

## CURRICULUM VITAE

**TIM WILTSHIRE, PH.D**

### **Personal Information**

Office Address: 1015 Genetic Medicine  
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Division of Pharmacotherapy and Experimental Therapeutics,  
UNC Eshelman School of Pharmacy  
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### **Academic Appointments**

<b>Associate Professor</b>	
Division of Pharmacotherapy and Experimental Therapeutics	2007 – present
UNC Eshelman School of Pharmacy	
Adjunct Associate Professor Genetics Department	
UNC School of Medicine	2010 -present
<b>Faculty member</b>	
Associate Director, Institute for Pharmacogenomics and Individualized Therapy	2007 – 2013
Director, Program for Pharmacogenomics and Individualized Therapy	2013 – present
Member, Lineberger Comprehensive Cancer Center.	2010 - present

### **Professional Education and Training:**

Bachelors of Science, major in Organic Chemistry. The University of Canterbury (Christchurch, New Zealand)	<b>B.Sc</b>	1972 - 1975
Diploma in Teaching, High School Teacher training Christchurch Teachers College (Christchurch, New Zealand).	<b>Dip.Teach</b>	1975

Post-Graduate Diploma in Science, major in Biotechnology. The University of Otago (Dunedin, New Zealand). Thesis Project: Comparison of oil levels in accessions of <i>Myoporum laetum</i> and development of a tissue culture protocol for <i>M. laetum</i> . Advisor: Dr. Paula Jameson	<b>Dip.Sci. (Hons)</b>	1990 - 1991
Doctor of Philosophy in Biochemistry, Cellular and Molecular Biology. The University of Tennessee, Knoxville, Tennessee. Dissertation: Mammalian Meiosis: Events of meiotic prophase I in spermatogenesis Advisor: Dr. Mary Ann Handel	<b>Ph.D.</b>	1991 - 1996

### Postdoctoral Research

Post-Doctoral Fellow, Department of Physiology The Johns Hopkins University School of Medicine Advisor: Dr. Roger Reeves		1996 - 1998
Post-Doctoral Fellow, Center for Neurobiology and Behavior University of Pennsylvania School of Medicine Advisor: Dr. Maja Bucan		1998 - 1999

### Other Employment:

<b>High School Teacher</b> (New Zealand – trained teacher certification) Teaching general science classes and chemistry and biology to advanced levels Waikohu College – Te Karaka		1980 - 1991
Motueka High School – Motueka (Head of Biology and Outdoor Education)		1980 - 1981 1982 - 1991
<b>Institute Research Fellow</b> Genomics Institute of the Novartis Research Foundation, a division of Novartis Pharmaceuticals		2000
<b>Staff Scientist</b> Genomics Institute of the Novartis Research Foundation		2001 - 2003
<b>Genetics Group Leader</b> Genomics Institute of the Novartis Research Foundation		2003 - 2006
<b>Senior Research Investigator</b> – Genetics Genomics Institute of the Novartis Research Foundation San Diego, CA		2006 - 2007

### Professional Activities and Services:

Course Instructor, Cloning and Analysis of Large DNA – Cold Spring Harbor Laboratory, NY		1996
Course Instructor, Positional Cloning Course – Cold Spring Harbor Laboratory, NY		1997
National Cancer Institute - (Think Tank participant) Cancer Susceptibility and Resistance		9/12/04- 9/14/04
National Cancer Institute - (Think Tank participant) Predictive Models of Cancer Susceptibility: Integrated Strategies		12/6/05 - 12/7/05

Host Susceptibility meeting, participant/consultant National Toxicology Program (NIEHS)	12/2006
NCI-Integrated Systems Genetics Meeting participant Newport Beach, CA.	3/11/08 - 3/13/08
Member International Mouse Genome Society, Nominations and Elections committee	2011 - 2012
Elected member - International Committee on Standardized Genetic Nomenclature for Mice	2012 – 2018
Ontario Research Fund – Research Excellence Round 7 Program. Pharmacogenetics reviewer	11/18-19/2014
Member, Board of Reviewers AFPE	2016 - present

### **National Institutes of Health**

Reviewer for NIEHS special emphasis panel Comparative Biology Elucidation of Environmental Pathways and Susceptibility	2007
Reviewer for NIH GCAT Study sections, Genomics, Computational Biology and Technology	2007 2008
Reviewer for NIH ARRA Challenge Grant Program (RFA-OD-09-003) National Institutes of Health (NIH).	2009
National Toxicology Program/NIEHS Board of Scientific Counselors meeting – Review of NTP	11/30/10 - 12/1/10
NIH/NIGMS review panel.	7/24/2012
New Methods for Understanding the Functional Role of Human DNA Sequence Variants in Complex Phenotypes RFA	
NIH study section MNG (molecular neurogenetics) - Special Emphasis Panel/Scientific Review Group ZRG1 ETTN-G (02)	6/2011 – 2014 5/22/2013
Special Emphasis Panel/Scientific Review Group ZGM1 PPBC-5	2/13/15
Special Emphasis Panel/Scientific Review Group ZRG1 IMST-C (90) S	7/14/2015
Special Emphasis Panel/Scientific Review Group ZRG1 IMST-C (90) S	11/10/2015
National Institutes of Health (NIH) Loan Repayment Program (LRP) primary mentor	2015 - present
Special Emphasis Panel/Scientific Review Group ZTR1 CI-4 (01) 1	6/1,2/2016
National Toxicology Program/NIEHS Board of Scientific Counselors meeting – Review of National Toxicology Program	12/14,15 2016
NIH Study Section Biophysical, Physiological, Pharmacological and Bioengineering Neuroscience Fellowship Study Section [F03B]	6/26,27 2017

### **Journal Reviews**

Reviewer for scientific journals: Genomics, Mammalian Genome, Genome Research, Nature Genetics, Genetics, Trends in Genetics, Physiological Genomics, BMC Genomics, PLoS Biology, PLoS Genetics, PLoS ONE, Nature Neuroscience, Nature Reviews – Genetics, Medicine & Science in Sports and Exercise,

### **Editor**

Editor – Frontiers in Pharmacogenomics	2014 -
Journal of Physiological Genomics, a Journal of the American Physiological Society (APS). Section Editor – Pharmacogenomics	2015 –
Guest Editor – PLoS Genetics	2015

## **Inventions**

US Patent number 7,595,148

This invention provides novel methods and compositions for modulating T cell differentiation and T cell responses.

## **UNC-Chapel Hill**

Member, UNC IACUC committee 2008 - 2011

Sub-committee responsibilities – mouse genetics

Faculty Search Committee – Genetics Dept.

UNC School of Medicine

Faculty Search Committee 2013 – present

UNC Eshelman School of Pharmacy 2007 - present

School of Medicine Faculty Mentoring Program 2014 - present

## **UNC Eshelman School of Pharmacy**

Member, Conflict of Interest committee (COIC) 2014 - present

Interviewer – graduate program applicants

Center for Pharmacogenomics and Individualized Therapy 2007 – present

Director - Center for Pharmacogenomics and Individualized Therapy 2013 - present

Divisional Director of Graduate Studies 2011 – 2017

Interviewer – PharmD program applicants 2013 – present

Faculty Mentoring Program 2014 – present

Member Global Initiative Committee 2014 - 2015

## **Professional Memberships**

American Association for Advancement of Science (AAAS) 1993 - present

American Society of Human Genetics (ASHG) 2005 – present

International Mouse Genome Society 1997 - present

Elected member of Nominations committee 2010

Society of Toxicology (SOT) 2011 – present

American Association of Pharmaceutical Scientists (AAPS) 2012 – present

American Physiological Society (APS) 2014 - present

International Society for Pharmacoeconomics and Outcomes Research (ISPOR) 2016 – present

## **Awards**

New Zealand Teacher of the year award 1986

Post-Primary Teachers Association: Nominated by students

Science Alliance Graduate Student Award of Excellence 1994

University of Tennessee 1995

Excellence and Extraordinary Professional Promise 1996

University of Tennessee Chancellors Award

Best Paper Award (2009) - Society of Toxicology 2009

Mouse population-guided resequencing reveals that variants in CD44 contribute to acetaminophen-induced liver injury in humans. Published in Genome,

Sterling Visiting Professor – University of Toledo. 2015

## Publications

1. Zhu J, Patel T, Miller JA, Torrice CD, Aggarwal M, Sketch MR, Alexander MD, Armistead PM, Coghill JM, Grgic T, Jamieson KJ, Ptachcinski JR, Riches ML, Serody JS, Schmitz JL, Shaw JL, Shea TC, Suzuki O, Vincent BG, Wood WA, Rao KV, **Wiltshire T**, Weimer ET, Crona DJ. Influence of germline genetics on tacrolimus pharmacokinetics and pharmacodynamics in allogeneic hematopoietic stem cell transplant patients. *Int J Mol Sci* January 2020 accepted
2. Dong OM, Wheeler SB, Cruden G, Lee CR, Voora D, Dusetzina SB, **Wiltshire T**. Cost-Effectiveness of Multigene Pharmacogenetic Testing in Patients With Acute Coronary Syndrome After Percutaneous Coronary Intervention. *Value Health*. 2020 Jan;23(1):61-73. doi: 10.1016/j.jval.2019.08.002. Epub 2019 Sep 25. PMID:31952675
3. Roell KR, Havener TM, Reif DM, Jack J, McLeod HL, **Wiltshire T**, Motsinger-Reif AA. Synergistic Chemotherapy Drug Response Is a Genetic Trait in Lymphoblastoid Cell Lines. *Front Genet*. 2019 Oct 15;10:829. doi: 10.3389/fgene.2019.00829. eCollection 2019. PMID:31681399
4. Suzuki O, Dong OM, Howard RM, **Wiltshire T**. Characterizing the pharmacogenome using molecular inversion probes for targeted next-generation sequencing. *Pharmacogenomics*. 2019 Sep;20(14):1005-1020. doi: 10.2217/pgs-2019-0057. PMID:31559919
5. Zammit NW, Siggs OM, Gray PE, Horikawa K, Langley DB, Walters SN, Daley SR, Loetsch C, Warren J, Yap JY, Cultrone D, Russell A, Malle EK, Villanueva JE, Cowley MJ, Gayevskiy V, Dinger ME, Brink R, Zahra D, Chaudhri G, Karupiah G, Whittle B, Roots C, Bertram E, Yamada M, Jeelall Y, Enders A, Clifton BE, Mabbitt PD, Jackson CJ, Watson SR, Jenne CN, Lanier LL, **Wiltshire T**, Spitzer MH, Nolan GP, Schmitz F, Aderem A, Porebski BT, Buckle AM, Abbott DW, Ziegler JB, Craig ME, Benitez-Aguirre P, Teo J, Tangye SG, King C, Wong M, Cox MP, Phung W, Tang J, Sandoval W, Wertz IE, Christ D, Goodnow CC, Grey ST. Denisovan, modern human and mouse TNFAIP3 alleles tune A20 phosphorylation and immunity. *Nat Immunol*. 2019 Oct;20(10):1299-1310. doi: 10.1038/s41590-019-0492-0. Epub 2019 Sep 18. PMID:31534238
6. Akhtari FS, Havener TM, Fukudo M, Jack JR, McLeod HL, **Wiltshire T**, Motsinger-Reif AA. The Influence of Neanderthal Alleles on Cytotoxic Response. *PeerJ*. 2018 Oct 23;6:e5691. doi: 10.7717/peerj.5691. eCollection 2018. PMID:30386687
7. Frick A, Benton C, Suzuki O, Dong O, Howard R, El-Sabae H, **Wiltshire T**. Implementing Clinical Pharmacogenomics in the Classroom: Student Pharmacist Impressions of an Educational Intervention Including Personal Genotyping. *Pharmacy (Basel)*. 2018 Oct 23;6(4). pii: E115. doi: 10.3390/pharmacy6040115. PMID:30360487
8. Dong OM, Howard RM, Church R, Cottrell M, Forrest A, Innocenti F, Mosedale M, Kashuba A, Gonzalez D, **Wiltshire T**. Challenges and Solutions for Future Pharmacy Practice in the Era of Precision Medicine. *Am J Pharm Educ*. 2018 Aug;82(6):6652. doi: 10.5688/ajpe6652. PMID:30181675
9. Dong OM, Li A, Suzuki O, Oni-Orisan A, Gonzalez R, Stouffer GA, Lee CR, **Wiltshire T**. Projected Impact of a Multigene Pharmacogenetic Test to Optimize Medication Prescribing in Cardiovascular Patients. *Pharmacogenomics*. 2018 Jun 1;19(9):771-782. doi: 10.2217/pgs-2018-0049. Epub 2018 May 25. PMID:29793377
10. Zhuang GZ, Upadhyay U, Tong X, Kang Y, Erasso DM, Fu ES, Sarantopoulos KD, Martin ER, **Wiltshire T**, Diatchenko L, Smith SB, Maixner W, Levitt RC. Human Carbonic Anhydrase-8 AAV8 Gene Therapy Inhibits Nerve Growth Factor Signaling Producing Prolonged Analgesia and Anti-Hyperalgesia in Mice. *Gene Ther*. 2018 Jul;25(4):297-311. doi: 10.1038/s41434-018-0018-7. Epub 2018 Apr 24. PMID:29789638
11. **Wiltshire T**, Dong OM. Clinical Pharmacogenetics: How do we Ensure a Favorable Future for Patients? *Pharmacogenomics*. 2018 Apr;19(6):553-562. doi: 10.2217/pgs-2017-0192. Epub 2018 Apr 5. PMID:29620450
12. Wang T, Pehrsson EC, Purushotham D, Li D, Zhuo X, Zhang B, Lawson HA, Province MA, Krapp C, Lan Y, Coarfa C, Katz TA, Tang WY, Wang Z, Biswal S, Rajagopalan S, Colacino JA, Tsai ZT, Sartor MA, Neier K, Dolinoy DC, Pinto J, Hamanaka RB, Mutlu GM, Patisaul HB, Aylor DL, Crawford GE, **Wiltshire T**, Chadwick LH, Duncan CG, Garton AE, McAllister KA; TaTARGET II Consortium, Bartolomei MS, Walker CL, Tyson FL. The NIEHS TaTARGET II

- Consortium and Environmental Epigenomics. *Nat Biotechnol.* 2018 Mar 6;36(3):225-227. doi: 10.1038/nbt.4099. No abstract available. PMID:29509741
13. Chen J, Akhtari FS, Wagner MJ, Suzuki O, **Wiltshire T**, Motsinger-Reif AA, Dumond JB. Pharmacogenetic Analysis of the Model-Based Pharmacokinetics of Five Anti-HV Drugs: How Does this Influence the Effect of Aging? *Clin Transl Sci.* 2018 Mar;11(2):226-236. doi: 10.1111/cts.12525. Epub 2017 Dec 3. PMID:29205871
  14. Fu ES, Erasso DM, Zhuang GZ, Upadhyay U, Ozdemir M, **Wiltshire T**, Sarantopoulos KD, Smith SB, Maixner W, Martin ER, Levitt RC. Impact of Human CA8 on Thermal Antinociception in Relation to Morphine Equivalence in Mice. *Neuroreport.* 2017 Dec 13;28(18):1215-1220. doi: 10.1097/WNR.0000000000000872. PMID:28902707
  15. Chen J, Akhtari FS, Wagner MJ, Suzuki O, **Wiltshire T**, Motsinger-Reif AA, Dumond JB. Pharmacogenetic Analysis of the Model-Based Pharmacokinetics of Five Anti-HIV Drugs: How Does This Influence the Effect of Aging? *Clin Transl Sci.* 2017 Dec 3. doi: 10.1111/cts.12525. [Epub ahead of print] PMID:29205871
  16. Fu ES, Erasso DM, Zhuang GZ, Upadhyay U, Ozdemir M, **Wiltshire T**, Sarantopoulos KD, Smith SB, Maixner W, Martin ER, Levitt RC. Impact of human CA8 on thermal antinociception in relation to morphine equivalence in mice. *Neuroreport.* 2017 Dec 13;28(18):1215-1220. doi: 10.1097/WNR.0000000000000872. PMID:28902707
  17. Gonzalez D, Rao GG, Bailey SC, Brouwer KLR, Cao Y, Crona DJ, Kashuba ADM, Lee CR, Morbitzer K, Patterson JH, **Wiltshire T**, Easter J, Savage SW, Powell JR. Precision Dosing: Public Health Need, Proposed Framework, and Anticipated Impact. *Clin Transl Sci.* 2017 Nov;10(6):443-454. doi: 10.1111/cts.12490. Epub 2017 Aug 10. Review. No abstract available. PMID:28875519
  18. Dong OM, **Wiltshire T**. Advancing Precision Medicine in Healthcare: Addressing Implementation Challenges to Increase Pharmacogenetic Testing in the Clinical Setting. *Physiol Genomics.* 2017 Jul 1;49(7):346-354. doi: 10.1152/physiolgenomics.00029.2017. Epub 2017 May 26. PMID:28550089
  19. Levitt RC, Zhuang GY, Kang Y, Erasso DM, Upadhyay U, Ozdemir M, Fu ES, Sarantopoulos KD, Smith SB, Maixner W, Diatchenko L, Martin ER, **Wiltshire T**. Car8 Dorsal Root Ganglion Expression and Genetic Regulation of Analgesic Responses are Associated with a Cis-eQTL in Mice. *Mamm Genome.* 2017 Oct;28(9-10):407-415. doi: 10.1007/s00335-017-9694-7. Epub 2017 May 25. PMID:28547032
  20. Mosedale M, Kim Y, Brock WJ, Roth SE, **Wiltshire T**, Eaddy JS, Keele GR, Corty RW, Xie Y, Valdar W, Watkins PB. Candidate Risk Factors and Mechanisms for Tolvaptan-Induced Liver Injury Are Identified Using a Collaborative Cross Approach. *Toxicol Sci.* 2017 Apr 1;156(2):438-454. doi: 10.1093/toxsci/kfw269. PubMed PMID: 28115652.
  21. High M, Cho HY, Marzec J, **Wiltshire T**, Verhein KC, Caballero MT, Acosta PL, Ciencewicz J, McCaw ZR, Kobzik L, Miller-DeGraff L, Gladwell W, Peden DB, Serra ME, Shi M, Weinberg C, Suzuki O, Wang X, Bell DA, Polack FP, Kleeberger SR. Determinants of Host Susceptibility to Murine Respiratory Syncytial Virus (RSV) Disease Identify a Role for the Innate Immunity Scavenger Receptor MARCO Gene in Human Infants. *EBioMedicine.* 2016 Aug 6. pii: S2352-3964(16)30360-7. doi: 10.1016/j.ebiom.2016.08.011. PMID:27554839.
  22. Frick A, Benton C, Sclaro KL, McLaughlin JE, Bradley CL, Suzuki OT, Wang N, **Tim Wiltshire T**. Transitioning Pharmacogenomics into the Clinical Setting: Training Future Pharmacists. *Frontiers in Pharmacology* 2016 Aug 8;7:241. doi: 10.3389/fphar.2016.00241.2016. PMID:27551265.
  23. Song G, Suzuki OT, Santos CM, Lucas AT, **Wiltshire T**, Zamboni WC. Gulp1 is Associated with the Pharmacokinetics of PEGylated Liposomal Doxorubicin (PLD) in Inbred Mouse Strains. *Nanomedicine.* 2016 Oct;12(7):2007-2017. doi: 10.1016/j.nano.2016.05.019. Epub 2016 Jun 9. PubMed PMID: 27288666.
  24. Frick A, Suzuki OT, Benton C, Parks B, Fedoriw Y, Richards KL, Thomas RS, **Wiltshire T**. Identifying Genes that Mediate Anthracycline Toxicity in Immune Cells. *Front Pharmacol.* 2015 Apr 15;6:62. doi: 10.3389/fphar.2015.00062. eCollection 2015. PubMed PMID: 25926793; PubMed Central PMCID: PMC4398020.

25. Zhuang GZ, Keeler B, Grant J, Bianchi L, Fu ES, Zhang YP, Erasso DM, Cui JG, **Wiltshire T**, Li Q, Hao S, Sarantopoulos KD, Candiotti K, Wishnek SM, Smith SB, Maixner W, Diatchenko L, Martin ER, Levitt RC. Carbonic Anhydrase-8 Regulates Inflammatory Pain by Inhibiting the ITPR1-Cytosolic Free Calcium Pathway. *PLoS One*. 2015 Mar 3;10(3):e0118273. doi: 10.1371/journal.pone.0118273. eCollection 2015. PubMed PMID: 25734498; PubMed Central PMCID: PMC4347988.
26. Segall SK, Shabalina SA, Meloto CB, Wen X, Cunningham D, Tarantino LM, **Wiltshire T**, Gauthier J, Tohyama S, Martin LJ, Mogil JS, Diatchenko L. Molecular Genetic Mechanisms of Allelic Specific Regulation of Murine Comt Expression. *Pain*. 2015 Oct;156(10):1965-77. doi: 10.1097/j.pain.0000000000000258. PubMed PMID: 26067582; PubMed Central PMCID: PMC4579042.
27. **Wiltshire T**, Ervin RB, Duan H, Bogue MA, Zamboni WC, Cook S, Chung W, Zou F, Tarantino LM. Initial Locomotor Sensitivity to Cocaine Varies Widely among Inbred Mouse Strains. *Genes Brain Behav*. 2015 Mar;14(3):271-80. doi: 10.1111/gbb.12209. PubMed PMID: 25727211; PubMed Central PMCID: PMC4692246.
28. Frick A, Fedoriw Y, Richards K, Damania B, Parks B, Suzuki O, Benton CS, Chan E, Thomas RS, **Wiltshire T**. Immune Cell-Based Screening Assay for Response to Anticancer Agents: Applications in Pharmacogenomics. *Pharmacogenomics Pers Med*. 2015 Feb 26;8:81-98. doi: 10.2147/PGPM.S73312. eCollection 2015. PubMed PMID: 25897258; PubMed Central PMCID: PMC4397719.
29. Xu X, Jaeger ER, Wang X, Lagler-Ferrez E, Batalov S, Mathis NL, **Wiltshire T**, Walker JR, Cooke MP, Sauer K, Huang YH. Mst1 Directs Myosin IIa Partitioning of Low and Higher Affinity Integrins during T Cell Migration. *PLoS One*. 2014 Aug 18;9(8):e105561. doi:10.1371/journal.pone.0105561. eCollection 2014. PMID:25133611; PubMed Central PMCID: PMC4136924.
30. Suzuki OT, Frick A, Parks BB, Trask OJ Jr, Butz N, Steffy B, Chan E, Scoville DK, Healy E, Benton C, McQuaid PE, Thomas RS, **Wiltshire T**. A Cellular Genetics Approach Identifies Gene-Drug Interactions and Pinpoints Drug Toxicity Pathway Nodes. *Front Genet*. 2014 Aug 29;5:272. doi: 10.3389/fgene.2014.00272. eCollection 2014. PubMed PMID: 25221565; PubMed Central PMCID: PMC4148776.
31. Nichols JL, Gladwell W, Verhein KC, Cho HY, Wess J, Suzuki O, **Wiltshire T**, Kleeberger SR. Genome-Wide Association Mapping of Acute Lung Injury in Neonatal Inbred Mice. *FASEB J*. 2014 Jun;28(6):2538-50. doi: 10.1096/fj.13-247221. Epub 2014 Feb 26. PMID:24571919; PubMed Central PMCID: PMC4021442.
32. Eisener-Dorman AF, Bailey JS, Grabowski-Boase L, Huitron-Resendiz S, Roberts AJ, **Wiltshire T**, Tarantino LM. Characterization of Highper, an ENU-induced Mouse Mutant with Abnormal Psychostimulant and Stress Responses. *Psychopharmacology (Berl)*. 2013 Jan;225(2):407-19. doi: 10.1007/s00213-012-2827-5. Epub 2012 Sep 5. PubMed PMID: 22948668; PubMed Central PMCID: PMC3536991.
33. Shimomura K, Kumar V, Koike N, Kim TK, Chong J, Buhr ED, Whiteley AR, Low SS, Omura C, Fenner D, Owens JR, Richards M, Yoo SH, Hong HK, Vitaterna MH, Bass J, Pletcher MT, **Wiltshire T**, Hogenesch J, Lowrey PL, Takahashi JS. *Usp1*, a Suppressor of the Circadian Clock Mutant, Reveals the Nature of the DNA-Binding of the CLOCK:BMAL1 Complex in Mice. *Elife*. 2013;2:e00426. PubMed PMID: 23580255; PubMed Central PMCID: PMC3622178.
34. Beisner DR, Langerak P, Parker AE, Dahlberg C, Otero FJ, Sutton SE, Poirot L, Barnes W, Young MA, Niessen S, **Wiltshire T**, Bodendorf U, Martoglio B, Cravatt B, Cooke MP. The Intramembrane Protease *Sppl2a* is Required for B cell and DC Development and Survival via Cleavage of the Invariant Chain. *J Exp Med*. 2013 Jan 14;210(1):23-30. PubMed PMID: 23267013; PubMed Central PMCID: PMC3549714.
35. Segall SK, Maixner W, Belfer I, **Wiltshire T**, Seltzer Z, Diatchenko L. Janus Molecule I: Dichotomous Effects of COMT in Neuropathic vs Nociceptive Pain Modalities. *CNS Neurol Disord Drug Targets*. 2012 May;11(3):222-35. PubMed PMID: 22483297; PubMed Central PMCID: PMC3698056.

36. Wang S, Zhang H, **Wiltshire T**, Sealock R, Faber JE. Genetic Dissection of the Canq1 Locus Governing Variation in Extent of the Collateral Circulation. *PLoS One* 2012;7(3):e31910. Epub 2012 Mar 6. PMID:22412848; PubMed Central PMCID: PMC3295810.
37. The Collaborative Cross Consortium (one of 86 authors). The Genome Architecture of the Collaborative Cross Mouse Genetic Reference Population. *Genetics*. February 1, 2012 vol. 190 no. 2 389-401. PubMed PMID: 22345608; PubMed Central PMCID: PMC3276630.
38. Benton CS, Miller BH, Skwerer S, Suzuki O, Schultz LE, Cameron MD, Marron JS, Pletcher MT, **Wiltshire T**. Evaluating Genetic Markers and Neurobiochemical Analytes for Fluoxetine Response Using a Panel of Mouse Inbred Strains *Psychopharmacology (Berl)*. 2011 Nov 24. PMID:22113448; PubMed Central PMCID: PMC3337404.
39. White MA, Steffy B, **Wiltshire T**, Payseur BA Genetic Dissection of a Key Reproductive Barrier Between Nascent Species of House Mice. *Genetics*. 2011 Sep;189(1):289-304. Epub 2011 Jul 12. PMID:21750261
40. Loguercio S, Overall RW, Michaelson JJ, **Wiltshire T**, Pletcher MT, Miller BH, Walker JR, Kempermann G, Su AI, Beyer A. Integrative Analysis of Low- and High-Resolution eQTL. *PLoS One*. 2010 Nov 10;5(11):e13920. PMID: 21085707
41. Dumont BL, White MA, Steffy B, **Wiltshire T**, Payseur BA. Extensive Recombination Rate Variation in the House Mouse Species Complex Inferred from Genetic Linkage Maps. *Genome Res*. 2011 Jan;21(1):114-25. doi: 10.1101/gr.111252.110. Epub 2010 Oct 26. PubMed PMID: 20978138; PubMed Central PMCID: PMC3012918.
42. Segall SK, Nackley AG, Diatchenko L, Lariviere WR, Lu X, Marron JS, Grabowski-Boase L, Walker JR, Slade G, Gauthier J, Bailey JS, Steffy BM, Maynard TM, Tarantino LM, **Wiltshire T**. Comt1 Genotype and Expression Predicts Anxiety and Nociceptive Sensitivity in Inbred Strains of Mice. *Genes Brain Behav*. 2010 Nov;9(8):933-46. doi: 10.1111/j.1601-183X.2010.00633.x. PubMed PMID: 20659173; PubMed Central PMCID: PMC2975805.
43. Kelly SA, Nehrenberg DL, Peirce JL, Hua K, Steffy BM, **Wiltshire T**, Pardo-Manuel de Villena F, Garland T Jr, Pomp D. Genetic Architecture of Voluntary Exercise in an Advanced Intercross Line of Mice. *Physiol Genomics*. 2010 Jul 7;42(2):190-200. Epub 2010 Apr 13. PubMed PMID: 20388837.
44. Eisener-Dorman AF, Grabowski-Boase L, Steffy BM, **Wiltshire T**, Tarantino LM. Quantitative Trait Locus and Haplotype Mapping in Closely Related Inbred Strains Identifies a Locus for Open Field Behavior. *Mamm Genome*. 2010 Jun;21(5-6):231-46. Epub 2010 May 15. PubMed PMID: 20473506.
45. Bopp SE, Ramachandran V, Henson K, Luzader A, Lindstrom M, Spooner M, Steffy BM, Suzuki O, Janse C, Waters AP, Zhou Y, **Wiltshire T**, Winzeler EA. Genome Wide Analysis of Inbred Mouse Lines Identifies a Locus Containing Ppar-Gamma as Contributing to Enhanced Malaria Survival. *PLoS One*. 2010 May 28;5(5):e10903. PubMed PMID: 20531941; PubMed Central PMCID: PMC2878346.
46. Lee JM, Zhang J, Su AI, Walker JR, **Wiltshire T**, Kang K, Dragileva E, Gillis T, Lopez ET, Boily MJ, Cyr M, Kohane I, Gusella JF, MacDonald ME, Wheeler VC. A Novel Approach to Investigate Tissue-Specific Trinucleotide Repeat Instability. *BMC Syst Biol*. 2010 Mar 19;4:29. PubMed PMID: 20302627; PubMed Central PMCID: PMC2856555.
47. Rakhra-Burris TK, Auman JT, Deverka P, Dressler LG, Evans JP, Goldberg RM, Havener TM, Hoskins JM, Jonas DE, Long KM, Motsinger-Reif AA, Irvin WJ, Richards KL, Roederer MW, Valgus JM, Riper M, Vernon JA, Zamboni WC, Wagner MJ, Walko CM, Weck KE, **Wiltshire T**, McLeod HL. Institutional profile. UNC Institute for Pharmacogenomics and Individualized Therapy: interdisciplinary research for individual care. *Pharmacogenomics*. 2010 Jan;11(1):13-21. PubMed PMID: 20017668.
48. Schwander M, Lopes V, Sczaniecka A, Gibbs D, Lillo C, Delano D, Tarantino LM, **Wiltshire T**, Williams DS, Müller U. A Novel Allele of Myosin VIIa Reveals a Critical Function for the C-Terminal FERM Domain for Melanosome Transport in Retinal Pigment Epithelial Cells. *J Neurosci*. 2009 Dec 16;29(50):15810-8. PubMed PMID: 20016096; PubMed Central PMCID: PMC2834289.
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### Book Chapters, Invited Reviews and Commentaries

1. Dong OM, and **Wiltshire T**. Chapter 41: Electrolytes. *Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition* Eds Raffaele De Catarina, J Alfredo Martinez, Martin Kohlmeier. Publisher: Academic Press, Elsevier. Publication date December 2019. ISBN: 978-0-12- 804572-5
2. Dong OM, and **Wiltshire T**. Chapter 68: Pharmaconutrigenetics: The Impact of Genetics on Nutrient-Drug Interactions. *Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition* Eds Raffaele De Catarina, J Alfredo Martinez, Martin Kohlmeier. Publisher: Academic Press, Elsevier. Publication date December 2019. ISBN: 978-0-12- 804572-5
3. **Wiltshire T**, Dong OM. Clinical Pharmacogenetics: How do we ensure a favorable future for patients? *Pharmacogenomics.* 2018 Apr;19(6):553-562. doi: 10.2217/pgs-2017-0192. Epub 2018 Apr 5. PMID: 29620450
4. Benton CS, **Wiltshire T**. Pharmacogenomics of antidepressant drugs: focus on key findings and future directions. *Curr Pharmacogenomics Person Med.*, 2015; 12(3): 141-147
5. Frick A, Suzuki O, Butz N, **Wiltshire T**. In Vitro and in Vivo Mouse Models for Pharmacogenetic Studies. *Methods in Methods Mol Biol.* 2013;1015:263-78 PMID:23824862
6. Segall SK, Maixner W, Belfer I, **Wiltshire T**, Seltzer Z, Diatchenko L, Janus Molecule I: Dichotomous Effects of COMT in Neuropathic vs. Nociceptive Pain Modalities. *CNS & Neurological Disorders - Drug Targets* 2012 May;11(3):222-35 PMID:22483297

7. **Wiltshire T**, Maixner W, Diatchenko L. Relax you won't feel the pain. *Nature Neuroscience* volume 14, number 12, Dec. 2011.
8. Benton C, **Wiltshire T**. *Biological Alterations in Depression. Psychiatric Disorders - Trends and Developments*. Edited by: Toru Uehara. ISBN 978-953-307-745-1, Publisher: InTech. Publication date: October 2011.
9. Rusyn I, Gatti DM, **Wiltshire T**, Kleeberger SR, Threadgill DW. Toxicogenetics: population-based testing of drug and chemical safety in mouse models. *Pharmacogenomics*. 2010 Aug;11(8):1127-36. PubMed PMID: 20704464.
10. Breitling R, Li Y, Tesson BM, Fu J, Wu C, **Wiltshire T**, Gerrits A, Bystrykh LV, de Haan G, Su AI, Jansen RC. Genetical genomics: spotlight on QTL hotspots. *PLoS Genet*. 2008 Oct;4(10):e1000232. Epub 2008 Oct 24. PubMed PMID: 18949031
11. Walker JR, **Wiltshire T**. Databases of free expression. *Mamm Genome*. 2006 Dec;17(12):1141-6. Epub 2006 Dec 1. Review. PubMed PMID: 17143588.
12. Pletcher M. **Wiltshire T**. Can we find the genes involved in complex traits? *Genome Biol*. 2004;5(10):347. Epub 2004 Sep 22. PubMed PMID: 15461809

### Recent Invited Presentations and Lectures 2008 –

Nutrigenetics, Nutrigenomics, and Precision Nutrition – Kannapolis Experimental Biology Conference, San Diego, April 2-6. Invited speaker and session chair.	2016 - 2019 2016
University of Otago, New Zealand, invited talk: Future of Pharmacogenomics	5/5/2016
University of Toledo keynote lecture for the 42 <sup>nd</sup> Pharmacology Research Colloquium (participants University of Michigan, Michigan State University, Wayne State University, University of Toledo). Honored as this year's Sterling Visiting Professor. 6/12/2015	
Invited Speaker – Cold Spring Harbor Laboratory Meeting on Rat Genomes & Models.	10/12/2015
28th International Mammalian Genome Conference, Session Chair, and speaker Mouse models for idiosyncratic tolvaaptan-induced liver injury are identified using a Collaborative Cross approach. Bar Harbor. ME.	10/27/2014
What is new in Pharmacogenetics? 2014 Southeast Regional Genetic Technology Meeting, Asheville, NC	9/19/14
Pharmacogenetics for UNCG Genetic Counseling Program – Greensboro NC. 3 hour lecture and discussion sessions	9/25/14 11/19/16
Pharmacogenetics short course coordinator and speaker, 10th biennial meeting of GPEN (GPEN2014), University of Helsinki, Helsinki, Finland.	8/27-30, 2014.
Translational Pharmacogenomics: From Mice to Men – Symposium Speaker American Association of Pharmaceutical Science meeting, San Antonio TX	11/11/13 – 11/14/13
Genetic Approaches to Identifying Toxicity Pathways – Symposium Speaker International Congress of Toxicology Meeting Seoul South Korea	6/30/13 – 7/4/13
University of Pennsylvania Pharmacology Seminar Series Host: Drs. John Hogenesch, Garrett Fitzgerald In vitro screening for toxicity biomarkers	1/2013
26th International Mammalian Genome Conference Cellular Genomics Approaches to Defining Toxicity Pathways. St. Petersburg FL.	10/21/12

Inaugural Genetics of Pain Meeting. Using Mouse Models for Chemotherapy-Induced Peripheral Neuropathy Miami Beach FL	2/8/12 – 2/10/12
50th Annual Meeting of the Society of Toxicology, Identifying Genetic Pathways of Toxicity	3/6/11 – 3/10/11
24th International Mammalian Genome Conference Importance of Cadm1 and cell adhesion in depressive behavior. Heraklion, Crete	10/17/10 – 10/21/10
5th Helsinki Biomedical Graduate School Student Council Symposium Pharmacogenetics: disease models using mice Helsinki, Finland:	5/4/10 - 5/5/10
NC TraCS Symposium: Translational Research to Address Health Disparities Across the Lifespan	3/19/10
Society of Toxicology (SOT) Annual Meeting Symposium session Genetics: The Link Between Exposures, Gene x Environment Interaction, and Toxicity - Salt Lake City, Utah	3/7/10 - 3/11/10
COMBIO (Australian and New Zealand molecular biology and biochemistry societies) Plenary Lecture, Genetic variation in mice: modeling disease, and pharmacogenetics Christchurch New Zealand	12/9/09
University of Pennsylvania School of Medicine - Department of Pharmacology Seminar series: Using genetic variation in mice for pharmacogenetic studies.	9/21/09
NIEHS Genetic analysis in toxicology Seminar Series Toxicogenetics using mouse models	9/14/09
IPIT Seminar Series, University of North Carolina Genetic variation in mice: modeling disease, pharmacogenetics, and basic biology	9/8/09
Pfizer, Groton CT Pre-Clinical assessment group meeting. Pre-clinical testing using mouse models University of Pennsylvania School of Medicine	9/7/08
Society of Biological Psychiatry Symposium Society 63rd Annual Scientific Meeting, Mapping Complex Traits for Addictive and Psychiatric Disorders in Mice. Washington, DC.	May 1-3, 2008

## Abstracts/Posters

1. Dong OM, Lee CR, Wheeler S, Voora D, Dusetzina S, **Wiltshire T**. A cost-effectiveness analysis of multi-gene pharmacogenetic testing in acute coronary syndrome patients following percutaneous coronary intervention. International Society for Pharmacoeconomics and Outcomes, 21st Annual European Congress, Barcelona, Spain, November 13, 2018.
2. Dong OM, Suzuki O, Howard R, Jamieson K, Pointer M, Kohlmeier M, **Wiltshire T**. Characterizing the Genetics of Salt Sensitivity: A Cost-Efficient Assay in Development. Nutrition 2018: American Society for Nutrition Annual Meeting, Boston, Massachusetts, June 10, 2018.
3. Dong OM, Young L, **Wiltshire T**, Guenzel N. The Prevalence of Atypical Antipsychotic Medication Changes Based on CYP2D6 Genotyping in Patients with Psychiatric Disorders.

- American Society for Clinical Pharmacology and Therapeutics Annual Meeting, Orlando, Florida, March 22, 2018.
4. Patel H, Dupuis R, Benton C, **Wiltshire T**, Paka P, Xue I, Szempruch K, Lee RA, Toledo A, Kozlowski T. Pharmacogenetic-Guided Tacrolimus Dosing and Monitoring in Kidney Transplant Recipients. 2018 Global Conference on Clinical Pharmacology, ACCP Seattle, October 20-23, 2018.
  5. Gonzalez R, Benton C, **Wiltshire T**. Determining copy number variations in CYP2D6 using a TaqMan Real-Time PCR assay. ABRCMS Phoenix and UNC BBSP Fall Poster Session Symposium.
  6. Gonzalez R, Lee C, Patel H, Benton C, **Wiltshire T**. Testing rare alleles (CYP3A5 \*6, \*7) for tacrolimus genotype guided dosing in a diverse kidney transplant patient population. UNC ESOP recruitment weekend.
  7. Dong OM, Young L, **Wiltshire T**, Guenzel N. The Prevalence of Atypical Antipsychotic Medication Changes Based on CYP2D6 Genotyping in Patients with Psychiatric Disorders. Accepted for the ASCPT Annual Meeting, Orlando, FL, USA. 2018.
  8. Dong OM, Borse MS, Polasek MJ, Farley JF, Stouffer GA, Lee CR. CYP2C19 Guided Antiplatelet Therapy: A Cost-effectiveness analysis of 30-day and one-year outcomes following percutaneous coronary intervention. International Society for Pharmacoeconomics and Outcomes, 20th Annual European Congress. Glasgow, UK. 2017.
  9. Dong OM, Suzuki O, Howard R, Jamieson K, Pointer M, Kohlmeier M, **Wiltshire T**. Using targeted next-generation sequencing as a cost-efficient method to characterize the genetics of salt sensitivity. 11th Congress of the International Society of Nutrigenetics and Nutrigenomics (ISNN) Annual Meeting, Los Angeles, CA, USA. 2017.
  10. Wu JM, **Wiltshire T**, Rupp B, Suzuki O, Jamieson K, Vora D, Schmader K. Can pharmacogenetics be used to predict the response to fesoterodine fumarate? American Urogynecologic Society (AUGS). Providence, RI, USA. 2017.
  11. Paka P, Benton C, Bolger L, Desai C, Detwiler R, DuPuis R, Gerber D, Fuller E, Lee R, Shurney J, Steele P, Szempruch K, Toledo A, True K, **Wiltshire T**, Kozlowski T. Study of Pharmacogenomic-Guided Tacrolimus Dosing and Monitoring in Kidney Transplant Recipients. The Eleventh Annual Chapel Hill Pharmaceutical Sciences Conference. Chapel Hill, NC, USA. 2017
  12. El-Sabae H, Howard R, Dong O, Suzuki O, Benton C, McLaughlin J, Frick A, **Wiltshire T**. Student pharmacists' attitudes and confidence about clinical pharmacogenomics based on an educational intervention including personal genotyping. The Eleventh Annual Chapel Hill Pharmaceutical Sciences Conference. Chapel Hill, NC, USA. 2017.
  13. Chen J, Akhtari F, Wagner M, Suzuki O, Motsinger-Reif A, **Wiltshire T**, Dumond J. Precision Dosing of Antiretrovirals (ARVs) For Aging Human Immunodeficiency Virus (HIV)-infected Patients: Pharmacogenetic (PGx) and Pharmacokinetic (PK) Analysis of Atazanavir (ATV), Ritonavir (RTV), Efavirenz (EFV), Tenofovir (TFV) and Emtricitabine (FTC). The Eleventh Annual Chapel Hill Pharmaceutical Sciences Conference. Chapel Hill, NC, USA. 2017.
  14. Allard N, Horman B, Safi A, **Wiltshire T**, Patisaul H, Crawford G, Aylor D. Epigenomic Analysis of 2,3,7,8-Tetrachlorodibenzo-p-dioxin Exposure in Multiple Tissues. ?
  15. Young L, Dong O, **Wiltshire T**, Kupzyk K, Guenzel N. MC4R Polymorphism Associated with Antipsychotic-associated Weight Gain. 11<sup>th</sup> Congress of the International Society of Nutrigenetics and Nutrigenomics. Los Angeles, CA, USA. 2017.
  16. **Wiltshire T**, Dong O, Suzuki O. PGx1: an assay for actionable genes in pharmacogenetics. 2016 American Society of Human Genetics. ASHG Annual Meeting. Vancouver, B.C., Canada. 2016.
  17. Li A, Dong O, Oni-Orisan A, **Wiltshire T**, Lee C. Projected impact of genotype-guided optimization of medication use: an opportunity for preemptive genotyping in cardiac catheterization laboratory patients. ASHP Annual Meeting. Las Vegas, NV, USA. 2016.
  18. Frick A, Benton C, Scolaro K, McLaughlin J, Bradley C, Suzuki O, Wang N, **Wiltshire T**. Changes in student pharmacists' attitudes and self-perceived competence following the use of direct-to-consumer personal genotyping and educational interventions on pharmacogenomics. AACP Annual Meeting, Anaheim, CA, USA. 2016.

19. Dong O, Suzuki O, Frick A, Benton C, **Wiltshire T**. The Actionable Pharmacogenomic Genome: A Novel Genetic Sequencing Assay in Development. UNC School of Pharmacy Research Day, Chapel Hill, NC, USA. 2016.
20. Crona D, Suzuki O, Trask OJ, Parks B, Frick A, **Wiltshire T**, Innocenti F. A high-throughput cellular genetics approach to identifying genes associated with sorafenib-induced cytochrome C release. AACR Annual Meeting. Philadelphia, PA, USA. 2015.
21. Mosedale M, **Wiltshire T**, Eaddy JS, Brock WJ, Roth S, Dodd DE, Valdar W, Corty RW, Xie Y, Watkins PB. Candidate Risk Factors for Tolvaptan-Induced Liver Injury Are Identified Using a Collaborative Cross Approach. SOT 54th Annual Meeting, San Diego, CA, USA. 2015.
22. Crona D, Suzuki O, Trask OJ, Frick A, Parks B, Thomas R, **Wiltshire T**, Innocenti F. A High-Throughput Cellular Genetics Approach to Identifying Genes Associated with Sorafenib Response and Toxicity. ASCPT meeting, Atlanta, GA, USA. 2014.
23. Frick A, Fedoriw Y, Richards K, Thomas R, **Wiltshire T**. Cellular genomics approaches to defining toxicity pathways of chemotherapeutic agents in immune cells. AACR Tumor Angiogenesis and Vascular Normalization: Bench to Bedside to Biomarkers, Orlando, FL, USA. 2014.
24. Crona D, Suzuki O, Trask OJ, Jr., Frick A, Parks B, Thomas R, **Wiltshire T**, Innocenti F. A High-Throughput Cellular Genetics Approach to Identifying Genes Associated with Sorafenib Response and Toxicity. AACR Annual Meeting, San Diego, CA, USA. 2014.
25. **Wiltshire T**, Eaddy JS, Brock WJ, Roth S, Dodd DE, Valdar W, Corty RW, Xie Y, Watkins PB, Mosedale M. Mouse models for idiosyncratic tolvaptan-induced liver injury are identified using a Collaborative Cross approach. International Mouse Genome Conference, Harbor, ME, USA. 2014.
26. Benton CS, Muhale F, Suzuki O, Frick A, Trask OJ, Thomas R, Cai S, McLeod HL, **Wiltshire T**. A mechanism for docetaxel-induced neutropenia: The role of *Cwc27*. ASHG meeting Boston, MA, USA. 2013.
27. **Wiltshire T**, Cooke M. The intramembrane protease Sppl2a is required for B cell and DC development and survival via cleavage of CD74. AAI Meeting, Honolulu, HI, USA 2013.
28. Crona D, Suzuki O, Trask OJ, Frick A, Parks B, Thomas R, **Wiltshire T**, Innocenti F. Cellular genetics approaches to defining toxicity pathways. AACR Annual Meeting, Washington, DC, USA. 2013.
29. Suzuki O, Parks B, Trask OJ, Benton C, Frick A, Butz N, Chan E, Healy E, Thomas RS, **Wiltshire T**. In vitro toxicogenomic screen developed using genetically diverse mouse inbred cell lines: developing in vivo validations. 52nd Annual Meeting of the Society of Toxicology, San Antonio, TX, USA. 2013.
30. Nichols J, Burkholder A, Lu J, McCaw Z, Suzuki O, Fargo D, Bushel P, **Wiltshire T**, Kleeberger SR. Integrating Genome and Transcriptome data to understand susceptibility to postnatal lung injury. 52nd Annual Meeting of the Society of Toxicology, San Antonio, TX, USA. 2013.
31. Trask OJ, Parks B, Suzuki O, Frick A, **Wiltshire T**, Thomas R. Improving Predictive Drug and Chemical Safety using High Content Imaging Phenotypic Screen and Pharmacogenetics to Determine Toxicity Pathways. 2nd Annual Society for Laboratory Automation and Screening, Orlando, FL, USA. 2013.
32. Frick AD, Richards KL, Thomas R, Fedoriw YD, Damania BA, Parks B, Chan E, **Wiltshire T**. A Cellular Genomics Approach to Defining Toxicity Pathways. 54th ASH Annual Meeting and Exposition, Atlanta, GA, USA. 2012.
33. Frick A, Thomas R, Richards K, Damania B, Fedoriw Y, Parks B, Chan E, **Wiltshire T**. Cellular Genomics Approaches to Defining Toxicity Pathways. 26th International Mammalian Genome Conference, St. Petersburg, FL, USA. 2012.
34. Benton CS, Suzuki O, McQuaid PE, Chan E, Frick A, Trask OJ, Parks B, Thomas R, **Wiltshire T**. Moving drug development forward: validating in vitro assays developed using genetically diverse mouse inbred cell lines. 26th International Mammalian Genome Conference, St. Petersburg, FL, USA. 2012.



35. Gladwell W, Levitt A, Walters D, Martin J, **Wiltshire T**, Kleeberger SR. Genetic and Genomic Analysis of Airway Hyperresponsiveness to Serotonin in Inbred Mice. American Thoracic Society, Denver CO, USA. 2012.
36. Benton CS, Chan E, **Wiltshire T**. Characterizing the Genetic Mechanisms Underlying Chemotherapy-Induced Peripheral Neuropathy. Inaugural Genetics of Pain Meeting, Miami Beach FL, USA. 2012.
37. Santos C, Miller BH, Skwerer S, Suzuki O, Marron JS, Pletcher MT, Tarantino L, **Wiltshire T**. Evaluating Genetic Markers and Neurobiochemical Analytes for Antidepressant Response Using a Panel of Inbred Mouse Strains. American Society of Human Genetics, Montreal, Canada. 2011.
38. Tarantino LM, Ervin RB, Duan H, Cook S, Zamboni W, Chung W, Zou F, **Wiltshire T**. Haplotype mapping identifies loci involved in cocaine-induced locomotor activation in inbred mice. Satellite symposium to the World Congress on Psychiatric Genetics sponsored by the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism. 2011
39. Telleria MA, Li Q, Zhang YP, Morris RW, Fu ES, Sato-Takeda M, Yabe T, **Wiltshire T**, Casamayor N, Spertus M, Levitt RC. Biomarkers of Persistent Pain: *CAR8* is Associated with Multiple Forms of Chronic Pain. Annual Meeting of American Society of Anesthesiologists, Chicago, IL, USA. 2011.
40. Fu ES, Zhang Y, **Wiltshire T**, Morris RW, Levitt RC. Carbonic Anhydrase 8 (*Car8*) is Polymorphic in Mice and Variable Dorsal Root Ganglia (DRG) Expression Alters Nociception. Annual Meeting of American Society of Anesthesiologists, Chicago, IL, USA. 2011.
41. Tarantino LM, Ervin RB, Duan H, Cook S, Zamboni W, Chung W, Zou F, **Wiltshire T**. Cocaine-induced locomotor activation and pharmacokinetics in 45 inbred mouse strains. International Mouse Genome Society, Washington, DC, USA. 2011.
42. **Wiltshire T**, Suzuki O, Frick A, Butz N, Parks B, Trask J, Thomas R. Interrogating Genetic Pathways of Toxicity Using In Vitro High-Content Screening of Embryonic Fibroblasts. 50th Annual Meeting of the Society of Toxicology, Washington, DC, USA. 2011.
43. Suzuki O, Santos C, Su A, Tarantino L, **Wiltshire T**. A Survey of Neurobiochemical Levels in a Panel of Genetically Diverse Mouse Inbred Strains to Identify a Biomarker for Anxiety and Mood Disorder. The 8th Globalization of Pharmaceuticals Education Network (GPEN) Meeting, Chapel Hill, NC, USA. 2010.
44. Eisener-Dorman AF, Bailey JS, Grabowski-Boase L, Steffy BM, **Wiltshire T**, Tarantino LM. Using comparative analysis and haplotype mapping approaches to identify quantitative trait loci in closely-related strains. International Behavioural and Neural Genetics Meeting, Halifax, NS, Canada. 2010.
45. Li H, Cherry SM, Maslen CL, **Wiltshire T**, Roger H. Reeves RH. Genetic modifiers predisposing to congenital heart disease in a sensitized population. ASHG Washington, DC, USA. 2010.
46. Santos C, Miller B, Pletcher M, Su A, Tarantino L, **Wiltshire T**. Unique Systems Biology Approach to Identify Biomarkers. The 11th international conference on Systems Biology, Edinburgh, UK, 2010.
47. Santos C, Miller B, Pletcher M, Su A, Tarantino L, **Wiltshire T**. Importance of *Cadm1* and cell adhesion in Depressive Behavior. 24th International Mammalian Genome Conference, Heraklion. Crete October 17-21, 2010.
48. Suzuki O, Butz N, Pletcher M, Su A, Steffy B, Scoville D, Frick A, Trask J, Thomas R, **Wiltshire T**. A Cellular Genetics Platform to identify pharmacogenetic toxicity pathways. 24th International Mammalian Genome Conference, Heraklion, Crete. 2010.
49. Shimomura K, Lowrey PL, Kumar V, Chong J, Buhr ED, Low SS, Omura C, Fenner D, Richards M, Hong H, Vitaterna MH, Pletcher MT, **Wiltshire T**, Hogenesch JB, Hida A, Mishima K, Kadotani H, Takahashi JS. Upstream Transcription Factor 1 (*Usf1*) is responsible for Suppressor of Clock (*Soc*): Uncovering a hidden transcription pathway for circadian clock genes. Meeting of the Society for Research on Biological Rhythms, Sandestin, FL, USA. 2010.

50. Santos C, Miller B, Pletcher M, Su A, Tarantino L, **Wiltshire T**. Modeling Depression in Mice to Identify Genetic Mechanisms of Mood Disorder. CIHR 1<sup>st</sup> International Annual Conference Models of Human Diseases, Toronto, Canada. 2010.
51. Li H, Cherry SM, Maslen CL, **Wiltshire T**, Reeves RH. Genetic modifiers predisposing to congenital heart disease in a sensitized population. Weinstein Cardiovascular Development Conference, Amsterdam, Netherlands. 2010.
52. Nackley AG, Slade G, Walker J, Steffy B, Tarantino LM, Diatchenko L, **Wiltshire T**. An insertion of a SINE element in the 3'UTR of Comt1 Influences Pain Perception in Common Inbred Strains of Mice. The American Pain Society's 29<sup>th</sup> Annual Scientific Meeting, Baltimore, MD, USA. 2010.
53. QTL mapping of hybrid male sterility. 9th annual meeting of the Complex Trait Community Chicago, IL, USA. 2010.
54. Evolution of the Meiotic Recombination Rate across the House Mouse Genome. 9th Annual meeting Complex Trait Community, Chicago, IL, USA. 2010.
55. Eisener-Dorman AF, Bailey JS, Grabowski L, Roberts AJ, Steffy BM, **Wiltshire T**, Tarantino LM. Highper, an ENU-induced mutant that exhibits abnormal psychostimulant and stress responses. International Behavioural and Neural Genetics Society, Dresden, Germany. 2009.
56. Eisener-Dorman AF, Bailey JS, Grabowski-Boase L, Steffy BM, **Wiltshire T**, Tarantino LM. Comparative mapping of quantitative trait loci for locomotor response to novelty and anxiety using closely-related inbred strains. International Mammalian Genome Conference, San Diego, California, USA. 2009.
57. Santos C, Miller B, Pletcher M, Steffy B, Tarantino L, Su A, **Wiltshire T**. Identifying Candidate Gene Expression Markers in Depression Models. International Mammalian Genome Conference, 23<sup>rd</sup> Meeting, La Jolla, CA, USA. 2009.
58. Gene Expression Networks in Anxiety and Depression. Globalization of Pharmaceuticals Education Network 7<sup>th</sup> International Meeting, Katholieke Universiteit, Leuven, Belgium, 2008.
59. Tarantino LM, Bailey JS, Grabowski-Boase L, Walker JR, Wu C, Janes J, Su AI and **Wiltshire T**. Organismal and genetic networks in anxiety and depression. International Behavioural and Neural Genetics Meeting, Portland, Oregon, USA. 2008.
60. Tarantino LM, Bailey JS, Grabowski-Boase L, Walker JR, Wu C, Janes J, Su AI and **Wiltshire T**. Organismal and genetic networks in anxiety and depression. Society for Neuroscience, Washington DC, USA. 2008.
61. Bailey JS, Grabowski-Boase L, Steffy BM, **Wiltshire T** and Tarantino LM. Identification of an ENU-induced mutant that displays hyperactivity in a novel environment, exaggerated responses to psychostimulants and a prolonged stress response. International Behavioural and Neural Genetics Meeting, Doorwerth, Netherlands. 2007.
62. Bailey JS, Grabowski L, Hice R, **Wiltshire T** and Tarantino LM. Haplotype-association mapping of behavior across inbred strains: identification of loci associated with locomotor activity in a novel environment. International Mammalian Genome Conference, Charleston, South Carolina, USA. 2006.
63. Tarantino LM, Bailey JS, Grabowski L, Steffy BM and **Wiltshire T**. Identification of ENU-induced mutants with hyperactivity and abnormal responses to psychostimulants and acute stress. Gordon Conference: Genes and Behavior, Ventura, California, USA. 2006.

## Teaching

High School – Subjects taught to lower grade levels, Biology, Chemistry, Physics, Earth Sciences, and Mathematics. Subjects taught to advanced grade levels, Biology, Chemistry. Outdoor Education, also taught to senior students.

Biology 101 labs – University of Tennessee undergraduate program.

Biotechnology Lab class – University of Tennessee graduate program.

## Graduate Program (Ph.D. in Pharmaceutical Sciences)

Course Coordinator DPET 838 – Methods in Pharmacogenetics	2009 - 2017
Lecturer DPET 832 – Pharmacogenomics	2008 - present
Advisor DPET 991 – Research in DPET	2008 -present
<b>Professional Program (PharmD)</b>	fall – 2013
PHCY 203 Physiology – neuroscience section Pharmacogenetics section	2014 - 2015
Greensboro Pharmacogenetics in Clinical Genetics Medical Genetics counseling program	2014 - present
PHCY 621 Problems in Pharmaceutical Sciences	2016 - 2017
PHCY 611 Applied Clinical Pharmacology	2016 - present

### **Continuing Education Programs for Pharmacists**

Design and execution of CE's to train Pharmacists in Pharmacogenetics

30<sup>th</sup> Annual Pharmacy Practice Seminar, Wrightsville Beach NC, August, 2015

NCAP Annual Convention, Raleigh, NC, November 2015

Kroger Pharmacists – 2 lectures Chapel Hill, NC, November 2015

AHEC – Pharmacy Update, Greensboro, NC, – December 2015

### **Dissertation Committees**

#### Division of Pharmacotherapy and Experimental Therapeutics

James Beaudoin (Committee member)

Spinel Karas (Committee member)

Daisy Zhu (Committee Chair)

Jenna Foyt (Committee member) – left program

Olivia Dong (Major Advisor) - graduated

Nancy Gillis (Committee Chair) - graduated

Dan Crona (Committee Chair) - graduated

Dan Hertz (Committee Chair) - graduated

Akinyemi Oni-Orisan (Committee Chair) - graduated

Gina Song (Committee member) - graduated

Amber Frick (Major Advisor) - graduated

Cristina Santos (Major Advisor) - graduated

Shawn Watson (Committee Chair) - graduated

Venita Gresham (Committee member) – graduated

#### Division of Chemical Biology and Medicinal Chemistry

Sarah Claypool (Committee member) - graduated

#### Graduate Program Curriculum of Genetics and Molecular Biology, University of North Carolina

Yanwei, Cai (Committee member – Valdar major advisor)

Tangi Smallwood (Committee member) – graduated

Samantha Segall (Major Advisor) – graduated

Yuying Xie – (Threadgill major advisor) - graduated

Graduate Program Curriculum in Toxicology, Environmental Genetics Group, NIEHS

Monica High - (Kleeberger - major advisor) - graduated

Jennifer Nicholls (Kleeberger - major advisor) - graduated

Graduate Program – Department of Cell and Molecular Physiology

Shiliang Wang (Faber – major advisor) - graduated

Department of Biostatistics, School of Public Health

Wonil Chung (Zou – major advisor Committee member) - graduated

Yi Gong (Zou - major advisor) - graduated

## Post-Doctoral Advisor

### Current

Oscar Suzuki (Program Manager)

Cristina Benton (Clinical Trials Manager)

### Prior

Mat Pletcher - Senior Principal Scientist, Investigative Toxicology Pfizer Global Research and Development. Groton CT.

David Delano – Product Manager, Epigenetics. Illumina Corp, San Diego, CA.

Steven Su – Scientist, Merrimack Pharmaceuticals, Boston MA

Natasha Butz – Manager, genome sequencing core group - UNC

## Current Research Support

UNC School of Medicine and NC TraCS (Wiltshire and Bates – CO PI) \$50,000, 1/2019-1/2020

### **Implementation of a Preemptive Approach to Pharmacogenomics in Oncology – IDEA0002140**

1U01 ES026717 01 (Aylor - NCSU, Wiltshire - UNC, Crawford - Duke) \$632,000, 4/1/2016 – 3/30/2020 - NIEHS

### **System Toxicogenomics of Endocrine Disrupting Chemicals in Brain.**

The major goal of this project is to assess the epigenetic marks in brain tissues and surrogate tissues to determine if surrogate tissues can be used to evaluate drug toxicity.

UNC sub-contract – 10% effort

5 R01 CA161608 02 (Motsinger-Reif – PI, NCSU) \$446,000 4/1/17 – 3/30/22 NCI

### **Genetic etiology of cancer drug response.**

The major goals of this project are to conduct ex vivo GWAS studies in two large, independent population cohorts on drug response phenotypes. The overall goal is to identify high interest genes and characterize the trait etiology of these drug response outcomes. – 18% effort

1R01HD08827901A1 (Tang, J – UNC, PI, Wiltshire – sub-contract) NICHD, \$522,899, 27/9/2016 – 6/30/2022

**A prospective cohort of HIV-infected Malawian women on efavirenz initiating the levonorgestrel implant or the depot medroxyprogesterone acetate injectable.** Sub-contract to provide sequencing of pharmacogenetics genes. (5% effort)

Eshelman School of Pharmacy Innovation award Tier 3 \$442,000 6/1/2017 – 5/30/2019  
**Clinical Implementation of Pharmacogenomics: The Actionable Genome** (Wiltshire PI). The goal of this project is to provide a direct path to the clinical implementation of pharmacogenomics (PGx). We will develop a novel test that assesses genetic information on 21 genes.  
No salary support – 20% effort

### Completed Research Support

Eshelman School of Pharmacy Innovation award Tier 1 \$50,000 6/1/2016 – 5/30/2017  
**Clinical Implementation of Pharmacogenomics: The Actionable Genome** (Wiltshire PI). The goal of this project is to provide a direct path to the clinical implementation of pharmacogenomics (PGx). We will develop a novel test that assesses genetic information on 21 genes.

2R01DA023690-03A1(Tarantino, Wiltshire, co-PI) 1/20/2013 – 1/31/2018. NIDA  
**Organismal and Genetic Networks in Drug Reward and Reinforcement.**  
The major goals of this project are to collect and analyze drug reward and reinforcement-related genetic, biochemical and clinical phenotype data related in inbred mouse strains – 10% effort

5 R01 CA161608 02 (Motsinger-Reif – PI, NCSU) \$446,000 2/6/13 – 2/29/17 NCI  
**GENETIC ETIOLOGY OF CANCER DRUG RESPONSE**  
The major goals of this project are to conduct ex vivo GWAS studies in two large, independent population cohorts on drug response phenotypes. The overall goal is to identify high interest genes and characterize the trait etiology of these drug response outcomes.

5 U54 HL11779802 (Fitzgerald – PI, PENN) \$515,000 8/1/12 – 5/31/17  
NHLBI  
**PERSONALIZATION OF THERAPEUTIC EFFICACY AND RISK**  
We understand poorly their mechanism of action of non-steroidal anti-inflammatory drugs (NSAIDs). They also cause serious gastrointestinal and cardiovascular adverse effects and we still do not know the NSAID of choice for patients with arthritis and heart disease or if NSAIDs differ in clinical efficacy.

1R01MH077251-01A1 (Wiltshire) \$250,000 7/01/2007 - 4/31/2013 NIMH  
**Organismal, Cellular and Genetic Networks in Anxiety and Depression**  
The major goals of this project are to collect and analyze anxiety and depression-related genetic, biochemical and clinical phenotype data related in inbred mouse strains.

5R01MH077251-01A1 (Wiltshire) \$35,000 4/31/2012 - 4/31/2013  
NIMH diversity supplement  
Organismal, Cellular and Genetic Networks in Anxiety and Depression  
The major goals of this project are to collect and analyze anxiety and depression-related genetic, biochemical and clinical phenotype data related in inbred mouse strains.

(Thomas HIHS, Wiltshire UNC co-PI's) 11/30/11 – 1/30/13  
**Pfizer Special project funding**  
Collaborative effort with The Hamner Institute for Health Sciences for pre-clinical toxicology  
The major goals of this project are to identify genetic pathways implicated in pharmacogenetic responses for compounds in pre-clinical studies.

5R01DA023690-02 (Tarantino, Wiltshire, coPIs) \$390,000 8/01/2010 – 7/31/2012  
NIDA  
**Organismal and Genetic Networks in Drug Reward and Reinforcement.**

The major goals of this project are to collect and analyze drug reward and reinforcement-related genetic, biochemical and clinical phenotype data related in inbred mouse strains

1 R01 DOA022392-01(Tarantino) Co-PI -10% \$250,000 7/01/2007 – 7/01/2011  
NIDA

**Fine Mapping Genes for Cocaine Locomotor Response in ENU Mutagenized Mice**

The major goals of this project are to map, identify and characterize the gene underlying a cocaine locomotor response in an ENU mutant mouse.

Novartis Grant SFP-1407. (Wiltshire - PI)

2002 -2003

Internal special project funding support within Novartis to develop SNP mapping technologies.