DEPARTMENT OF
EXPERIMENTAL AND CLINICAL PHARMACOLOGY

2012 Annual Report
Contents

2 Letter from the Department Head
4 Department Members
6 Research
20 Teaching
22 Service
24 Graduate Program
DEAR COLLEAGUES AND FRIENDS,

In July 2012, following a national search by the College, I was honored to be offered a new position as head of the department that has been my professional home for 25 years. (I had accepted the reins on a temporary basis in April from interim department head Dr. Cynthia Gross.) By that time in the year, ECP faculty had already celebrated several new grants, not to mention numerous published articles in national and international journals and invitations to present research findings at conferences worldwide, and the department had held a successful conference on geriatrics, “Pharmacotherapy for the Elderly,” honoring our colleague Dr. David Guay upon his retirement.

Thanks to Dr. Gross’s strong interim leadership, ECP was also prepared for new growth. In July, Dr. Susan Marino joined our faculty as assistant professor (and almost immediately secured a NIH R01 grant for her work in drug effects on cognition). At a summer department retreat, faculty and staff articulated a shared vision for the department and its graduate program, and a plan to build upon the existing expertise of our renowned faculty and advance our mission of research, teaching, practice, and service with two new tenure-track faculty hires in the areas of human pharmacology and therapeutics. We have moved forward with that plan, and as we bring this annual report to press, we are conducting national searches for these positions.

Meanwhile, we continued to provide an excellent education for the College’s graduate and professional students—as well as gifted undergraduates interested in experimental and clinical pharmacology. During the summer of 2012, three graduate/professional students and one undergraduate were mentored by ECP faculty on ongoing research projects as part of a competitive new program of the Clinical and Translational Science Institute (CTSI). In addition, ECP’s five undergraduate Melendy Scholars were exclusively aligned with the CTSI program and allowed to participate in the structured learning activities offered by CTSI. In Fall 2012, five new students entered the ECP graduate
program, joining our 14 continuing students. Faculty also contributed significantly throughout 2012 to the design of the College’s new Pharm.D. curriculum, which begins with our first-year students in the fall of 2013.

As 2012 came to a close, we were proud to see our colleague Dr. John Rotschafer receive the Russell R. Miller Award from the American College of Clinical Pharmacy in recognition of his decades of significant publications and contributions to the literature. Dr. Rotschafer’s level of accomplishment in research, his service to the field, and his thoughtful training of clinical scientists of tomorrow is representative of the bedrock our department builds upon as we move into 2013 and beyond.

I am pleased and proud to share with you this 2012 Annual Report, which highlights developments and achievements within the department in the previous year. I invite you to look through its pages and consider the groundbreaking work being conducted here. From my 25 years as a member of ECP and from the perspective I now hold as department head, it is clear to me that the positive relationship between faculty and staff has been integral to pursuing our mission. That relationship—along with the expertise of our faculty, and the capabilities and commitment of students and staff—has allowed us to create one of the top experimental and clinical pharmacology programs in the country today. I look forward to the work we will accomplish together in 2013.

Robert J. Straka, Pharm.D.
Professor and Department Head
FACULTY

Angela K. Birnbaum, Ph.D.
Associate Professor

Richard C. Brundage, Ph.D., Pharm.D.
Professor

Scott A. Chapman, Pharm.D.
Associate Professor

James C. Cloyd, Pharm.D.
Professor; Weaver Endowed Chair; Director, Center for Orphan Drug Research

Jeannine M. Conway, Pharm.D.
Assistant Professor; Director of Applied Learning

Esam El-Fakahany, Ph.D.
Professor; Associate Dean for Research and Graduate Studies

Cynthia R. Gross, Ph.D.
Professor

David R. Guay, Pharm.D.
Professor Emeritus

Pamala A. Jacobson, Pharm.D.
Associate Professor

L’Aurelle A. Johnson, Ph.D.
Assistant Professor

Mark N. Kirstein, Pharm.D.
Associate Professor

Michael Kotlyar, Pharm.D.
Associate Professor

Jatinder Lamba, Ph.D.
Associate Professor

Vishal Lamba, Ph.D.
Assistant Professor

Ilo E. Leppik, M.D.
Professor

Ling Li, Ph.D.
Professor; VFW Endowed Chair

Henry J. Mann, Pharm.D.
Professor Emeritus

Susan E. Marino, Ph.D.
Assistant Professor

William S. Oetting, Ph.D.
Professor

Marnie L. Peterson, Ph.D., Pharm.D.
Associate Professor

John C. Rotschafer, Pharm.D.
Professor

Shellina Scheiner, Pharm.D.
Assistant Professor

Leo J. Sioris, Pharm.D.
Professor

Debra J. Skaar, Pharm.D.
Assistant Professor

Robert J. Straka, Pharm.D.
Professor; Department Head

ADJUNCT FACULTY

Andrew Behm, Pharm.D., CGP
Assistant Professor

Greg Beilman, M.D.
Professor

Dongfeng Cao, Ph.D.
Assistant Professor

Kristin Engebretsen, Pharm.D.
Assistant Professor

Dean T. Filandrinos, Pharm.D.
Assistant Professor

Mary E. Foss, Pharm.D.
Assistant Professor

John F. Gualtieri, Pharm.D.
Assistant Professor

Nitin Kaila, Ph.D.
Assistant Professor

Daniel E. Keyler, Pharm.D.
Professor

Robert Kriel, M.D.
Professor

Smita Khirsagar, Ph.D.
Instructor

Marie D. Kuker, R.Ph.
Assistant Professor

Stephen H. LeMaster, Pharm.D.
Assistant Professor

Len Lichtblau, Ph.D.
Associate Professor

Ramaiah Muthyala, Ph.D.
Associate Professor

Patrick J. Parks, M.D., Ph.D.
Associate Professor

David Parra, Pharm.D.
Associate Professor

Pamela A. Pawloski, Pharm.D.
Associate Professor

Mark Robbins, R.Ph.
Assistant Professor

Kelly M. Sioris, Pharm.D.
Assistant Professor

Catherine I. Starner, Pharm.D.
Assistant Professor

Catherine St. Hill, D.V.M., Ph.D.
Associate Professor

John V. St. Peter, Pharm.D.
Associate Professor

Jeanine Utz, Pharm.D.
Assistant Professor

Chester B. Whitley, M.D., Ph.D.
Professor

Rank and appointment as of 12/31/2012.
Research and Administrative Staff

Michele Anderson, Ph.D. ................................................................. Senior Research Associate, Peterson Lab
Marcia Brott .......................................................... Assistant Scientist, Oetting Lab
Rebecca Brown ........................................................ Study Coordinator, Jacobson Research Program
Carol Ann Dickinson .......................................................... Associate Administrator
Tanya Feldberg ........................................................ Assistant Scientist, Lamba Lab
James Fisher ........................................................ Technical Director, CPAS Laboratory
Kathy Fox ........................................................ Study Coordinator, Birnbaum Lab
Laurie Backer Hovde ........................................................ Coordinator, MTRF Laboratories
Dede Johnston .......................................................... Associate Administrator
Reena Kartha, Ph.D. .......................................................... Research Associate, Cloyd Lab
Brett M. Kistner .......................................................... Junior Scientist, Birnbaum Lab
Frank N. Konstantinides .......................................................... Director, CPAS Laboratory
Kyle LeBlanc .......................................................... Junior Scientist, Li Lab
Erin McGonagle .......................................................... Executive Office & Administrative Specialist
Annie Mills ........................................................ Study Coordinator, Kotlyar Research Program
Usda Mishra ........................................................ Assistant Scientist, Center for Orphan Drug Research
John O. Rarick .......................................................... Study Coordinator, Birnbaum Lab
Maryanne Reilly-Spong, Ph.D. .......................................................... Psychologist, Gross Research Program
Brent Williams .......................................................... Scientist, CPAS Laboratory

Advisor: Jatinder Lamba, Ph.D.

Continuing Graduate Students—Fall 2012

Mariam Ahmed, B.S. .......................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Suresh Agarwal, M.S. .......................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D;
Gavin Bart, M.D. .......................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Neha Bhise, B.Pharm. .......................................................... Advisor: Jatinder Lamba, Ph.D.
Manoj Chiney, M.Pharm. .......................................................... Advisor: L’Aurelle A. Johnson, Ph.D.
Caroline Baum, B.S. .......................................................... Advisor: Carolyn Fairbanks, Ph.D.
Aaron Gillman, B.S. .......................................................... Advisor: Marnie L. Peterson, Ph.D., Pharm.D.
Mary Holmey, R.N. .......................................................... Advisor: James C. Cloyd, Pharm.D.
Krista Johnson, B.S. .......................................................... Advisor: James C. Cloyd, Pharm.D.
Jia Kang, M.S. .......................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Taraswi Mitra Ghosh, M.Sc. .......................................................... Advisor: Jatinder Lamba, Ph.D.
Kinjal Sanghavi, B.Pharm. .......................................................... Advisor: Vishal Lamba, Ph.D.
Harrison Tam, B.S. .......................................................... Advisor: L’Aurelle A. Johnson, Ph.D.
Jie Zhou, M.S. .......................................................... Advisor: James C. Cloyd, Pharm.D.

New Graduate Students—Fall 2012

David Hottman, B.S. .......................................................... Advisor: Ling Li, Ph.D.
Janice Lee, Pharm.D. .......................................................... Advisor: Angela K. Birnbaum, Ph.D.
Chay Ngee Lim, B.Sc. .......................................................... Advisor: Angela K. Birnbaum, Ph.D.
Malek Okour, B.S. .......................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Youssef Roman, Pharm.D. .......................................................... Advisor: Robert J. Straka, Pharm.D.

New and Continuing Post-Docs, Fellows, and Residents

Laura Breshears, Ph.D. .......................................................... Advisor: Marnie L. Peterson, Ph.D., Pharm.D.
Shaowu Cheng, Ph.D. .......................................................... Advisor: Ling Li, Ph.D.
Lisa Coles, Ph.D. .......................................................... Advisor: James C. Cloyd, Pharm.D.
Darcy Flora, Ph.D. .......................................................... Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Yogita Ghodke, Ph.D. .......................................................... Advisor: Jatinder Lamba, Ph.D.
Amit Kumar Mitra, Ph.D. .......................................................... Advisor: Jatinder Lamba, Ph.D.
One testimony to the impact of our faculty’s research is the honor received this year by Dr. John Rotschafer. He was presented with the prestigious Russell R. Miller Award by the American College of Clinical Pharmacy for his decades of substantial contributions to the literature of clinical pharmacy.

RESEARCH

Groundbreaking and critical research is conducted in the Department of Experimental and Clinical Pharmacology. Faculty research programs focus on oncology, transplantation, infectious diseases, genomics, geriatrics, critical care, neuroscience, cardiovascular diseases, pediatrics, integrative therapies and outcomes, and psychiatry. ECP is home to the Lawrence C. Weaver Endowed Chair in Orphan Drug Development and the VFW Endowed Chair in Geriatric Pharmacotherapy. 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 nearly a decade.

Our 23 faculty members regularly present important research findings 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 National Institutes of Health and other granting agencies’ review committees.

In 2012:

- New grants received by ECP faculty = 10
- Peer-reviewed articles published by ECP faculty = 62
- Books and chapters published by ECP faculty = 6
- Department expenditures on sponsored projects (exclusive of salaries/fringe) = $1,262,572
- Department salaries/fringe offset by sponsored projects in 2012 = $1,790,479
- Percentage of total department salaries/fringe offset by sponsored projects in 2012 = 29%
Research Centers and Groups within ECP

- Center for Forecasting Drug Response, led by Dr. Richard Brundage
- Center for Orphan Drug Research, led by Dr. Jim Cloyd
- Center for Clinical and Cognitive Neuropharmacology, led by Dr. Susan Marino
- Center for Excellence in Critical Care, led by Dr. Greg Beilman
- Center for Translational Excitatory Neurotherapeutics, led by Dr. Ilo Leppik
- Pathway-Driven Pharmacogenomics University of Minnesota Alliance, led by Dr. Jatinder Lamba

Newly Funded Projects (Sponsored or Intramural) by ECP Faculty in 2012

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<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>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Metrum Pharmacometrics Traineeship</td>
<td>Metrum Research Institute</td>
</tr>
<tr>
<td>James C. Cloyd (PI)</td>
<td>The Human Epilepsy Project</td>
<td>Epilepsy Study Consortium</td>
</tr>
<tr>
<td>Jeannine M. Conway (PI)</td>
<td>A Pharmacy Coordinated Program to Enhance Medication Use in Chronic Cardiovascular Disease in a Rural Minnesota Community</td>
<td>MN Department of Health</td>
</tr>
<tr>
<td>Mark N. Kirstein (PI)</td>
<td>Evaluation of Antitumor Efficacy for Imprime PGG + Monoclonal Antibody Combination in Pancreatic Tumor Mouse Model</td>
<td>Biothera</td>
</tr>
<tr>
<td>Mark N. Kirstein (Co-I)</td>
<td>Pilot Analysis of Unbound Sorafenib: Relevance to Efficacy and Toxicity in a Phase I Trial and to In-vitro Cytotoxicity</td>
<td>UMN Minnesota Medical Foundation</td>
</tr>
<tr>
<td>Jatinder Lamba (PI)</td>
<td>Impact of Genetic Variation on Response to GO Therapy in COG-AML Clinical Trials</td>
<td>NIH National Cancer Institute</td>
</tr>
</tbody>
</table>
### Newly Funded Projects by ECP Faculty in 2012, continued

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susan E. Marino (PI), Angela K. Birnbaum (Co-I), Ilo E. Leppik (Co-I)</td>
<td>Characterizing and Predicting Drug Effects on Cognition</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>Susan E. Marino (PI)</td>
<td>Professional Fighters Brain Health Study</td>
<td>The Cleveland Clinic</td>
</tr>
<tr>
<td>Debra Skaar (Co-I)</td>
<td>Testing the Feasibility of Patient-Controlled Sedation in Ventilated ICU Patients</td>
<td>NIH National Institute of Nursing</td>
</tr>
<tr>
<td>Robert J. Straka (PI)</td>
<td>Pharmacogenomic Markers of Lipid Response to Fenofibrate in a Hispanic Population</td>
<td>UMN Institute of Human Genetics</td>
</tr>
<tr>
<td>Jeanine Utz (PI)</td>
<td>Placebo Controlled Trial Evaluating Gabapentin for the Treatment of Small Fiber Neuropathic Pain in Patients with Fabry Disease</td>
<td>Genzyme Corporation</td>
</tr>
</tbody>
</table>

### Ongoing Sponsored Projects by ECP Faculty in 2012

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela K. Birnbaum (PI), Susan E. Marino (Co-I)</td>
<td>Clinical Impact of Unstable AED Levels in Elderly Nursing Home Epilepsy Patients</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>Angela K. Birnbaum (PI)</td>
<td>Multivalent Vaccine for Opiate Addiction</td>
<td>Minneapolis Medical Research Foundation</td>
</tr>
<tr>
<td>Angela K. Birnbaum (PI)</td>
<td>Preclinical Studies of a Heroin/Morphine Vaccine for Opiate Addiction</td>
<td>Minneapolis Medical Research Foundation</td>
</tr>
</tbody>
</table>

continued on next page
### Ongoing Sponsored Projects by ECP Faculty in 2012, continued

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela K. Birnbaum (PI), Jatinder Lamba (Co-I)</td>
<td>Pharmacogenomics and Pharmacokinetics of Lamotrigine in Early Pregnancy</td>
<td>Epilepsy Foundation of America, Inc.</td>
</tr>
<tr>
<td>Angela K. Birnbaum (PI)</td>
<td>Pharsight–University of Minnesota Pharmacometrics Collaboration</td>
<td>Pharsight Corporation</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Pharmacogenetics and Drug Interactions</td>
<td>NIH National Institute of General Medical Sciences</td>
</tr>
<tr>
<td>Richard C. Brundage (Co-I)</td>
<td>University of Minnesota Clinical and Translational Science Institute</td>
<td>NIH National Center for Research Resources</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Novartis Fellowship in Pharmacometrics</td>
<td>Novartis Pharma AG</td>
</tr>
<tr>
<td>Richard C. Brundage (Co-I), Ilo E. Leppik (Co-I)</td>
<td>Genotype-Dependent Drug Interactions</td>
<td>NIH</td>
</tr>
<tr>
<td>Richard C. Brundage (PI)</td>
<td>Pfizer Pharmacometrics Traineeship</td>
<td>Pfizer, Inc.</td>
</tr>
<tr>
<td>Richard C. Brundage (Co-I)</td>
<td>Drug-Drug Interactions</td>
<td>NIH</td>
</tr>
<tr>
<td>James C. Cloyd (Co-PI), Jeanine Utz (PI), Chester Whiteley (Co-I)</td>
<td>Development of Pharmacotherapy and Pharmacogenetics of Inherited Metabolic Disease 2-Year Residency</td>
<td>Genzyme Corporation</td>
</tr>
<tr>
<td>James C. Cloyd (Co-I), Reena Kartha (Co-I)</td>
<td>Phase II Clinical Trial to Evaluate the Benefits of Post-Conditioning in STEMI</td>
<td>NIH National Heart, Lung, and Blood Institute</td>
</tr>
<tr>
<td>James C. Cloyd (Co-I)</td>
<td>Neurophysiologically Based Responsive Pharmacotherapy for Epilepsy</td>
<td>NIH</td>
</tr>
</tbody>
</table>

*continued on next page*
## Ongoing Sponsored Projects by ECP Faculty in 2012, continued

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cynthia R. Gross (Co-I)</td>
<td>Studies of Organ Transplantation in Animals and Man</td>
<td>NIH National Institute of Diabetes and Digestive and Kidney Diseases</td>
</tr>
<tr>
<td>Pamala A. Jacobson (Co-I),</td>
<td>Genomics of Kidney Transplantation</td>
<td>NIH National Institute of Allergy and Infectious Diseases</td>
</tr>
<tr>
<td>William S. Oetting (Co-I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pamala Jacobson (Co-I),</td>
<td>Cancer Center Support Grant</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>Mark N. Kirstein (Co-I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mark N. Kirstein (PI)</td>
<td>Vitamin D3 Effects on Musculoskeletal Symptoms with Use of Aromatase Inhibitors</td>
<td>Park Nicollet Institute</td>
</tr>
<tr>
<td>Michael Kotlyar (PI)</td>
<td>Medicinal Nicotine for Preventing Stress-Induced Craving and Withdrawal Symptoms</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Jatinder Lamba (PI)</td>
<td>Pharmacogenetics of Ara-C Metabolic Pathway</td>
<td>NIH National Cancer Institute</td>
</tr>
<tr>
<td>Vishal Lamba (Co-I)</td>
<td>Genetic and Time-Frequency Aspects of Neural Phenotypes in Schizophrenia</td>
<td>US Department of Veterans Affairs</td>
</tr>
<tr>
<td>Ilo E. Leppik (PI), James C. Cloyd (Co-PI)</td>
<td>Canine Status Epilepticus: A Translational Platform for Human Therapeutics Trials</td>
<td>NIH National Institute of Neurological Disorders and Stroke</td>
</tr>
<tr>
<td>Ilo E. Leppik (PI)</td>
<td>Open-Label Study to Assess the Safety and Tolerability of Intravenous Carbamazepine as Short-Term Replacement of Oral Carbamazepine in Adult Patients with Epilepsy</td>
<td>Prism Research, LLC</td>
</tr>
</tbody>
</table>
### Ongoing Sponsored Projects by ECP Faculty in 2012, continued

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ling Li (PI)</td>
<td>Modulation of Incretins as a Novel Treatment for Alzheimer’s Disease</td>
<td>Alzheimer’s Association</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>A Novel Role of ApoA-I in Alzheimer’s Disease</td>
<td>American Health Assistance Foundation</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>Protective Mechanisms of Statins in Alzheimer’s Disease</td>
<td>NIH National Institute on Aging</td>
</tr>
<tr>
<td>William S. Oetting (Co-I)</td>
<td>Twin Study of ADHD, CD and Substance Abuse</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>William S. Oetting (Co-I)</td>
<td>Statistical Model Building for High Dimensional Biomedical Data</td>
<td>NIH National Institute of General Medical Sciences</td>
</tr>
<tr>
<td>William S. Oetting (Co-I)</td>
<td>Substance Abuse &amp; Behavioral Disinhibition: Integrating Genes &amp; Environment</td>
<td>NIH National Institute on Drug Abuse</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI), William S. Oetting (Co-I)</td>
<td>Staphylococcal Superantigen Interactions with Vaginal Epithelium</td>
<td>NIH National Institute of Allergy and Infectious Diseases</td>
</tr>
<tr>
<td>Marnie L. Peterson (Co-I)</td>
<td>Immunological Factors and Risk of Vulvodynia</td>
<td>NIH National Institute of Child Health and Human Development</td>
</tr>
<tr>
<td>Marnie L. Peterson (Co-I)</td>
<td>Cardiotoxicity of Streptococcal Pyrogenic Exotoxins</td>
<td>NIH National Institute of Allergy and Infectious Diseases</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Biomarker Analysis of Non-Healing Wounds as a Function of Treatment</td>
<td>3M</td>
</tr>
</tbody>
</table>

*continued on next page*
## Ongoing Sponsored Projects by ECP Faculty in 2012, continued

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Models for Skin and Wound Infections</td>
<td>3M</td>
</tr>
<tr>
<td>Marnie L. Peterson (PI)</td>
<td>Mucosal Models of Infection for Antisepsis</td>
<td>3M</td>
</tr>
<tr>
<td>Robert J. Straka (Co-I)</td>
<td>Pretreatment at APOA5 and GCKR Loci and Response to Fenofibrate Therapy</td>
<td>NIH National Institute of Diabetes and Digestive and Kidney Diseases</td>
</tr>
</tbody>
</table>

## Ongoing Intramural Projects by ECP Faculty in 2012

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Project Description</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>James C. Cloyd (Co-PI)</td>
<td>Diazepam Prodrugs for the Treatment of Seizure Emergencies</td>
<td>AHC Faculty Development Grant</td>
</tr>
<tr>
<td>Mark N. Kirstein (PI)</td>
<td>Optimizing Combination OSI-906 and Chemotherapy</td>
<td>UAB/UMN SPORE in Pancreatic Cancer</td>
</tr>
<tr>
<td>Jatinder Lamba (Co-PI)</td>
<td>Generation of Genetically Diverse Liver Cultures from Skin-Derived iPS Libraries</td>
<td>Minnesota Medical Foundation</td>
</tr>
<tr>
<td>Jatinder Lamba (Co-PI),</td>
<td>Genotype Associations with Disease Outcomes</td>
<td>AHC Faculty Development Grant</td>
</tr>
<tr>
<td>Mark N. Kirstein (Co-I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vishal Lamba (PI)</td>
<td>Pharmacogenetic determinants of sexually dimorphic CYP3A4 expression</td>
<td>BIRCWH Career Development Award, Deborah E. Powell Center for Women's Health</td>
</tr>
<tr>
<td>Vishal Lamba (PI)</td>
<td>Use of HapMap Lymphoblastoid Cell Lines to Identify Pharmacogenetic Predictors of Mycophenolate Tox</td>
<td>UMN Office of the Vice President for Research</td>
</tr>
<tr>
<td>Ling Li (PI)</td>
<td>ApoA-I Mimetic Peptides to Enhance Cognitive and Synaptic Function in Alzheimer's Disease</td>
<td>AHC</td>
</tr>
</tbody>
</table>
Published Articles by ECP Faculty


Published Articles by ECP Faculty, continued


14
Published Articles by ECP Faculty, continued


Published Articles by ECP Faculty, continued


Published Articles by ECP Faculty, continued


Published Books and Chapters by ECP Faculty


Other Publications and Reports by ECP Faculty


TEACHING

The College of Pharmacy consistently ranks among the top three pharmacy schools in the nation. In 2012, ECP faculty provided 1,856.5 hours of didactic education to 167 pharmacy students per class year, as well as students in dentistry, nursing, public health, geriatrics, and genetics. Instruction to pharmacy students included experiential education in acute care, geriatric patient care, pediatric infectious disease, and clinical toxicology. It also included teaching and directing in the pharmacotherapy series and the pharmaceutical care skills course sequence, and teaching other elective courses. In addition, ECP members participated in journal clubs throughout the University in their areas of interest and with research collaborators.

In 2012, ECP faculty mentored:

- 13 Melendy or Undergraduate Research Opportunities Program students
- 4 undergraduate students
- 12 professional students
- 3 graduate students in non-ECP programs

In 2012, ECP faculty:

- offered laboratory experience to 12 students
- served as advisors or readers on thesis projects to 95 pharmacy students

With more than two dozen faculty and adjunct faculty and a dedicated administrative and research staff, ECP trains professional, graduate, and post-graduate students of the highest caliber while advancing a widely respected research program.
Innovations in Teaching

**Angela Birnbaum** expanded ECP 5220 (Regulatory Issues in Drug Research) from a 1 credit course to a 2 credit course, allowing for more in-depth group discussions and cases.

**Esam El-Fakahany** helped develop the curriculum for an online professional development course in mentoring for the Clinical and Translational Science Institute. “Optimizing the Practice of Mentoring” is designed to prepare faculty from a range of disciplines to be effective research mentors for junior faculty, post-doctoral fellows, and graduate students.

**L’Aurelle Johnson** incorporated a new assignment into PHAR 5205 (Obesity: More than Just a Prescription) that is designed to improve students’ understanding of social interactions and potential biases when delivering care to obese subjects. She also expanded the focus on scientific writing in ECP 8992 (Directed Readings in Experimental and Clinical Pharmacology), specifically the writing of abstracts and specific aims pages and how to compare to supportive and alternative views in the literature.

**Mark Kirstein** developed exercises for ECP 8900 (Advanced Topics in Experimental and Clinical Pharmacology) to advance graduate students’ skills in writing specific aims pages, giving and receiving critique, and incorporating feedback into revisions. Students were also given a clinical protocol to practice developing a research hypothesis and writing together as a group; a future draft of the work may be submitted to regulatory bodies for approval to conduct a clinical observational study.

**Jatinder Lamba**, with a fourth-year pharmacy student, surveyed health care students across several colleges at the University (Pharmacy, Nursing and Medicine) about their views on pharmacogenomics. The results of this study indicated that although a huge majority healthcare students consider pharmacogenomics to be an important area of clinical practice, they acknowledge that it has not been an important part of their curriculum.

**Vishal Lamba, William Oetting, Marnie Peterson, and Robert Straka** implemented an interinstitutional approach to graduate teaching with ECP 8992 (Directed Readings in Experimental and Clinical Pharmacology), working with the University of Pittsburgh and the University of North Carolina at Chapel Hill to provide students at all three programs with course content that was synchronous and shared via live videoconferencing.

**Susan Marino** implemented a new interdisciplinary undergraduate Honors College seminar, “A Pill for Every Problem or Problem Pills.”

**Marnie Peterson** traveled to the United Kingdom to develop an international collaborative Ph.D. student research program between her lab, and the University of Birmingham and Queens Hospital.
In addition to their college teaching and research, many ECP faculty discover opportunities for service both within the University and with outside organizations and companies. The immeasurable hours they spend offering expertise and guidance are a way to give back to the community, peers and students, and the field.

Faculty cited service to 16 national committees in 2012, including NIH study section committees, abstract review committees, and program planning committees for national organizations. Faculty served on 27 University and AHC committees including the Faculty Senate, search committees, advisory groups, the Graduate Education Council, facilities planning, clinical protocol review, and others. They also had a total of 53 service commitments to committees within the College of Pharmacy and 22 within ECP.

Five faculty members had appointments on boards of directors or professional advisory boards of research organizations; others had appointments on standards and education committees with health providers in Minnesota such as HealthPartners, Regions, and Fairview.

In 2012, faculty served on the editorial boards of Diagnostic Microbiology and Infectious Disease, Frontiers in Cellular and Infection Microbiology, Frontiers in Neurodegenerative Diseases, Frontiers in Pharmacogenetics and Pharmacogenomics, Human Mutation, International Scholarly Research Network – Pharmacology, Pharmacogenomics, and the Scientific World Journal. In addition, they served as manuscript reviewers for 55 journals; as proposal reviewers for 14 funding bodies including the National Science Foundation, the Alzheimer’s Association, and the Italian Ministry of Health; and as reviewers of faculty promotion documents for institutions across the country and around the world.
Highlights in Service

In April 2012, ECP presented “Pharmacotherapy for the Elderly: Challenges and Solutions,” a half-day conference that brought together several expert speakers to explore issues within the field. Topics included the economic challenges of caring for the aging adult population in the U.S., past and present pharmacological treatment of Alzheimer’s and the current state of research into the disease, drug use in the elderly population and “cognitive aging,” Medicare, and the goals of palliative/hospice care. More than 90 participants from the College of Pharmacy, the School of Nursing, and the School of Medicine registered; the event was open to professional students as well. The conference director was Shellina Scheiner; department faculty who delivered lectures included Ling Li and Susan Marino.

Jeannine Conway served as pharmacist for Camp Oz, a program of the Epilepsy Foundation of Minnesota that offers a traditional camping experience for youth with epilepsy.

Jim Cloyd worked with the Child Neurology Foundation on the Young Brain Carnival, a special event at the Mall of America/Nickelodeon Universe for families with children affected by brain disorders.

Cynthia Gross spoke at the Connecting Parents to Educational Opportunities (CPEO) program graduation at Elizabeth Hall Elementary School in Minneapolis. CPEO is a part of the University’s College Readiness Consortium.

Pamala Jacobson was co-coordinator of the Twin Cities Oncology Pharmacist group, a bimonthly meeting of Twin Cities hematology/oncology pharmacists.

Robert Straka was a contributing member of the Institute for Clinical Systems Integration’s Healthcare Guidelines Committee for Congestive Heart Failure.
The Graduate Program provides hands-on learning experiences to those who will become tomorrow’s leaders in experimental and clinical pharmacology research and teaching.

GRADUATE PROGRAM

The ECP Graduate Program is an innovative, interdisciplinary program that trains students to conduct research encompassing methodology from basic and clinical pharmacology perspectives. It was designed specifically for students interested in clinical research with the goal 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, and pharmacogenomics. Graduates are prepared for distinguished careers in clinical research.

ECP celebrated the graduation of seven students in 2012 (bringing the total number of program graduates to 34), and had a total of 19 new and continuing students in the program as of Fall 2012.

New Students—Fall 2012

The department admitted five new students in Fall 2012:

David Hottman, B.S. Advisor: Ling Li, Ph.D.
Janice Lee, Pharm.D. Advisor: Angela K. Birnbaum, Ph.D.
Chay Ngee Lim, B.Sc. Advisor: Angela K. Birnbaum, Ph.D.
Malek Okour, B.S. Advisor: Richard C. Brundage, Ph.D., Pharm.D.
Youssef Roman, Pharm.D. Advisor: Robert J. Straka, Pharm.D

New Ph.D. Candidates in 2012

Five students became Ph.D. candidates by passing their oral preliminary exams:

Gavin Bart, M.D.
Manoj Chiney, M.Pharm.
Mary Holmay, R.N.
Jia Kang, M.S.
Jie Zhou, M.S.
# ECP Ph.D. Graduates in 2012

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Thesis Title</th>
<th>Advisor</th>
<th>Current Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaitali Passey, Ph.D.</td>
<td>Application of Pharmacometrics for Covariate Selection and Dose Optimization of Tacrolimus in Adult Kidney Transplant Recipients</td>
<td>Angela K. Birnbaum, Ph.D.</td>
<td>Post-Doctoral Associate, Rutgers University</td>
</tr>
<tr>
<td>Ghada Ahmed, Ph.D.</td>
<td>Pharmacometric Analyses of Anti-epileptic Drugs in Elderly Patients: Applications to Carbamazepine, Gabapentin and Topiramate</td>
<td>Angela K. Birnbaum, Ph.D.</td>
<td>Abbott Laboratories</td>
</tr>
<tr>
<td>Akshanth Polepally, Ph.D.</td>
<td>Pharmacometric Analyses of Lamotrigine in Special Populations: Application to Pregnant Women, Younger Adult and Elderly Epilepsy Patients</td>
<td>Angela K. Birnbaum, Ph.D.</td>
<td>Abbott Laboratories</td>
</tr>
<tr>
<td>Azher Arafah, Pharm.D., Ph.D.</td>
<td>Studies Investigating the Impact of Select Genotypes on the Pharmacological Effect of Fenofibrate</td>
<td>Robert J. Straka, Pharm.D.</td>
<td>Assistant Professor, King Saud University, Saudi Arabia</td>
</tr>
<tr>
<td>Heather Vezina, Pharm.D., Ph.D.</td>
<td>Application of Pharmacometric Methods to Studies of Antiviral Prophylaxis After Solid Organ Transplantation</td>
<td>Richard C. Brundage, Ph.D., Pharm.D.</td>
<td>Post-Doctoral Fellow, Children’s Hospital of Philadelphia</td>
</tr>
<tr>
<td>Pornpimol Kijsanayotin, Ph.D.</td>
<td>Association of Genetic Variants in CYP ARCB1 and SCN1A and Non-Generic Variant with Phenotoin Response Phenotype</td>
<td>William S. Oetting, Ph.D.</td>
<td>Assistant Professor, Pharmaceutical Sciences, Chulalong-korn University</td>
</tr>
<tr>
<td>Katherine Needleman, Ph.D.</td>
<td>Exposure-Response Modeling of QT Prolongation for Clinical Studies</td>
<td>Richard C. Brundage, Ph.D., Pharm.D.</td>
<td>Federal Drug Administration</td>
</tr>
</tbody>
</table>
Presentations by Graduate Students or Post-Docs

**Agarwal S.** Intranasal therapy and other novel approaches in seizure emergencies. Presented at: Gillette’s Third Biennial Pediatric Neurosciences Conference; 2012 May 30; Minneapolis, MN.


**Arafah A.** Evidence of UGT2B7 as a pharmacogenetic determinant of variability in serum fenofibric acid levels in human subjects. Presented at: American Heart Association’s Arteriosclerosis, Thrombosis and Vascular Biology 2012 Scientific Sessions; 2012 Apr 18-20; Chicago, IL.


**Baum C.** Adeno-associated virus (AAV) gene therapy for chronic pain. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2012 Sep; Minneapolis, MN.

**Bhise N.** Role of hypoxia in development of cellular resistance. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2012 Apr; Minneapolis, MN.

**Gillman A.** Progress towards a staphylococcal vaccine. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; Mar 2012; Minneapolis, MN.

**Johnson K.** Designing and validating bioanalytical methods. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2012 Apr; Minneapolis, MN.

**Kang J.** Some considerations on pharmacokinetic study and therapies in pregnant women. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; 2012 Apr; Minneapolis, MN.

**Mitra Ghosh T.** Use of HAPMAP lymphoblastoid cell lines as model for pharmacogenomic discovery. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; Apr 2012; Minneapolis, MN.

**Sanghavi K.** MicroRNA mediated regulation of drug metabolizing enzymes. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; Apr 2012; Minneapolis, MN.

**Tam H.** The effect of obesity on plasma xanthine oxidase and intestinal UGTs. Presented at: Department of Experimental and Clinical Pharmacology Weekly Seminar, College of Pharmacy, University of Minnesota; Nov 2012; Minneapolis, MN.

**Zhou J.** Mitochondria-targeted antioxidants: a potential neuroprotective therapy. Presented at: CODR Journal Club, Center for Orphan Drug Research, College of Pharmacy, University of Minnesota; 2012 Nov 15; Minneapolis, MN.
Abstracts—Poster Sessions and Presentations by Graduate Students or Post-Docs

Agarwal S. A meta-analysis of pharmacokinetic data of diazepam following alternate routes of administration to optimize future bioequivalence trials. Poster presented at: Translating Discoveries into Better Health. CTSI Research Conference; 2012 Sep 12; Minneapolis, MN.


Gillman A. Penetration Staphylococcus aureus toxic shock syndrome toxin-1 into vaginal mucosa causes pro-inflammatory effects. Poster presented at: 112th General Meeting of the American Society of Microbiology; 2012 June 16-19; San Francisco, CA.

Johnson K. Comparison of blood and plasma assay methods for measurement of topiramate concentrations. Poster presented at: Translating Discoveries into Better Health. CTSI Research Conference; 2012 Sep 12; Minneapolis, MN.

Horvath KJ, Rosser BRS, Oakes JM, Konstan J, Danilenko GP, Vezina H, Amico KR, Simoni J, Williams ML. Results of an online social support and text reminder ART intervention. Poster presented at: 7th International Conference on HIV Treatment and Prevention Adherence; 2012 June 3-5; Miami Beach, FL.

Zhou J, Kartha RV, Basso L, Orchard PJ, Schroder H, Cloyd JC. Heme oxygenase-1 (HO-1) is a possible mediator of cytoprotective effects by N-acetyl cysteine (NAC) in CCALD patients. Poster presented at: 2012 American Society for Clinical Pharmacology and Therapeutics (ASCPT) Annual Meeting; 2012 Mar 12-17; National Harbor, MD.

Phillips KA, Epstein DH, Reamer D, Bart G, Preaston KL. Methadone dose-related increase in QTc without clinically significant prolongation or arrhythmia. Poster presented at: College on Problems of Drug Dependence (CPPD) 74th Annual Scientific Meeting; 2012 June 9-14; Palm Springs, CA.


