional, Jacobson Research Program
Researcher, Li Research Program
Research Associate, Bishop Research Program
Department Administrator, ECP Office
Assistant Scientist, Center for Orphan Drug Research
Finance & Communications Specialist, ECP Office
Researcher, Center for Orphan Drug Research
Researcher, Li Research Program
Graduate Program Coordinator, ECP Office

POSTDOCS, FELLOWS, & VISITING SCHOLARS

Israa Gamal Aly Abdelbar
Mahmoud EISherif
Benu George, PhD
Mina George
Vasudeva Reddy Dodda, PhD
Mohamed Fayed, BPharm
Robert Gruener, PhD
Jaehyeok Roh, PharmD
Sampreeti Jena, PhD
Holly Korthas, PhD
Bushra Sadaf, PhD
Omar Al Yacoub, PharmD, MSc, PhD

Advisor: R. Stephanie Huang, PhD
Advisor: Beshay Zordoky, PhD
Advisor: Beshay Zordoky, PhD
Advisor: Beshay Zordoky, PhD
Advisor: Ramaiah Muthyala, PhD
Advisor: Lisa Coles, PhD
Advisor: R. Stephanie Huang, PhD
Advisor: Reena Kartha, PhD
Advisor: R. Stephanie Huang, PhD
Advisor: Ling Li, PhD
Advisor: Beshay Zordoky, PhD
Advisor: Lisa Coles, PhD
NEW & CONTINUING GRADUATE STUDENTS

PhD PROGRAM

Ibrahim Abdelgawad, BS  Advisor: Beshay Zordoky, PhD; Ling Li, DVM, PhD
Charul Avachat, MS  Advisor: Angela Birnbaum, PhD
Kuber Bajgain, MS  Advisor: Ling Li, DVM, PhD
Adeboye Bamgboye, BPharm  Advisor: Lisa Coles, PhD
Cecilia (Cece) Barajas, BS  Advisor: Carolyn Fairbanks, PhD
Jessica Barry, BS  Advisor: Angela Birnbaum, PhD
Morgan Bixby, BS  Advisor: Elizabeth Hirsch, PharmD, RPh; Pamala Jacobson, PharmD
Tiffany Chang, MS  Advisor: Elizabeth Hirsch, PharmD; Melanie Nicol, PharmD, PhD
Mohamed Dabour, MS  Advisor: Beshay Zordoky, PhD
Mary Raphel Daniel, PharmD  Advisor: Beshay Zordoky, PhD
Yingbo Huang, MS  Advisor: R. Stephanie Huang, PhD
Alyssa Lantz, BS  Advisor: Melanie Nicol, PharmD, PhD
Chenxu Li, MS  Advisor: Reena Kartha, PhD; Lisa Coles, PhD
Yuhan Long, BS  Advisor: Angela Birnbaum, PharmD
Xintian Lyu, BS  Advisor: Angela Birnbaum, PharmD
Moataz Mohamed, MS  Advisor: Pamala Jacobson, PharmD
Nathan Phan, BS  Advisor: Reena Kartha, PhD and James Cloyd, PharmD
Abdelrahman Saqr, MS  Advisor: Pamala Jacobson, PharmD
Yuting Shan, PharmD  Advisor: R. Stephanie Huang, PhD
Jason Sriwijaya, MD  Advisor: Angela Birnbaum, PharmD
Mei-Chi (Judy) Su, MS  Advisor: R. Stephanie Huang, PhD; Angela Birnbaum, PharmD
Boguang Sun, PharmD  Advisor: Robert J. Straka, PharmD
Bovornpat Suriyapakorn, PharmD  Advisor: Lisa Coles, PhD
Fan Wang, MS  Advisor: Melanie Nicol, PharmD, PhD; Angela Birnbaum, PharmD
Lusi Zhang, MHI, PharmD  Advisor: Jeff Bishop, PharmD, MS
Rui Zhong, BS  Advisor: Ling Li, DVM, PhD

MASTERS PROGRAM

Mohamed Duklef, BPharm  Advisor: Reena Kartha, PhD
Jennifer Vigliaturo, BA, BS  Advisor: Angela Birnbaum, PhD
RESEARCH

Led by our world-class faculty, research teams conduct groundbreaking and critical research in the Department of Experimental and Clinical Pharmacology. Faculty research programs focus on oncology, transplantation, infectious diseases, pharmacogenomics, geriatrics, critical care, neuroscience, cardiovascular diseases, pediatrics, and psychiatry, among other areas. ECP is home to the Lawrence C. Weaver Endowed Chair in Orphan Drug Development and the VFW Endowed Chair in Pharmacotherapy for the Elderly. In addition, ECP’s state-of-the-art, CLIA-certified Clinical Pharmacology Analytical Services Laboratory has provided an important research resource to both University researchers and external customers for 20 years, as of the fall of 2023.

Our faculty routinely present important research at national and international conferences, lecture and collaborate across the country, serve as reviewers and editorial board members of international journals, hold leadership positions in national organizations, and serve on review committees for National Institutes of Health (NIH) and other granting agencies.

ANNUAL PERFORMANCE AND YEAR-TO-YEAR TRENDS

➢ Funding for research in ECP comes from both intramural and external sources:
  ● New Grants Received: 60
    ○ Intramural: 35
    ○ External sponsored: 25

➢ Research endeavors result in various outputs, including:
  ● Articles in peer-reviewed publications: 73
  ● Books, chapters and other publications: 8

Financials of Sponsored Projects in FY2023

➢ Expenditures by category
  ● Salary and Fringe $1,806,248
  ● Other Expenses $2,255,436
    ○ Total $4,061,683

➢ Percentage of department faculty salaries supported by sponsored projects: 23.15%
  ● Salary offset percentage grew to 23% for the year
    ○ (22% in FY21, 22% in FY22).
A RESEARCH-RICH ENVIRONMENT

The College of Pharmacy is ranked 3rd among outstanding pharmacy education and research institutions in the world. It is located within one of the largest academic health centers in the U.S., with nationally recognized programs in public health, medicine, nursing, dentistry, and veterinary medicine. Major campus research facilities include a Clinical and Translational Science Institute, the Biomedical Genomics Center, and a comprehensive cancer center. In addition, there are numerous partnerships with affiliated healthcare systems that offer exceptional research and educational programs. The Twin Cities also have a large number of cutting-edge biomedical companies eager to collaborate with the academic community.

RESEARCH CENTERS WITHIN ECP

- Center for Orphan Drug Research (Dr. James Cloyd, Director)
- Institute for Personalized Medicine (Dr. Pamala Jacobson, Director)
- Center for Clinical and Cognitive Neuropharmacology (Dr. Susan Marino, Director)

LOCATIONS AND FACILITIES

ECP maintains a total of 25,889 square feet of office and laboratory space within four buildings on the East Bank of the University of Minnesota’s Twin Cities campus:

- Weaver-Densford Hall 7,332 SF
- McGuire Translational Research Facility 7,696 SF
- Phillips Wangensteen Building 6,915 SF
- 717 Delaware Street SE 3,946 SF
## NEW EXTERNALLY FUNDED PROJECTS WITH ECP FACULTY

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Developmental Psychopathology T32</td>
<td>NIH National Institute of Mental Health</td>
</tr>
<tr>
<td>Jeffrey Bishop (Co-I)</td>
<td>An Informatics Framework for Discovery and Ascertainment of Drug-Supplement Interactions</td>
<td>NIH National Center for Complementary and Integrative Health</td>
</tr>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Comorbidity: Substance Use Disorders and Other Psychiatric Conditions</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Real-world utilization and impact of psychiatric pharmacogenomic testing in a large health system</td>
<td>American Association of Psychiatric Pharmacists</td>
</tr>
<tr>
<td>Elizabeth Hirsch (Co-PI), Melanie Nicol (Co-I)</td>
<td>Assessment of the infectious diseases pharmacist workforce across the U.S.</td>
<td>Society of Infectious Diseases Pharmacists</td>
</tr>
<tr>
<td>R. Stephanie Huang (Co-I)</td>
<td>AR gene rearrangements and AR signaling in prostate cancer</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>R. Stephanie Huang (PI)</td>
<td>Towards a TIME-informed digital biospecimen to predict cancer combination treatment</td>
<td>NIH NCI Frederick National Laboratory/Leido</td>
</tr>
<tr>
<td>R. Stephanie Huang (Advisor)</td>
<td>Targets of Cancer Training Program T32</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>R. Stephanie Huang (Advisor)</td>
<td>Interdisciplinary Training Program to Transform Graduate Education in Genetics and Genomics T32</td>
<td>NIH National Institute of General Medical Sciences</td>
</tr>
<tr>
<td>Pamala Jacobson (PI)</td>
<td>Tacrolimus and Metabolite Analysis in Cell Culture</td>
<td>National Institutes of Health (NIH), Hennepin Healthcare Research Institute</td>
</tr>
<tr>
<td>Reena Kartha (PI)</td>
<td>Extracellular Vesicles as Potential Biomarkers and Therapeutic Target in Gaucher Disease</td>
<td>Takeda Cambridge, Ltd.</td>
</tr>
<tr>
<td>Reena Kartha (PI)</td>
<td>Translational Pharmacology Research Fellowship</td>
<td>Sanofi-Aventis US</td>
</tr>
<tr>
<td>Michael Kotlyar (Project Co-Lead)</td>
<td>Feasibility of Using a Culturally Tailored Conversational Agent for promoting smoking cessation treatment utilization in African Americans who use cigarettes</td>
<td>NIH National Institute on Minority Health</td>
</tr>
<tr>
<td>Faculty</td>
<td>Project Description</td>
<td>Sponsor</td>
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</tr>
<tr>
<td>Ling Li (PI)</td>
<td>Impact of Mitochondrial Lipidomic Dynamics and its Interaction with APOE Isoforms on Brain Aging and Alzheimer’s Disease</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Ling Li (Co-I)</td>
<td>Supplement to DNA Protein Cross-Links: Cellular Effects and Repair Mechanisms</td>
<td>NIH National Institute of Environmental Health Sciences</td>
</tr>
<tr>
<td>Ling Li (Co-I)</td>
<td>Supplement 03S1 to MUFA-SIRT1 signaling as a central node regulating healthspan</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Ling Li (Advisor)</td>
<td>Functional Multi-omics of Aging Training Grant</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Ling Li, Pamala Jacobson (Advisors)</td>
<td>Biostatistics in Genetics and Genomics Training Program</td>
<td>NIH National Institute of General Medical Sciences</td>
</tr>
<tr>
<td>Ling Li (Advisory Committee)</td>
<td>Building Interdisciplinary Careers in Women’s Health (BIRCWH) Program</td>
<td>National Institutes of Health</td>
</tr>
<tr>
<td>Melanie Nicol (Co-I)</td>
<td>Identifying CMV Retinitis as a Reversible Cause of Vision loss in persons with HIV-associated meningitis</td>
<td>NIH National Eye Institute</td>
</tr>
<tr>
<td>Melanie Nicol (Co-I)</td>
<td>Encochleated Oral Amphotericin for HIV-related Cryptococcal Meningitis</td>
<td>NIH National Institute of Neurological Disorders &amp; Stroke</td>
</tr>
<tr>
<td>Melanie Nicol (Consultant)</td>
<td>Adult human brain tissue cultures to study neuroHIV</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Beshay Zordoky (Advisor)</td>
<td>Fulbright Postdoctoral Fellowship (Mina George)</td>
<td>U.S. Department of State, Bureau of Educational and Cultural Affairs</td>
</tr>
<tr>
<td>Beshay Zordoky (Advisor)</td>
<td>Visiting Scholar Training Grant (Mahmoud Elsherif)</td>
<td>U.S. Agency for International Development (USAID)</td>
</tr>
<tr>
<td>Beshay Zordoky (Advisor)</td>
<td>Visiting Scholar Training Grant (Engie Elsawaf)</td>
<td>U.S. Agency for International Development (USAID)</td>
</tr>
</tbody>
</table>

**NEW INTRAMURAL PROJECTS WITH ECP FACULTY**

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela Birnbaum (Co-PI)</td>
<td>Neurobehavioral Impacts of Medical Cannabis Treatment in Chronic Pain Patients</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Angela Birnbaum (Co-PI)</td>
<td>Characterization of the use and extent of concentration fluctuation</td>
<td>Women's Health Research Program, University of Minnesota</td>
</tr>
</tbody>
</table>

12
<table>
<thead>
<tr>
<th>Name</th>
<th>Project Description</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Impact and implications of using pharmacogenomic testing to guide medication therapy in patients with depression: a real-world study leveraging electronic health records and artificial intelligence</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Jeffrey Bishop (PI)</td>
<td>Pharmacogenetics to guide drug selection in adolescents with depression</td>
<td>UMN STRIDES (STrategic Research Investment for the Development of Early Scientists) Program Grant</td>
</tr>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Patients' perspectives on pharmacogenomics and real-world utilization of test results in a large health system</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>ECP Fellowship</td>
<td>University of Minnesota College of Pharmacy</td>
</tr>
<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Olsteins Graduate Fellowship</td>
<td>University of Minnesota College of Pharmacy</td>
</tr>
<tr>
<td>Lisa Coles (Co-I)</td>
<td>InTRANASAL Delivery of Cortisol Stress Dosing in Patients with Adrenal Insufficiency</td>
<td>UMN, ODAT, CTSI Pediatric Device Innovation Consortium</td>
</tr>
<tr>
<td>Lisa Coles (Co-I)</td>
<td>Use of PIVO device for Ketamine PK Sampling in Pediatric Patients</td>
<td>Accelerating Epilepsy Research Fund, University of Minnesota Foundation</td>
</tr>
<tr>
<td>Lisa Coles (Advisor)</td>
<td>Melendy Research Scholarship</td>
<td>University of Minnesota College of Pharmacy</td>
</tr>
<tr>
<td>Lisa Coles (Advisor)</td>
<td>CTSI Advanced Pathways to Research Program Scholarship (APReP)</td>
<td>Clinical and Translational Science Institute, University of Minnesota</td>
</tr>
<tr>
<td>Elizabeth Hirsch (PI)</td>
<td>Optimization of fosfomycin disk diffusion testing via a mouse model to determine the urinary tract colonizing abilities of inner colonies</td>
<td>UMN STRIDES (STrategic Research Investment for the Development of Early Scientists) award</td>
</tr>
<tr>
<td>Elizabeth Hirsch (Advisor)</td>
<td>Impact of an antimicrobial stewardship intervention to reduce UA/UC and antimicrobial use in ASB</td>
<td>University of Minnesota College of Pharmacy Melendy Research Scholarship</td>
</tr>
<tr>
<td>Elizabeth Hirsch (Advisor)</td>
<td>Coin Fellowship</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Elizabeth Hirsch (Advisor)</td>
<td>Hadsall-Uden Award for Pharmacy Advancement</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Elizabeth Hirsch (Advisor)</td>
<td>Summer College of Pharmacy Experiences (SCoPE) Program</td>
<td>University of Minnesota College of Pharmacy</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>R. Stephanie Huang (PI)</td>
<td>Sex differences in intra-tumor microbiome and their effect in therapeutic outcomes</td>
<td>Microbiome and Cancer Symposium, University of Minnesota</td>
</tr>
<tr>
<td>R. Stephanie Huang (PI)</td>
<td>Computational-aided drug development to treat castration-resistant prostate cancer</td>
<td>Office of the Associate Dean for Research, University of Minnesota College of Pharmacy, SURRGE award</td>
</tr>
<tr>
<td>R. Stephanie Huang (Advisor)</td>
<td>Summer College of Pharmacy Experiences (SCoPE) Program</td>
<td>University of Minnesota College of Pharmacy</td>
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<tr>
<td>R. Stephanie Huang (Advisor)</td>
<td>Bighley Graduate Fellowship (Yingbo Huang)</td>
<td>University of Minnesota</td>
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<tr>
<td>R. Stephanie Huang (Advisor)</td>
<td>Bighley Graduate Fellowship (Yuting Shan)</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Pamala Jacobson (PI), Jeff Bishop (Co-I)</td>
<td>Development of a Participant-Controlled PGx Data Repository for Drug Biomarker Discovery</td>
<td>Informatics Institute, University of Minnesota</td>
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<tr>
<td>Reena Kartha (Advisor)</td>
<td>Summer College of Pharmacy Experiences (SCoPE) Program</td>
<td>University of Minnesota College of Pharmacy</td>
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<td>Reena Kartha (Advisor)</td>
<td>Melendy Research Scholarship (Chenwei Yan)</td>
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<td>Reena Kartha (Advisor)</td>
<td>Melendy Research Scholarship (Danielle Luettel)</td>
<td>University of Minnesota College of Pharmacy</td>
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<tr>
<td>Reena Kartha (Advisor)</td>
<td>James C. Cloyd Neuropharmacology Fellowship</td>
<td>University of Minnesota College of Pharmacy</td>
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<tr>
<td>Ling Li (PI)</td>
<td>HDL Mimetic Peptides to Mitigate SARS-CoV-2 Infection-Induced Neuroinflammation and Cerebrovascular Injury</td>
<td>SURRGE Program Grant, University of Minnesota College of Pharmacy</td>
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<tr>
<td>Melanie Nicol (PI)</td>
<td>Improving outcomes in HIV-associated opportunistic infections with CNS pharmacokinetics and pharmacodynamics</td>
<td>STRIDES (STrategic Research Investment for the Development of Early Scientists) Program Grant University of Minnesota College of Pharmacy</td>
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<tr>
<td>Robert Straka (Advisor)</td>
<td>Robert J. Straka Fellowship</td>
<td>University of Minnesota</td>
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<td>Robert Straka (Advisor)</td>
<td>A Novel Natural Language Processing Enriched Clinical Pharmacology Approach to Identify Optimal Allopurinol Dosing for an Underserved Population at Risk for Gout Using Real-World Data from Electronic Health Records (EHRs)</td>
<td>Doctoral Dissertation Fellowship, University of Minnesota</td>
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<td>Beshay Zordoky (PI)</td>
<td>Leveraging Senotherapeutics to Combat Doxorubicin-induced Immunosenescence</td>
<td>Pediatric Cancer Survivorship Working Group, University of Minnesota</td>
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<tr>
<td>Beshay Zordoky (PI)</td>
<td>Deciphering the Role of AMPK in Carfilzomib-induced Cardiovascular Dysfunction</td>
<td>University of Minnesota College of Pharmacy</td>
</tr>
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<td>Beshay Zordoky (Advisor)</td>
<td>Summer College of Pharmacy Experiences (SCoPE) Program</td>
<td>University of Minnesota College of Pharmacy</td>
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<tr>
<td>Beshay Zordoky (Advisor)</td>
<td>Molecular Mechanisms and Cardiovascular Ramifications of Doxorubicin-induced Senescence - Doctoral Dissertation Fellowship (Ibrahim Abdelgawad)</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Beshay Zordoky (Advisor)</td>
<td>MN Advancing Science, Enhancing Diversity University of Minnesota (M-ASCEND)</td>
<td>Masonic Cancer Center, University of Minnesota</td>
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<tr>
<td><strong>ONGOING EXTERNALLY FUNDED PROJECTS WITH ECP FACULTY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angela Birnbaum (Co-PI)</td>
<td>Pharmacokinetic/Pharmacodynamic model in pregnant women with depression to guide sertraline dosing</td>
<td>NIH National Institute of Child Health and Human Development</td>
</tr>
<tr>
<td>Angela Birnbaum (Co-I)</td>
<td>Development of a monoclonal antibody to reverse overdose from fentanyl and its analogs: from manufacturing to clinical trials</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Angela Birnbaum (PI), Stephanie Huang (Co-I)</td>
<td>Physiological-based Pharmacokinetics Approach to Determine the Extent of Drug Exposure of Antiseizure Medications During Pregnancy and Breastfeeding</td>
<td>NIH National Institute of Child Health and Development</td>
</tr>
<tr>
<td>Angela Birnbaum (Co-I)</td>
<td>Phase 1a/1b Clinical Trials of Multivalent Opioid Vaccine Components</td>
<td>NIH National Institute on Drug Abuse</td>
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<tr>
<td>Angela K. Birnbaum (Co-I)</td>
<td>Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
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<tr>
<td>Name</td>
<td>Title</td>
<td>Sponsor/Institution</td>
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<tr>
<td>-----------------------------</td>
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<tr>
<td>Angela Birnbaum (Co-I)</td>
<td>Vaccines for Fentanyl and Its Derivatives: A strategy to reduce illicit use and overdose</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Angela Birnbaum (Co-I)</td>
<td>Novel Nanovaccines Against Opioid Use Disorder</td>
<td>NIH National Institute on Drug Abuse</td>
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<tr>
<td>Angela Birnbaum (Co-I)</td>
<td>Medical Cannabis Dosage and Adverse Events in Clinical Practice</td>
<td>Vireo Health, LLC</td>
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<tr>
<td>Angela K. Birnbaum (PI)</td>
<td>Pharsight-University of Minnesota Pharmacometrics Collaboration</td>
<td>Pharsight Corporation</td>
</tr>
<tr>
<td>Jeffrey Bishop (Co-I)</td>
<td>Genotype- and phenoconversion-predicted CYP2D6 activity and risperidone exposure</td>
<td>American Association of Colleges of Pharmacy (AACP)</td>
</tr>
<tr>
<td>Jeffrey Bishop (Co-I)</td>
<td>An Informatics Framework for Discovery and Ascertainment of Drug-Supplement Interactions</td>
<td>NIH National Center for Complementary and Integrative Health</td>
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<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Comorbidity: Substance Use Disorders and Other Psychiatric Conditions</td>
<td>NIH National Institute on Drug Abuse</td>
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<tr>
<td>Jeffrey Bishop (Advisor)</td>
<td>Developmental Psychopathology T32</td>
<td>NIH National Institute of Mental Health</td>
</tr>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Licensing Agreement-IV Topiramate</td>
<td>Ligand Pharmaceuticals</td>
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<td>James C. Cloyd (Co-PI)</td>
<td>Lysosomal Disease Network</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>James C. Cloyd (Co-PI)</td>
<td>Development of Intravenous Baclofen</td>
<td>Allaysis Pharmaceuticals</td>
</tr>
<tr>
<td>Lisa Coles (Co-I)</td>
<td>NEOLEV3: A Phase IIb Dose Escalation Study of Levetirace</td>
<td>USA Food &amp; Drug Administration (FDA)</td>
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<tr>
<td>Lisa Coles (PI)</td>
<td>AbbVie-UMN Clinical Pharmacology and Pharmacometrics Fellowship</td>
<td>AbbVie, Inc.</td>
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<tr>
<td>Lisa Coles (PI)</td>
<td>Leveraging innate immunity to prevent post-traumatic epilepsy</td>
<td>University of California - Los Angeles (UCLA)</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Sponsor</td>
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<tr>
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<tr>
<td>Lisa Coles (PI)</td>
<td>Translational platform for epilepsy therapy and biomarker development in post-traumatic epilepsy</td>
<td>Albert Einstein College of Medicine</td>
</tr>
<tr>
<td>Elizabeth Hirsch (Co-I)</td>
<td>Optimal vancomycin exposure target for pulmonary exacerbations in CF</td>
<td>Cystic Fibrosis Foundation</td>
</tr>
<tr>
<td>R. Stephanie Huang (Co-I)</td>
<td>Targeting early events in prostate cancer lineage plasticity</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>R. Stephanie Huang (PI)</td>
<td>Drug Repurposing in Breast Cancer</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>R. Stephanie Huang (PI)</td>
<td>Genetic Mechanisms Underlying Sexual Dimorphism in Cancer and Response to Therapy</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>Pamala Jacobson (PI)</td>
<td>Molecular and Cellular Analysis of Allograft Loss in Kidney Transplant Biopsies</td>
<td>National Institutes of Health, Hennepin Healthcare Research Institute</td>
</tr>
<tr>
<td>Pamala Jacobson (PI)</td>
<td>Pharmacogenomics Clinical Training Program for Pharmacists in Rural and Underserved Areas in Minnesota</td>
<td>Minnesota Department of Health (MDH)</td>
</tr>
<tr>
<td>Pamala Jacobson (PI)</td>
<td>Gut Microbiota and Effect on Immune Suppressants in Transplantation</td>
<td>NIH National Institute of Allergy and Infectious Disease</td>
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<tr>
<td>Reena Kartha (PI)</td>
<td>Translational Pharmacology Research Fellowship</td>
<td>Sanofi-Aventis US</td>
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<tr>
<td>Reena Kartha (PI)</td>
<td>Magnetic Resonance Spectroscopy Biomarkers in Type 3 Gaucher Disease</td>
<td>Sanofi-Aventis US</td>
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<tr>
<td>Reena Kartha (PI)</td>
<td>Dose Optimization of Nervonic Acid-a Potential Therapy to Alleviate Disease Progression in Adrenoleukodystrophy</td>
<td>NIH National Center for Advancing Translational Science</td>
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<tr>
<td>Reena Kartha (PI)</td>
<td>Nervonic Acid-a Potential Therapy to Alleviate Disease Progression in Adrenoleukodystrophy</td>
<td>Ligand Pharmaceuticals, Inc.</td>
</tr>
<tr>
<td>Reena Kartha (PI)</td>
<td>Novel Inflammatory Biomarkers Complement 5a and Hepcidin in Patients with Gaucher Disease</td>
<td>Sanofi-Genzyme</td>
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<tr>
<td>Michael Kotlyar (Co-PI)</td>
<td>Feasibility of Using Wearable Technology for Just-in-Time Prediction of Smoking Lapses</td>
<td>NIH National Institute on Drug Abuse</td>
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<td>Michael Kotlyar (Co-I)</td>
<td>Bupropion for the Prevention of Postpartum Smoking Relapse</td>
<td>NIH National Institute on Drug Abuse</td>
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<tr>
<td>Name</td>
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<td>Funding Agency</td>
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<td>Ilo Leppik (PI), Angela Birnbaum (Co-I)</td>
<td>Nursing Home Survey Project for Epilepsy</td>
<td>UCB Pharma</td>
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<tr>
<td>Ling Li (Co-I)</td>
<td>Detecting synergistic effects of pharmacological and non-pharmacological interventions for AD/ADRD</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Ling Li (Co-PI)</td>
<td>Combined Effects of TBI &amp; Covid19 Developing Alzheimer's</td>
<td>MN Office of Higher Education</td>
</tr>
<tr>
<td>Ling Li (Co-I)</td>
<td>Estimation and inference in directed acyclic graphical models for biological networks</td>
<td>NIH National Institute on Aging</td>
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<tr>
<td>Ling Li (PI)</td>
<td>Acute and Long-Term Impact of SARS-CoV-2 Infection and its Interaction with APOE on Cognitive Function and Neuropathology in Aging and Alzheimer's Disease</td>
<td>NIH National Institute on Aging</td>
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<td>Ling Li (Co-I)</td>
<td>Deep Learning with Neuroimaging Genetic Data for Alzheimer's Disease</td>
<td>NIH National Institute on Aging</td>
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<td>Ling Li (Co-I)</td>
<td>Integrating Alzheimer's Disease GWAS with Proteomic and Metabolomic QTL Data</td>
<td>NIH National Institute on Aging</td>
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<td>Ling Li (PI)</td>
<td>HDL Mimetic Peptide-Mediated Enhancement of Neurovascular Function to Mitigate Cerebral Amyloid Angiopathy and Alzheimer's Disease</td>
<td>NIH National Institute on Aging</td>
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<tr>
<td>Melanie Nicol (PI)</td>
<td>Evaluating Antiretroviral Pharmacology in the Female Genital Tract to Optimize HIV Prevention</td>
<td>NIH National Institute of Allergy and Infectious Diseases</td>
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<tr>
<td>Melanie Nicol (Co-I)</td>
<td>Improving Diagnostics and Neurocognitive Outcomes in HIV/AIDS-related Meningitis</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>Melanie Nicol (Co-I)</td>
<td>Encochleated Oral Amphotericin for Cryptococcal Meningitis Trial</td>
<td>National Institutes of Health (NIH)</td>
</tr>
<tr>
<td>Robert Straka (Co-I)</td>
<td>The Long-Life Family Study (LLFS): Pharmacogenetics (PGx) Administrative Supplement</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Beshay Zordoky (Advisor)</td>
<td>Pakistan Government Scholarship</td>
<td>Pakistani Ministry of Higher Education</td>
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</table>
**Beshay Zordoky (Advisor)**  
Egyptian Government Scholarship  
Egyptian Ministry of Higher Education

**Beshay Zordoky (PI)**  
Psychosocial Stress Exacerbates Doxorubicin-induced Cardiovascular Aging  
NIH National Heart, Lung, and Blood Institute

## ONGOING INTRAMURAL PROJECTS WITH ECP FACULTY

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Full Project Name</th>
<th>Sponsor</th>
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</thead>
<tbody>
<tr>
<td>Lisa Coles (Co-I)</td>
<td>Intranasal Delivery of Cortisol Stress Dosing in Patients with Adrenal Insufficiency</td>
<td>The Pediatric Device Innovation Consortium (PDIC), University of Minnesota</td>
</tr>
<tr>
<td>Angela Birnbaum (Co-I)</td>
<td>Neurobehavioral Impacts of Medical Cannabis Treatment in Chronic Pain Patients</td>
<td>Medical Discovery on Addiction, University of Minnesota</td>
</tr>
<tr>
<td>James C. Cloyd (PI)</td>
<td>Allopregnanolone (ALLO), A Novel Neurosteroid Drug, for Treatment of Status Epilepticus, A Life-threatening Neurological Emergency</td>
<td>Office of Academic Clinical Affairs (OACA), University of Minnesota</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>Modeling and Reversing Alzheimer’s Pathology via Human Brain Organoids</td>
<td>Faculty Research Development Grant Program, OACA, University of Minnesota</td>
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<tr>
<td>Robert Straka (PI)</td>
<td>Optimizing the identification and prediction of statin intolerance to improve statin adherence using natural language processing and machine learning</td>
<td>CTSI Translational Research Development Program Award (TRDP), University of Minnesota</td>
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<tr>
<td>Robert J. Straka (PI)</td>
<td>Very Important Pharmacogenes in Hmong (VIP-HC) Study (California Cohort)</td>
<td>College of Pharmacy, University of Minnesota</td>
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</tbody>
</table>
PUBLICATIONS

JOURNAL ARTICLES BY ECP FACULTY
(Key: ECP Faculty, ECP Graduate Students, Postdocs and Staff)

2023 Journal Articles


Agostinucci, K., Grant MKO, Melaku, W., Nair, C., & Zordoky, B. N. (2023). Exposure to Doxorubicin Modulates the Cardiac Response to Isoproterenol in Male and Female Mice. Pharmaceuticals (Basel, Switzerland), 16(3). 10.3390/ph16030391


considerations and a conceptual framework to enhance patient care. Journal of the American College of Clinical Pharmacy. https://doi.org/10.1002/jac5.1892


Blaes, A. H., Nair, C., Everson-Rose, S., Jewett, P., Wolf, J., & Zordoky, B. Psychological measures of stress and biomarkers of inflammation, aging, and endothelial dysfunction in breast cancer survivors on aromatase inhibitors. Scientific Reports, 13(1). http://dx.doi.org/10.1038/s41598-023-28895-4 10.1038/s41598-023-28895-4


bronchopulmonary dysplasia. Journal of perinatology: official journal of the California Perinatal Association. 10.1038/s41372-023-01809-y


**Wen, Y.-F.,** Culhane-Per A. K., Pergament, S. L., Moua, Y., Vue, B., Yang, T., **Sun, B.**, & **Straka, R. J.** (2023). Hmong microbiome ANd Gout, Obesity, Vitamin C (HMANGO-C): A phase II clinical study protocol. Plos one, 18(2), e0279830.


OTHER PUBLICATIONS BY ECP FACULTY

2023 Other Publications by ECP Faculty

Cloyd, J., Coles, L., Kriel, R., & Krach, L. *METHOD OF DELIVERY OF INTRAVENOUS BACLOFEN.*

Coles, L., Sarafoglou, K., Al-Kofahi, M., & Brundage, R. *FORMULATIONS AND METHODS FOR INTRANASAL DELIVERY OF HYDROCORTISONE.*


TEACHING

The College of Pharmacy consistently ranks among the top three pharmacy schools in the country for the quality of its PharmD program. Faculty fill a variety of roles in the educational process, including course director, lecturer, discussant, seminar participant, and others. In addition to these classroom roles, faculty also serve as mentors and advisors to students, providing them with one-on-one training and counsel as they prepare for their careers.

In 2023, ECP faculty contributed significant, didactic education to PharmD classes. This instruction included teaching and directing the required pharmacotherapy series and the pharmaceutical care skills course sequence, as well as teaching elective courses. Instruction to pharmacy students also included experiential education in acute care, geriatric patient care, pediatric infectious disease, and clinical toxicology. The department also offers a research emphasis track for PharmD students which pairs students with an advisor(s) in the Clinical Pharmacology Research Emphasis program. In addition to coursework, students choose a research topic in experimental, translational, or clinical pharmacology for their PharmD paper project.

ECP faculty also teach graduate program classes. While these are primarily designed to support the department’s own graduate students, the courses also include students in nursing, public health, geriatrics, and genetics, as well as graduate students in other College of Pharmacy programs.

TEACHING-RELATED METRICS IN ECP

- (unspecified) Students mentored by ECP faculty: 34
- Undergraduate students mentored or advised by ECP faculty: 9
- Graduate/Professional students mentored or advised by ECP faculty: 60

Reported Student Credit Hours by Course Level

<table>
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<th>Course level</th>
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<tr>
<td>8000</td>
<td>111</td>
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</table>
SERVICE

ECP faculty discover opportunities for service both within and outside the University. The hours spent offering expertise and guidance are a way to give back to students, the community, and the field. In 2023, faculty members served on boards of directors or advisory councils of research organizations and others reviewed grant proposals and/or faculty promotion documents for institutions across the country. While much of the service performed by ECP faculty is performed on behalf of the department, college, and university in which they work, they also support their colleagues and their profession.

SERVICE-RELATED METRICS IN ECP

<table>
<thead>
<tr>
<th>Service Commitment</th>
<th>Count</th>
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<tbody>
<tr>
<td>Service commitments to the discipline or profession</td>
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<tr>
<td>Service commitments to the university, college, or department</td>
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<td>External and public service commitments</td>
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<td>Professional memberships</td>
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<td>Professional development activities</td>
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<td>Peer mentorship relationships</td>
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ECP GRADUATE PROGRAM

The ECP Graduate Program provides individualized, hands-on learning experiences to those who will become tomorrow’s leaders in experimental and clinical pharmacology research and teaching.

The ECP Graduate Program is an innovative, interdisciplinary program that trains students to conduct research utilizing methodology from basic and clinical pharmacology perspectives. Designed specifically for students interested in clinical research, the goal of the program is to advance the science of human pharmacology and therapeutics to improve the safe, effective, and economical use of drugs by patients. Students study such topics as experimental pharmacotherapy, drug metabolism, infectious disease, pharmacometrics, neuropsychopharmacology/neuroscience, and pharmacogenomics. Graduates are prepared for distinguished careers in clinical research.

ECP GRADUATE PROGRAM-RELATED METRICS

- PhD degrees completed: 65
- MS degrees completed: 9
- ECP program graduates: 3
- Students in ECP graduate program: 25

ECP DOCTORAL GRADUATES

<table>
<thead>
<tr>
<th>Name</th>
<th>Advisor</th>
<th>Thesis Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibrahim Abdelgawad, PhD</td>
<td>Beshay Zordoky, PhD; Ling Li, DVM, PhD</td>
<td>Molecular Mechanisms and Cardiovascular Ramifications of Doxorubicin-induced Senescence</td>
</tr>
<tr>
<td>Fan Wang, PhD</td>
<td>Melanie Nicol, PharmD, PhD; Angela Birnbaum, PhD</td>
<td>Approaches to Understanding Antiretroviral Pharmacology in Difficult-to-access Tissues for HIV Treatment and Prevention</td>
</tr>
<tr>
<td>Rui Zhong, PhD</td>
<td>Ling Li, DVM, PhD</td>
<td>Cerebral Vasculature as a Therapeutic Target to Combat Alzheimer’s Disease</td>
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FELLOWSHIPS AND AWARDS FOR GRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Fellowships/Awards</th>
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</thead>
<tbody>
<tr>
<td>Ibrahim Abdelgawad</td>
<td>Honorable Mention College of Pharmacy Rho Chi Research Day Poster Competition</td>
</tr>
<tr>
<td>Charul Avachat</td>
<td>University of Minnesota Doctoral Dissertation Fellowship, ASCPT Network and Community Development award, Student and trainee grant ASCPT</td>
</tr>
<tr>
<td>Adeboye Bamgboyé</td>
<td>CTSI A-PRep Fellowship</td>
</tr>
<tr>
<td>Jessica Barry</td>
<td>American Foundation for Pharmaceutical Education Fellowship</td>
</tr>
<tr>
<td>Tiffany Chang</td>
<td>Coin Fellowship</td>
</tr>
<tr>
<td>Mohamed Dabour</td>
<td>2nd place College of Pharmacy Rho Chi Research Day Poster Competition</td>
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</table>
Mary Raphel Daniel  People’s Choice Award College of Pharmacy 3 Minute Thesis Competition
Yingbo Huang  Bighley Graduate Fellowship
Alyssa Lantz  University of Minnesota CTSI and University of Michigan 3 Minute Thesis 3rd place
Chenxu Li  Cloyd Fellowship, First place College of Pharmacy Rho Chi Research Day Poster Competition
Yuhan Long  Young Investigator Award, American Epilepsy Society 2023 Annual Meeting
Yuting Shan  Bighley Graduate Fellowship, Cancer Microbiome Seed Fund-Masonic Cancer Center, Runner up College of Pharmacy 3 Minute Thesis competition, Microbiome & Cancer Symposium Award of Excellence, PGRN Presidential Abstract Award
Boguang Sun  Straka Fellowship, ASCPT Presidential Trainee Award, 2022-2023 Teaching Assistant Recognition Award Nomination
Lusi Zhang  University of Minnesota Interdisciplinary Doctoral Fellowship, Olsteins Graduate Fellowship, ECP Fellowship

**ECP RESEARCH EMPHASIS TRACK GRADUATES**

ECP also provides professional students in the PharmD program an opportunity to specialize in research by participating in the ECP Research Emphasis Track.

<table>
<thead>
<tr>
<th>Name</th>
<th>Advisor</th>
</tr>
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<tbody>
<tr>
<td>Kaylyn Billmeyer</td>
<td>Elizabeth Hirsch</td>
</tr>
<tr>
<td>Jillian Brooks</td>
<td>Lisa Coles</td>
</tr>
<tr>
<td>Lee Cheung</td>
<td>R. Stephanie Huang</td>
</tr>
<tr>
<td>Kadiro Gelchu</td>
<td>R. Stephanie Huang</td>
</tr>
<tr>
<td>Ryan McFarland</td>
<td>Amanda Klein</td>
</tr>
<tr>
<td>Chandini Nair</td>
<td>Beshay Zordoky</td>
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<tr>
<td>Loan Tran</td>
<td>Jacob Brown and David Stenehjem</td>
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**PUBLICATIONS BY GRADUATE STUDENTS & POSTDOCS**

**2023 Journal Articles**


contraception initiation in Malawi. AIDS (London, England), 37(14), 2185-2190. 10.1097/QAD.0000000000003686


### PRESENTATIONS BY GRADUATE STUDENTS & POSTDOCS

#### 2023 Abstracts, Posters, and Presentations

**Avachat, C.** “Changes in total daily dose of lamotrigine and levetiracetam during pregnancy: Reflection on current clinical practice at US tertiary epilepsy centers” International League Against Epilepsy annual meeting, Dublin, Ireland, September 2023


**Avachat, C.** “Characterization of the US Food and Drug Administration Post-Marketing Commitments and Requirements for Pregnancy and Lactation“. American Society of Clinical Pharmacology and Therapeutics annual meeting, Atlanta, Georgia, March 2023 (Poster)

**Avachat, C.** “Making sense of sparse pharmacokinetic data using Phoenix NLME”, for Experimental and Clinical Pharmacology Pharmacometrics Webinar sponsored by Certara, January 2023


**Bixby ML, Collins LB, Salay JM, Hirsch EB.** Comparison of growth rates among Klebsiella pneumoniae (KP) isolates stratified by the production of inner colonies during fosfomycin disk diffusion (DD) testing. eFlash Presentation, ECCMID 2023. April 2023. (Poster)


Shan, Y, Sex Differences in Intratumor Microbiome Have Implications on Cancer Risk and Drug Response. Selected oral presentation at Pharmacogenonomic Global Research Network (PGRN) annual conference, 2023, Memphis, Tennessee. (Presentation)

Shan, Y, Sex Differences in Intratumor Microbiome Have Implications on Cancer Risk and Drug Response. Masonic Cancer Center (MCC) Microbiome & Cancer Symposium. 2023, Minneapolis, MN. (Presentation)

Sun B; Zhang R; Chi CL; Straka RJ et al. Development and validation of the pharmacological statin-associated muscle symptoms risk stratification (PSAMS-RS) score using real-world electronic health record data. ACCP Annual Conference: November 11-13, 2023, Dallas, Texas


Sun B; Zhang R; Chi CL; Straka RJ et al. Optimizing the identification and prediction of statin intolerance to improve statin adherence using natural language processing and machine learning. AMIA Informatics Summit: March 13-16, 2023, Seattle, Washington (Poster)


Vigliaturo, Jennifer, Carly Baehr, Andrew Kassick, Diego Luengas, Marco Pravetoni, Saadyah Averick, and Michael Raleigh. "Determination of Strychnine Levels in Serum and Brain via LC-MS/MS in Mice Vaccinated Against Strychnine." (2023). ASPET; 2023, May 18th – 21st in St. Louis, MO.

X Lyu, S Ilamola, IE Leppik, SE Marino, S Dahmer, P Lehelftd, JM Conway, S Park, AK Birnbaum, Medical Cannabis and Seizure Control in Minnesota Medical Cannabis Program, American Epilepsy Society 2023 Annual Meeting, Dec. 2023 (Poster)

Zhang, Lusi, “Peripheral Inflammation, Cardiometabolic Risk, and Cognitive Function in Psychosis: Genomic and Proteomic Analyses.” Presented at West China Hospital of Sichuan University. Sichuan, Chengdu, P.R. China (1/3/2023).


Zhang M, Shan Y, Huang RS. Akkermansia muciniphila: A Female-enriched Bacteria that Impacts the Response of Multiple Cancer Therapeutics. Rho Chi Research Day. 2023, Minneapolis, MN.
ECP RESEARCH SEMINAR (ECP 8100)
Both graduate students and postdoctoral associates present at the weekly research seminar.

<table>
<thead>
<tr>
<th>Date - Spring 2023</th>
<th>Title</th>
<th>Presenter</th>
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<tr>
<td>January 25</td>
<td>Drug Testing Basics for Different Laboratory Settings</td>
<td>Jennifer Brown, PhD, MLS(ASCP)CM, Medical Laboratory Sciences, CAH</td>
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<tr>
<td>February 1</td>
<td>The Protective Effects of Canagliflozin against Carfilzomib-induced Endothelial Toxicity</td>
<td>Mohamed Dabour, PhD student, ECP</td>
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<td>February 8</td>
<td>Repurposing Nervonic acid: a Naturally Occurring Dietary Fatty Acid for Adrenoleukodystrophy</td>
<td>Chenx Li, PhD student, ECP</td>
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<td>February 15</td>
<td>New Guidelines for the Management of Heart Failure</td>
<td>Orly Vardeny, PharmD, MS, FAHA, FHFSA, Adjunct Faculty, ECP</td>
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<tr>
<td>February 22</td>
<td>Theoretically Understanding Volume of Distribution During Pregnancy</td>
<td>Yuhan Long, PhD student, ECP</td>
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<tr>
<td>March 15</td>
<td>Pharmacokinetics/Pharmacodynamics Scaled: How Antimicrobials Move Through/Affect the Social Body</td>
<td>Lorenzo Servitje, PhD, MPH, Assoc. Prof. of Literature and Medicine, Dept. of English, Director of Health, Medicine &amp; Society, Lehigh University, Bethlehem, PA</td>
</tr>
<tr>
<td>March 22</td>
<td>Applications of Personalized Medicine Approaches in the Critically Ill</td>
<td>Moataz Mohamed, PhD student, ECP</td>
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<td>March 29</td>
<td>Ketamine: A Treatment for Status Epilepticus</td>
<td>Adeboye Bamgboye, PhD student, ECP</td>
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<td>April 5</td>
<td>Explore Sex Differences in Pan-cancer Intratumor Microbiome</td>
<td>Yuting Shan, PhD student, ECP</td>
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<tr>
<td>April 12</td>
<td>Strategies for Conducting your First Peer Review</td>
<td>Sarah Jane Brown, MSc, College of Pharmacy &amp; Medical School, Duluth Campus Librarian, Health Sciences Library, UMN</td>
</tr>
<tr>
<td>April 26</td>
<td>Bullying and Bias in Science</td>
<td>ECP DEI Task Force, Panel Discussion moderated by Adam Lee, PhD, and Reena Kartha, PhD</td>
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<tr>
<td>Date - Fall 2023</td>
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<tr>
<td>September 13</td>
<td>ECP Lab Safety Training Seminar</td>
<td><strong>Rebecca Cuellar</strong>, PhD, College Safety Officer <strong>Jodi Oglvie</strong>, PhD &amp; <strong>Nancy Rolsted</strong>, MS, RBP, DEHS Co-Presenters</td>
</tr>
<tr>
<td>September 20</td>
<td>Conversations with Experts - Collaborative research to optimize doses for prevention and treatment of deadly infections</td>
<td><strong>Melanie Nicol</strong>, PharmD, PhD, Associate Professor, and <strong>Caleb Skipper</strong>, MD, Assistant Professor of Medicine, Division of Infectious Diseases &amp; International Medicine, Univ. of Minnesota</td>
</tr>
<tr>
<td>September 27</td>
<td>Psychosocial stress exacerbates doxorubicin-induced cardiotoxicity in adult mice</td>
<td><strong>Mary Raphel Daniel</strong>, PharmD, ECP PhD student</td>
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<tr>
<td>October 4</td>
<td>Industry Pharmacist: Path to a Career in Medical Publications</td>
<td><strong>Thao Luu</strong>, PharmD, Deciphera Pharmaceuticals (Oncogene), CoP Alumna</td>
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<td>October 11</td>
<td>Gene Therapies: Unveiling the Promise of Cures and Confronting the Cost Burden</td>
<td><strong>Mohamed Duklef</strong>, ECP MS student</td>
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<td>October 18</td>
<td>Clinically Relevant Herb-Drug Interactions: A 30-year Historical Perspective Second Annual ECP Toxicology Seminar Sponsored by the Speedie-SafetyCall Endowment Fund</td>
<td><strong>Bill J. Gurley</strong>, PhD, Principal Scientist, National Center for Natural Products Research, School of Pharmacy, University of Mississippi</td>
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<td>November 1</td>
<td>Connections between SARS-CoV-2 and Alzheimer's Disease</td>
<td><strong>Holly Korthas</strong>, PhD, Post-Doctoral Associate Ling Li Lab</td>
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<td>November 8</td>
<td>Investigation of Enterobacterales inner colonies during fosfomycin susceptibility testing</td>
<td><strong>Morgan Bixby</strong>, ECP PhD student</td>
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<tr>
<td>November 15</td>
<td>Fentanyl abuse epidemic: current and emerging treatments</td>
<td><strong>Jenny Vigliaturo</strong>, ECP MS student</td>
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<td>November 29</td>
<td>Conversations with Experts - Psychiatric Pharmacogenomics: From Research to Clinical Care and Back Again</td>
<td><strong>Lusi Zhang</strong>, PharmD, MHI, ECP graduate student, and <strong>Jeff Bishop</strong>, PharmD, MS, Associate Professor</td>
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<tr>
<td>December 6</td>
<td>Identifying New Therapies for Breast Cancer Patients Via Drug Response Modeling</td>
<td><strong>Robert Gruener</strong>, PhD, Post-Doctoral Associate, R. Stephanie Huang Lab</td>
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