Updated on May 14, 2026

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EDUCATION AND TRAINING

2004 - 2008 **Postdoctoral Fellow, Pharmacogenomics & Pharmacokinetics**
Department of Pharmaceutical and Biomedical Sciences
College of Pharmacy, Medical University of South Carolina
Charleston, SC

2001 - 2004 **Doctor of Philosophy, Pharmacology**
Department of Pharmacology, School of Pharmacy
China Pharmaceutical University,
Nanjing, China

2000 - 2003 **Master of Business Administration (MBA)**
School of Business, Nanjing University
Nanjing, China

1998 - 2001 **Master of Science, Pharmacology**
Department of Pharmacology, School of Pharmacy
China Pharmaceutical University,
Nanjing, China

1991 - 1994 **Pharmacy Diploma (College level)**
China Pharmaceutical University
Nanjing, China

1990 - 1991 **Residency Training in Dental Medicine**
Yangzhou University, Subei Hospital
Yangzhou, China

1986 - 1989 **Pharmacy Diploma (Entry level)**
Qidong Health School, Qidong, China

PROFESSIONAL AND ACADEMIC POSITIONS

2023 – **Professor with Tenure**
Department of Clinical Pharmacy
University of Michigan College of Pharmacy, Ann Arbor, MI

2017 – 2023 **Associate Professor with Tenure**
Department of Clinical Pharmacy
University of Michigan College of Pharmacy, Ann Arbor, MI

2013 – 2017 **Assistant Professor**
Department of Clinical Pharmacy
University of Michigan College of Pharmacy, Ann Arbor, MI

2009 – 2013 **Research Assistant Professor**
Center for Pharmacogenomics
Department of Pharmacotherapy and Translational Research
University of Florida College of Pharmacy, Gainesville, FL

2008 – 2009 **Research Assistant Professor**
Department of Pharmaceutical and Biomedical Sciences
Medical University of South Carolina College of Pharmacy, Charleston, SC

2004 – 2008 **Postdoctoral Fellow**
Laboratory of Drug Disposition and Pharmacogenetics
Medical University of South Carolina College of Pharmacy, Charleston, SC

2004 **Research Associate**
Department of Chemistry
Jackson State University, Jackson, MS

1998 – 2004 **Graduate Research Assistant**
Department of Pharmacology
China Pharmaceutical University College of Pharmacy, Nanjing, China

1995 – 1998 **Marketing Manager of Jiangsu Branch**
Qidong Gaitianli Pharmaceutical Co., Ltd
Qidong, China

1991 – 1995 **Dentist**
Xiaoji Central Hospital
Yangzhou, China

1990 – 1991 **Resident in Dental Medicine**
Subei Hospital, Yangzhou University
Yangzhou, China

1989 – 1990 **Pharmacist**
Xiaoji Central Hospital
Yangzhou, China

RESEARCH

PEER-REVIEWED PUBLICATIONS (* denotes corresponding authorship, ^ denotes post-doctoral fellows, # denotes Ph.D. students, @ denotes Pharm.D. students who were trainees, & denotes other trainees (e.g., Master and undergraduate students) in my lab when the papers were published)

1. Xia Z, Yu H, Park JM, **Zhu HJ***. Comparing Whole-Blood and Plasma Tacrolimus Intra-Patient Variability for Predicting Allograft Rejection in Kidney Transplantation. Clin Transl Sci. 2026 Apr;19(4):e70543. doi: 10.1111/cts.70543. PMID: 41992742; PMCID: PMC13087444.
2. Yu H, Qin Z, Smith LS, Park JM, **Zhu HJ***. Mechanism-informed machine learning for individualized tacrolimus dose adjustment in the early post-kidney transplant period. Br J Clin Pharmacol. 2026 Jan 13. doi: 10.1002/bcp.70448. Epub ahead of print. PMID: 41531243.
3. Xu M, Yuan X, Li P, Bach T, Zhu HJ, An G. Target Abundance in Pharmacological Target-Mediated Drug Disposition (TMDD) for Small Molecules - A Proteomics Approach. AAPS J. 2026 Jan 6;28(1):45. doi: 10.1208/s12248-025-01182-y. PMID: 41495534.
4. Norton N, Larson NB, Jenkins GD, Beumer JH, Langevin B, Gobbaru J, Morris MJ, Nakamura Y, Kroetz DL, Zhu HJ, O'Donnell PH, Lewis LD, Hertz DL. Association of SULT2A1 Locus With Abiraterone Clearance in the Alliance A031201: Randomized Phase III Study of Enzalutamide Compared With Enzalutamide Plus Abiraterone for Metastatic Castration-Resistant Prostate Cancer. Clin Transl Sci. 2025 Dec;18(12):e70425. doi: 10.1111/cts.70425. PMID: 41346252; PMCID: PMC12678863.
5. Zhang Q, Melchert PW, Awad A, McCurdy CR, Krone B, Newcorn J, Froehlich TE, Stein MA, Raeuscher J, Zhu HJ, Markowitz JS. Increased Plasma Concentrations of 6-oxo-Methylphenidate in CES1 G134E Carriers Following a Single Oral Dose of Methylphenidate. Med Chem Res. 2025 Nov;34(11):2318-2327. doi: 10.1007/s00044-025-03477-3. Epub 2025 Oct 2. PMID: 41567292; PMCID: PMC12818952.
6. Jung SM, Shi J, Wang X, **Zhu HJ***. Differential protein expressions of hepatic drug-metabolizing enzymes between White and Black Americans and the associated genetic polymorphisms. Drug Metab Dispos. 2025 Aug;53(8):100121. doi: 10.1016/j.dmd.2025.100121. Epub 2025 Jul 12. PMID: 40753786.
7. Yu H, Xiao J, **Zhu HJ***. Predicting Vancomycin Clearance in Neonates and Infants by Integrating Machine Learning and Metabolomics With Population Pharmacokinetics. Clin Transl Sci. 2025 Jul;18(7):e70293. doi: 10.1111/cts.70293. PMID: 40616641; PMCID: PMC12228420.
8. Liu S, Wang L, Miller N, Waltje A, Abdelnabi M, Zhu HJ, Sun D, Rothberg AE, Pai MP. Examining the Impact of Diet-and-Exercise-Induced Weight Loss on Drug Metabolism and Gastric Emptying in Patients with Obesity. J Clin Pharmacol. 2025 Jul;65(7):805-814. doi: 10.1002/jcph.6192. Epub 2025 Jan 22. PMID: 39840538; PMCID: PMC12202197.

9. Nguyen-Hoang N, Liu Y, Henry NL, Pai MP, Zhu HJ, Hertz DL. Quantitation of Plasma Proteins to Predict Taxane-Induced Peripheral Neuropathy. JCO Precis Oncol. 2025 Jan;9:e2400380. doi: 10.1200/PO-24-00380. Epub 2025 Jan 31. PMID: 39889244; PMCID: PMC11790257.
10. Wang Z, McCalla Z, Lin L, Tornichio D, Agyemang Y, Bastulli JA, Zhang XS, Zhu HJ, Wang X. Impact of Genetic Polymorphisms and Drug-Drug Interactions Mediated by Carboxylesterase1 on Remimazolam Deactivation. Drug Metab Dispos. 2024 Nov 5:DMD-AR-2024-001916. doi: 10.1124/dmd.124.001916. Online ahead of print.
11. Jung SM#, **Zhu HJ***. Regulation of human hydrolases and its implications in pharmacokinetics and pharmacodynamics.
Drug Metab Dispos. 2024 May 22:DMD-AR-2023-001609. doi: 10.1124/dmd.123.001609. Online ahead of print.PMID: 38777597
12. Liu Y#, Li J#, and **Zhu HJ***. Regulation of carboxylesterases and its impact on pharmacokinetics and pharmacodynamics: an up-to-date review. Expert Opin Drug Metab Toxicol. 2024 May;20(5):377-397. doi: 10.1080/17425255.2024.2348491. Epub 2024 May 6.
13. Li J#, de Melo Jorge DM, Wang W#, Sun S#, Frum T, Hang YA#, Liu Y, Zhou X, Xiao J#, Wang X#, Spence JR, Wobus CE, **Zhu HJ***,. Differential Bioactivation Profiles of Different GS-441524 Prodrugs in Cell and Mouse Models: ProTide Prodrugs with High Cell Permeability and Susceptibility to Cathepsin A Are More Efficient in Delivering Antiviral Active Metabolites to the Lung. J Med Chem. 2024 May 9;67(9):7470-7486. doi: 10.1021/acs.jmedchem.4c00234. Epub 2024 May 1. PMID: 38690769
14. Smith D, He B^, Shi J^, **Zhu HJ***, Wang X*. Novel independent trans- and cis-genetic variants associated with CYP2D6 expression and activity in human livers. Drug Metabolism and Disposition November 29, 2023, DMD-AR-2023-001548; DOI: https://doi.org/10.1124/dmd.123.001548
15. Smith LS#, Wang X^, Shi J^, He B^, **Zhu HJ***. Genome-Wide Association Study for the Genetic Determinants of Thiopurine Methyltransferase Protein Expression in Human Livers and Racial Differences. *Pharm Res.* 2023 https://doi.org/10.1007/s11095-023-03558-1
16. Bhatt-Mehta V, Jing X, Wang X^, **Zhu HJ***. Transplacental methadone exposure and risk of Neonatal Opioid Withdrawal Syndrome. *Pharmacotherapy*. 2023 Aug 13. doi: 10.1002/phar.2863
17. Liu Y&, Sun S&, Li J#, Wang W&, **Zhu HJ*.** Cell-dependent activation of ProTide prodrugs and its implications in antiviral studies. *ACS Pharmacol Transl Sci.* 2023, 6, 10, 1340–1346 (Liu and Sun equally contributed to the work)
18. Her L#, Shi J^, Wang X^, He B^, Smith LS#, Jiang H, **Zhu HJ***. Identification of regulatory variants of carboxylesterase 1 (CES1): A proof-of-concept study for the application of the Allele-Specific Protein Expression (ASPE) assay in identifying cis-acting regulatory genetic polymorphisms. *Proteomics.* 2023 Jan;23(1):e2200176. doi: 10.1002/pmic.202200176. Epub 2022 Dec 7. PubMed PMID: 36413357; PubMed Central PMCID: PMC10077986.
19. Li J#, Xue Y, Wang X^, Smith LS#, He B^, Liu S#, **Zhu HJ***. Tissue- and cell-expression of druggable host proteins provide insights into repurposing drugs for COVID-19. *Clin Transl Sci.* 2022 Dec;15(12):2796-2811. doi: 10.1111/cts.13400. Epub 2022 Oct 19. Review. PubMed PMID: 36259251; PubMed Central PMCID: PMC9747131.
20. Campos-Staffico AM, Dorsch MP, Barnes GD, **Zhu HJ**, Limdi NA, Luzum JA. Eight pharmacokinetic genetic variants are not associated with the risk of bleeding from direct oral anticoagulants in non-valvular atrial fibrillation patients. *Front Pharmacol.* 2022;13:1007113. doi: 10.3389/fphar.2022.1007113. eCollection 2022. PubMed PMID: 36506510; PubMed Central PMCID: PMC9730333.
21. Xiao J#, Shi J^, Thompson BR, Smith DE, Zhang T, and **Zhu HJ***. Physiologically-based pharmacokinetic modeling to predict methylphenidate exposure affected by interplay among carboxylesterase 1 pharmacogenetics, drug-drug interactions, and sex. *J Pharm Sci.* 2022 May 5;S0022-3549(22)00190-3. doi: 10.1016/j.xphs.2022.04.019.

22. Shi J^, Xiao J#, Wang X^, Sun MJ#, Bleske BE, Markowitz JS, Patrick KS, and **Zhu HJ***. Plasma Carboxylesterase 1 Predicts Methylphenidate Exposure: A Proof-of-Concept Study Using Plasma Protein Biomarker for Hepatic Drug Metabolism. *Clin Pharmacol Ther* 2021 Nov 7. doi: 10.1002/cpt.2486.
23. Li J#, Shi J^, Xiao J#, Tran L@, Wang X^, and **Zhu HJ***. Contributions of Cathepsin A and Carboxylesterase 1 to the hydrolysis of Tenofovir Alafenamide in the Human Liver, and the Effect of CES1 Genetic Variation on Tenofovir Alafenamide Hydrolysis. *Drug Metab Dispos.* 2021 Dec 21:DMD-AR-2020-000323. doi: 10.1124/dmd.120.000323. Online ahead of print. PMID: 34933885
24. Li J#, Liu S#, Shi J^, and **Zhu HJ***. Activation of Tenofovir Alafenamide and Sofosbuvir in the Human Lung and Its Implications in the Development of Nucleoside/Nucleotide Prodrugs for Treating SARS-CoV-2 Pulmonary. *Pharmaceutics* 13 (10), 1656
25. Li J#, Smith LS#, and **Zhu HJ***. Data-independent acquisition (DIA): An emerging proteomics technology for analysis of drug-metabolizing enzymes and transporters. *Drug Discov Today Technol.* 2021 Dec;39:49-56. doi: 10.1016/j.ddtec.2021.06.006.
26. Rizzolo D, Kong B, Piekos S, Chen L, Zhong XB, Lu J, Shi J^, **Zhu HJ**, Yang Q, Li AP, Li L, Wang H, Siemiątkowska A, Park C, Kagan L, Guo GL*. Effects of Overexpression of Fibroblast Growth Factor 15/19 on Hepatic Drug Metabolizing Enzymes. *Drug Metab Dispos.* 2021 Dec 29:DMD-AR-2021-000416. doi: 10.1124/dmd.121.000416. Online ahead of print.
27. Xiao J#, Shi J^, Li R, Her L#, Wang X, Li J#, Sorensen MJ, Bhatt-Mehta V, and **Zhu HJ***. Developing a SWATH capillary LC-MS/MS method for simultaneous therapeutic drug monitoring and untargeted metabolomics analysis of neonatal plasma. *J Chromatogr B Analyt Technol Biomed Life Sci.* 2021 Aug 1;1179:122865. doi: 10.1016/j.jchromb.2021.122865. Epub 2021 Jul 27.
28. Collins JM, Lu R, Wang X^, **Zhu HJ**, Wang D*. Transcriptional Regulation of Carboxylesterase 1 in Human Liver: Role of the Nuclear Receptor Subfamily 1 Group H Member 3 and Its Splice Isoforms. *Drug Metab Dispos.* 2022 Jan;50(1):43-48. doi: 10.1124/dmd.121.000649. Epub 2021 Oct 25. PMID: 34697082
29. Her LH#, Wang X^, Shi J^, Choi HJ@, Jung SM#, Smith LS#, Wu AH, Bleske BE, **Zhu HJ***. Effect of CES1 genetic variation on enalapril steady-state pharmacokinetics and pharmacodynamics in healthy subjects. *Br J Clin Pharmacol.* 2021 May 7;. doi: 10.1111/bcp.14888. [Epub ahead of print] PubMed PMID: 33963573.
30. Li J#, Liu S#, Shi J^, Wang X^, Xue Y, **Zhu HJ***. Tissue-Specific Proteomics Analysis of Anti-COVID-19 Nucleoside and Nucleotide Prodrug-Activating Enzymes Provides Insights into the Optimization of Prodrug Design and Pharmacotherapy Strategy. *ACS Pharmacol Transl Sci.* 2021 Apr 9;4(2):870-887. doi: 10.1021/acsptsci.1c00016. eCollection 2021 Apr 9. PubMed PMID: 33855276; PubMed Central PMCID: PMC8033752.
31. Wang X^, Her L#, Xiao J#, Shi J^, Wu AH, Bleske BE, **Zhu HJ***. Impact of carboxylesterase 1 genetic polymorphism on trandolapril activation in human liver and the pharmacokinetics and pharmacodynamics in healthy volunteers. *Clin Transl Sci. 2021* Mar 4;. doi: 10.1111/cts.12989. [Epub ahead of print] PubMed PMID: 33660934.
32. Shi J^, Xiao J#, Li J#, Wang X^, Her L#, Sorensen MJ, **Zhu HJ***. FRACPRED-2D-PRM: A Fraction Prediction Algorithm-Assisted 2D Liquid Chromatography-Based Parallel Reaction Monitoring-Mass Spectrometry Approach for Measuring Low-Abundance Proteins in Human Plasma. *Proteomics.* 2020 Dec;20(24):e2000175. doi: 10.1002/pmic.202000175. Epub 2020 Nov 3. PMID: 33085175
33. He B^, Shi J^, Wang X^, Jiang H, **Zhu HJ***. Genome-wide pQTL analysis of protein expression regulatory networks in the human liver. *BMC Biol.* 2020 Aug 10;18(1):97. doi: 10.1186/s12915-020-00830-3. PMID: 32778093
34. Thompson BR, Shi J^, **Zhu HJ**, Smith DE*. Pharmacokinetics of gemcitabine and its amino acid ester prodrug following intravenous and oral administrations in mice. *Biochem Pharmacol.* 2020 Oct;180:114127. doi: 10.1016/j.bcp.2020.114127. Epub 2020 Jun 27. PMID: 32603666

35. Xiao J[#], Tran D, Zhang X, Zhang T, Seo S, **Zhu H**, Zou P*. Biliary Excretion-Mediated Food Effects and Prediction. *AAPS J*. 2020 Sep 27;22(6):124. doi: 10.1208/s12248-020-00509-1. PubMed PMID: 32980935.
36. Li J[#], **Zhu HJ***. Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)-Based Proteomics of Drug-Metabolizing Enzymes and Transporters. *Molecules*. 2020 Jun 11;25(11):2718. doi: 10.3390/molecules25112718. PMID: 32545386
37. Shenoy VM, Thompson BR, Shi J^, **Zhu HJ**, Smith DE, Amidon GL*. Chemoproteomic Identification of Serine Hydrolase RBBP9 as a Valacyclovir-Activating Enzyme. *Mol Pharm*. 2020 May 4;17(5):1706-1714. doi: 10.1021/acs.molpharmaceut.0c00131. Epub 2020 Mar 30. PubMed PMID: 32196348.
38. Bao Y, Wang P, Shao X, **Zhu J**, Xiao J[#], Shi J^, Zhang L, Zhu HJ, Ma X, Manautou JE, Zhong XB*. Acetaminophen-Induced Liver Injury Alters Expression and Activities of Cytochrome P450 Enzymes in an Age-Dependent Manner in Mouse Liver. *Drug Metab Dispos*. 2020 May;48(5):326-336. doi: 10.1124/dmd.119.089557. Epub 2020 Feb 24. PubMed PMID: 32094214; PubMed Central PMCID: PMC7153563.
39. Her L[#] and **Zhu HJ*.** Carboxylesterase 1 and Precision Pharmacotherapy: Pharmacogenetics and Nongenetic Regulators. *Drug Metab Dispos*. 2020 Mar;48(3):230-244. doi: 10.1124/dmd.119.089680. Epub 2019 Dec 23. PubMed PMID: 31871135; PubMed Central PMCID: PMC7031766.
40. Wang X^, He B^, Shi J^, Li Q, **Zhu HJ*.** Comparative Proteomics Analysis of Human Liver Microsomes and S9 Fractions. *Drug Metab Dispos*. 2020 Jan;48(1):31-40. doi: 10.1124/dmd.119.089235. Epub 2019 Nov 7.
41. Sutliff AK, Shi J^, Watson CJW, Hunt MS, Chen G, **Zhu HJ**, Lazarus P*. Potential Regulation of UGT2B10 and UGT2B7 by miR-485-5p in Human Liver. *Mol Pharmacol*. 2019 Dec;96(6):674-682. doi: 10.1124/mol.119.115881. Epub 2019 Sep 25.
42. Martinez SE, Shi J^, **Zhu HJ**, Perez Jimenez TE, Zhu Z, Court MH*. Absolute Quantitation of Drug-Metabolizing Cytochrome P450 Enzymes and Accessory Proteins in Dog Liver Microsomes Using Label-Free Standard-Free Analysis Reveals Interbreed Variability. *Drug Metab Dispos*. 2019 Nov;47(11):1314-1324. doi: 10.1124/dmd.119.088070. Epub 2019 Aug 19.
43. He B^, Shi J^, Wang X^, Jiang H, **Zhu HJ***. Label-Free Absolute Protein Quantification with Data-Independent Acquisition. *J Proteomics,* 2019 May 30;200:51-59. doi: 10.1016/j.jprot.2019.03.005. Epub 2019 Mar 14.
44. Wang X^, Shi J^, **Zhu HJ*.** Functional Study of Carboxylesterase 1 Protein Isoforms. *Proteomics*. 2019 Feb;19(4):e1800288. doi: 10.1002/pmic.201800288. Epub 2019 Jan 25.
45. Shi J^, Wang X^, Zhu H, Jiang H, Wang D, Nesvizhskii A, **Zhu HJ***. Determining Allele-Specific Protein Expression (ASPE) Using a Novel Quantitative Concatamer Based Proteomics Method. *J Proteome Res*. 2018 Sep 4. doi: 10.1021/acs.jproteome.8b00620.
46. Hu Y, Epling D, Shi J^, Song F, Tsume Y, **Zhu HJ**, Amidon GL, Smith DE*. Effect of biphenyl hydrolase-like (BPHL) gene disruption on the intestinal stability, permeability and absorption of valacyclovir in wildtype and Bphl knockout mice. *Biochem Pharmacol*. 2018 Aug 17;156:147-156.
47. Shi J^, Hu Y, Smith DE, **Zhu HJ***. A sensitive liquid chromatography-tandem mass spectrometry method for the quantification of valacyclovir and its metabolite acyclovir in mouse and human plasma. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2018 Aug 15;1092:447-452
48. Piekos SC, Chen L, Wang P, Shi J^, Yaqoob S, **Zhu HJ**, Ma X, Zhong XB*. Consequences of Phenytoin Exposure on Hepatic Cytochrome P450 Expression during Postnatal Liver Maturation in Mice. *Drug Metab Dispos*. 2018 Aug;46(8):1241-1250.
49. Wang X^, Liang Y, Shi J^, **Zhu HJ**, Bleske BE*. Crataegus Special Extract WS 1442 Effects on eNOS and microRNA 155. *Planta Med*. 2018 Apr 16. doi: 10.1055/a-0601-7083. [Epub ahead of print]

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51. Wang X^, Rida N[@], Shi J^, Wu A, Bleske BE, **Zhu HJ***. A comprehensive functional assessment of carboxylesterase 1 nonsynonymous polymorphisms. *Drug Metab Dispos*. 2017 Aug 24. pii: dmd.117.077669. doi: 10.1124/dmd.117.077669
52. **Zhu HJ**, Patrick KS*, Straughn AB, Reeves III OT, Bernstein H, Shi J^, Johnson HJ, Knight JM, Smith AT, Malcolm RJ, Markowitz JS*. Ethanol Interactions with Dexmethylphenidate and dl-Methylphenidate Spheroidal Oral Drug Absorption Systems in Healthy Volunteers. *J Clin Psychopharmacol*. 2017 Aug;37(4):419-428. doi: 10.1097/JCP.0000000000000721.
53. Chen X, Keep RF, Liang Y, **Zhu HJ**, Hammarlund-Udenaes M, Hu Y, Smith DE*. Influence of Peptide Transporter 2 (PEPT2) on the Distribution of Cefadroxil in Mouse Brain: A Microdialysis Study. *Biochem Pharmacol*. 2017 May 1;131:89-97. doi: 10.1016/j.bcp.2017.02.005. Epub 2017 Feb 10.
54. Shi J^, Wang X^, Nguyen J[@], Bleske BE, Liang Y, Liu L, **Zhu HJ***. Dabigatran Etexilate Activation is Affected by the CES1 Genetic Polymorphism G143E (rs71647871) and Gender. *Biochemical Pharmacology* 2016 Nov 1;119:76-84. doi: 10.1016/j.bcp.2016.09.003. Epub 2016 Sep 8.
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57. Shi J^, Wang X^, Nguyen J[@], Wu A, Bleske B, **Zhu HJ***. Sacubitril is selectively activated by carboxylesterase 1 (CES1) in the liver and the activation is affected by CES1 genetic variation. Drug Metab Dispos. 2016 Apr;44(4):554-9. doi: 10.1124/dmd.115.068536. Epub 2016 Jan 27.
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59. Wang X^, Liang Y, Liu L, Shi J^, **Zhu HJ***. Targeted absolute quantitative proteomics with SILAC internal standards and unlabeled full-length protein calibrators (TAQSI). Rapid Commun Mass Spectrom. 2016 Mar 15;30(5):553-61. doi: 10.1002/rcm.7482. *This paper was selected by the Journal as the Cover story.
60. Wang X^, Wang G*, Shi J^, Aa J, Comas R, Liang Y, **Zhu HJ*.** Evaluation of carboxylesterase 1 as a determinant of the activation of ACE inhibitor prodrugs. *Pharmacogenomics J*. 2016; 16(3):220-30. doi: 10.1038/tpj.2015.42.
61. Wang X^, **Zhu HJ**, Munoz J, Gurley BJ, Markowitz JS*. An ex vivo approach to botanical-drug interactions: A proof of concept study. J Ethnopharmacol. 2015 Apr 2;163:149-56. doi: 10.1016/j.jep.2015.01.021.
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65. Kawaguchi-Suzuki M, Frye RF, **Zhu HJ**, Brinda BJ, Chavin KD, Bernstein HJ, and Markowitz JS*. The effects of Milk Thistle (Silybum marianum) on human cytochrome P450 activity. *Drug Metabolism and Disposition*, 2014 Jul 15. pii: dmd.114.057232.
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67. **Zhu HJ**, Brinda BJ, Chavin KD, Bernstein HJ, Patrick KS, Markowitz JS*. An assessment of pharmacokinetics and antioxidant activity of free silymarin flavonolignans in healthy volunteers: A dose escalation study. *Drug Metab Dispos*. 2013 41 (9), 1679-1685
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70. Markowitz JS* and **Zhu HJ**. Limitations of in vitro Assessments of the Drug Interaction Potential of Botanical Supplements. *Planta Medica*. 2012 Sep;78(13):1421-7.
71. Brinda B, **Zhu HJ**, Markowitz JS*. A sensitive LC-MS/MS assay for the simultaneous analysis of the major active components of silymarin in human plasma. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2012 Aug 1;902:1-9.
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94. **Zhu HJ,** Wang JS, Donovan JL, DeVane CL, Gibson BB, Markowitz JS*. Sensitive quantification of atomoxetine in human plasma by HPLC with fluorescence detection using 4-(4,5-diphenyl-1H-imidazole-2-yl) benzoyl chloride derivatization. *J Chromatogr B Analyt Technol Biomed Life Sci.* 2007 Feb 1;846(1-2):351-4.
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99. Wu YL, Ma BL, **Zhu HJ**, Liu GQ*. Lomerizine inhibited the function of P-glycoprotein (P-gp) without decreasing the expression of mdr1 gene and P-gp in primarily cultured rat brain microvessel endothelial cells. *Chinese Journal of Clinical Pharmacology and Therapeutics*. 2006, 11(1): 45-50
100. Zou JM, Li YM*, Wang Z, **Zhu HJ**, Zhou J. Effect of Naomaitai Capsule on learning and memory abilities and cerebral lipid-peroxidation in rat with vascular dementia. *Chinese Traditional and Herbal Drugs*. 2006; 37(2): 238-241
101. Wang JS, DeVane CL*, Gibson BB, Donovan JL, Markowitz JS, **Zhu HJ.** Population pharmacokinetic analysis of drug-drug interactions among risperidone, bupropion, and sertraline in CF1 mice. *Psychopharmacology (Berl)*. 2006 Jan;183(4):490-9.
102. Markowitz JS*, DeVane CL, Malcolm RJ, Gefroh HA, Wang JS, **Zhu HJ,** Donovan JL. Pharmacokinetics of Olanzapine After Single Dose Oral Administration of Standard Tablet Versus Normal and Sublingual Administration of an Orally Disintegrating Tablet in Normal Volunteers. *J Clin Pharmacol.* 2006; 46: 164-171
103. **Zhu HJ*,** Wang JS, Guo QL, Jiang Y, Liu GQ. Reversal of P-glycoprotein mediated multidrug resistance in K562 cell line by a novel synthetic calmodulin inhibitor, E6. *Biol Pharm Bull.* 2005 Oct;28(10): 1974-8.
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105. **Zhu HJ,** Liu GQ*. Glutamate up-regulates P-glycoprotein expression in rat brain microvessel endothelial cells by an NMDA receptor-mediated mechanism. *Life Sci.* 2004 Jul 75(11):1313-1322.
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108. **Zhu HJ,** Liu GQ*. Effect of E6, a novel calmodulin inhibotor, on activity of P-glycoprotein in purified primary cultured rat brain microvessel endothelial cells. *Acta Pharmacol Sin.* 2003 Nov;24 (11):1143-1149.
109. **Zhu HJ***. Analysis of purchase behavior of medicine consumers. *Market weekly*. 2003, 3: 47-49
110. Li YM, **Zhu HJ**, Liu GQ*. Shikonin inhibits the catalytic activity of DNA topoisomerase I and induces apoptosis in K562 leukemia cells. *Chinese Journal of Natural Medicines.* 2003, 1(3): 165-168
111. Wu YL, **Zhu HJ**, Liu GQ*. Effect of lomerizine on the activity of P-glycoprotein in primary cultured rat brain microvessel endothelial cells. *Journal of China Pharmaceutical University.* 2003, 33(5): 352-5
112. Wu YL, **Zhu HJ**, Liu GQ*. Reversal of multidrug resistance in human leukemia cell line K562/ADM by Lomerizine. *Chinese Journal of Clinical Pharmacology and Therapeutics*. 2003, 8:393-396.

BOOK CHAPTERS

1. Wang X, Shi J, **Zhu HJ*.** Targeted Absolute Protein Quantification Using SILAC Internal Standard and Full-Length Protein Calibrators (TAQSI). Methods Mol Biol. 2023;2603:269-283. doi: 10.1007/978-1-0716-2863-8_22. PubMed PMID: 36370287.
2. Smith LS, Jung SM, Li J, and **Zhu HJ***. Chapter 6: Mass Spectrometry Acquisition Methods for Quantifying Drug Metabolizing Enzymes and Transporters. Drug Metabolism Handbook: Concepts and Applications in Cancer Research 2nd Edition. edited by Ala Nassar and published by Wiley, 18 November 2022 https://doi.org/10.1002/9781119851042.ch6

INVITED PRESENTATIONS

1. Predicting Tacrolimus Trough Concentrations in Kidney Transplant Recipients During Early Post-transplantation Using Machine Learning. ROSA Webinars, August 13th, 2025
2. Unveiling the Role of Hydrolases in Drug Development and Precision Pharmacotherapy. Drug Metabolism Gordon Research Conference, Holderness, New Hampshire, July 6-11, 2025
3. Predicting Allograft Rejection and Initial Tacrolimus Exposure in Kidney Transplant Recipients Using Metabolomics and Machine-Learning. 15th Annual American Conference on Pharmacometrics, Phoenix, Arizona, November 10-13, 2024
4. Predicting Allograft Rejection in Kidney Transplant Recipients using LC-MS/MS-based Metabolomics and Machine Learning. 2024 Anachem Symposium, Livonia, MI, November 7, 2024
5. Pharmacogenetics and proteomics of carboxylesterase 1: a case study of multiomics-based precision pharmacotherapy. University of Iowa, Iowa City, IA, April 14th, 2022
6. Proteomics of Prodrug-Activating Enzymes and its Implications in the Development of Anti-COVID-19 Prodrugs. 2022 Experimental Biology Annual Meeting. Philadelphia, PA, April 4th, 2022
7. Development of two ultrasensitive proteomics methods for quantifying low-abundance plasma proteins. SCIEX Accurate Mass End of Year Users Forum, Dec 17th, 2020
8. FRACPRED-2D-PRM: A fraction prediction algorithm-assisted 2D-LC PRM proteomics for measuring low-abundance proteins in human plasma. Sciex Virtual Podium, May 29th, 2020
9. Multiomics-based precision pharmacotherapy. University of New Mexico, Albuquerque, NM, January 15th, 2020
10. New Proteomics Approaches for Precision Medicine. Nanjing Children's Hospital, Nanjing, China, November 4th, 2019
11. Pharmacogenomics and Proteomics of Methylphenidate. The 4th Oriental Congress of Pediatrics, Shanghai, China, September 15th, 2018
12. Precision Pharmacotherapy in Pediatrics. Nanjing Children's Hospital, Nanjing, China, September 6th, 2018
13. Pharmacogenomics- and Proteomics-Based Precision Pharmacotherapy, Nanjing University of Chinese Medicine, Nanjing, China, September 6th, 2018
14. Integration of proteomics into pharmacogenomics research. University of Florida, Gainesville, FL, November 3rd, 2017
15. Genetic Polymorphisms of Carboxylesterases and their Clinical Implications. 21st North American ISSX Meeting, Providence, RI, September 27th, 2017
16. Carboxylesterase 1 Pharmacogenetics: its genesis, present, and future. University of Illinois at Chicago, January 18th, 2017
17. Trans-Omics of Drug-Metabolizing Enzymes for Precision Medicine, University of Tennessee, Memphis, TN, November 11th, 2016
18. Quantitative Proteomics of Drug-Metabolizing Enzymes in Human Liver and HepG2, Hep3B, and Huh7 Cells, The

21st International Symposium on Microsomes and Drug Oxidations, Davis, CA, October 2nd-6th, 2016

19. Pharmacogenomics of Prodrug Activation, 2016 American Association of Colleges of Pharmacy annual meeting, Anaheim, CA, July 25th, 2016
20. Pharmacogenomics of Prodrug Activation, 2016 Sino-American Forum of Clinical Pharmacy, Shanghai, China, May 28th, 2016
21. Invited Lecture: Pharmacogenomics and Precision Medicine, China Pharmaceutical University, Nanjing, China, May 10th - 14th, 2016
22. Pharmacogenomics of Prodrug Activation, China Pharmaceutical University, Nanjing, China, May 13th, 2016
23. CES1 Pharmacogenetics: Implications for Precision Medicine, University of Minnesota College of Pharmacy, April 21st, 2016
24. Prodrug Pharmacogenomics, Shanghai Institute of Materia Medica Chinese Academy of Sciences, China, May 19th, 2015
25. Precision medicine of Prodrugs: Pharmacogenomics and beyond, Peking University Third Hospital, China, May 15th, 2015
26. Precision medicine of Prodrugs: Pharmacogenomics and beyond, Shandong University School of Pharmacy, China, May 14th, 2015
27. Precision medicine of Prodrugs: Pharmacogenomics and beyond, Wannan Medical College School of Pharmacy, China, May 11th, 2015
28. Pharmacogenetics of Carboxylesterase 1. Department of Pharmacology, University of Michigan Medical School, December 11th, 2014
29. Natural Variants of Carboxylesterase 1 as Determinants of Drug Metabolism, Presented on the Delaware Valley Drug Metabolism Discussion Group on June 3rd, 2013

POSTER PRESENTATIONS

1. Zachary McCalla, Zhuo Wang, Li Lin, Hao-Jie Zhu, Xinwen Wang. Hydrolysis of Fenofibrate, Misoprostol and Flumazenil by Carboxylesterase1: Impact of Genetic Variants and Drug-Drug Interactions. 2025 ASPET Annual Meeting, April 3-6, Portland, OR
2. Li J, Sun S, Liu Y, Wang W, and **Zhu HJ**. Cathepsin A and High Cell Permeability Determine the Efficiency of Intracellular Bioactivation of Remdesivir in Lung Cells. 2023 Great Lakes Drug Metabolism Discussion Group meeting, Ann Arbor, MI, May 4-5, 2023
3. Liu Y, Sun S, Li J, Wang W, and **Zhu HJ**. Cell type-dependent Activation of Nucleotide Prodrugs and its Implications in Antiviral Studies. 2023 Great Lakes Drug Metabolism Discussion Group meeting, Ann Arbor, MI, May 4-5, 2023
4. Smith LS and **Zhu HJ**. Genome-Wide Association Study for the Genetic Determinants of Thiopurine S-Methyltransferase Protein Expression in the Liver. 2022 Experimental Biology (EB) annual meeting, Philadelphia, PA, April 2-5, 2022

5. Li J, Shi J, Liu S, and **Zhu HJ.** Activation of Tenofovir Alafenamide and Sofosbuvir in the Human Lung and its Implications in the Development of Nucleoside/Nucleotide Prodrugs for Treating SARS-CoV-2 Pulmonary Infection. 2022 Experimental Biology (EB) annual meeting, Philadelphia, PA, April 2-5, 2022
6. Shi J, Li J, Tran L, Wang X, and **Zhu HJ.** Tenofovir Alafenamide is Hydrolyzed by Cathepsin A and Carboxylesterase 1 in the Human Liver and the Hydrolysis is Affected by CES1 Genetic Variation. Experimental Biology (EB) annual meeting 2021.
7. Shi J and **Zhu HJ**. The Impact of Phenytoin Exposure on the Liver Proteome of Neonatal and Adult Mice Using DIA-MS Technology. 2019 Great Lakes Drug Metabolism and Disposition Group meeting, Ann Arbor, MI, May 9-10, 2019
8. Wang X, Shi J, He B, and **Zhu HJ**. Novel protein quantitative trait loci (pQTLs) associated with cytochrome P450 2D6 activity in human livers. 2019 Translational Science, Washington DC, March 5-8, 2019
9. Shi J, Piekos SC, Chen L, Jing X, Zhong XB, **Zhu HJ**. Short- and Long-term Effects of Phenytoin Exposure on the Liver Proteome of Neonatal and Adult Mice Using SWATH-MS Technology. 2018 Experimental Biology (EB) meeting, San Diego, CA, April 21-25, 2018
10. Shi J, Wang X, and **Zhu HJ**. Comparison of Protein Expressions of Drug-metabolizing Enzymes between Human Liver and the Hepatic Cell Lines HepG2, Hep3B and Huh7 by SWATH and MRM-HR Mass Spectrometric Proteomics Workflows. 2017 Experimental Biology (EB) meeting, Chicago, April 22-26, 2017
11. Wang X, Rida N, Shi J, and **Zhu HJ**. A Comprehensive Functional Assessment of CES1 Nonsynonymous Variants. 2017 Experimental Biology (EB) meeting, Chicago, April 22-26, 2017
12. Tran T, Li J, Shi J, **Zhu HJ**. Identification of Hepatic Hydrolysis Enzymes Responsible for the Activation of Tenofovir Alafenamide Fumarate. ASCPT 2017 Annual Meeting, March 15-18, 2017 Washington Marriott Wardman Park Washington, DC
13. Shi J, Wnag X, and **Zhu HJ**. Influence of Carboxylesterase 1 Genetic Polymorphisms on the Activation of Dabigatran Etexilate. Great Lakes Drug Metabolism & Disposition Group Annual Meeting, Rosemont, Illinois May 5-6, 2016
14. Shi J, Wang X, Nguyen J, Liang Y, Liu L, and **Zhu HJ**. Influence of Carboxylesterase 1 Genetic Polymorphisms on the Activation of Dabigatran Etexilate. 20th North American ISSX Meeting. Orlando, Florida, October 18-22, 2015. (Postdoctoral Fellow Poster Competition Finalist)
15. Wang X and **Zhu HJ**. Pharmacogenetics of ACEI Prodrug Activation, 2015 Pharmacogenomics Research Network (PGRN) meeting, State College, PA, April 27-29, 2015
16. Shi J and **Zhu HJ**. Influence of Carboxylesterase 1 Genetic Polymorphisms on the Metabolism of Oseltamivir and Methylphenidate, 35th Pharmacological Sciences and Bio-related Chemistry Symposium, Ann Arbor, MI, April 3, 2015
17. Wang X, **Zhu HJ**, Munoz J, Gurley BJ, Markowitz JS. An ex vivo approach to botanical-drug interactions: A proof of concept study. 18thAnnual Meeting of the College of Psychiatric and Neurologic Pharmacists (CPNP) April 19th-22nd 2015, Tampa, FL
18. Wang X and **Zhu HJ**. Activation of ace inhibitors is affected by carboxylesterase 1 (CES1) genetic polymorphisms. 19th North American ISSX Meeting / 29th JSSX Meeting October 19 - 23, 2014, San Francisco, CA

19. Wang X, Markowitz J, and **Zhu HJ**. CES1 mediated drug drug interactions between clopidogrel and simvastatin. The 1st Science Day of University of Michigan College of Pharmacy, Ann Arbor, MI January 31, 2014.

20. Wang X, Comas R, and **Zhu HJ**. Evaluation of the carboxylesterase 1 as a determinant for the activation of ACEI prodrugs. The 1st Science Day of University of Michigan College of Pharmacy, Ann Arbor, MI January 31, 2014.

21. **Zhu HJ**, Brinda BJ, Markowitz JS. Disposition of d,l-methylphenidate in organic cation transporter 3 (Oct3) knockout mice. NCDEU, May 28th-31st, 2013, Hollywood, FL.

22. **Zhu HJ**, Brinda B, Froehlich TE, Markowitz JS. A discriminative analytical method for detection of CES1A1 and CES1A2/CES1A3 genetic variants. College of Psychiatric and Neurologic Pharmacists (CPNP) Annual Meeting, Tampa, FL, April 29th-May 2nd, 2012.

23. Appel DI, Brinda B, Markowitz JS, Newcorn JS, **Zhu HJ**. A novel liquid chromatography /tandem mass spectrometry assay for the analysis of atomoxetine in human plasma and in vitro cellular samples. College of Psychiatric and Neurologic Pharmacists (CPNP) Annual Meeting, Tampa, FL April 29th-May 2nd, 2012.

24. Patrick KS, **Zhu HJ**, Markowitz JS. An assessment of isopropylphenidate pharmacology: An ester homolog of methylphenidate. College of Psychiatric and Neurologic Pharmacists (CPNP) Annual Meeting, Tampa, FL April 29th-May 2nd, 2012.

25. Gillis NK, **Zhu HJ**, Markowitz JS. An in vitro evaluation of guanfacine as a substrate for P-glycoprotein. College of Psychiatric and Neurologic Pharmacists (CPNP) Annual Meeting, Tampa, FL April 29th-May 2nd, 2012.

26. Rhoades JA, Peterson YK, **Zhu HJ**, Appel DI, Peloquin CA, Markowitz JS. Prediction and in vitro evaluation of selected protease inhibitor antiviral drugs as inhibitors of carboxylesterase 1: A potential source of drug-drug interactions. College of Psychiatric and Neurologic Pharmacists (CPNP) Annual Meeting, Tampa, FL April 29th-May 2nd, 2012.

27. **Zhu HJ**, Appel DI, Gründemann D, Richelson E, Markowitz, JS. Evaluation of organic cation transporter 3 (SLC22A3) inhibition as a potential mechanism of antidepressant action. College of Psychiatric and Neurologic Pharmacists (CPNP) Annual Meeting, Tampa, FL April 29th-May 2nd, 2012.

28. **Zhu HJ,** Appel DI, DeVane CL, Donovan JL, Markowitz JS. Developmental expression and activity of carboxylesterase 1 and carboxylesterase 2 in mouse and human. (Suppl) *European Neuropsychopharmacology*. 22nd ECNP Congress, September 12 - 16 2009, Istanbul, Turkey

29. **Zhu HJ**, DeVane CL, Markowitz JS. Evaluation of P-glycorptotein mediated interaction of the atypical antipsychotic agents risperidone and paliperidone in vitro. FASEB J. 2008 22:1132.8, April 5-9 2008, San Diego, CA

30. Markowitz JS, Wang JS, DeVane CL, Yuan HJ, **Zhu HJ**, Malcolm R, Donovan JL, Johnson JA, Youngblood GL, Sweet DH, Patrick KS. Identification of two novel single nucleotide polymorphisms of the CES1 gene encoding carboxylesterase-1 (hCE-1) in a slow metabolizer of methylphenidate. 47th Annual Meeting, NCDEU, June 13th, 2007, Boca Raton, FL.

31. **Zhu HJ**, Wang JS, Markowitz JS, Donovan JL, Gibson BB, DeVane CL. Risperidone and palliperidone inhibit p-glycoprotein activity in vitro. Collegium Internationale Neuro-Psychopharmacologicum (CINP) 25th Biennial Congress, July 11th, 2006 Chicago. Intl J Neuropsychopharm 2006;9:S263.

32. Wang JS, **Zhu HJ**, Markowitz JS, Donovan JL, DeVane CL. Evaluation of Antipsychotic Drugs as Inhibitors of Multidrug Resistance Transporter P-glycoprotein. World Pharmacology Conference 2006, June 28-30, 2006 Changsha,

China

33. DeVane CL, Stowe ZN, Donovan JL, Newport DJ, Ritchie JC, Wang JS, **Zhu HJ**. Convergence of in vitro, animal, and human data to predict determinants of sertraline serum concentrations in depressed pregnant women. American Psychiatric Association Annual Meeting, Toronto, CA, May 24, 2006.
34. Williard RL, **Zhu HJ**, Wang JS, Donovan JL, DeVane CL, Middaugh LD, Patrick KS, Gibson BB, Markowitz JS. Brain Penetration of d-amphetamine is Not Influenced by the Polymorphic Efflux Transporter P-glycoprotein. Society of Biological Psychiatry 61st Annual Convention and Scientific Program, Toronto, Ontario, Canada, May 18-20, 2006,
35. **Zhu HJ**, Wang JS, Markowitz JS, Donovan JL, Gibson BB, Gefroh HA, DeVane CL. The cannabinoid cannabidiol inhibits P-glycoprotein activity. Presented at the 107th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics (ASCPT), Baltimore, MD, March 8-11th, 2006. Clin Pharmacol Ther. 79(2): 75
36. Wang JS, **Zhu HJ**, Gibson BB, Donovan JL, Markowitz JS, DeVane CL. Sertraline and its metabolite desmethylsertraline, but not bupropion or its major metabolites, have high affinity for P-glycoprotein. Presented at the107th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics (ASCPT), Baltimore, MD, March 8-11th, 2006. Clin Pharmacol Ther. 79(2): 16
37. DeVane CL, Wang JS, Gibson BB, Donovan JL, Markowitz JS, **Zhu HJ**. Population pharmacokinetic analysis of drug-drug interactions among risperidone, bupropion, and sertraline in CF-1 mice. American College of Neuropsychopharmacology Annual Meeting, Waikoloa, Hawaii, December 13, 2005.
38. Williard RL, Middaugh LD, **Zhu HJ**, Patrick KS. Ethylphenidate formation and its effects on motor activity compared to methylphenidate in C57BL/6 mice. Society for Neuroscience 35th Annual Meeting in Washington, DC, November 12-16, 2005
39. **Zhu HJ**, Williard RL, Wang JS, Donovan JL, Gibson BB, Devane CL, Middaugh LD, Patrick KS, Markowitz JS. Brain penetration of d-threo-methylphenidate is influenced by the polymorphic efflux transporter P-glycoprotein. Poster presented at the Joint Annual Meeting of the AACAP and CACAP, Toronto, Ontario, Canada, October 22, 2005.
40. **Zhu HJ**, Liu GQ. Effect of Cadmium on expression and function of P-glycoprotein in rat brain microvessel endothelial cells. Congress of Jiangsu Pharmacological Society. Nanjing, Dec. 2002
41. **Zhu HJ**, Li YM, Liu GQ. Effect of shikonin on the catalytic activity of topoisomerase I and its mode of action. Pharmacologist. San Francisco, CA, 2002, 44 (supplement 1): A60
42. **Zhu HJ**, Li YM, Liu GQ. The mechanism of the anti-cancer activity of shikonin. Proceedings of 9th conference of industrial pharmacology of China. Haikou, Hainan, 2000, 62-6

SELECTED RESEARCH AWARDS

2015 New Investigator Award of AACP (American Association of Colleges of Pharmacy)

2016 JBC/Herb Tabor Young Investigator Award

PATENT APPLICATIONS

#62/247,524 "Systems and Methods for Proteomic Analysis" Inventor: **Hao-Jie Zhu**, Provisional patent filed on

10/28/2015

13/384,920 "A Novel Homolog of Methylphenidate as a Novel and Potent Therapeutic Agent for the Treatment of ADHD" Inventors: John S. Markowitz, Kennerly S. Patrick, **Hao-Jie Zhu**, Provisional patent filed on 06/14/2012.

61477475 "Compositions and Methods for Genotyping Ces1 Genetic Variants and Use Thereof" Investors: **Hao-Jie Zhu**, John S. Markowitz. Provisional patent filed on 04/20/2011

60/942,818, "Methods and Kits for Detecting Carboxylesterase-1 Polymorphisms" Inventors: John S. Markowitz, **Hao-Jie Zhu**. Provisional patent filed on 06/08/2007.

RESEARCH SUPPORT

1. Title: Predicting Post-Transplant Diabetes Mellitus in Kidney Transplant Recipients using Metabolomics and Machine Learning
   Source: Michigan Diabetes Research Center (MDRC)
   Funding Period: 01/01/2026 - 12/31/2026
   Total award: $ 50,000
   Role: PI

2. Title: Predicting Allograft Rejection in Kidney Transplant Recipients Using Plasma Metabolomics and Machine-learning
   Source: University of Michigan College of Pharmacy Stimulus Grant
   Funding Period: 03/01/2025 - 2/28/2026
   Total award: $ 25,000
   Role: PI

3. R01 HL181042
   Title: Functional Immune Phenotyping of Sepsis Patients: Integrating Microphysiological Assays, Omics and In Silico Modeling
   Source: NIH/National Heart, Lung, and Blood Institute
   Funding Period: 09/05/2025 - 06/30/2029
   Total award: $ 376,000 (subaward to UM)
   Role: Co-I, (PIs: Laurie Kilpatrick and Mohammad Kiani, Temple University)

4. R21 HD115866
   Title: A Novel Physiologically Based Pharmacokinetic (PBPK) Modeling Approach to Facilitate Safer Medications During Lactation
   Source: NIH/Eunice Kennedy Shriver National Institute of Child Health and Human Development
   Funding Period: 09/01/2025 - 03/31/2027
   Total award: $ 63,000 (subaward to UM)
   Role: Co-I, (PI: Tao Zhang, State University of New York, Binghamton)

5. R01 GM144401
   Title: Carboxylesterase 1 Plasma Biomarker for Precision Pharmacotherapy

Source: NIH/National Institute of General Medical Sciences
Funding Period: 09/01/2022 - 08/31/2026
Total award: $ 936,000
Role: PI

6. R01 HD093612
   Title: Carboxylesterase 1 Genetic Variation and Methylphenidate in ADHD
   Source: NIH/Eunice Kennedy Shriver National Institute of Child Health & Human Development
   Funding Period: 08/16/2018 – 07/31/2024
   Total award: $ 2,972,695
   Role: Multiple PI (Contact PI: John S. Markowitz, University of Florida)

7. R21 AI163425
   Title: Modifying Remdesivir Prodrug Design to Enhance the Active Metabolite Accumulation in the Lung
   Source: NIH/National Institute of Allege and Infectious Diseases
   Funding Period: 05/13/2022 - 04/30/2024
   Total award: $ 429,000
   Role: PI

8. R01 HL126969
   Title: Genetic determinants of ACEI prodrug activation
   Source: NIH/National Heart, Lung, and Blood Institute
   Funding Period: 02/15/2016-01/31/2021
   Total award: $1,948,750
   Role: PI

9. G025565
   Title: Duellman Award: Plasma Exosome Biomarkers for Midazolam Precision Pharmacotherapy
   Source: University of Michigan College of Pharmacy
   Funding Period: 02/01/2021 – 01/31/2022
   Total award: $ 50,000
   Role: Mentor (PI: Jingchneg Xiao)

10. U067003
    Title: MICHR MCubed Diamond 2019
    Source: University of Michigan, MICHR MCubed Program
    Funding period: 07/1/2019 - 06/30/2021
    Total award: $15,000
    Role: PI

11. U064011
    Title: Plasma proteomics of drug-metabolizing enzymes

Source: University of Michigan, MCubed Program
Funding period: 10/01/2019 – 12/31/2020
Total award: $60,000
Role: PI

12. Title: Pharmacogenetics of sacubitril activation
    Source: Michigan Institute for Clinical and Health Research (MICHR) Pre-K Program
    Funding Period: 03/01/2018 - 02/29/2020
    Total award: $85,000
    Role: Mentor (PI: Xinwen Wang)

13. R21 AG048500
    Title: CES1 variants as determinant of ACE inhibitor activation: a healthy volunteer study
    Source: NIH/National Institute on Aging
    Funding Period: 05/01/2015-04/30/2018
    Total award: $427,000
    Role: PI

14. U049706
    Title: A novel LC-MS/MS-based quantitative proteomics approach for the study of gene expression regulation
    Source: University of Michigan, MCubed Program
    Funding period: 10/01/2015 – 12/31/2017
    Total award: $60,000
    Role: PI

15. 2015 AACP New Investigator Award
    Title: Genetic Determinants of Carboxylesterase 1 Activity
    Source: American Association of Colleges of Pharmacy (AACP)
    Funding period: 01/01/2015 – 12/31/2015
    Total award: $10,000
    Role: PI

16. Title: WS 1442 Regulation of eNOS expression via Epigenetic Mechanisms – Focus on MircoRNA's
    Source: Schwabe Pharmaceuticals
    Funding period: 01/01/2015 – 12/31/2015
    Total award: $48,267
    Role: Co-I (PI: Barry E. Bleske)

17. Title: Carboxylesterase 1 pharmacogenetics and ACE inhibitor prodrug activation
    Source: Michigan Institute of Clinical & Health Research (MICHR)
    Funding period: 1/1/2014 – 06/30/2015
    Total award: $50,000
    Role: PI

18. R21 AI096345
    Title: Genetic Variants of Human Carboxylesterase 1 Influence the Activation and Antiviral Activity of Oseltamivir
    Funding agency: NIH/National Institute of Allergy and Infectious Diseases
    Funding period: 06/20/2011 – 5/31/2013
    Total Award: $402,875
    Role: Co-I (PI: John S. Markowitz)

19. R01 DA022475
    Title: Drug Transporters and the Disposition of ADHD Therapeutic Agents
    Funding agency: NIH/National Institute on Drug Abuse
    Funding period: 08/01/2007 – 7/31/2012
    Total Award: $1,261,358
    Role: Co-I (PI: John S. Markowitz)

TEACHING

COURSES TAUGHT

Pharm.D. courses

2015-present	P719, P739 PharmD Investigations Course Series (course coordinator), University of Michigan College of Pharmacy
2014-present	P614 Principles of Research & Problem Solving, University of Michigan College of Pharmacy
2014-present	P730 Pharmacy Student Seminar, University of Michigan College of Pharmacy
2015-2018	P718 Biopharmaceutics and Pharmacogenomics, University of Michigan College of Pharmacy
2014-2015	P709, P719, P739 PharmD Investigations Courses Series (co-course coordinator), University of Michigan College of Pharmacy
2011-2013	PHA5113 Personalized Medicine, University of Florida College of Pharmacy
2012-2013	PHA6427 Pharmacogenetics of Drug Metabolism and Transport, University of Florida College of Pharmacy

Graduate courses

2019-present	CPTS824 Proteomics and Metabolomics (course coordinator), University of Michigan College of Pharmacy
2019-present	CPTS802 Research Grant Proposal II (co-course coordinator), University of Michigan College of Pharmacy
2019-present	CPTS822 Research and Clinical Translation in Pharmacogenomics, University of Michigan College of Pharmacy
2017-present	PHARMSCI704 Analytical Methods in Drug Delivery, University of Michigan College of

Pharmacy

Undergraduate courses

2022-present P212 Contemporary Research Seminar, University of Michigan College of Pharmacy

TRAINEES

Ph.D. Students

Hui Yu (2023 - present)

Logan S. Smith, Pharm.D. (2019 - 2025)
Dissertation project title: Evaluating the relationship between Cytochrome P450 3A and tacrolimus trough concentration through plasma proteomics

Sunny Jung (2019 – 2026, Pharm.D./Ph.D. program)
Dissertation project title: Plasma protein biomarkers of hepatic drug-metabolizing enzymes

Jiapeng Li (2018 - 2023)
Dissertation project title: Proteomics-guided design of antiviral nucleoside prodrugs

Jingcheng Xiao (2017 - 2022)
Dissertation project title: Pharmacometric Modeling and Simulation in Special Populations
Current position: Scientist, Merck & Co

Lucy Her, Pharm.D./Ph.D. (2016 – 2021, Pharm.D./Ph.D. program)
Dissertation project title: Carboxylesterase 1 and Precision Pharmacotherapy
Current position: Scientist, Eli Lilly and Company

Xinwen Wang, Ph.D. (2012 - 2015) co-advised by Dr. Guangji Wang
Dissertation project title: Pharmacogenetics of carboxylesterase 1
Current position: Assistant Professor, Department of Pharmaceutical Sciences, Northeast Ohio Medical University

Master students

Zeyu Xia (2024 - 2026)
Yiran Huo (2024 - 2026)
Zihan Qin (2023 - 2025)
Yuan Hang (2023 - 2024)
Maira Vahora (2023 - 2024)
Shuxin Sun (2022 - 2023)

Post-doctoral fellows

Xinwen Wang, Ph.D. (2015 - 2020)
Current position: Assistant Professor, Department of Pharmaceutical Sciences, Northeast Ohio Medical University

Jian Shi, Ph.D. (2014 - 2019)
Current position: Scientist, Bristol Myers Squibb, New Brunswick, NJ

Bing He, Ph.D. (2017 - 2019)
Current position: Senior Research Scientist, Tencent, China

Pharm.D. and undergraduate students mentored for research elective

Hayden Sitko (2026 -)
Timothy Liang (2026 -)
Myunghyun Jeong (2026 -)
Yuan Hang (2022)
Yanling Xue (2020 - 2021)
Sherry Zhao (2018 - 2019)
Yifan Zheng (2017 - 2018)
Jerry Li (2016 - 2017)
Lana Tran (2016 - 2017)
Mason McComb (2014 - 2015)
Brendan Leja (2014 - 2015)

Pharm.D. students mentored for Pharm.D. Investigations projects

Dayna Lim (2024 - present)
Chloe Kim (2023 - present)
Jessica Holsopple-Bowen (2023 - present)
Elaine Burley (2022 - 2025)
Michael Gruntfest (2022 - 2025)
Vivian Leung (2022 - 2025)
Gabrielle Toreja (2022 - 2025)
Noah Wegener (2022 - 2025)
Abigail Hibbler (2021 - 2024)
Je-Won (Jennifer) Hong (2021 -2024)
Zaid Khan (2021 - 2024)
Nasim Malakoti-Negad (2021 - 2024)
Nagesh Sharma (2021 - 2024)
Madison Kiryakoza (2021 - 2024)
Melissa Mezy (2021 - 2024)
Julianne Fava (2020 - 2023)
Anna Burley (2020 - 2023)

Jingting Wang (2020 - 2023)
Demitra Mantzopoulos (2019 - 2022)
Dounya Berry (2019 - 2022)
Jonathan George (2019 - 2022)
HeeJae Choi (2018 - 2021)
Raul Ghib (2018 - 2021)
Yingli He (2018 - 2021)
Jin Hee Hayward (2018 - 2021)
Jing Liu (2018 - 2021)
Wolfegang Moorhouse (2018 - 2021)
Jeannie Paik (2018 - 2021)
Sherry Zhao (2017 - 2020)
Diana Le (2017 - 2020)
Yaxun Jing (2017 - 2020)
Jae Yun Baek (2017 - 2020)
Jessica Arabi (2016 - 2019)
Raajan Naik (2016 - 2019)
Nada Rida (2016 - 2019)
Lana Tran (2016 - 2018)
Brian Williams (2015 - 2017)
Rebecca M Sarkozi (2015 - 2017)
Chivonne Gammon (2015 - 2017)
Jeffrey Hanson (2014 - 2016)
Stephen Liu (2014 - 2016)
Megan Krol (2014 - 2016)

Pharm.D. students mentored for P730 Pharmacy Student Seminar

Vivian Leung (2024)
Gabrielle Toreja (2024)
Noah Wegener (2024)
Andrea Banner (2021)
Chanel Hsiang (2021)
Jing Liu (2020)
Arrin Kontos (2020)
Jennifer Garvey (2020)
Sherry Zhao (2019)
Jae Yun Baek (2019)
Josh Linton (2018)
Nada Rida (2018)
Kyle Quirk (2017)
Lana Tran (2017)
Priya Dungarani (2016)
Lisa Chen (2016)

Maahin Mahmood (2015)
Robert Yeshe (2015)
Chloe Zhang (2014)
Sara Thomas (2014)

Rotation Ph.D. students

Hari Prabhath Tummala (2025)
Yaping Liu (2023)
Hui Yu (2023)
Natalie Jusko (2022)
Marc McCann (2018)
Jiapeng Li (2018)
Jingcheng Xiao (2018)
Lucy Her (2017)
Brian Thompson (2016)
Jenny Nguyen (2015)

University of Michigan Undergraduate Research Opportunity Program (UROP) students

John Soukar (2015 - 2016)
Kunal Patrawala (2015 - 2016)
Rinelly Comas (2013 - 2014)

BSPS students mentored for research thesis projects

Yuan Hang (2022)
Yanling Xue (2021)

Ph.D. students mentored as the chair or a member of Dissertation Committees

Ana Iris Lopez Medina, Ph.D. candidate (2021- 2025)
Shuhan Liu, Ph.D. candidate (2021- 2025)
Marc McCann, Ph.D. candidate (2019 - 2023)
Jen Diaz-Espinosa, Ph.D. candidate (2019 - 2023)
Andrew Willmer, Ph.D. candidate (2019 - 2023)
Qixing Liang, Ph.D. candidate (2018 - 2019)
Xiaomei Chen, Ph.D. candidate (2015 - 2017)
Heather Marie Davis, Pharm.D., Ph.D. candidate (2009 – 2011)
Wan Sun, Ph.D. candidate (2009 - 2012)

PharmD students mentored for Research Electives at the University of Florida

2012 Brian Gawronski, Pharm.D.
2011 Bryan B. Branda, Pharm.D.
2011 Megha Patel, Pharm.D.
2010 Nancy Gillis, Pharm.D.
2010 Jenna A. Rhoades, Pharm.D.

SERVICES

Professional Organization Service

2022	Chair of the symposium "Importance of Prodrug-activating Enzymes in Drug Development and Precision Pharmacotherapy" at the 2022 Experimental Biology (EB) annual meeting, Philadelphia, PA, April 2-5, 2022
2021 -	Organizer of the ASPET quarterly seminar series on drug metabolism and disposition
2021 -	Secretary/Treasurer, American Society for Pharmacology and Experimental Therapeutics (ASPET), Division of Drug Metabolism and Disposition
2021 -	Executive Committee Member, American Society for Pharmacology and Experimental Therapeutics (ASPET), Division of Drug Metabolism and Disposition
2016 - 2019	Councilor, American Society for Pharmacology and Experimental Therapeutics (ASPET), Division of Drug Metabolism of Disposition
2016 - 2019	Executive Committee Member, American Society for Pharmacology and Experimental Therapeutics (ASPET), Division of Drug Metabolism and Disposition
2016	Chair of the Section "Biotransformations & Technologies in the Spotlight" in the 21st International Symposium on Microsomes and Drug Oxidations (October 2-6, 2016, Davis, California)

Committee Services

University level services

2018 - 2020	Member, Faculty Senate, University of Michigan
2015	Judge, University of Michigan Undergraduate Research Opportunity Program

College/Department level services

2022	Chair, Third Year Review Committee for two Assistant Professors, University of Michigan College of Pharmacy, Department of Clinical Pharmacy
2021 - 2023	Member, BSPS Admissions Committee, University of Michigan College of Pharmacy
2021 -	Member, MSIPS Oversight Committee, University of Michigan College of Pharmacy
2021 -	Member, Safety Committee, University of Michigan College of Pharmacy
2021	Member, Faculty Search Committee, University of Michigan College of Pharmacy

2021 Chair, Faculty Promotion Committee, University of Michigan College of Pharmacy

2019 - 2021 Member, PharmD Admission Committee, University of Michigan College of Pharmacy

2018 Member, Faculty Promotion Committee, University of Michigan College of Pharmacy

2017 Member, Faculty Search Committee, University of Michigan College of Pharmacy

2015 - 2020 Member, Graduate Education Committee, University of Michigan College of Pharmacy

2015 - 2017 Chair, PharmD Investigations Committee, University of Michigan College of Pharmacy

2016 Chair, Translational Sciences Faculty Search Committee, University of Michigan College of Pharmacy, Department of Clinical Pharmacy

2013 - 2015 Member, Faculty Development Committee, University of Michigan College of Pharmacy

2014 Member, Faculty Search Committee, University of Michigan College of Pharmacy

2014 - 2015 Member, Pharm.D. Investigations Committee, University of Michigan College of Pharmacy

2013 - 2014 Member, Pharmacogenomics Committee, University of Michigan College of Pharmacy

Other services

2020 Representing UM College of Pharmacy to attend the 4th China Pharmaceutical University International Education Fair (Online event)

2019 Representing UM College of Pharmacy to attend the 3rd China Pharmaceutical University International Education Fair (Nanjing, China)

Grant Reviewer

2025 NIH study section CRD

2025 NIH study section ZDK1 GRB-J (M4)

2025 NIH study section ZDK1 GRB-J (M4)

2024 NIH study section DBDT

2023 NIH study section DBDT

2023 NIH study section ZRG1 MCST-M (81) S

2022 NIH study section ZRG1 EMNR-S (55) R

2021 NIH study section ZRG1 EMNR-D (56) R

2020 NIH study section ZRG1 EMNR-S (55) R

2019 NIH study section ZRG1 EMNR-S (55) R

2019 Medical Research Council (MRC), UK

2018 NIH study section ZRG1 EMNR-S (55) R

2017 Czech Science Foundation

2017 Michigan Institute for Clinical & Health Research (MICHR)

2016 Medical Research Council (MRC), UK

2016 NIH study section ZRG1 EMNR-S (55) R

Editorial Service

2023 - Editorial Board Member, Drug Metabolism and Disposition

2023 - Review Editor, Frontier Pharmacology

2017 - 2024 Consulting Editor, Clinical Therapeutics

Journal Reviewer

Acta Pharmaceutica Sinica B

Acta Pharmacologica Sinica

Amino Acids

Basic & Clinical Pharmacology & Toxicology

Biopharmaceutics & Drug Disposition

Chinese Journal of Clinical Pharmacology and Therapeutics

Clinical Pharmacokinetics

Drug Testing and Analysis

Drug Metabolism and Pharmacokinetics

Evidence-Based Complementary and Alternative Medicine

Fitoterapia

Human Psychopharmacology: Clinical and Experimental

In Vitro Cellular & Developmental Biology – Animal

Journal of Pharmaceutical and Biomedical Analysis

Journal of Agricultural and Food Chemistry

Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences

Journal of Clinical Pharmacology

Journal of Drug Metabolism & Toxicology

Journal of Neural Transmission

Journal of Neurochemistry

Journal of Pharmacy & Pharmacology

Journal of Pharmaceutical and Biomedical Analysis

Microcirculation

Molecular Nutrition and Food Research

Molecular Pharmaceutics

Neuropharmacology

Planta Medica

PlosOne

Pharmaceutical Research

Pharmacotherapy

Signal Transduction and Targeted Therapy

Drug Metabolism and Disposition

Trends in Pharmacological Sciences

Clinical Pharmacology & Therapeutics

Clinical and Translational Sciences

Consulting Position

2022 - 2024 AnnJi Pharmaceutical Co., Ltd.

Professional Membership

American Society for Pharmacology and Experimental Therapeutics (ASPET)
American Society for Clinical Pharmacology and Therapeutics (ASCPT)
American Heart Association (AHA)
International Society for the Study of Xenobiotics (ISSX)
American Association of Colleges of Pharmacy (AACP)