Dr. John C. Rotschafer Wins Prestigious Russell R. Miller Award

Winning praise from his colleagues for the profound impact of his decades of work, Dr. John C. Rotschafer has been selected to receive this year’s prestigious Russell R. Miller Award from the American College of Clinical Pharmacy (ACCP). The award is given in recognition of substantial contributions to the literature of clinical pharmacy that advance both clinical pharmacy practice and rational pharmacotherapy.

John C. Rotschafer, Pharm.D., FCCP, is professor (tenured) and former chair of ECP, where he directs the Antibiotic Pharmacodynamic Research Institute. Dr. Rotschafer has supervised the postdoctoral training of 22 fellows and been awarded fellowship grants in infectious diseases three times by ACCP and twice by the American Society of Hospital Pharmacists. He has been the author of more than 150 journal publications, has made more than 30 book contributions, and has more than 100 scientific abstracts. His primary interests are in the areas of antibiotic pharmacokinetics, pharmacodynamics, antibiotic resistance, and infectious diseases.

Those who nominated Dr. Rotschafer praised his sustained record of publication, the significant impact of his manuscripts on therapeutic drug monitoring and dosing strategies, and his anti-infective research laboratory.

“Dr. Rotschafer’s research and publications shape much of what we know today about the pharmacokinetics, pharmacodynamics, and dosing of vancomycin, aminoglycosides, and fluoroquinolones,” said Dr. Elizabeth Hermansen. She noted that Dr. Rotschafer is one of few investigators to use an anaerobic chamber in in vitro pharmacodynamic modeling.

Dr. Keith Rodvold from the University of Illinois College of Pharmacy agreed that Dr. Rotschafer’s translational research was pioneering. “His in vitro model has allowed the evaluation of comparative pharmacokinetic-pharmacodynamic studies of anti-infective agents under aerobic and anaerobic conditions.”

Dr. Rotschafer was presented with the award on October 21 in Hollywood, Florida, during the opening general session of ACCP’s annual meeting. The award is named for Russell R. Miller, who was the founding editor of ACCP’s journal, Pharmacotherapy.
Dear Friends:

As another remarkable semester draws to a close, I’m pleased to share our department’s latest newsletter, which highlights the ongoing work and significant accomplishments of ECP faculty, staff, and students.

In the last few months, ECP faculty have received funding for several significant new studies in areas of neuropharmacology, the effect of drugs on cognition, and several studies in the area of pharmacogenetics. The diversity of research conducted by our ECP colleagues not only advances the field of experimental and clinical pharmacology, it also offers graduate students myriad opportunities and topics to enhance their training (see page 3).

ECP faculty also provide students in the College of Pharmacy’s graduate and professional programs with some of the country’s best instruction. Further, our collaboration with peers at the University of Pittsburgh and the University of North Carolina at Chapel Hill is an exciting, ongoing experiment in the instruction of graduate students in clinical translational research (see page 7).

I’m also proud to recognize the service of our faculty, who consistently contribute a great deal of their time and attention to advancing the missions of the department and the College of Pharmacy. In particular, they have put much effort this semester into the development of the College’s new curriculum, working alongside colleagues from other departments to shape an innovative, cutting-edge program for tomorrow’s Pharm.D. students.

I continue to be astounded by the level of excellence that is found within our department. Thank you for all you do for ECP and the profession of pharmacy. You have my warmest wishes for continued success and productivity in 2013.

Robert J. Straka, Professor and Department Head
What Break? Summer Offers Scholars Opportunities for Research Training

Three ECP students got the chance to pursue advanced research projects last summer after being named scholars in the Clinical and Translational Science Institute (CTSI) Summer Advanced Research Program.

Suresh Agarwal was mentored by Jim Cloyd and Dick Brundage on his project, “A Meta-Analysis of the Absorption Characteristics of Diazepam Following Alternative Routes of Administration to Optimize Future Bioequivalence Trial Design.” Also mentored by Jim Cloyd was Krista Johnson on her project, “A Study Comparing Blood and Plasma Assay Methods for Measurement of Topiramate Concentrations.” LeeAnna Pederson was mentored by Robert Straka on her project, “Consideration of Genetic Variations of UGT2B7 and APOE Genes within the Pharmacogenomics for Hypertriglyceridemia in Hispanics Trial.”

For students, CTSI’s summer program is an opportunity to pursue an ongoing project with a faculty mentor who is an established investigator. With the mentor’s guidance, the student becomes acquainted with the skills required to conduct clinical and translational research. It is a rigorous schedule—scholars work 40 hours a week on their research project, participate in weekly seminars, and join in activities recommended by mentors, such as grand rounds or lab meetings. Through this immersion, however, they learn what will be expected of them as professionals. A final mini-symposium allows them to present their research to other scholars and mentors.

Gifted undergraduates also used the summer to conduct research projects: College of Biological Sciences student Kendra Radtke participated in the summer research program offered by CTSI to undergraduates, and was also mentored by Jim Cloyd. In addition, ECP’s five 2012 Melendy Scholars were given the opportunity to participate in some of the structured activities at CTSI.

CTSI has announced that both the advanced research program for doctoral or professional students and the undergraduate research program will return for the summer of 2013. Up to ten students will be selected to participate in each. Applications are currently being accepted and are due by noon on Tuesday, January 29, 2013. Faculty who are interested in serving as mentors should register online, as well.
SPOTLIGHT:
Dr. Angela Birnbaum

Angela Birnbaum’s interest in studying pharmacokinetics came from a desire to work on something that would change practices. She is now doing exactly that—in several large projects revolving around antiepileptic drugs (AEDs) within special populations, specifically the elderly and pregnant women.

In one project, Dr. Birnbaum is working to provide a foundation for evidence-based recommendations for the use of AEDs for nursing home residents. Dr. Birnbaum’s study is the first to collect prospective outcome information (seizures and adverse events) at the time of a blood draw in elderly nursing home residents treated with phenytoin (PHT), lamotrigine (LTG), and levetiracetam (LEV). Although PHT has been attributed to falls in the elderly and is very difficult to dose due to complicated pharmacokinetics, it continues to be the most frequently prescribed AED in nursing homes. Newer AEDs such as LTG and LEV appear to have more desirable pharmacokinetic characteristics and their use may lead to better outcomes than use of PHT.

Dr. Birnbaum recently received a $1.98 million grant from the NIH/National Institute of Neurological Disorders and Stroke for the project “Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs.” She will study several populations of women with and without epilepsy in order to compare the effect of AED exposure on the woman and child during pregnancy. Her investigation is part of a multi-clinical site proposal of approximately 20 sites nationally. That project joins ongoing research on the pharmacokinetics of lamotrigine (LTG) in early pregnancy, which is supported by a grant from the Epilepsy Foundation of America.

Dr. Susan Marino Joins ECP Faculty

Susan Marino, Ph.D., has joined the faculty of the Department of Experimental and Clinical Pharmacology as Assistant Professor (tenure track) for the Center for Clinical and Cognitive Neuropharmacology (C3N). In her new position, Dr. Marino will contribute her expertise in the area of neuropharmacology by teaching in both the professional and graduate programs of the College of Pharmacy.

She also holds the directorship of C3N. Established in 2010, the center advances one of ECP’s strategic goals: to build a concentration of scientists with a focus on neuroscience. Dr. Marino’s responsibilities include administration of C3N, external relations, strategic planning, and fundraising—and actively seeking the interdisciplinary collaborations that are essential to its mission.

“Dr. Marino has hit the ground running with a recent NIH grant, which will no doubt raise the profile of the ECP department and the College of Pharmacy and show our leadership and innovation in the area of novel measures of predicting drug effects on cognition,” says Professor Robert Straka, head of the ECP department.

“That our respected colleague Susan Marino will be taking on the challenge, along with colleagues from PCHS and other disciplines, is a testament to the importance of interdisciplinary research.”
Recent Activities

Honors, Elections, Appearances

Dick Brundage received the Outstanding Advising Award sponsored by the University’s Student Conflict Resolution Center (SCRC) working with the Graduate and Professional Student Assembly (GAPSA). The award, which is University-wide, recognizes advisors who go out of their way to create a positive learning environment. Dr. Brundage was one of only 12 recipients; nominations came directly from students.

Jatinder Lamba has been elected 2012-13 chair of ACCP’s Pharmacogenomics SIG.

Shellina Scheiner was the featured faculty in the Summer 2012 issue of Old News, the newsletter of the Minnesota Area Geriatric Education Center. She is the newest faculty member of the center.

Leo Sioris’s company, SafetyCall International, was named one of the Top 100 Workplaces in Minnesota for 2012 by the Star Tribune. This is the third consecutive year the company has received the award.

Presentations

Jim Cloyd presented “Pharmacology: Why Drugs Work – And Sometimes Don’t” at the University’s Mini Medical School.

Jatinder Lamba presented “Regulatory Polymorphisms and Their Impact on Interindividual Differences in Drug Disposition and Response” at the 18th North American Regional ISSX Meeting held October 14-18, 2012, in Dallas, TX.


Publications

“The Role of Academic Institutions in the Development of Drugs for Rare and Neglected Diseases,” co-authored by Jim Cloyd and Lisa Coles, appeared in the August 2012 issue of Clinical Pharmacology & Therapeutics.

Jatinder Lamba’s paper “Common Allelic Variants of Cytochrome P4503A4 and Their Prevalence in Different Populations,” originally published in Pharmacogenetics in September 2002, has been selected by the editors of Advanced Drug Delivery Reviews for inclusion in a special supplementary issue marking the 25th anniversary of that journal, recognizing the paper as one of its 25 most-cited.

Another of Dr. Lamba’s papers, “Assessment of Healthcare Students’ Views on Pharmacogenomics at the University of Minnesota,” which originated from work done by Pharm.D. student Meg Moen as part of her Pharm-IV paper, will be published as a special report in the October 2012 issue of the journal Pharmacogenomics.

Ilo Leppik’s and Angela Birnbaum’s comment, “Challenges of Epilepsy in Elderly People,” appeared in the September 29 issue of The Lancet.

A manuscript by Marnie Peterson and Laura Breshears entitled “A Disintegrin and Metalloproteinase 17 (ADAM17) and Epidermal Growth Factor Receptor (EGFR) Signaling Drive the Epithelial Response to Staphylococcus aureus Toxic Shock Syndrome Toxin-1 (TSST-1)” has been published in the September 28, 2012, issue of the Journal of Biological Chemistry.

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This marks the first description of the signaling pathway by which a staph aureus superantigen affects the mucosal epithelium.

Grants

**Angela Birnbaum** received support of $1.98 million from the NIH/National Institute of Neurological Disorders and Stroke for the project “Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs.” Her investigation is part of a multi-clinical site proposal of approximately 20 sites nationally, which has a total grant award of $13.1 million. Her co-investigators are **Rory Remmel** and **Dick Brundage**.

**Jatinder Lamba** received funding of $471,658 over two years from the NIH/National Cancer Institute for her R21 project, “Impact of Genetic Variation on Response to GO Therapy In COG-AML Clinical Trials.” In the project, she will be testing if genetic variation in drug target CD33 and other genes of interest—e.g. ABCB1, SOCS3, glutathione-S-transferases, DNA-repair and DNA-damage response pathway genes (XRCC4/5, XPC, PARP1, LIG4, ATM, and ATR), and apoptosis-related genes (CASP9 and 3)—are associated with response to GO-based therapy. A detailed understanding of the interplay between SNPs and therapeutic response to GO and conventional chemotherapy will have significant consequences for disease prognostication and therapy.

**Susan Marino** received an NIH grant of $2.76 million over five years for the project “Characterizing and Predicting Drug Effects on Cognition.” Her study will examine the relationship among exposure to TPM (a second-generation, broad-spectrum antiepileptic drug) as measured by plasma drug levels, its neurophysiological effects, and consequent effect on the cognitive processes observable in everyday language. The long-term goal of the project is to enhance clinical strategies and inform drug development in order to maximize the benefits of individual medication therapy while minimizing adverse cognitive/language-related side effects. Co-investigators are **Serguei Pakhomov**, **Angela Birnbaum**, and **Ilo Leppik**.

**Robert Straka** received a seed grant of $7,900 from the University’s Institute of Human Genetics for his project “Validation of the Effects of Pharmacogenomic Markers Predicting Lipid Response to Fenofibrate in a Hispanic Population.”

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**ECP Conference Highlights Current Issues in Geriatric Pharmacotherapy**

In April, 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.

The keynote speaker for the event was Dr. Louise Mallet, a professor of clinical pharmacy at the University of Montreal and a clinical pharmacist in geriatrics at the McGill University Health Centre. In her keynote lecture, “Perils of Polypharmacy in the Elderly,” Dr. Mallet addressed the problem of adverse drug events in the elderly population, Geriatric Syndrome, discontinuation of medications, and teaching geriatrics at the university level.

The conference director was **Shellina Scheiner**; department faculty who delivered lectures included **Ling Li** and **Susan Marino**.

Immediately following the conference, the department held a luncheon to honor their retiring colleague **Dr. David Guay**, celebrating a long career dedicated to the practice, research, and teaching of geriatric pharmacy.
ECP Readings Course Uses an Interinstitutional Approach

Three Programs Collaborate to Strengthen Graduate Training in Experimental Therapeutics

What does the ideal training program for tomorrow’s experimental pharmacologist look like? ECP and two like-minded programs, at the University of Pittsburgh and the University of North Carolina at Chapel Hill, are working together to find out.

In an effort to strengthen and foster graduate training in experimental therapeutics nationally, the three institutions are investigating ways to share educational resources, including an interinstitutional graduate readings course, offered here as ECP 8992: Directed Readings in Experimental and Clinical Pharmacology. (Course registration and credit is handled by the individual institutions, but among the three programs the content is synchronous and shared via live videoconferencing.)

Structured in a journal club format, the course allows students to become familiar with contemporary literature in translational sciences and clinical pharmacology, with relevant papers initially selected by faculty who have expertise in the topic areas of pharmacoceometrics, genomics, and biomarker validation. Later in the course, students work in groups to select and present the papers for course discussion.

Ultimately, students are learning how to effectively assess translational research strategies through active, critical questioning. This means of learning encourages students to achieve a deeper understanding of the issues present in a particular translational research area than they might through traditional lecture-based approaches.

The consortium would like to develop more opportunities like this for students in the future—for example, co-mentoring students and serving on dissertation committees for graduate students in the other programs.

“Our three programs are very enthusiastic about working together to advance the study of experimental therapeutics,” says ECP department head Robert Straka. “By sharing complementary faculty expertise, we can create new collaborations for research. We can offer deeper and more nuanced instruction to our graduate students, which should lead to enhanced opportunities for pharmacy in the translational sciences at the national level.”

The department plans to offer ECP 8992: Directed Readings in Experimental and Clinical Pharmacology every fall.

Students Win CTSI Poster Awards

Two students mentored this summer by ECP faculty were big winners in the first annual CTSI Research Conference Poster Session, held on September 11. Fifty-six scholars and community partners presented their clinical and translational research projects in the session, which opened the conference. Posters were judged on the presenters’ translation plans, including next steps, barriers to translation, and how the project will contribute to improving human health.

As scholars with top poster presentations in their respective categories, Suresh Agarwal (Advanced Research Program) and Kendra Radtke (Undergraduate Research Program) each took home an award of up to $1,200 in travel funds to attend a national conference and present their CTSI research.