

Curriculum Vitae

SCOTT R. PENZAK, Pharm.D., FCP

June, 2019

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Date of Birth: 8/23/1967

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Current Position and office address

Scott R. Penzak, Pharm.D., FCP
Department Head and Professor
Department of Pharmacy Practice
Auburn University
Harrison School of Pharmacy

Education

1994 – 1996 Post B.S. Doctor of Pharmacy. Wayne State University, Detroit,
Michigan

1985 – 1990 B.S. Pharmacy. Ferris State University, Big Rapids, MI

Postgraduate Training

1996 – 1998 Research Fellow, Infectious Diseases Pharmacology, University of
Arkansas for Medical Sciences (UAMS), College of Pharmacy

Appointments

2019 – Present Department Head and Professor, Department of Pharmacy Practice,
Harrison School of Pharmacy, Auburn University

2018 – 2019 Professor and Interim Chair, Department of Pharmacotherapy
University of North Texas, Health Science Center, System College of
Pharmacy

2016 – 2017 Professor and Interim Associate Dean for Academic Affairs

2014 – 2016 Professor and Vice Chair, Department of Pharmacotherapy
University of North Texas, Health Science Center, System College of
Pharmacy

- 2001 – 2014: Director, Clinical Pharmacokinetics Research Laboratory (CPRL), National Institutes of Health, Bethesda, MD
- 1998 – 2001: Assistant Professor of Pharmacy Practice, Mercer University, Southern School of Pharmacy, Atlanta, GA

Certificates and Licensure

- 1990 – Present Michigan Pharmacist’s License: 5302026964
 1998 – 2001 Georgia Pharmacist’s License: RPH019810 (inactive)
 2014- Present Texas Pharmacist’s License: 55963

Honors and Awards

- 2017 Dept. of Pharmacotherapy Faculty of the Year Award (Student Government Association)
 2016 American Association of Colleges of Pharmacy (AACP) Academic Leadership Fellows Program: 2016-2017
 2014 Dept. of Pharmacotherapy Faculty of the Year Award (Student Government Association)
 2013 NIH Directors Award: Science, “For Continuous Excellence in Science and Contributions to the HIV Literature”
 2012 2012 NIH Clinical Center Director’s Award (Pharmacogenomics Implementation Award)
 2011 Recognition Award for 10 years’ service to the U.S. Federal Government
 2008 NIH National Director’s Mentoring Award (Presented by Dr. Elias Zerhouni)
 2007 Named *Fellow* in the American College of Clinical Pharmacology
 2005 Society of Infectious Diseases Pharmacists Young Investigator Award
 2005 NIH Clinical Center Director’s Award (Science)
 2004 Marquis Who’s Who in Science and Engineering (Dec. 2004)
 2001 Rho Chi Faculty Member of the Year, Mercer University 2000-2001
 1995 Member, Rho Chi, Alpha Chi Chapter
 1990 *Merck Award* from Merck and Co. for academic excellence
 1990 Member of Who's Who Among College Students 1990
 1989 Inducted as a member of Rho Chi, Beta Mu Chapter

II. Teaching

Auburn University: 2019 – Present

<u>Year(s)</u>	<u>Course</u>	<u>Role</u>
2019	Pharmacokinetics Workshop	Content Expert

UNTHSC System College of Pharmacy: 2014 – 2019

<u>Year(s)</u>	<u>Course</u>	<u>Role</u>
2014-2018	PHAR7322 Personalized Medicine	Classroom Session Leader
2014, 2015, 2017	PHAR 7313 Pharmaceutics	Classroom Session Leader
2017	PHAR 7313 Pharmaceutics	Co-course Director + leader
2014-2015	PHAR 7331 Immunology	Course Director + leader
2016-2017	PHAR 7331 Immunology	Classroom Session Leader
2014-2016	PHAR 7217 Calculations Lab	Lab facilitator
2015	PHAR 7343 Pharmacokinetics	Course Director
2016-2018	PHAR 7343 Pharmacokinetics	Classroom Session Leader

2015-2018	PHAR 7345 Evidence-based Practice	Classroom Session Leader
2015-2018	PHAR 7451 Infectious Diseases	Classroom Session Leader
2015-2018	PHAR 7354 Optimizing Wellness	Classroom Session Leader

<u>Year(s)</u>	<u>Course</u>	<u>Role</u> (Continued)
2015	PHAR 7137 Sterile Compounding	Interim Director
Spring 2016	PHAR 7365 Pharmacy Law and Ethics	Course Director
2014-2018	Interprofessional Education activities	Facilitator
2014-2018	OSCE: Immunizations	Grader
2014-2018	OSCE: Hand washing	Grader
2015	TCU Code simulation	Facilitator
2015-2017	Sterile Compounding	Grader
2016	Physical Assessment	Grader

UNTHSC SCP Residency Teaching Certificate Program:

<u>Academic year</u>	<u>Role</u>
2014 – 2017	Co-director / Lecturer
2018	Co-director / Lecturer

Invited Professional Presentations

<u>Year</u>	<u>Topic</u>	<u>Organization</u>
2002	Pharmacogenomics	NIH: Pharmacotherapy Frontiers
2002	Herb-Drug Interactions	Washington DC Pharmacist's Association
2003	Complementary & Alternative Drug Interactions	American Society of Health-System Pharmacists (ASHP) Spring Meeting
2004	Drug Transport Proteins	NIH: Pharmacotherapy Frontiers
2005	Prednisone Interaction with HIV Protease Inhibitors	HIV Pharmacology Workshop
2005	Pharmacokinetics of Antiretroviral Medications	ASHP Mid-Year Meeting
2006	Antifungal Pharmacogenomics	Annual FOCUS meeting
2007	Pharmacogenomics of HIV Treatment	NIH: Grand Rounds
2012	Complementary & Alternative Drug Interactions	NIH: Pharmacotherapy Frontiers
2013	Drug Interactions Update	FDA Grand Rounds

National Institutes of Health: Post-doctoral Pharmacokinetics Research Fellowship: Fellows Trained

<u>Time Period</u>	<u>Fellow</u>	<u>Current Position</u>
2004-2006	Sarah Robertson, Pharm.D.	Director, Clinical Pharmacology, Vertex
2006-2008	Kristin Busse, Pharm.D.	Investigational Drug Pharmacist, Froedtert Hospital
2006-2008	Kristina Estes, Pharm.D.	Clinical Pharmacology Reviewer, U.S. Food and Drug Administration (FDA)
2008-2010	Christine Malati, Pharm.D.	Pharmaceutical Advisor, US Agency for International Development (USAID)
2010-2012	Monica Calderon, Pharm.D.	Clinical Pharmacology Reviewer, U.S. Food and Drug Administration (FDA)

2012-2014 Lori Gordon, Pharm.D. Assistant Professor, Pharmacy Practice,
Xavier University College of Pharmacy

National Institutes of Health: Summer Research Training Program

Students trained (3 of 6)

<u>Time Period</u>	<u>Student</u>	<u>Current Position</u>
2011	James Stevenson, Pharm.D., MS	Assistant Professor, University of Pittsburgh
2003	Susan Janeczko, Pharm.D.	Health Insurance Specialist at Centers for Medicare and Medicaid Services, Office of Legislation
2005	Michael Long, Pharm.D.	Unknown

National Institutes of Health: recurring teaching experiences

<u>Time Period</u>	<u>Course</u>	<u>Topic (total hrs)</u>
2003 – 2013	NIH Clinical Center Principles of Clinical Pharmacology	Drug Interactions (11)
2003 – 2008	International Society for Infectious Diseases (ISID) HIV Pharmacology Course	Alternative Medications (6)
2003 – 2008	International Society for Infectious Diseases (ISID) HIV Pharmacology Course	HIV Drug Interactions (6)
2002 – 2013	NIH, NIAID Medical Fellows Lecture Series	HIV Drug Interactions (12)

Mercer University, Southern School of Pharmacy: didactic teaching

<u>Time Period</u>	<u>Course</u>	<u>Role</u>	<u>Lecture hrs</u>
1998 – 2001	Infectious Diseases Therapeutics	Course Director	~30 hrs/yr
1998 – 2001	Medicinal Chemistry	Lecturer	1 hr
1998 – 2001	Clinical Pharmacokinetics	Lecturer	2 hrs

Mercer University, Southern School of Pharmacy: experiential teaching

<u>Time Period</u>	<u>Advanced Pharmacy Practice Experience</u>	<u>Total students</u>
1999 – 2001	Infectious Disease Program (Ponce) Clinic Atlanta, GA	20-25
2000 – 2001	Research Rotation	3

Mercer University, Southern School of Pharmacy: Summer Research Program

<u>Time Period</u>	<u>Project</u>	<u>Student</u>
2000	Ritonavir HPLC assay development	Walter Lawhorn

III. Research

(Google Scholar via *Harzing's Publish or Perish [updated 03/14/2019]*)

- Number of publications: **171** (Pub Med: 103)
- H-index: **36**
- Total citations: **4686**
- Citations per year: **213**

Peer-reviewed Publications

Penzak SR, Rojas-Fernandez C. 4 β -Hydroxycholesterol as an Endogenous Biomarker for CYP3A Activity: Literature Review and Critical Evaluation. *J Clin Pharmacol*. 2019 Feb 12. doi: 10.1002/jcph.1391. [Epub ahead of print]

Pinelli NR, Sease JM, Nola K, Kyle JA, Heldenbrand SD, **Penzak SR**, Ginsburg DB. The Importance of Authentic Leadership to all Generations Represented within Academic Pharmacy. *Am J Pharm Educ*. 2018 Aug;82(6):6694.

Kibathi LW, Bae S, **Penzak SR**, Kumar P. Potential Influence of Centrally Acting Herbal Drugs on Transporters at the Blood-Cerebrospinal Fluid Barrier and Blood-Brain Barrier. *Eur J Drug Metab Pharmacokinet*. 2018 Dec;43(6):619-635.

Lee JH, Moriyama B, Henning SA, Danner RL, Walsh TJ, **Penzak SR**, Grimes GJ, Potti GK. Stability of isoniazid injection in i.v. solutions. *Am J Health Syst Pharm*. 2018 May 15;75(10):622-626.

Kasule J, Gabriel EE, Anok A, Neal J, Eastman RT, **Penzak S**, Newell K, Serwadda D, Duffy PE, Reynolds SJ, Hobbs CV. Sulfamethoxazole Levels in HIV-Exposed Uninfected Ugandan Children. *Am J Trop Med Hyg*. 2018 Jun;98(6):1718-1721.

Yang J, Patel M, Nikanjam M, Capparelli EV, Tsunoda SM, Greenberg HE, **Penzak SR**, Aubrey Stoch S, Bertino JS Jr, Nafziger AN, Ma JD. Midazolam Single Time Point Concentrations to Estimate Exposure and Cytochrome P450 (CYP) 3A Constitutive Activity Utilizing Limited Sampling Strategy With a Population Pharmacokinetic Approach. *J Clin Pharmacol*. 2018 Sep;58(9):1205-1213.

Jann MW, **Penzak SR**. Long-Acting Injectable Second-Generation Antipsychotics: An Update and Comparison Between Agents. *CNS Drugs*. 2018 Mar;32(3):241-257. doi: 10.1007/s40263-018-0508-6. Review. Erratum in: *CNS Drugs*. 2018 Jun;32(6):603.

Kumar P, Gordon LA, Brooks KM, George JM, Kellogg A, McManus M, Alfaro RM, Nghiem K, Lozier J, Hadigan C, **Penzak SR**. Differential Influence of the Antiretroviral Pharmacokinetic Enhancers Ritonavir and Cobicistat on Intestinal P-glycoprotein Transport and the Pharmacokinetic/Pharmacodynamic Disposition of Dabigatran. *Antimicrob Agents Chemother*. 2017 Oct 24;61(11).

Walsh TJ, Moriyama B, **Penzak SR**, Klein TE, Caudle KE. Response to "Impact of CYP3A4 Genotype on Voriconazole Exposure: New Insights Into the Contribution of CYP3A4*22 to Metabolism of Voriconazole. *Clin Pharmacol Ther*. 2018 Feb;103(2):187.

Walsh TJ, Moriyama B, **Penzak SR**, Klein TE, Caudle KE. Response to Impact of CYP3A4 Genotype on Voriconazole Exposure - New Insights into the Contribution of CYP3A4*22 to Metabolism of Voriconazole. *Clin Pharmacol Ther.* 2017 Aug 8. doi: 10.1002/cpt.811. [Epub ahead of print]

Walsh TJ, Moriyama B, **Penzak SR**, Klein TE, Caudle KE. Response to "Pharmacogenetics of Voriconazole: CYP2C19 but Also CYP3A4 Need to Be Genotyped" - The Role of CYP3A4 and CYP3A5 Polymorphisms in Clinical Pharmacokinetics of Voriconazole. *Clin Pharmacol Ther.* 2017 Aug;102(2):190. doi: 10.1002/cpt.681. Epub 2017 Apr 29.

Jancel T, Shaw PA, Hallahan CW, Kim T, Freeman AF, Holland SM, **Penzak SR**. Therapeutic drug monitoring of posaconazole oral suspension in paediatric patients younger than 13 years of age: a retrospective analysis and literature review. *J Clin Pharm Ther.* 2016 Dec 16. doi: 10.1111/jcpt.12483. [Epub ahead of print]

Moriyama B, Obeng AO, Barbarino J, **Penzak SR**, Henning SA, Scott SA, Agúndez JA, Wingard JR, McLeod HL, Klein TE, Cross S, Caudle KE, Walsh TJ. Clinical Pharmacogenetics Implementation Consortium (CPIC®) Guideline for CYP2C19 and Voriconazole Therapy. *Clin Pharmacol Ther.* 2016 Dec 16. doi: 10.1002/cpt.583. [Epub ahead of print]

Gordon LA, Kumar P, Brooks KM, Kellogg A, McManus M, Alfaro RM, Nghiem K, George JM, Lozier J, **Penzak SR**, Hadigan C. Antiretroviral Boosting Agent Cobicistat Increases the Pharmacokinetic Exposure and Anticoagulant Effect of Dabigatran in HIV-Negative Healthy Volunteers. *Circulation* 2016;134:1909-1911.

Ramanathan MR, Penzak SR. Pharmacokinetic Drug Interactions with Panax ginseng. *Eur J Drug Metab Pharmacokinet.* 2016 Nov 18. [Epub ahead of print] Review

Guo S, Pham K, Li D, **Penzak SR**, Dong X. Novel in situ self-assembly nanoparticles for formulating a poorly water-soluble drug in oral solid granules, improving stability, palatability, and bioavailability. *International Journal of Nanomedicine.* 2016;11;1-10.

Ahlman MA, Raman FS, Pang J, Zemrak F, Sandfort V, **Penzak SR**, Fan Z, Liu S, Li D, Bluemke DA. Part 2 - Coronary angiography with gadofosveset trisodium: a prospective intra-subject comparison for dose optimization for 100 % efficiency imaging. *BMC Cardiovasc Disord.* 2016 Mar 22;16(1):58. doi: 10.1186/s12872-015-0152-8.

Pham K, Li D, Guo S, **Penzak SR**, Dong X. Development and in vivo evaluation of child-friendly lopinavir/ritonavir pediatric granules utilizing novel in situ self-assembly nanoparticles. *J Control Release.* 2016 Mar 28;226:88-97. doi: 10.1016/j.jconrel.2016.02.001. Epub 2016 Feb 2.

LA Gordon, CY Malati, C Hadigan, M McLaughlin M3, RM Alfaro, MM Calderón, JA Kovacs JA, **SR Penzak**. Influence of Lopinavir/ritonavir and Ritonavir Alone on the Pharmacokinetics of Fenofibric Acid in Healthy Volunteers. *Pharmacotherapy* 2016 Jan;36(1):49-56. doi: 10.1002/phar.1682.

Penzak SR and Calderón M, Pau AK, Kumar P, McManus ME, Alfaro RM, Kovacs JA. Efavirenz (EFV) but not Atazanavir/ritonavir (ATV/r) Significantly Reduces Atovaquone Concentrations in HIV-infected Subjects. *Clin Infect Dis* 2016 doi: 10.1093/cid/ciw028.

Ahlman MA, Raman FS, **Penzak SR** et al. Part 1 - Coronary angiography with gadofosveset trisodium: a prospective feasibility study evaluating injection techniques for steady-state imaging. *BMC Cardiovasc Disord.* 2015 Dec 22;15(1):177.

Calderón MM, Chairez CL, Gordon LA, Alfaro RM, Kovacs JA, **Penzak SR**. Influence of Panax ginseng on the steady state pharmacokinetic profile of lopinavir-ritonavir in healthy volunteers. *Pharmacotherapy.* 2014 Nov;34(11):1151-8. doi: 10.1002/phar.1473. Epub 2014 Aug 20.

Moriyama B, Kadri S, Henning SA, Danner RL, Walsh TJ, **Penzak SR**. Therapeutic Drug Monitoring and Genotypic Screening in the Clinical Use of Voriconazole. *Curr Fungal Infect Rep.* 2015 Jun;9(2):74-87.

Hobbs CV, Dixit S, **Penzak SR**, Sahu T, Orr-Gonzalez S, Lambert L, Zeleski K, Chen J, Neal J, Borkowsky W, Wu Y, Duffy PE. Neither the HIV protease inhibitor lopinavir-ritonavir nor the antimicrobial trimethoprim-sulfamethoxazole prevent malaria relapse in plasmodium cynomolgi-infected non-human primates. *PLoS One.* 2014 Dec 26;9(12):e115506. doi: 10.1371/journal.pone.0115506.

Hobbs CV, Neal J, Conteh S, Donnelly L, Chen J, Marsh K, Lambert L, Orr-Gonzalez S, Hinderer J, Healy S, Borkowsky W, **Penzak SR** Chakravarty S, Hoffman SL, Duffy PE. HIV treatments reduce malaria liver stage burden in a non-human primate model of malaria infection at clinically relevant concentrations in vivo. *PLoS One.* 2014 Jul 2;9(7):e100138. doi: 10.1371/journal.pone.0100138.

Ko SY, Pegu A, Rudicell RS, Yang ZY, Joyce MG, Chen X, Wang K, Bao S, Kraemer TD, Rath T, Zeng M, Schmidt SD, Todd JP, **Penzak SR**, Saunders KO, Nason MC, Haase AT, Rao SS, Blumberg RS, Mascola JR, Nabel GJ. Enhanced neonatal Fc receptor function improves protection against primate SHIV infection. *Nature.* 2014 Oct 30;514(7524):642-5. doi: 10.1038/nature13612.

Hobbs CV, De La Vega P, **Penzak SR**, Van Vliet J, Krzych U, Sinnis P, Borkowsky W, Duffy PE. The effect of antiretrovirals on Plasmodium falciparum liver stages. *AIDS.* 2013 Jun 19;27(10):1674-7.

Boyd SD, Hadigan C, McManus M, Chairez C, Nieman LK, Pau AK, Alfaro RM, Kovacs JA, Calderon MM, **Penzak SR**. Influence of Low-dose Ritonavir With and Without Darunavir on the Pharmacokinetics and Pharmacodynamics of Inhaled Beclomethasone. *J Acquir Immune Defic Syndr.* 2013 Jul 1;63(3):355-61.

Moriyama B, Jarosinski PF, Figg WD, Henning SA, Danner RL, **Penzak SR**, Wayne AS, Walsh TJ. Pharmacokinetics of intravenous voriconazole in obese patients: implications of CYP2C19 homozygous poor metabolizer genotype. *Pharmacotherapy.* 2013 Mar;33(3):e19-22.

Hobbs CV, Voza T, De La Vega P, Vanvliet J, Conteh S, **Penzak SR**, Fay MP, Anders N, Ilmet T, Li Y, Borkowsky W, Krzych U, Duffy PE, Sinnis P. HIV nonnucleoside reverse transcriptase inhibitors and trimethoprim-sulfamethoxazole inhibit plasmodium liver stages. *J Infect Dis*. 2012 Dec 1;206(11):1706-14. doi: 10.1093/infdis/jis602.

Moriyama B, Henning SA, **Penzak SR**, Walsh TJ. The postantifungal and paradoxical effects of echinocandins against *Candida* spp. *Future Microbiol*. 2012 May;7(5):565-9. doi: 10.2217/fmb.12

Pau AK, **Penzak SR**, Boyd SD, McLaughlin M, Morse CG. Impaired maraviroc and raltegravir clearance in a human immunodeficiency virus-infected patient with end-stage liver disease and renal impairment: a management dilemma. *Pharmacotherapy*. 2012 Jan;32(1):e1-6. doi: 10.1002/PHAR.1003.

Jann MW, Spratlin V, Momary K, Zhang H, Turner D, **Penzak SR**, Wright A, Vandenberg C. Lack of a pharmacokinetic drug-drug interaction with venlafaxine extended-release/indinavir and desvenlafaxine extended-release/indinavir. *Eur J Clin Pharmacol*. 2011 Dec 16. [Epub ahead of print]

Moriyama B, Henning SA, Leung J, Falade-Nwulia O, Jarosinski P, **Penzak SR**, Walsh TJ. Adverse interactions between antifungal azoles and vincristine: review and analysis of cases. *Mycoses*. 2011 Nov 29. doi: 10.1111/j.1439-0507.2011.02158.x. [Epub ahead of print]

McDermott DH, Liu Q, Ulrick J, Kwatema N, Anaya-O'Brien S, **Penzak SR**, Oliveira Filho J, Long Priel DA, Kelly C, Garofalo M, Littel P, Marquesen MM, Hilligoss D, Decastro R, Fleisher TA, Kuhns DB, Malech HL, Murphy PM. The CXCR4 antagonist plerixafor corrects panleukopenia in patients with WHIM syndrome. *Blood*. 2011 Sep 2. [Epub ahead of print]

Malati CY, Robertson SM, Hunt JD, Chairez C, Alfaro RM, Kovacs JA, **Penzak SR**. Influence of Panax ginseng on Cytochrome P450 (CYP)3A and P-glycoprotein (P-gp) Activity in Healthy Participants. *J Clin Pharmacol*. 2011 Jun 6. [Epub ahead of print]

Moriyama B, Falade-Nwulia O, Leung J, **Penzak SR**, Jjing C, Huang X, Henning SA, Wilson WH, Walsh TJ. Prolonged half-life of voriconazole in a CYP2C19 homozygous poor metabolizer receiving vincristine chemotherapy: avoiding a serious adverse drug interaction. *Mycoses*. 2011 Nov;54(6):e877-9.

Musselwhite LW, Sheikh V, Norton TD, Rupert A, Porter BO, **Penzak SR**, Skinner J, Mican JM, Hadigan C, Sereti I. Markers of endothelial dysfunction, coagulation and tissue fibrosis independently predict venous thromboembolism in HIV. *AIDS*. 2011 Mar 27;25(6):787-95.

Moriyama B, Ditullio M, Wilson E, Henning SA, **Penzak SR**, Danner RL, Pennick G, Rinaldi MG, Zelazny AM, Gea-Banacloche J, Barrett AJ, Walsh TJ. Pharmacokinetics of anidulafungin in pleural fluid during the treatment of a patient with *Candida* empyema. *Antimicrob Agents Chemother*. 2011 May;55(5):2478-80. Epub 2011 Mar 14.

Ma JD, Nguyen ET, Tsunoda SM, Greenberg HE, Gorski JC, **Penzak SR**, Lee LS. Assessment of oral midazolam limited sampling strategies to predict area under the concentration time curve (AUC) during cytochrome P450 (CYP) 3A baseline, inhibition and induction or activation. *Int J Clin Pharmacol Ther*. 2010 Dec;48(12):847-53.

Penzak SR, Robertson SM, Hunt JD, Chairez C, Malati CY, Alfaro RM, Stevenson JM, Kovacs JA. Echinacea purpurea Significantly Induces Cytochrome P450 3A Activity but Does Not Alter Lopinavir-Ritonavir Exposure in Healthy Subjects. *Pharmacotherapy*. 2010 Aug;30(8):797-805.

Jancel T, **Penzak SR**. Antiviral therapy in patients with hematologic malignancies, transplantation, and aplastic anemia. *Semin Hematol*. 2009 Jul;46(3):230-47.

Busse KH, Hadigan C, Chairez C, Alfaro RM, Formentini E, Kovacs JA, **Penzak SR**. Gemfibrozil Concentrations Are Significantly Decreased in the Presence of Lopinavir-Ritonavir. *J Acquir Immune Defic Syndr*. 2009;52:235-239.

Celi FS, Zemskova M, Linderman JD, Babar NI, Skarulis MC, Csako G, Wesley R, Costello R, **Penzak SR**, Pucino F. The pharmacodynamic equivalence of levothyroxine and liothyronine. A randomized, double blind, cross-over study in thyroidectomized patients. *Clin Endocrinol (Oxf)*. 2009 Sep 10. [Epub ahead of print]

Estes KE, **Penzak SR**, Calis KA, Walsh TJ. Pharmacology and antifungal properties of anidulafungin, a new echinocandin *Pharmacotherapy*. 2009 Jan;29(1):17-30.

Robertson SM, Maldarelli F, Natarajan V, Formentini E, Alfaro RM, **Penzak SR**. Efavirenz Induces CYP2B6-Mediated Hydroxylation of Bupropion in Healthy Subjects. *J Acquir Immune Defic Syndr*. 2008 Dec 15;49(5):513-9

Busse KH, **Penzak SR**. Pharmacological enhancement of protease inhibitors with ritonavir: an update. *Exp Rev of Clin Pharmacol*. July 2008, Vol. 1, No. 4, Pages 533-545.

Busse KH, Formentini E, Alfaro RM, Kovacs JA, **Penzak SR**. Influence of Antiretroviral Drugs on the Pharmacokinetics of Prednisolone in HIV-Infected Individuals. *J Acquir Immune Defic Syndr*. 2008 Aug 15;48(5):561-6.

Holodniy M, **Penzak SR**, Straight TM, Davey RT, Lee KK, Goetz MB, Raisch DW, Cunningham F, Lin ET, Olivo N, Deyton LR. Pharmacokinetics and Tolerability of Oseltamivir (Tamiflu(R)) Combined with Probenecid. *Antimicrob Agents Chemother*. 2008 Jun 16. [Epub ahead of print]

Chamberlain CE, **Penzak SR**, Alfaro RM, Wesley R, Daniels CE, Hale D, Kirk AD, Mannon RB. Pharmacokinetics of low and maintenance dose valganciclovir in kidney transplant recipients. *Am J Transplant*. 2008 Jun;8(6):1297-302. Epub 2008 Apr 29.

Penzak SR, Busse KH, Robertson SM, Formentini E, Alfaro RM, Davey RT Jr. Limitations of using a single postdose midazolam concentration to predict CYP3A-mediated drug interactions. *J Clin Pharmacol*. 2008 Jun;48(6):671-80. Epub 2008 Apr 16.

Gubbins PO, Gurley BJ, Williams DK, **Penzak SR**, McConnell SA, Franks AM, Saccente M. Examining sex-related differences in enteric itraconazole metabolism in healthy adults using grapefruit juice. *Eur J Clin Pharmacol*. 2008 Mar;64(3):293-301.

Robertson SM, Davey RT, Voell J, Formentini E, Alfaro RM, **Penzak SR**. Effect of Ginkgo biloba extract on lopinavir, midazolam and fexofenadine pharmacokinetics in healthy subjects. *Curr Med Res Opin*. 2008 Feb;24(2):591-9.

Robertson SM, **Penzak SR**, Pau A. Drug interactions in the management of HIV infection: an update. *Expert Opin Pharmacother*. 2007 Dec;8(17):2947-63
2008 Feb;24(2):591-9.

Estes KE, Busse KH, **Penzak SR**. Pharmacogenomic considerations in the management of HIV infection. *J J Pharm Prac*, Vol. 20, No. 3, 234-245 (2007)

Rao VK, Dowdell KC, Dale JK, Dugan F, Pesnicak L, Bi LL, Hoffmann V, **Penzak S**, Avila NA, Fleisher TA, Puck JM, Straus SE. Pyrimethamine treatment does not ameliorate lymphoproliferation or autoimmune disease in MRL/lpr^{-/-} mice or in patients with autoimmune lymphoproliferative syndrome. *Am J Hematol*. 2007 Aug 2;

Cho ME, Smith DC, Branton MH, **Penzak SR**, Kopp JB. Pirfenidone slows renal function decline in patients with focal segmental glomerulosclerosis. *Clin J Am Soc Nephrol*. 2007 Sep;2(5):906-13. Epub 2007 Aug 16.

Di Prospero NA, Sumner CJ, **Penzak SR**, Ravina B, Fischbeck KH, Taylor JP. Safety, tolerability, and pharmacokinetics of high-dose idebenone in patients with Friedreich ataxia. *Arch Neurol*. 2007 Jun;64(6):803-8.

Busse K, **Penzak SR**. Darunavir: a second-generation protease inhibitor. *Am J Health Syst Pharm*. 2007 Aug 1;64(15):1593-602.

Roedler R, Neuhauser MM, **Penzak SR**. Does Metronidazole Interact with CYP3A Substrates by Inhibiting Their Metabolism Through This Metabolic Pathway? Or Should Other Mechanisms Be Considered? *Ann Pharmacother*. 2007 Mar 20; [Epub ahead of print]

Penzak S, Kabuye G, Mugenyi P, Mbamanya F, Natarajan V, Alfaro R, Kityo C, Formentini E, Masur H. Cytochrome P450 2B6 (CYP2B6) G516T influences nevirapine plasma concentrations in HIV-infected patients in Uganda. *HIV Med*. 2007 Mar;8(2):86-91.

Goldbach-Mansky R, Dailey NJ, Canna SW, Gelabert A, Jones J, Rubin BI, Kim HJ, Brewer C, Zalewski C, Wiggs E, Hill S, Turner ML, Karp BI, Aksentijevich I, Pucino F, **Penzak SR**, Haverkamp MH, Stein L, Adams BS, Moore TL, Fuhlbrigge RC, Shaham B, Jarvis JN, O'Neil K, Vehe RK, Beitz LO, Gardner G, Hannan WP, Warren RW, Horn W, Cole JL, Paul SM, Hawkins PN, Pham TH, Snyder C, Wesley RA, Hoffmann SC, Holland SM, Butman JA, Kastner DL.

Neonatal-onset multisystem inflammatory disease responsive to interleukin-1beta inhibition. *N Engl J Med* 2006 Aug 10;355(6):581-92.

Robertson SM, Formentini E, Alfaro RM, Falloon J, **Penzak SR**. Lack of in vivo correlation between indinavir and saquinavir exposure and cytochrome P450 3A phenotype as assessed with oral midazolam as a phenotype probe *Pharmacotherapy* 2006 Aug;26(8):1051-9.

Robertson SM, Falloon J, Formentini E, Alfaro RM, **Penzak SR**. Lack of sex-related differences in saquinavir pharmacokinetics in an HIV seronegative cohort *Br J Clin Pharmacol.* 2006;61:379-88.

Gubbins PO, Krishna G, Sansone-Parsons A, **Penzak SR**, Dong L, Martinho M, Anaissie EJ. Pharmacokinetics and safety of oral posaconazole in neutropenic stem cell transplant recipients. *Antimicrob Agents Chemother.* 2006 Jun;50(6):1993-9.

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Abstracts

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Penzak SR, Acosta E, Tavel J, Turner M, Masur H. Quality-Control Analysis Of Generic Nevirapine Formulations In The Developing World: An Initial Report. 4th International Workshop on Clinical Pharmacology of HIV Therapy March 27-29, 2003. Cannes, France [abstract 1.1].

Penzak S, Tavel J, Acosta E, Turner M, Masur H. Quality-Control Analysis Of Generic Nevirapine Formulations In The Developing World: An Initial Report. 10th Conference on Retroviruses and Opportunistic Infections, February 2003; Boston, Mass. [Abstract 549a]

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Shirley KL, Hon YY, **Penzak SR**, Lam FYW, Jann MW. Correlation of CYP1A2 Activity with Olanzapine Disposition in Healthy Volunteers. College of Psychiatric and Neurologic Pharmacists. April 18-21, 2002. Seattle, Washington. [Abstract 10].

Shirley KL, Hon YY, **Penzak SR**, Lam FYW, Jann MW. Correlation of cytochrome P450 1A2 activity with olanzapine disposition in healthy volunteers. American College of Clinical Pharmacy, April 9, 2002; Savannah, GA. [Abstract 97].

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Gubbins PO, Melchert RB, McConnell SA, Franks AH, **Penzak SR**, Gurley BJ. The Effect of Interleukin-6 on the Hepatic Metabolism of Itraconazole and its Metabolite Hydroxyitraconazole. American College of Clinical Pharmacy (ACCP). Los Angeles, CA. November 7, 2000. Presentation # 208.

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Penzak SR, Chuck SK, Stajich GV. HMG-CoA Reductase Inhibitors (Statins) for the Treatment of Protease Inhibitor (PI)-associated Hyperlipidemia. American College of Clinical Pharmacy (ACCP) Spring Practice and Research Forum. April 2-5, 2000; Monterey, California.

Gubbins PO, McConnell SA, Gurley BJ, Franks AM, **Penzak SR**, Saccente M. Effect of Grapefruit Juice on the Systemic Availability of Itraconazole Oral Solution in Healthy Adults. [abstract 236] Presented at the American College of Clinical Pharmacy 1999 Annual Meeting. October 24-27, 1999; Kansas City, Missouri.

Penzak SR, Chuck SK, Stajich GV. Efficacy and Safety of HMG-CoA Reductase Inhibitors (Statins) for the Treatment of Protease Inhibitor (PI)-related Hyperlipidemia: a Retrospective Analysis. [abstract 1297] In: Programs and Abstracts of the 39th Interscience Conference of Antimicrobial Agents and Chemotherapy, 27 September, 1999; San Francisco, California.

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Gubbins PO, **Penzak SR**, Polston S, Anaissie EJ, McDonnell RW. Identification of Variables to Estimate the Risk of Amphotericin B (AmB)-Induced Nephrotoxicity in the Multiple Myeloma (MM) Bone Marrow Transplantation (BMT) Population. [abstract J-105] In: Programs and Abstracts of the 38th Interscience Conference of Antimicrobial Agents and Chemotherapy, 26 September, 1998; San Diego, California

Vartivarian S, Cacek T, Aslan T, Donnelly JP, Ippolity C, **Penzak SR**, Anaissie EJ. Decreased Bioavailability of Ciprofloxacin in Cancer patients Experiencing Mucositis: Implications for Prophylaxis. [abstract A-102] In: Programs and Abstracts of the 38th Interscience Conference of Antimicrobial Agents and Chemotherapy, 26 September, 1998; San Diego, California

Penzak SR, Gubbins PO, Gurley BJ, Wang PL, Saccente M. Effect of Grapefruit Juice on the Systemic Availability of Itraconazole (ITZ) Capsules. [abstract] American Association of Pharmaceutical Scientists Southern Regional Discussion Group (AAPS-SRDG), 28-29 May, 1998; Oxford, Mississippi.

Penzak SR, Gubbins PO, Anaissie EJ, McDonnell RW, Owens S. Epidemiological Investigation of a Gram-negative (GN) Outbreak Among Cancer Patients. [abstract J-213] In: Programs and Abstracts of the 37th Interscience Conference of Antimicrobial Agents and Chemotherapy, 17 September, 1997; Toronto, Canada
Anaissie EJ, Darwiche R, Monson TP, **Penzak SR**, Stratton SL.

Anaissie EJ, Monson TP, **Penzak SR**, Stratton SL. Vancomycin-resistant Enterococci (VRE) in Hospital Water Systems: a Multi-center Evaluation. [abstract J-78] In: Programs and Abstracts of the 37th Interscience Conference of Antimicrobial Agents and Chemotherapy, 17 September, 1997; Toronto, Canada

Anaissie EJ, Monson TP, **Penzak SR**, Stratton SL. Opportunistic Fungi Recovered from Hospital Water Systems. [J-93] In: Programs and Abstracts of the 37th Interscience Conference of Antimicrobial Agents and Chemotherapy, 17 September, 1997; Toronto, Canada

Penzak SR, Mercier RC, Rybak MJ. In vitro Activity of Investigational Antibiotics Alone and in Combinations Against Vancomycin-Resistant *Enterococcus faecium* (VREF). [abstract F-207] In: Programs and Abstracts of the 36th Interscience Conference of Antimicrobial Agents and Chemotherapy, 17 September, 1996; New Orleans, LA

Penzak SR, Mallayasamy, Surulivelrajan. Interactions between herbs and anti-infective medications. In: Piscitelli SC, Rodvold KA, Eds. Drug Interactions in Infectious Diseases Totowa, New Jersey: Humana Press Inc; Fourth edition (manuscript in preparation)

Moriyama B, Obeng AO, Barbarino J, **Penzak SR** et al. Clinical Pharmacogenetics Implementation Consortium (CPIC®) Guideline for *CYP2C19* and Voriconazole Dosing. Clin Pharmacol Ther (under peer review)

Ramanathan M, **Penzak SR**. Drug Interactions with Panax Ginseng. European Journal of Drug Metabolism and Pharmacokinetics (manuscript in preparation)

Recent (2014 – present) Funded Research Support

Trends in the Use of IV Iron and ESAs under the Prospective Payment System: ESRD Commercial and Medicare Populations

Keryx Pharmaceuticals

Direct Costs: \$76,500

Status: Active

Role: co-investigator (PI: Dr. Annesha White)

Past Extramural Research Funding as Principal Investigator

2001-2014: Intramural funding (~100 K per year) + in-kind funding.

Past Extramural Research Funding as Principal Investigator

Effects of Intestinal Cytochrome P450 (CYP) 3A4 and P-glycoprotein on the Systemic Availability of the HIV Protease Inhibitor Indinavir

American Association of Colleges of Pharmacy (AACP) New Investigators Program (NIP)

Year: 1999

Direct Costs: \$ 10,000

Role: PI

Influence of the HIV Protease Inhibitor Ritonavir, on the Pharmacokinetics and of Olanzapine (Zyprexa)

Lilly Research Laboratories. \$ 29,436

Year: 2000

Direct Costs: \$ 29,436

Role: PI

Development of a Rapid and Sensitive HPLC Assay for Ritonavir in Human Plasma

Solvay Summer Research Program

Year: 2000

Direct Costs: \$ 4,100.00

Role: PI

Influence of MDR1 Genotype on HIV Protease Inhibitor Pharmacokinetics

American College of Clinical Pharmacy (ACCP) Investigator Development Research Award (OrthoBiotech Pharmacogenomics Research Award)

Year: 2003 – 2004

Direct Costs: \$12,500

Role: PI

Therapeutic Drug Monitoring of Antiretroviral medications in conjunction with ultra-sensitive HIV-RNA quantitation

Intramural AIDS Targeted Anti-viral Program (IATAP) Major Capital Equipment Award

Year: 2004

Direct Cost: \$350,280

Role: PI

Influence of Low-dose Ritonavir on the Pharmacokinetics of the P-glycoprotein Substrate Digoxin in Healthy Volunteers.” Society of Infectious Diseases Pharmacists

Society of Infectious Disease Pharmacists (SIDP)

Year: 2001 – 2002

Direct Costs: \$14,000

Role: PI

IV. Service

Professional Affiliations

Dates

1994 – Present:

1995 – 2002

1996 – Present

1998 – 2000

2000 – Present

2000 – Present:

2000 – Present

Organization

American College of Clinical Pharmacy (ACCP)

American Society of Health Systems Pharmacists (ASHP)

Society of Infectious Disease Pharmacists (SIDP)

- Government Committee: 2001-2
- Government Committee (Chair): 2002-3
- Government Committee (Chair): 2003-4

American Association of Colleges of Pharmacy

American College of Clinical Pharmacology

Kappa Psi Pharmaceutical Fraternity, Gamma Psi Chapter (Faculty Advisor 2001-2002)

Christian Pharmacists Fellowship International

2014 – Present	American Association of Colleges of Pharmacy
2014 – Present	Texas Pharmacists Association (TPA)

System College of Pharmacy Committees

<u>Dates</u>	<u>Committee</u>	<u>Role</u>
2014	Ad Hoc Student Scholarship Committee	Member
2014 – 2015	Dept. of Pharmacotherapy Search Committee	Chair
2014 – 2015	Curriculum Committee	Member
2015 – 2016	Curriculum Committee	Chair
2014 – 2015	Admissions Committee	Member
2014 – 2015	Graduate Programs Committee	Member
2015 – 2016	Self-Study Subsection: curriculum	Chair
2015 – 2016	Admissions Committee	Member
2016 – 2017	Student Performance Committee	Member
2016 – 2017	Self Study Subcommittee: Organization & Process	Chair
2016 – 2017	Admissions Committee	Member
2016-2017	UNTHSC SCP Promotion and Tenure Committee	Member

UNTHSC Committees

<u>Dates</u>	<u>Committee</u>	<u>Role</u>
2014	UNTHSC Values Focus Group	Member
2014 – 2015	UNTHSC Institutional Review Board (IRB)	Member/Vice Chair
2015 – Present	UNTHSC Institutional Review Board (IRB)	Chair
2015	Search Committee for People Development Advisor	Member
2015 – Present	Office of the President, Faculty Roundtable Committee	Member

UNTHSC SCP-related Community Events

<u>Date</u>	<u>Event</u>	<u>Role</u>
2014	Department of Transportation (DOT) Health and Safety Fair	Preceptor
2015	Handley Meadowbrook Health Screening	Preceptor
2014	Area Health Organization Education Center (AHEC) Pharmacy Compounding Exercise	Presenter

Editorial Board Membership

<u>Dates</u>	<u>Journal</u>
2005 – Present	Journal of Clinical Pharmacology
2006 – Present	Pharmacotherapy
2014 – Present	European Journal of Drug Metabolism and Pharmacokinetics
2015 – Present	International Journal of Pharmacokinetics

Manuscript Review Experience (not all inclusive)

AIDS

Annals of Pharmacotherapy

Antimicrobial Agents and Chemotherapy

American Journal of Health-Systems Pharmacy

British Journal of Clinical Pharmacology

Clinical Infectious Disease

Clinical Pharmacology and Therapeutics

Current Drug Metabolism

Drugs and Aging

European Journal of Drug Metabolism and Pharmacokinetics

International Journal of Pharmacokinetics

Journal of Clinical Pharmacology

Journal of the Acquired Immunodeficiency Syndrome

Therapeutic Drug Monitoring

Xenobiotica

External Grant Review Experience and Professional Expertise Panels

<u>Date</u>	<u>Organization</u>
2004	USP Drug Quality and Information Expert Panel Member
2004	NIH Inter-Institute Program for the Development of AIDS-Related Therapeutics
2005	NIH: AIDS, Clinical Studies, & Epidemiology (ACE) Study Section
2010	NIH: AIDS, Clinical Studies, & Epidemiology (ACE) Study Section
2014	NIH: AIDS, Clinical Studies, & Epidemiology (ACE) Study Section
2015	NIH: AIDS, Clinical Studies, & Epidemiology (ACE) Study Section
2016	Clinical Pharmacogenetics Implementation Consortium (CPIC®) Guideline for <i>CYP2C19</i> and Voriconazole Dosing