



College of Pharmacy

UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

DEPARTMENT OF EXPERIMENTAL AND CLINICAL PHARMACOLOGY

Annual Report 2011





From the Department Head

ON BEHALF OF the Department of Experimental and Clinical Pharmacology (ECP), I am pleased to share our 2011 Annual Report. In it, you will find details of new grants awarded, invited and contributed presentations given around the globe, and books and journal articles published in 2011.

First, however, I would like to highlight some of the exciting developments and achievements within our department in 2011. Foremost, we extended hearty congratulations to three faculty members who were promoted: Scott Chapman was promoted to associate professor, and Marnie Petersen and Jatinder Lamba were promoted to the rank of associate professor with tenure. We welcomed two new full-time faculty members, Schellina Sheiner and Vishal Lamba. Following a competitive search process, Shellina was hired as an assistant professor to lead our clinical geriatrics and inter-professional training initiatives. Vishal joined the department's genomics faculty with support from a competitively awarded two-year, mentored research training grant. We also welcomed Dede Johnston to a new role, office supervisor.

ECP maintained its reputation as a department of outstanding educators, innovators and leaders. Jeannine Conway received the 2011 University of Minnesota Award for Outstanding Contributions to Postbaccalaureate, Graduate and Professional Education. Pamala Jacobson was a senior editor for the 2011 edition of the major pharmacotherapy textbook *Applied Therapeutics: The Clinical Use of Drugs*. Marnie Petersen was honored at the University's Inventor Recognition Ceremony for her role in patenting a new technology for infection prevention that was the basis for a start-up company. Marnie also was the keynote speaker at the College of Pharmacy's annual Sadoff Lecture. Jim Cloyd initiated and co-chaired the first-ever Minnesota Epilepsy Research Summit and was the keynote speaker at the College of Pharmacy's Rho Chi Research Day.

ECP also sustained a high level of service to the department, college, and beyond. In 2011, Dick Brundage, ECP director of graduate studies, and Angela Birnbaum, associate director of graduate studies, convened a series of working groups to develop and enhance ECP graduate program curriculum and policies, and address changes in graduate education at the University level. John Rotschafer led the faculty advisory committee for ECP's Clinical Pharmacology Analytical Services (CPAS) Laboratory. John, Mark Kirstein, and Pam Jacobson, along with CPAS director James Fisher, developed two marketing videos to introduce CPAS to researchers within and outside the University. Carol Ann Dickinson was a founding member of Go-pher the Cure, a team that participated in the 2011 Susan G. Komen Foundation 3-Day Walk to raise funds for breast cancer research.

As 2011 drew to a close, ECP had two active search committees: Bill Oetting chaired a search to identify a new department head, and Mike Kotlyar chaired a search to identify a clinical neuroscience faculty to lead the Center for Clinical and Cognitive Neurosciences. College-wide curriculum revision efforts intensified, and Robert Straka continued to serve on the curriculum revision task force and was its liaison to ECP faculty.

We appreciate your interest in the department and encourage you to review our website at www.pharmacy.umn.edu/ecp. Please feel free to contact any of our faculty or staff if you'd like more information.

Regards,

Cynthia R. Gross, Ph.D.
Professor and Interim Department Head (2011)

Mission and Structure

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, graduate students, post-graduate trainees, and others for careers in pharmacy and health care with the ultimate goal of improving health. With over two dozen faculty, adjunct faculty, and a cadre of dedicated administrative and research staff, ECP trains professional, graduate, and post-graduate students of the highest caliber while advancing a widely respected research program. ECP faculty and staff will strive to advance the science of human pharmacology and therapeutics, while maintaining the highest standards of ethics in research and education.

About ECP

ECP is a premier department of the University of Minnesota College of Pharmacy with a unique national and international identity. It is home to the Lawrence C. Weaver Endowed Chair in Orphan Drug Development, the Veterans of Foreign Wars Endowed Chair in Geriatric Pharmacotherapy, an independent graduate program, and the Clinical Pharmacology Analytical Services (CPAS) Laboratory.

ECP houses active collaborative working groups in infectious diseases, oncology, transplantation, neuroscience and psychiatry, geriatrics, genomics, and critical care. Additional faculty research programs focus on cardiovascular diseases, pediatrics, integrative therapies, and outcomes research.

ECP also houses or provides significant leadership to several interdisciplinary research centers and research groups. These include:

- Center for Forecasting Drug Response (CFDR), led by Dr. Richard Brundage;
- Center for Orphan Drug Research, led by Dr. Jim Cloyd;
- Center for Clinical and Cognitive Neuropharmacology Research, led by Dr. Susan Marino.
- Center for Excellence in Critical Care, led by Dr. Gregory Beilman;
- Center for Translational Excitatory Neurotherapeutics (CTEN), led by Dr. Ilo Leppik; and
- Pathway-Driven Pharmacogenomics University of Minnesota Alliance (PUMA), a member of the national Pharmacogenetics Research Network, led by Dr. Jatinder Lamba.

Our faculty lectures and collaborates across the country and internationally, bringing to the department a wide spectrum of experience. They work with a dedicated administrative and research staff, graduate students, residents, post-docs, and fellows to assure quality and success for the department.

In 2011, ECP's faculty consisted of 25 University and 25 adjunct faculty members. We had 22 graduate students and 10 residents, post-docs, and fellows.

About the CPAS Laboratory

CPAS Laboratory is ECP's vanguard effort to provide central, accessible research services to the community. A special subunit of the Center for Forecasting Drug Response, CPAS is directed by James Fisher. The CPAS Laboratory provides critical research capabilities to investigators across the University. CPAS also provides drug and metabolite detection and quantification in biological matrices, mainly using HPLC-UV or FLD and GC/MS. In addition, CPAS can provide limited ELISA immunoassay testing using commercially available kits. For several years, these services have been an integral part of sponsored research projects conducted by University faculty.

NEW AND CONTINUING MEMBERS OF THE DEPARTMENT, 2011

Faculty

Angela K. Birnbaum, Ph.D.	Associate Professor
Richard C. Brundage, Ph.D., Pharm.D.	Professor; Director of Graduate Studies
Scott A. Chapman, Pharm.D.	Associate Professor
Jim C. Cloyd, Pharm.D.	Professor; Weaver Endowed Chair; Director, Orphan for 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. P. Guay, Pharm.D.	Professor
Pamala A. Jacobson, Pharm.D.	Associate Professor
L'Aurette 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
Len Lichtblau, Ph.D.	Associate Professor
Susan E. Marino, Ph.D.	Assistant Professor
William S. Oetting, Ph.D.	Associate 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

Adjunct Faculty

Andrew Behm	Assistant Professor
Greg Beilman	Professor
Bjoern Bauer, Ph.D.	Assistant Professor, Duluth
Dongfeng Cao	Assistant Professor
Kristin Engebretson, Pharm.D.	Assistant Professor
Dean T. Filandrinis, Pharm.D.	Assistant Professor
Mary E. L. Foss, Pharm.D.	Assistant Professor
John F. Gualtieri, Pharm.D.	Assistant Professor
Lisa Hlavenka	Instructor
Nitin Kaila, Ph.D.	Assistant Professor
Daniel E. Keyler, Pharm.D.	Professor
Robert Kriel, M.D.	Professor
Smita Kshirsagar	Instructor
Marie D. Kuker, R.Ph.	Assistant Professor
Stephen H. LeMaster, Pharm.D.	Assistant Professor
Ramaiah Muthyala	Associate Professor
Patrick J. Parks, M.D., Ph.D.	Associate Professor
David Parra, Pharm.D.	Associate Professor
Pamela Pawloski	Associate Professor
Mark Robbins, R. Ph.	Assistant Professor
Kelly M. Sioris, Pharm.D.	Assistant Professor
Catherine I. Starnier, Pharm.D.	Assistant Professor
John V. St. Peter, Pharm.D.	Associate Professor

Jeanine Utz, Pharm.D..... Assistant Professor
Chester B. Whitley, Ph.D., M.D..... Professor

Administration and Research Staff

Laurie Baker Hovde..... MTRF Laboratory
Brenda Davis..... Executive Secretary
Carol Ann Richardson..... Associate Administrator
James Fisher..... Director, CPAS Laboratory
Dede Johnston..... Program/Project Specialist
Brett M. Kistner..... Laboratory Scientist, Birnbaum Lab
Reena Kartha, Ph.D..... Research Associate
Nancy McClanahan..... Center for Orphan Drug Research
Usha Mishra..... Laboratory Scientist, Cloyd Lab
John O. Rarick..... Study Coordinator, Birnbaum Lab
Maryanne Reilly-Spong, Ph.D..... Psychologist, Gross Research Group
Elizabeth Reich..... Study Coordinator

Continuing Graduate Students

Suresh Agarwal, M.S..... Advisor, Jim Cloyd, Pharm.D.
Ghada Ahmed, B.Sc..... Advisor, Angela Birnbaum, Ph.D.
Azher Arafah, Pharm.D..... Advisor, Robert Straka, Pharm.D.
Gavin Bart, M.D..... Advisor, Richard Brundage, Ph.D., Pharm.D.
Neha Bhise, B.Pharm..... Advisor, Jatinder Lamba, Ph.D.
Minoj Chiney, M.S..... Advisor, LAurette Johnson, Ph.D.
Veena Choudary, M.S..... Advisor, Judy Garrard, Ph.D.
Taraswi Mitra Ghosh, M.Sc..... Advisor, Jatinder Lamba, Ph.D.
Aaron Gillman, B.S..... Advisor, Marnie Peterson, Pharm.D., Ph.D.
Mary Holmay, R.N..... Advisor, Jim Cloyd, Pharm.D.
Krista Johnson, B.S..... Advisor, Jim Cloyd, Pharm.D.
Jia Kang, M.S..... Advisor, Richard Brundage, Pharm.D., Ph.D.
Hyewon Kim, M.S..... Advisor, Richard Brundage, Pharm.D., Ph.D.
Pornpimol Kijsanayotin, M.S..... Advisor, Richard Brundage, Pharm.D., Ph.D.
Kathleen Needleman..... Advisor, Richard Brundage, Pharm.D., Ph.D.
Chaitali Passey..... Advisor, Angela Birnbaum, Ph.D.
Akshanth Polepally, M.Pharm..... Advisor, Angela Birnbaum, Ph.D.
Harrison Tam, B.S..... Advisor, TBD
Heather Vezina, Pharm.D..... Advisor, Richard Brundage, Ph.D., Pharm.D.
Wei Zhong..... Advisor, Richard Brundage, Ph.D., Pharm.D.
Jie Zhou, M.S..... Advisor, Jim Cloyd, Pharm.D.

New Graduate Students

Kinjal Sanghavi..... Advisor, Vishal Lamba, Ph.D.

New and Continuing Post-Docs, Residents, and Fellows

Michele Anderson, Ph.D..... Advisor, Marnie Peterson, Ph.D., Pharm.D.
Ashley Brown, Pharm.D..... Advisor, Leo Sioris, Pharm.D.
Laura Breshears, Ph.D..... Advisor, Marnie Peterson, Ph.D., Pharm.D.
Shaowu Cheng, Ph.D..... Advisor, Ling Li, Ph.D.
Lisa Coles, Ph.D..... Advisor, Jim Cloyd, Ph.D.
Darcy Flora, Ph.D..... Advisor, Richard Brundage, Ph.D., Pharm.D.
Yogita Ghodke..... Advisor, Jatinder Lamba, Ph.D.
Reena Kartha, Ph.D..... Advisor, Jim Cloyd, Ph.D.
Amit Kumar Mitra, Ph.D..... Advisor, Jatinder Lamba, Ph.D.
Wei Zhan, Ph.D..... Advisor, Ling Li, Ph.D.

TEACHING

ECP faculty provided 1,155 hours of didactic education to College of Pharmacy students 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 to teaching within the College of Pharmacy, ECP faculty members participated in journal clubs throughout the University in their areas of interest and with research collaborators.

Faculty mentored five UROP students, 15 undergraduate students, 10 professional students, and seven graduate students in other programs and offered laboratory experience to 22 students. Sixty-four pharmacy students had ECP faculty as advisors or thesis readers on their thesis projects.

Faculty members have taught short courses around the country on topics such as NONMEM® by pharmacometrics faculty. They have facilitated roundtable discussions at conferences. They have assisted in the development of APPE and have served as OSCE evaluators within the College of Pharmacy program.

Teaching Innovation

- Dr. Angela Birnbaum developed and ran an Advanced Topics in Neuropharmacology course under ECP 8900 Fall 2011. This course fills the gap in training of clinical neuropharmacologists and fulfills a requirement for advanced topics in the ECP graduate program.
- Dr. Jeannine Conway facilitated the creation of a SOAP notes system. She had been supporting systems that were designed by former faculty. The lab faculty worked closely with our programmer to recreate the SOAP notes system to create a more stable program. Eventually, this platform will be available to any faculty that would like to use it in their course.
- Dr. Jeannine Conway also implemented a new course schedule for Pharmacy Outcomes (PHAR 6135).
- Dr. Pamala Jacobson met with Professional Education, library and bookstore staff to explore e-textbooks for Pharmacotherapy courses.
- Dr. Pamala Jacobson also coordinates the Twin Cities Oncology Pharmacy Journal Club.
- Dr. Mark Kirstein led a discussion group on developing a proposed new graduate course entitled Principles of Clinical Pharmacology (ECP 8220).
- Dr. Mark Kirstein was also involved in establishing standards for oral and written qualifying exams for graduate students.
- Dr. Susan Marino's "A Pill for Every Problem or Problem Pills" was adopted by the University Honors Program in Fall 2011 to be offered in Spring 2012.
- Dr. Marnie Peterson contributed to the development of an inter-institutional translational Clinical Therapeutics Journal Club in Fall 2011. It is offered jointly with the University of Minnesota, University of North Carolina, and Pittsburg for the 1st and 2nd year graduate students.
- Dr. Robert Straka served as a contributing faculty to the design and conduct of a novel active learning exercise involving case-based multiple choice exam question development on three topics related to cardiovascular section of PHAR 6122. This activity resulted in the submission of a paper.

SERVICE

Faculty cited service to 24 national committees including NIH section committees, abstract review committees, and program planning committees for national organizations. Six faculty members have appointments on research advisory boards; others have appointments on standards and education committees with health providers in Minnesota such as Medtronic, HealthPartners, Regions, and Fairview. Faculty also served on 21 University and AHC committees including the Faculty Senate, 23 committees within the College of Pharmacy, and six committees within ECP.

Some ECP faculty held the positions of editor for the *British Journal of Pharmacology*, while others served as associate editors for *Quality of Life Research*, *Drug Metabolism and Disposition*, and *Communicating Editor of Human Mutation*. They serve on the editorial boards of *Diagnosis in Microbiology and Infectious Disease*, *Journal of Pharmacokinetics and Pharmacodynamics*, *Pharmacogenomics*, *Clinical Pharmacy and Therapeutics*, *Journal of Pharmaceutical Education*, *Frontiers in Pharmacogenetics and Pharmacogenomics*, and *CPNP*. In addition, faculty served as reviewers for more than 66 additional journals, served as grant reviewers for government grants such as NIH challenge grants and T32 grants, and also reviewed faculty promotion documents from around the country and the world.

- Dr. Pamala Jacobson served as the senior editor for the textbook *Applied Therapeutics*, 10th edition (2011), overseeing four sections, and she also served as the section editor for two sections.
- Dr. Mark Kirstein served as the oncology section editor for the same textbook.

ECP faculty presented their research with numerous posters, conference lectures, and invited presentations:

- Dr. Ling Li was invited to present at the 10th International Conference on Alzheimer's and Parkinson's Diseases in Barcelona, Spain (March 2011); Goethe University Frankfurt/Forchungskolleg, Humanwissenschaften, Bad Homburg, Germany (August 2011); Yangzhou University, Yangzhou, China (September 2011); and Neuron Bio, Granada, Spain (September 2011).

ECP faculty members were involved in many professional organizations in pharmacy and within their research areas of interest:

- Dr. Robert Straka served as the co-chair of the cardiovascular, renal, pulmonary section and member of the coordinating committee for the American Society of Clinical Pharmacology and Therapeutics.
- Dr. Bill Oetting served as the secretary-treasurer of the Human Genome Variation Society.
- Dr. Cynthia Gross served as the co-chair and co-organizer of the International Society for Quality of Life's 2011 annual conference.

Many other ECP faculty members have contributed nationally by serving on committees in organizations relevant to their research area:

- Dr. Jeannine Conway continues to offer her time locally as a pharmacist at Camp Oz for children with epilepsy, and serves on the professional advisory board for the Epilepsy Foundation of Minnesota. She is also co-chair of the Clinical Neuropharmacology SIG for the American Epilepsy Society.
- Drs. Debra Skaar and Scott Chapman serve as clinical education coordinators for Pharm.D. rotations. Dr. Skaar serves as the Fairview educational director, and Dr. Chapman is the clinical education coordinator at North Memorial Medical Center. Drs. Chapman and Skaar also served as president and president-elect, respectively, for the Minnesota College of Clinical Pharmacy.

RESEARCH ACTIVITY

In 2011, ECP faculty produced 61 peer-reviewed journal articles and 24 contributed articles. Over the same period, ECP faculty produced 25 peer-reviewed abstracts and 19 contributed abstracts.

In fiscal year 2011, ECP submitted 49 grants and received funding for 10 projects, with 14 grants still pending. In light of the significant and continuing challenges of the current funding environment, ECP's level of funding represents diligence and success. ECP ranked second in the College with funding from federal, industry, and foundation grants.

Grants Newly Funded in 2011

NAME	SPONSOR	TITLE	DIRECT	DATES
Cindy Gross	NIH	Mindfulness for Symptom Reduction: A Transplant Candidate Study	\$145,163	1/8/2011–31/7/2012
Pamala Jacobson	NIH	Pharmacogenomics of Immune Suppressants in Kidney Transplantation	\$144,604	1/8/2011–31/7/2012
Michael Kotlyar	NIH	Medicinal Nicotine for Preventing Stress Induced Craving and Withdrawal Symptoms	\$218,187	15/9/2011–30/6/2013
Angela Birnbaum and Jatinder Lamba	Epilepsy Foundation	Pharmacokinetics and Pharmacogenetics of Epilepsy and Pregnancy	\$49,891	2011–2012
Vishal Lamba	NIH K12 BIRCWH career development award from Deborah E. Powell Center for Women's Health	Pharmacogenetic Determinants of Sexually Dimorphic CYP3A4 Expression	\$100,000	2/2011–3/2013
Vishal Lamba	Office of the Vice President for Research, UMN	Use of HapMap Lymphoblastoid Cell Lines to Identify Pharmacogenetic Predictors of Mycophenolate Toxicity	\$31,456	7/2011–12/2012
William Oetting	NIH	Genetics Core	\$180,662	1/8/2011–31/7/2016
Total			\$724,800	

FACULTY HONORS AND RECOGNITION

The Department of Experimental and Clinical Pharmacology Pharmacometrics group continued to be declared a Phoenix Center of Excellence for Pharsight, which results in our ability to use their software for training purposes at no cost. Only six sites in the world were chosen for this honor. The Phoenix Centers of Excellence Program is a collaboration between Pharsight and elite academic centers that is intended to enhance research and training in pharmacometrics.

- Dr. Jim Cloyd was nominated by the American Association of Colleges of Pharmacy, Section of Pharmacy Practice, for the Volwiler Award.
- Dr. Jeannine Conway was selected Fall 2011 Teacher of the Semester by the Class of 2013 (Twin Cities). She was also the 2011 recipient of University of Minnesota College of Pharmacy Excellence in Professional Education Faculty Award, which is externally peer reviewed, and 2011 Teacher of the Graduating Class (Twin Cities), College of Pharmacy, University of Minnesota.
- Dr. Cynthia Gross received the Innovators Award, Advancing Teaching and Learning Excellence Series 2010–2011, in recognition for her creative spirit and commitment to excellence in nursing education, School of Nursing, University of Minnesota.
- Dr. Cynthia Gross' publication "Mindfulness-Based Stress Reduction Versus Pharmacotherapy for Chronic Primary Insomnia: A Randomized Controlled Clinical Trial," originally published in *EXPLORE* (March/April 2011), was selected for inclusion in *Best of Sleep Medicine 2012, an Annual Collection of Scientific Literature*, edited by Teofilo Lee-Chiong.
- Dr. Debra Skaar was selected as the Endocrine Topic Leader for the Society of Critical Care Medicine's new educational website and blog, LearnICU.
- Dr. Debra Skaar received The Society of Critical Care Medicine Presidential Citation for Outstanding Contributions to the Society (2011).
- Dr. Robert Straka received Teacher of the Year, Spring 2011, Pharm.D. II Doctor of Pharmacy Class, University of Minnesota at Twin Cities.

PROGRESS AND TRANSITIONS

The consortium for the advancement of experimental therapeutics represents a collaboration with the University of North Carolina and the University of Pittsburgh and the University of Minnesota. This is an exciting exploration of opportunities to share resources to enhance the experiences of our graduate students and perhaps to expand the options of inter-institutional research for our faculty. New technologies are offering opportunities for collaboration and ECP will continue to explore them to achieve our collective mission.

The year 2012 will reveal the fruits of the labor being invested by ECP faculty in the new Pharm.D. curriculum during 2010 and 2011. Faculty will continue throughout 2011 redesigning the curriculum and their courses to prepare for the roll-out in fall 2012.

The ECP graduate program curriculum will also be reviewed during 2011. The possibilities of a combined Pharm.D./PhD will be pursued.

FACULTY PUBLICATIONS

Published Articles

- Passey C, **Birnbaum AK**, **Brundage RC**, **Oetting WS**, Israni AK, **Jacobson PA**. Dosing equation for tacrolimus using genetic variants and clinical factors. *Br J Clin Pharmacol*. 2011 Dec;72(6):948-57.
- Pakhomov SVS, Kaiser E, Boley D, **Marino S**, Knopman D, **Birnbaum AK**. Effects of age and dementia on temporal cycles in spontaneous speech fluency. *Journal of Neurolinguistics*. 24(6), 619-635.
- Kiser JJ, Rutstein RM, Samson P, Graham B, Aldrovandi G, Mofenson LM, Smith E, Schnittman S, Fenton T, **Brundage RC**, Fletcher CV. Atazanavir and atazanavir/ritonavir pharmacokinetics in HIV-infected infants, children, and adolescents. *AIDS*. 2011 Jul 31;25(12):1489-96.
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- Aliwarga T, **Cloyd JC**, Goel V, **Brundage RC**, **Marino SE**, **Leppik IE**, Rimmel RP. Excretion of the principal urinary metabolites of phenytoin and absolute oral bioavailability determined by use of a stable isotope in patients with epilepsy. *Ther Drug Monit*. 2011; 33(1), 56-63.
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- Kolesar JM, **Brundage RC**, Pomplun M, Alberti D, Holen J, Traynor A, Ivy P, Wilding G. Population pharmacokinetics of 3-aminopyridine-2-carboxaldehyde thiosemicarbazone (Triapine®) in cancer patients. *Cancer Chemotherap Pharmacol*. 2011; 67(2), 393-400.
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- Leppik IE**, Patterson EN, Coles LD, Craft EM, **Cloyd JC**. Canine status epilepticus: A translational platform for human therapeutic trials. *Epilepsia*. Suppl 8, 31-34.
- Orchard PJ, Lund T, Miller W, Rothman SM, Raymond G, Nascene D, Basso L, **Cloyd JC**, Tolar J. Chitotriosidase as a biomarker of cerebral adrenoleukodystrophy. *J Neuroinflammation*. 8(1), 144-153.
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- Engel J Jr, McDermott MP, Wiebe S, Langfitt JT, Erba G, Gardiner I, Stern J, Dewar S, Sperling MR; for the Early Randomized Surgical Epilepsy Trial (ERSET) Study Group. Design considerations for a multicenter randomized controlled trial of early surgery for mesial temporal lobe epilepsy. *Epilepsia*. 51(10), 1978-86.
- Jakubik J, Janikova H, **El-Fakahany EE**, Dolezal V. Negative cooperativity in binding of muscarinic receptor agonist and GDP as a measure of agonist efficacy. *Br J Pharmacol*. 2011 Mar;162(5):1029-44.
- Jakubik J, Randakova A, **El-Fakahany EE**, Dolezal V. Subtype differences in pre-coupling of muscarinic acetylcholine receptors. *PLoS ONE*. 6(11), e27732.

Harbaugh BL, Tomlinson PS, **Gross CR**. An ethological approach to measuring maternal caretaking during critical child illness. *Southern Online Journal of Nursing Research*. 10(4), 1-20.

Hooke MC, Garwick A, **Gross CR**. Fatigue and physical performance in children and adolescents receiving chemotherapy. *Oncology Nursing Forum*. 38(6), 649-57.

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Johnson LA, Malayappan B, Tretyakova N, Campbell C, MacMillan ML, Wagner JE, **Jacobson PA**. Formation of cyclophosphamide specific DNA adducts in hematological diseases. *Pediatr Blood Cancer*. 2012 May;58(5):708-14. doi: 10.1002/pbc.23254. Epub 2011 Jul 25.

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Kim H, Long-Boyle J, Rydholm N, Orchard P, Tolar J, Smith A, **Jacobson PA**, **Brundage RC**. Population pharmacokinetics of unbound mycophenolic acid in pediatric and young adult patients undergoing allogeneic hematopoietic cell transplantation (alloHCT). *J Clinical Pharmacol*. 2011 Nov 22. [Epub ahead of print]

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Bommakanti SV, Dudek AZ, Khatri A, **Kirstein MN**, Gada PD. Phase I trial of gemcitabine with bortezomib in elderly patients with advanced solid tumors. *Amer J Clin Oncol*. 34(6), 597-602.

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GRADUATE PROGRAM

The Department of Experimental and Clinical Pharmacology had 21 graduate students enrolled during 2011. Two students graduated in 2011, bringing the total of graduates from the program to 27.

Students were very successful this year in the area of publications and presentations.

Graduate Student Publications with ECP Faculty and Research Staff

Anderson M, Lin YC, Gillman A, Peterson ML. Alpha-toxin affects mucosal biofilm formation by *Staphylococcus aureus*. *Frontiers in Cellular and Infection Microbiology*; Special Topics Issue on Staphylococci and Staphylococcal Diseases. (Invited) Manuscript in Preparation (December 2011).

Chiney MSA, Schwarzenberg SJ, Johnson LA. Altered xanthine oxidase and N-acetyltansferase activity in obese children. *Br J Clin Pharmacol*. 2011;72(1):109-15.

Ducat E, Ray B, Bart G, Umemura Y, Varon J, Ho A, Kreek MJ. Mu-opioid receptor A118G polymorphism in healthy volunteers affects HPA-axis ACTH stress response to metyrapone. *Addiction Biol*. 2011; early online publication: DOI: 10.1111/j.1369-1600.2011.00313.x.

Passey C, Birnbaum AK, Brundage RC, Oetting WS, Israni AK, Jacobson PA. Dosing equation for tacrolimus using genetic variants and clinical factors. *Br J Clin Pharmacol*. 2011 Dec;72(6):948-57. doi: 10.1111/j.1365-2125.2011.04039.x. PMID: 21671989

Graduate Student Published Abstracts with ECP Faculty and Research Staff

Bart G, Bart BA, Karim R, Wyman Z. Methadone dose and the QTc interval: Little clinical relevance big unknowns. Abstract from the Seventy-Third Annual Scientific Meeting; College on Problems of Drug Dependence, Hollywood, Florida, 2011

Passey C, Birnbaum AK, Brundage RC, Israni AK, Oetting WS, Jacobson PA. Dosing Equation for Tacrolimus Using Genetic and Clinical Factors. American Conference on Pharmacometrics, San Diego, CA, USA (April 2011)

Holmay M, Coles L, Mishra U, Basso L, Orchard P & Cloyd JC. N-acetylcysteine as Adjunctive Therapy With Hematopoietic Stem Cell Transplantation in Childhood Cerebral Adrenoleukodystrophy. Proceedings of the Annual Meeting the of Child Neurology Society, Savannah, GA (2011)

Radtke K., Coles LD, Mishra U, Orchard PJ, Holmay MJ, Cloyd JC. Interaction of N-acetylcysteine and Cysteine in Human Plasma. Proceedings of the Annual Meeting of the American College of Clinical Pharmacy, Chicago, IL (2011)

Graduate Student Posters and Poster Presentations with Faculty and Research Staff

Suresh K. Agarwal, Robert L. Kriel, Richard C. Brundage, Vijay D. Ivaturi, Jim C. Cloyd. A Pilot Study Assessing the Bioavailability and Pharmacokinetics of Diazepam after Intranasal and Intravenous Administration in Healthy Volunteers. Poster Presentation at American Epilepsy Society meeting, Baltimore, MD, USA (Dec 2011)

Arafah A, Oetting W, Tsai M, Straka R. Fenofibrate and the Pharmacogenetic Impact (FPI): The influence of

select UGT genetic variants on the pharmacokinetic profile of fenofibrate in healthy subjects. Presented at the Rho Chi Research Symposium, University of Minnesota, Minneapolis, Minnesota, March 22, 2011

Boreen C, Arafah A, Oetting W, Tsai M, Straka R. The pharmacogenetic impact of apolipoprotein E on lipid-altering response to fenofibrate. Presented at the Rho Chi Research Symposium, University of Minnesota, Minneapolis, Minnesota, March 22, 2011

Akshanth R. Polepally, Richard C. Brundage, Page B. Pennell, Zachary N. Stowe, D. Jeffrey Newport and Angela K. Birnbaum. 'Population pharmacokinetics of lamotrigine in pregnant women'. American Conference on Pharmacometrics

Manoj Chiney, Harrison Tam, Laura Ortinau, James Perfiel II, Laurelle Johnson; "The role of Sterculic Oil intervention on expression and activity of Drug Metabolising enzymes and transporters in OLETF model of obesity." ISSX, Atlanta, Georgia, USA, October 2011

Manoj Chiney, Tammy Butterick, Jen Teske, Laurelle Johnson "Elevated Xanthine Oxidase activity in HFD model of obesity" Obesity Society, Orlando, Florida, October 2011

Zhou J, Kartha RV, Coles L, Mishra U, Basso L, Orchard PJ, Schröder H, Cloyd JC. N-acetylcysteine(NAC) decreases H₂O₂-induced oxidative stress in murine oligodendrocytes. Chemistry Biology Interface Training Grant Symposium (University Of Minnesota, Minnesota, May, 2011)

Other Presentations

Agarwal, Suresh. "Intranasal Therapy and Other Novel Approaches in Seizure Emergencies" at the Gillette's Third Biennial Pediatric Neurosciences Conference, Minneapolis Convention Center, Minneapolis, Minnesota, USA (May 2012)

Chiney, Manoj. "Effect of Obesity on Drug Metabolism Enzyme Activity and Transporter Expression in Rat Model(s) of Obesity." Invited Guest Speaker at the VA Medical Center, Minneapolis, MN

Chaitali Passey. "Sequential PK-PD Modeling of a Novel Compound to Evaluate its Effects on Dyslipidemia" at GlaxoSmithKline, Research Triangle Park, Durham, NC, USA (Aug 2011)

Departmental Seminars

Agarwal, Suresh. "Benzodiazepines in Seizure Emergencies: Clinical Pharmacology and Pharmacokinetics." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; September 2011; Minneapolis, MN.

Agarwal, Suresh. "PK-Driven Modeling Approaches to Dose Estimation in Pediatrics." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; February 2011; Minneapolis, MN.

Bhise, Neha. "Effect of Tumor Hypoxia on Drug Disposition." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; February 2011; Minneapolis, MN.

Chiney, Manoj. "Drug Metabolism and Obesity: In Vivo and Ex Vivo Studies." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; March 2011; Minneapolis, MN.

Gillman, Aaron. "Gamma Toxin: Potential Vaccine Target for Staphylococcus Aureus." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; March 2011; Minneapolis, MN.

Johnson, Krista. "Effect of Hypothermia on Physiology and Drug Disposition." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; April 2011; Minneapolis, MN.

Kang, Jia. "Population Pharmacokinetics of Quercetin." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; January 2011; Minneapolis, MN.

Passey, Chaitali. "Sequential PK-PD Modeling of a Novel Compound to Evaluate its Effects on Dyslipidemia." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; September 2011; Minneapolis, MN.

Tam, Harrison. "Reactive Oxygen Species in Cardiovascular Disease: Role of Xanthine Oxidase." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; April 2011; Minneapolis, MN.

Zhou, Jie. "Mitigating Oxidative Stress in X-ALD disease." Seminar: Department of Experimental and Clinical Pharmacology, College of Pharmacy, University of Minnesota; November 2011; Minneapolis, MN.

Commencement

Heywon Kim, Ph.D..... Advisor, Richard Brundage, Ph.D., Pharm.D.

Matthew Schaefer, Ph.D..... Advisor, Marnie Peterson, Ph.D., Pharm.D.



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