CONGRATULATIONS on your decision to pursue a career in the pharmaceutical sciences! We are very pleased that you are considering graduate studies at The University of Tennessee Health Science Center in Memphis. The purpose of this brochure is to provide you with information about the Department of Pharmaceutical Sciences. The brochure should tell you about some of the more important issues affecting your decision: academic opportunities, the faculty, research interests, and living in Memphis.

You are cordially invited to arrange a visit to see our facilities and meet some of the faculty and students.

MESSAGE FROM THE ASSOCIATE DEAN RESEARCH AND GRADUATE PROGRAMS

“We are very pleased that you are considering graduate studies in the pharmaceutical sciences and honored that you are thinking about pursuing those studies at The University of Tennessee. The Department of Pharmaceutical Sciences is composed of three divisions, Medicinal Chemistry, Pharmaceutics, and Health Outcomes and Policy Research. For further information on the Health Outcomes and Policy Research Program click on the following link:
http://www.uthsc.edu/pharmacy/pharmsci/hopr/

Almost any avenue of study and research is available to you in these disciplines. In the Department we have a very diverse faculty dedicated to excellence in teaching, research, and public service. Our College of Pharmacy has consistently been ranked among the top schools in the nation.

As a graduate of our program, you have the ability to enter many different arenas: academia, industrial research, government service, and management, to name only a few. We believe our graduates are eminently qualified for whatever position they choose.

I am pleased to provide this information about our program. Please let us know how we may help you make your decision about graduate studies at The University of Tennessee College of Pharmacy. If you have any questions, please don’t hesitate to ask any of the faculty members or myself. We look forward to meeting with you to discuss our excellent program.”

BERND MEIBOHM, PHD
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DUANE D. MILLER, PH.D.
HARRIETT S. VAN VLEET PROFESSOR OF PHARMACEUTICAL SCIENCES

A native of Larned, Kansas, Dr. Miller earned his Bachelor of Science degree in Pharmacy in 1966 from the University of Kansas and his Doctor of Philosophy degree in Medicinal Chemistry in 1969 from the University of Washington. He became a faculty member at Ohio State University in 1969. After eleven years, he was promoted to full professor, and, from 1983 to 1992, he served as chairman of the Department of Medicinal Chemistry at Ohio State. He was named Van Vleet Professor at the UT College of Pharmacy in 1992. Dr. Miller’s research is focused on the relationship between chemical structure and biological activity of drug molecules, specifically working with drugs that affect the central and peripheral nervous systems. He was one of the co-discoverers of the new class of nonsteroidal selective androgen receptor modulators (SARMs). He is also interested in drugs that can be used to treat and prevent complications arising from diabetes and cancer. He is the author of over 200 articles, book chapters, and review articles. He holds many U.S. patents and has directed many graduate students and postdoctorals.

David Rogers, PHARM.D. Ph.D.
FIRST TENNESSEE CHAIR OF EXCELLENCE IN PEDIATRICS

Dr. David Rogers is Associate Dean for Translational Research for the College of Pharmacy, and Professor and Vice Chair for Research for the Department of Clinical Pharmacy at the University of Tennessee College of Pharmacy. He holds joint appointments in the Department of Pharmaceutical Sciences in the College of Pharmacy, as well as the Departments of Molecular Sciences and Pediatrics in the College of Medicine. Dr. Rogers completed his undergraduate work at the University of Memphis, received the Doctor of Pharmacy degree from the University of Tennessee, and the Master of Science and Doctor of Philosophy degrees in Microbiology from the University of Mississippi. He completed an ASHP-accredited Residency in Pharmacy Practice at the Regional Medical Center at Memphis, as well as an ASHP-accredited Residency in Infectious Diseases Pharmacy Practice and Fellowship in Infectious Diseases Pharmacotherapy at the University of Mississippi Medical Center. Dr. Rogers is an elected Fellow of the American College of Clinical Pharmacy. He is the recipient of the 2002 Society of Infectious Diseases Pharmacists Young Investigator Award, the 2004 Society of Infectious Diseases Pharmacists Impact Paper in Infectious Diseases Pharmacotherapy Award, and the 2004 American College of Clinical Pharmacy Young Investigator Award. The objective of Dr. Rogers’ research program is to identify ways to improve currently available antifungal drugs as well as to identify novel approaches for treating invasive fungal infections. His current work focuses on the elucidation of the molecular basis of antifungal resistance and tolerance in the pathogenic fungi Candida albicans and Candida glabrata. Dr. Rogers’ research is supported through grants from associations, industry, and the National Institutes of Health. He has authored over 60 publications, and over 100 scientific abstracts to date.
**THE UNIVERSITY**

The University Of Tennessee, founded in 1794 in Knoxville, is Tennessee’s land grant university. From her humble beginnings over 200 years ago, The University is now home to over 40,000 students at four main campuses located in Knoxville, Memphis, Chattanooga, and Martin. Indeed, the entire State of Tennessee is the campus of the University. The three-fold mission of The University of Tennessee is teaching, research, and public service.

The College of Pharmacy was founded in 1898 as part of the Science Department in Knoxville and moved to Memphis in the early 1900’s. UTHSC, the University’s health sciences campus, was established in 1911 as part of the UT System.

The UTHSC campus has approximately 2,600 students enrolled in its six colleges. Of these, approximately 284 are graduate students. The six colleges on the Memphis campus are Allied Health Sciences, Dentistry, Graduate Health Sciences, Medicine, Nursing, and Pharmacy.

**THE COLLEGE OF PHARMACY**

The University of Tennessee College of Pharmacy enjoys one of the best reputations of any pharmacy school in the United States. The College was one of the first to grant the Doctor of Pharmacy (Pharm.D.) degree. The first all Doctor of Pharmacy (Pharm.D.) class was graduated in 1988. As reported in the *U. S. News & World Report*, deans and senior faculty from across the nation have consistently ranked the UT College of Pharmacy in the top twenty pharmacy schools nationwide. Everyone associated with the College – students, faculty, alumni, and staff -- is extremely honored and proud of these achievements, but they are also striving to improve on every aspect of the three-fold mission of the University and the College: teaching, research, and public service.

**FACILITIES**

The Department of Pharmaceutical Sciences is headquartered in the Pat and Joe Johnson Building, with additional offices and laboratories in the R. L. Crowe and Feurt Pharmacy Research Building. Research facilities of the Department are well equipped with contemporary scientific instrumentation (see specialized laboratories below). In addition, the University supports an excellent library, computer center, mass spectrometry center, vivarium, and biostatistics center.

The 55-acre UTHSC campus is an integral part of one of the largest medical centers in the United States. The Memphis Medical Center area can roughly be defined as a six-block area located within blocks of downtown Memphis. The area contains one of the world’s largest private hospitals, Methodist Hospitals of Memphis. St. Jude Children’s Research hospital, founded by entertainer Danny Thomas, is the internationally-recognized hospital for the treatment of childhood cancers. The Veterans Affairs Medical Center is a 946-bed hospital affiliated with UTHSC. Just two blocks north of the campus is LeBonheur Children’s Medical Center, nationally known for its pediatric care. The Regional Medical Center at Memphis is a comprehensive hospital recognized for its Elvis Presley Memorial Trauma Center.
**SPECIALIZED LABORATORIES**

**DRUG DISCOVERY LABORATORIES**

**Molecular Modeling Laboratory**

The Molecular Modeling Laboratory is designed to find and develop new pharmaceutical agents as well as to enhance activity of existing drugs. The Department has many Linux and SGI workstations running the Tripos software package, AMBER, and a variety of other software packages. The traditional development of chemotherapeutic agents involved the systematic synthesis of compounds and qualitative assessment of the structure-activity relationships. The utilization of molecular modeling techniques in drug development now permits the quantitative determination of structure-activity relationship, conformational analysis of drug molecules, visualization of drug in the receptor/enzyme ligand binding pocket, and the *in silico* screening of combinatorial libraries against potential drug targets. Additionally, computational chemistry is utilized to develop models of proteins for which the structure is unknown as well as determine the reaction coordinates of chemical reactions.

**Nuclear Magnetic Resonance Laboratory**

The Department of Pharmaceutical Sciences has modern equipment for the performance of a wide range of experimental procedures. It consists of a Varian (now part of Agilent) Inova 500 MHz NMR and a Bruker Avance III 400M NHz NMR equipped with an automatic sample changer. The NMR lab is located in the Johnson Building. The 500MHz NMR is equipped with a Nano-probe, VAST, and three 5 mm probes. The 400M NMR is recently purchased by a NIH/NCRR instrument. These instruments are available to members of the Department for qualitative and quantitative purposes, and are presently being used to determine the structures of drug molecules, the metabolic profiles of living cells, and the high-throughput screening of combinatorial libraries. Proton, carbon, phosphorous, fluorine and multinuclear capabilities, as well as multi-dimensional experiments are available.

**LC-MS LABORATORY**

The Bruker Esquire-LC ion Trap LC/MS\(^{(n)}\) system is located in room 310, Johnson Building. Mass range (m/z) can be measured from 50 up to 6000 with high resolution and high sensitivity. Multiple fragmentation (MS/MS) of analyte molecule can go up to MS\(^{6}\) for structural elucidation. Coupled with HP 1100 Chemstation and the robust, versatile software running on Windows NT, the LC-MS system is an extremely powerful and indispensable instrument for life science and chemical research. The machine is currently available as an open access resource for our students to use.
The Parenteral Medication Laboratories are the result of a cooperative effort between The University of Tennessee and many private corporations who have special interests in injectable medications. Accordingly, private industry has generously contributed money and equipment to make these laboratories possible. The Laboratories contain a core processing area designed for academic instruction as well as for the processing of sterile dosage forms. It provides the capacity for small-scale manufacturing of sterile preparations. The faculty and staff associated with the Parenteral Medications Laboratories are involved in development of sterile formulations, manufacture of small lots of product for clinical investigation, development and determination of stability of new sterile products, and development of biotech dosage forms. The Parenteral Medications Laboratories continue to provide hands-on training for the pharmaceutical industry in aseptic processing. Click on the link below for more information about the Parenteral Medications Laboratories: http://www.uthsc.edu/pharmacy/parenterals/

The Pharmaceutical Research Development and Training Laboratories specialize in the research and development of conventional and controlled release dosage forms using state-of-the-art equipment. The laboratories are used to teach and train advanced undergraduate and graduate students and postdoctoral fellows. The laboratories are also used to do contract/research work for pharmaceutical, biotechnology and other health related industries. The graduate students, postdoctoral fellows and faculty are actively involved in all the research/contract projects as well as in the postgraduate training program. The research interests of faculty and staff of The Pharmaceutical Research Development and Training Laboratories include: preformulation and formulation of solid dosage forms, including controlled release oral drug delivery systems, evaluation of compaction properties of excipients; development of new methodologies for non-destructive testing of solid and semisolid dosage forms; and formulation and development of biodegradable, injectable and implantable controlled release drug delivery systems for small molecules, as well as for macromolecules such as biologically active proteins and peptides. The following laboratories have several state-of-art pieces of equipment:

**PREFORMULATION LABORATORY**

A sonic sieve analyzer for particle size analysis from Gilson; dynamic flow measuring equipment from Hanson Research Corporation; moisture adsorption/desorption equipment from VTI Corp.; a differential scanning calorimeter from Perkin Elmer Corp.; and a helium pycnometer and surface area measurement equipment from Micromeritics, Inc.
FORMULATION LABORATORY

A roller compactor from Vector Corporation, several high-shear mixer granulators from Robot-Coupe, Inc.; an 18-stations instrumented tablet press attached to a fully automated and computer-controlled three-way tablet tester from Elizabeth-Hata International, Inc.; a fluid-bed dryer and coater from Glatt Air Techniques., Inc.,

QUALITY CONTROL/ANALYTICAL LABORATORY

Three HPLC systems equipped with photodiode array and refractive index detectors from Shimadzu; a near infrared spectroscopy equipment from Foss NIRSystems; USP dissolution and disintegration testers from Hanson Research Corporation and Distek Inc.; Rainbow dissolution tester from Delphian Technologies; a fully automated flow-through UV-visible spectrophotometer for dissolution testing from Perkin Elmer Corp.; a tensile strength tester from Ametek, Corp., and shaker-incubators from Labline Instruments. Click on the link below for more information about the Pharmaceutical Research Development and Training Laboratories: http://www.uthsc.edu/pharmacy/pharmsci/tablettech/

PHARMACOKINETICS/PHARMACODYNAMICS RESEARCH LABORATORIES

CELL CULTURE LABORATORIES

Investigations of drug activity, metabolism, binding, protein/nucleic acid delivery and intracellular trafficking are often performed using isolated receptors or cultured cells. The Cell Culture Laboratory serves as the primary facility for these studies in the Department of Pharmaceutical Sciences. The laboratories consist of three temperature-and humidity-controlled rooms in the Johnson, Crowe and Feurt Buildings. The majority of research conducted in these laboratories is focused on the identification of compounds useful in the treatment of cancer as well as for evaluation of novel polymeric carriers and gene expression systems for the treatment of diabetes, cancer and cardiovascular diseases.
GRADUATE FACULTY
DEPARTMENT OF PHARMACEUTICAL SCIENCES

MEDICINAL CHEMISTRY FACULTY

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# PHARMACEUTICS FACULTY

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FACULTY WITH PRIMARY APPOINTMENTS IN OTHER DEPARTMENTS

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Lawrence J. Hak, Pharm.D., BCPS, FCCP Professor, Clinical Pharmacy
Richard Lee, Ph.D., FR-Adjunct Professor
Mary V. Relling, Pharm.D., FR-Professor, Clinical Pharmacy
Erin Schuetz, Ph.D., FR-Adjunct Professor
John Schuetz, Ph.D., FR-Adjunct Professor
Scott E. Snyder, Ph.D., FR-Adjunct Associate Professor
Clinton F. Stewart, Pharm. D., FR-Adjunct Professor
Thomas R. Webb, Ph.D., FR-Adjunct Professor

*St. Jude
HASSENAŁMOAZEN, P.H.D.
Assistant Professor, Pharmaceutical Sciences

B.S. Pharmacy, Damascus University, Syria, 1991
Ph.D. (Pharmaceutics) Long Island University, 2002

Research Interests

Dr. Almoazen’s laboratory is involved in basic pharmaceutics and biophysical pharmacy. He has projects involved in the delivery of nanoemulsions to enhance drug permeability, evaluate the stability of nanocrystals and solid dispersions to enhance the solubility of poorly soluble therapeutic agents. He is also interested in the delivery of adjuvants that augment the immune response to vaccines.

Selected Publications

SARNA BERANOVA-GIORGIANNI, PH.D.
Associate Professor, Pharmaceutical Sciences

M.S. (Chemistry), Prague Institute of Chemical Technology, Czechoslovakia, 1989.
Ph.D. (Analytical Chemistry), University of Akron, 1995

Research Interests

The research of Dr. Beranova-Giorgianni focuses on the application of mass spectrometry and proteomics to the study of human diseases. Current areas of interest include: (i) discovery of potential biomarkers and drug targets (prostate cancer; lung diseases); (ii) characterization of the phosphoproteome in human tissues (prostate; pituitary) and cultured cells (LNCaP); (iii) development and optimization of new proteomics methods that incorporate state-of-the-art mass spectrometry.

Selected Publications

- Zhao, Y; Giorgianni, F; Desiderio, DM; Fang B; Beranova-Giorgianni S. Analysis of the Proteome in Human Pituitary Tissue by Multiple Gel-Based Technology. Anal. Chem. 77, 5324-5331, 2005.
JOHN K. BUOLAMWINI, PH.D.
Professor, Pharmaceutical Sciences

B. Pharm. (Honors), University of Science and Technology, Ghana, 1981
Ph.D. (Medicinal Chemistry), University of Alberta, Canada, 1990

Research Interests
Research in Dr. Buolamwini’s laboratory focuses on the design, synthesis, isolation and/or modification and evaluation of new molecules as potential therapeutic agents or pharmacological and biochemical research tools. Approaches used include computer-aided drug design by molecular modeling, including Docking (GLIDE, GOLD), 2D- and 3D-QSAR (CoMFA, CoMSIA, CATALYST, PHASE), as well as multivariate statistical analyses (PLS) and artificial neural networks, synthetic medicinal chemistry and chemical biology, combichem, cell and molecular biology, flow cytometry and radioisotope methods of analysis of ligand-receptor interactions. Molecular targets include nucleoside transporters, HIV integrase, EGFR, HER2, MDM2, GST-Pi and STAT3. Therapeutic areas include Ischemia-Reperfusion injury (coronary heart disease and stroke), Cancer Chemotherapy and Chemoprevention, and HIV/AIDS

Other Professional
Editor-in-Chief, Current Cancer Drug Targets

Selected Publications
Research Interest

Dr. Donkor’s laboratory is involved in the design, synthesis, and evaluation of enzyme inhibitors and DNA interactive agents as potential therapeutic agents. The laboratory is currently focused on discovery of potent and selective inhibitors of calpain. Calpain is a calcium activated cysteine protease with several known isoforms. The enzyme is an important modulator of a number of physiological and pathological events hence, it is considered a potential drug target. The laboratory is probing the subsites of calpain to determine structural differences between the major calpain isoforms (calpains 1 and 2) with the goal of developing calpain isoform selective inhibitors. Additionally, the laboratory is investigating allosteric sites on calpain for development of nonpeptide allosteric inhibitors of the enzyme.

Selected Publications


Book Chapters

- The APhA Complete Review for the FPGEE (Chapter 8).
JAMES R. JOHNSON, PH.D.
Associate Professor, Pharmaceutical Sciences
Director, Pharmaceutical Research, Development and Training Laboratories

B.S. Pharmacy, University of Minnesota, 1962
M.S., University of Minnesota, 1968
Ph.D., University of Minnesota, 1968

Research Interest

The Pharmaceutical Research Development and Training Laboratories specialize in the research and development of conventional and controlled release dosage forms using state-of-the-art equipment. The laboratories are used to teach and train undergraduate and graduate students, postdoctoral fellows as well as over 100 industry personnel annually. The laboratories are also used to conduct contract/research work for pharmaceutical, biotechnology and other health related industries. The graduate students, postdoctoral fellows and faculty are actively involved in the research/contract projects as well as in the postgraduate training program.

Selected Publications


Abstracts:

- W. Qu, Y. Sun, A. Soscia, P. Jain, Y. Peng, E. Brunson, H. Almoazen, A. Shukla, J. Johnson, Abuse-resistant Immediate Release Oxycodone Formulation, American Association of Pharmaceutical Scientists 2010 annual meeting, New Orleans, LA.
- W. Wu, C. Egger, J. Xu, J. Johnson, A. Shukla, Development of Sustained Release Buprenorphine Formulations for Dogs, American Association of Pharmaceutical Scientists 2009 annual meeting, Los Angeles, CA.
Research Interest: Infectious Filed: Our group has a long-term interest in development of new antibacterial agents targeting novel or unexploited drug targets. In order to develop novel antibacterial molecules, we develop concise syntheses of complex molecules, designs chiral molecules, and generate small optimized libraries. We also design convenient assays against the target enzymes of interest. These efforts have resulted in the discovery of several new drug leads effective against MDR-gram-positive pathogens including MDR-M. tuberculosis (Mtb). Over the last 5 years, we have studied on unexploited peptidoglycan biosynthesis (MraY) and their inhibitor molecules, and selective electron transport system inhibitors. Cancer Research: We have been interested in eukaryotic inhibition factors (eIFs), protein synthesis inhibitors, and topoisomerase inhibitors. Our primary efforts are to develop concise synthesis of validated molecules and to generate small optimized libraries. Early Diagnosis of Cancer: We have been developing new molecular imaging tools via magnetic resonance imaging (MRI).

Selected Publications


Representative Patents


Books and Book Chapters

WEI LI, PH. D.
Associate Professor and Director of NMR Facility

BS, Chemistry, Univ. of Sci. & Technol. of China, 1992
PhD, Chemistry, Columbia University, 1999

Research Interest

The research in our lab is highly multi-disciplinary and often involves collaboration with other labs. Currently research in our group broadly focuses on the following three areas: 1) Discovery of novel therapeutic agent for melanoma; 2) Discovery of novel vitamin D analogs as potential therapeutic agents; and 3) Application of NMR spectroscopy, especially high resolution magic angle spinning NMR (HRMAS NMR) techniques, in drug discovery studies. Techniques used in our lab include extensive molecular modeling, organic synthesis, in vitro and in vivo biological assay, and nanotechnology based drug delivery approaches. For more information about the group including recent publications, please visit our lab homepage.

Selected Publications

Research Interest

Research interest is in the area of traditional radiopharmaceuticals, positron emission tomography (PET) radiopharmaceuticals, and interventional agents used in nuclear medicine.

Selected Publications

- VS Loveless. Drugs Used as Interventional Agents in Nuclear Medicine. Continuing Education for Nuclear Pharmacists and Nuclear Medicine Professionals, The University of New Mexico Health Sciences Center College of Pharmacy, Albuquerque, NM. 1998;7(2).
Research Interest

In Dr. Lowe’s state-of-the-art “Biomaterials for Translational Research Laboratory”, the research features innovative bionanotechnology, drug delivery, gene therapy, tissue engineering, and biosensor. The research activities include rational design and synthesis of multi-stimuli-responsive polymeric biomaterials including nanogels, branched nanoparticles, hydrogels and thin films; characterizations of the mechanisms by which the designed biopolymers regulate targeted and sustained delivery of drugs, proteins and genes, promote cell growth, and provide biosensing; and in vitro and in vivo studies of the bioefficacy of these biomaterials. The ultimate goal of the research in Dr. Lowe’s lab is to develop novel biomaterials that can provide exquisitely sensitive, selective, non-toxic, biodegradable and responsive platforms to target therapeutic agents to the sites of ocular, central nervous, cancerous, or musculoskeletal lesions.

Selected Publications

Dr. Mahato’s laboratory is involved in: (i) design and synthesis of polymers and lipids for delivery and targeting of small molecules, oligonucleotides, siRNA and genes; (ii) design and construction of gene/shRNA expression systems; (iii) formulation and in vitro Characterization of Nucleic Acid Delivery Systems, (iv) Micellar delivery of small molecule drugs; (v) Bioconjugation and particulate carrier systems for treating a) liver fibrosis, ischemia reperfusion liver injury, prostate cancer and diabetes; (vi) Mesenchymal stem cells as gene delivery vehicles for improved islet transplantation; and (vii) mechanisms of cellular uptake and intracellular trafficking of nucleic acid drugs, (viii) gene/siRNA delivery to human pancreatic islets.

### Selected Publications

BERND MEIBOHM, PH.D., F.C.P.
Professor, Pharmaceutical Sciences
Associate Dean, Graduate and Research Program

B.S. (Pharmacy), Technical University Carolo-Wilhelmina, Braunschweig, Germany, 1989
Ph.D. (Pharmaceutics), Technical University Carolo-Wilhelmina, Braunschweig, Germany, 1994

Research Interest

Dr. Meibohm’s research is focused on the investigation of the pharmacokinetics (PK), pharmacodynamics (PD) and pharmacogenetics (PG) of drugs with special emphasis on PK/PD/PG-correlations. Areas of interest include chronic inflammatory processes (e.g., COPD), transplantation, pediatric pharmacotherapy and preclinical and clinical drug development, especially of biotechnology drugs. The ultimate goal of the research in Dr. Meibohm’s lab is to contribute to the optimization of dosing regimens for increased efficacy and reduced toxicity and to modulate pharmacotherapy according to the needs of the individual patient.

Selected Publications

Dr. Miller has several research interests including: the design and synthesis of beta-3 adrenergic antagonists for the treatment of obesity; imidazoline analogs as molecular probes of the adrenergic receptors; nonsteroidal selective androgen receptor modulators (SARMs); aldose reductase inhibitors; anticancer (glioma) agents and new phospholipid agents for the interaction with LPA (EDG) receptors.

**Selected Publications**

- Kang, GS, Wang, XD, Mohler, ML, Kirichenko, OV, Patil, R, Orr, WE, Miller, DD, Geisert, EE. *Effects, in an in vivo model system, of 1,2,3,4-tetrahydroisoquinoline on glioma*. Anticancer Drugs, 19 (9), 859-70, 2008.
Research Interest

Research in Dr. Moore’s lab integrates synthetic organic chemistry, computational chemistry and in vivo and in vitro assays aimed at developing new chemotherapeutic entities. The current areas of research include: development of cannabinoid receptor (CB1 and CB2) agonist and antagonist for the treatment of cancer; hemorrhagic shock; and immune regulation. The anti-cancer activity of cannabinoid based therapeutics is one of the most promising areas in antineoplastic development owing to the low in vivo toxicity and broad spectrum activity. The significance of cannabinoid based cancer therapeutics is exemplified by the efficacious activity of Dr. Moore’s cannabinoid ligands against cancer stem like cells. This subpopulation of cancer cells is increasing being linked to metastasis and drug resistance, the ultimate cause of mortality in cancer patients.

Selected Publications


Professor, Pharmaceutical Sciences

B.S. (Pharmacy), University of Illinois Medical Center, Chicago, 1965
M.S. (Pharmaceutics), University of Illinois Medical Center, Chicago, 1968
Ph.D. (Pharmaceutics), University of Illinois Medical Center, Chicago 1970

Research Interest

Dr. Wood’s research interest includes development of biotechnology based, parenteral dosage forms. He is also interested in educational assessment of pharmacy student performance.

Selected Publications


C. Ryan Yates, Pharm.D., Ph.D.
Professor, Pharmaceutical Sciences
Coordinator Of Dual Degree Program

Pharm.D. (Pharmacy), The University of Tennessee, Memphis, 1997
Ph.D., (Pharmaceutics), The University of Tennessee, Memphis, 2000

Research Interest
Dr. Yates' research is focused on the discovery and development of anti-inflammatory drugs. His platform technology, based upon the quinic acid derivative KZ-41, has demonstrated radiomitigating activity in a murine model of the hematopoietic acute radiation syndrome (ARS). Moreover, his laboratory is investigating the genomic basis for susceptibility to injury following high dose radiation exposure using BXD mice as a human population genetics model. Our overall goal is to elucidate the mechanism of action of our radiomitigant platform and to identify novel molecular pathways/targets critical to the radiation injury response.

Selected Publications
Richard E. Lee, Ph.D.
FR-Adjunct Professor
Member, St. Jude Children's Research Hospital

B.Sc. (Honors Class 1), Chemistry, University of Newcastle-upon-Tyne, UK, 1989
Ph.D. (Organic Chemistry), University of Newcastle-upon-Tyne, UK, 1993

Research Interest

The research focus of Dr. Lee’s laboratory is the design and synthesis of new drugs targeting non-classical antibacterial drug targets using interdisciplinary approaches and the latest technologies. His research design includes drug target selection from pathogen genome analysis, high throughput screen development of these targets, rational and combinatorial drug design and their subsequent synthesis.

Selected Publications

MARY V. RELLING, PHARM.D.
FR-Adjunct Professor
Member, St. Jude Children’s Research Hospital

B.S. (Pharmacy), College of Pharmacy, University of Arizona, Tucson, 1982
Pharm.D., College of Pharmacy, University of Utah, Salt Lake City, 1985

Research Interest

Her primary interests are in antineoplastic pharmacokinetics and pharmacodynamics in children; pharmacogenetics of antileukemic therapy, and host- and treatment-related risk factors for adverse effects and secondary malignancies. Dr. Relling is one of the Principal Investigators within the Pharmacogenomics Research Network. The impetus for her research is the need to improve drug therapy of childhood leukemia by better understanding the contributions of and mechanisms underlying interindividual differences in pharmacokinetics and pharmacodynamics.

Selected Publications

ERIN SCHUETZ
FR-Adjunct Associate Professor
Member, St. Jude Children’s Research Hospital

PhD - Medical College of Virginia, Richmond

Research Interest

Regulation of cytochrome P4503A
Interplay of drug transport, cytochromes P450 and nuclear hormone receptors
Pharmacogenetics of drug transporters, cytochromes P450 and nuclear hormone receptors

Selected Publications

Our laboratory focuses on the function and regulation of mammalian ABC (ATP-binding cassette) transporters. These transporters play an critical role in drug penetration and retention in biological systems. We have recently defined the function of two new ABC transporters, MRP4 and BCRP. MRP4 is unique among ABC transporters in its ability to remove specific nucleotides from cells. This property allows cells that express high levels of it to evade chemotherapy by removing the nucleotide forms of nucleoside analogues. The other transporter is BCRP which is highly and uniquely expressed in mammalian stem cells. This unique expression allows BCRP to protect stem cells from chemotherapeutic insults. Besides determining ABC-transporter function, we are evaluating the signals that lead to up or down regulation of these genes. The knowledge of function as well as regulation should facilitate the future design of more effective chemotherapeutic regimens.

Selected Publications

SCOTT E. SNYDER, PH.D.
FR-Adjunct Associate Professor
Associate Member, St. Jude Children’s Research Hospital

BS. Virginia Polytechnic Institute and State University, Blacksburg, VA, 1986
PhD, Purdue University, West Lafayette, IN, 1993

Research Interest

Development of novel radiopharmaceuticals for positron emission tomographic (PET) imaging. Particular PET imaging applications include: Functional characterization of tumors; Therapy response monitoring; and Investigation of therapy-induced neurological disorders in cancer survivors.

Selected Publications

My research interests focus on: Clinical pharmacokinetics, pharmacodynamics, and pharmacogenetics of anticancer drugs in children; Role of ABC transporters in CNS penetration of camptothecin analogs; Multidrug resistance proteins (e.g., MRP4, BCRP) in camptothecin pharmacology and physiology; Novel methods to optimize drug exposure in children with cancer (pharmacokinetically guided dosing); Use of preclinical models to enhance design of clinical trials of new agents in children with cancer; Role of pharmacokinetics in drug development in pediatric oncology; and Use of clinical pharmacology to optimize therapy for children with primary CNS malignancies.

Selected Publications

THOMAS R. WEBB, PH.D.
FR-Adjunct Professor
Member, St. Jude Children's Research Hospital

Ph.D., University of California, Santa Cruz

Research Interest
Synthetic organic chemistry and medicinal chemistry:
- Heterocyclic and enantioselective synthesis, synthesis of non-peptide peptide mimics, protein kinase inhibitor design and synthesis, synthesis of active small molecules based on the pharmacophores of natural products;
- Lead discovery: integration of cheminformatics, small molecule library design and medicinal chemistry, synthesis of novel combinatorial templates

Selected Publications

**Research Interest**

The research focus of my group is pharmacogenomics of treatment outcomes (e.g. relapse) of childhood acute lymphoblastic leukemia (ALL). The goals of our research are to elucidate biological pathways dictating response to antileukemic drugs, to identify genetic predictors for drug resistance which can be utilized for treatment individualization, and to develop novel therapeutic agents to overcome drug resistance. We have led the first genome-wide association study to identify germline genetic variations associated with minimal residual disease in response to remission induction therapy in children with ALL (JAMA 301:393) and the first genome-wide interrogation of copy number alterations related to ALL relapse (Blood 112:4178). We are particularly interested in the genetic basis for racial/ethnic differences in ALL treatment outcomes. Our group is part of the NIH Pharmacogenomics Research Network (PGRN) and the Pharmacogenomic of Anticancer Agents Research in Children project (PAAR4Kids).

**Selected Publications**

PROGRAMS OF STUDY

The Department of Pharmaceutical Sciences offers the Master of Science and Doctor of Philosophy degrees through the College of Graduate Health Sciences at The University Of Tennessee Health Sciences Center in Memphis. Areas of specialized studies are in medicinal chemistry and pharmaceutics. Medicinal chemistry includes the design, synthesis and evaluation of compounds with potential therapeutic applications. Pharmaceutics includes the development of novel dosage forms, biopharmaceutics, pharmacokinetics, pharmacodynamics, pharmacogenetics, and pharmaceutical technology. Normally, about four years are required for a well-prepared student to obtain the Ph.D.

Graduates of the program in the Department of Pharmaceutical Sciences are prepared to assume positions of responsibility in academia, the pharmaceutical industry, government, and other health-related organizations and institutions. The nature and variety of research projects available to students reflect the stimulating and dynamic environment of the health science center and provide for truly meaningful research.

DUAL PHARM. D./PH.D. PROGRAM

UT College of Pharmacy offers an accelerated, integrated program, which combines study for the Doctor of Pharmacy (Pharm.D.) degree with the opportunity to earn the Ph.D. The program requires approximately seven years to complete, including summer research. This innovative dual degree program is designed to reduce the total time needed for completion while maintaining the high standards for both programs individually. Additional information about the dual degree program may be obtained by contacting Dr. C. Ryan Yates (cyates4@uthsc.edu).

COST OF STUDY/FINANCIAL AID

Tuition and fees for Tennessee residents are $4,338 per semester and $11,883 per semester for non-residents. A limited number of predoctoral fellowships are available on a competitive basis to qualified applicants. These provide an annual stipend of $23,000 plus a waiver of tuition.

APPLICATIONS

The normal admission time for new students is in the fall semester, which usually begins in mid-August. Prospective students should submit a completed application form and supporting documents no later than March 15 for admission in the fall semester. Generally a minimum undergraduate grade point average of 3.0 on a 4.0 scale is required. All applicants are required to take the Graduate Record Examination (GRE) and achieve a minimum combined score (verbal and quantitative) of 1,000 (or a combined minimum score of 300 (150 on verbal and 150 on quantitative) on the new GRE score scale) and a minimum score of 3.5 on the analytical section. Foreign applicants whose native language is not English are required to take the Test of English as Foreign Language (TOEFL) and achieve a minimum score of 213 on the computer-based test or 79 on the internet-based test. It is also recommended that the Test of Spoken English (TSE) be taken. Applications are accepted from students with a B.S. or M.S. degree in pharmacy, chemistry, biology, mathematics, engineering or other appropriate disciplines.

You may apply on-line at http://www.uthsc.edu/admiss/Application.html. Look under College of Graduate Health Science to select our program. On-line applicants are not required to pay the $75.00 application fees.
Note that there are no separate forms to apply for financial assistance. Successful applicants will be automatically considered for financial assistance.

Arrange for recommendation letters (at least two), official transcripts of all your college level academic work, GRE scores, and TOEFL scores (if English is not your first language) to be sent to the following address:

ATTN: Admissions Counselor
Office of Enrollment Services
University of Tennessee Health Science Center
910 Madison Avenue, Suite 525
Memphis, TN 38163.

EVERY IMPORTANT. NON-US ALLICANTS, PLEASE NOTE: Official test scores and three letters of recommendation must be sent directly from the contributing source and not by the student to the address listed above (i.e., ATTN: Admissions Counselor etc). Applicants may initiate the application process with uncertified transcripts. **However, we require that transcripts from any non-US institution must be verified and certified to generate a Grade Point Average (GPA) before an official letter of admission will be sent to the applicant.** Service agencies include but are not limited to Educational Credit Evaluation (ECE) eval@ece.org, World Education Services (WES) support@wes.org, Association of Collegiate Registrars and Admission Officers (AACRAO) oies@aacrao.org. These agencies and others charge a fee for services. Document by document certification is not adequate.

CONTACT

For more information, please contact

**Dr. Isaac O. Donkor**  
Director of Graduate Programs  
Department of Pharmaceutical Sciences  
College of Pharmacy  
University of Tennessee  
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The fourteenth largest city in the nation, Memphis is many different things to many different people: the world capitol of barbeque pork to the discriminating gourmet, home of the blues and Beale Street to the music aficionado; birthplace of rock-and-roll and site of Elvis Presley’s Graceland mansion to the rock-o-phile, host of the world’s art treasures through Wonders Series, the Memphis International Cultural Series to the connoisseur; site of the world’s largest cotton market to the historical scholar; home of the National Civil Rights Museum. For the sports enthusiast, Memphis is home to the NBA Grizzlies and the Triple A baseball Red Birds team. Lastly, but certainly not least Memphis is the home of the largest medical center in the Southeast.

Whatever you and your family are looking for, chances are you’ll find it in Memphis. The city holds many surprises for the unknowing; serene botanic gardens in the heart of the city; victorian architecture and stately homes amid the bustle of downtown; wineries, world-class sporting facilities, outdoor activities, a new downtown trolley line, and much, much more.

Memphis’s central geographic location provides easy access. The city is the headquarters of Federal Express and is one of three national hubs for Northwest Airlines. Memphis International Airport is the largest cargo airport in the world and is also served by Delta, American, United and USAir.

Memphis is located in extreme southwest Tennessee with the Mississippi River at its doorstep. Mississippi and Arkansas are adjacent neighbors. The city is at the junction of interstate highways 55 and 40, with I-240 providing circumferential transportation routes around the city.

The University Of Tennessee, Health Science Center, is located within blocks of downtown, with easy access to I-240 and only minutes from Memphis International Airport. The 55-acre UTHSC campus is the hub of the Memphis Medical Center.

To learn more about Memphis click on this link: http://www.cityofmemphis.org