

CURRICULUM VITAE

TIM WILTSHIRE, PH.D

Personal Information

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Academic Appointments

Associate Professor Division of Pharmacotherapy and Experimental Therapeutics UNC Eshelman School of Pharmacy	2007 – present
Faculty member Associate Director, Institute for Pharmacogenomics and Individualized Therapy	2007 – present
Adjunct Faculty Department of Genetics UNC School of Medicine	2010 – present
Faculty member Lineberger Comprehensive Cancer Center	2010 – present

Professional Education and Training:

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

Post-Graduate Diploma in Science, major in Biotechnology. **Dip.Sci.(Hons)** 1990 - 1991
The University of Otago (Dunedin, New Zealand).
Thesis Project: Comparison of oil levels in accessions of *Myoporum laetum* and development of a tissue culture protocol for *M. laetum*.
Advisor: Dr. Paula Jameson

Doctor of Philosophy in Biochemistry, Cellular and Molecular Biology. **Ph.D.** 1991 - 1996
The University of Tennessee, Knoxville, Tennessee.
Dissertation: Mammalian Meiosis: Events of meiotic prophase I in spermatogenesis
Advisor: Dr. Mary Ann Handel

Postdoctoral Research

Post-Doctoral Fellow, Department of Physiology 1996 - 1998
The Johns Hopkins University School of Medicine
Advisor: Dr. Roger Reeves

Post-Doctoral Fellow, Center for Neurobiology and Behavior 1998 - 1999
University of Pennsylvania School of Medicine
Advisor: Dr. Maja Bucan

Other Employment:

High School Teacher (New Zealand – trained teacher certification) 1980 - 1991
Teaching general science classes and chemistry and biology to advanced levels
Waikohu College – Te Karaka 1980 - 1981
Motueka High School – Motueka (Head of Biology and Outdoor Education) 1982 - 1991

Institute Research Fellow 2000
Genomics Institute of the Novartis Research Foundation, a division of Novartis Pharmaceuticals

Staff Scientist 2001 - 2003
Genomics Institute of the Novartis Research Foundation

Genetics Group Leader 2003 - 2006
Genomics Institute of the Novartis Research Foundation

Senior Research Investigator – Genetics 2006 - 2007
Genomics Institute of the Novartis Research Foundation
San Diego, CA

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) September 12-14, 2004
Cancer Susceptibility and Resistance

National Cancer Institute - (Think Tank participant) December 6-7, 2005
Predictive Models of Cancer Susceptibility: Integrated Strategies

Host Susceptibility meeting, participant/consultant December 2006
National Toxicology Program (NIEHS)

NCI-Integrated Systems Genetics Meeting participant March 11-13 2008
Newport Beach, CA.

National Institutes of Health

Reviewer for NIEHS special emphasis panel 2007
Comparative Biology Elucidation of Environmental Pathways and Susceptibility

Reviewer for NIH GCAT Study sections, 2007, 2008
Genomics, Computational Biology and Technology

Reviewer for NIH ARRA Challenge Grant Program (RFA-OD-09-003) 2009
National Institutes of Health (NIH).

Journal Reviews

Reviewer for scientific journals: Genomics, Mammalian Genome, Genome Research, Nature Genetics, Genetics, Trends in Genetics, Physiological Genomics, BMC Genomics, and PLoS Biology, PLoS ONE.

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 - present
Sub-committee responsibilities – mouse genetics

Faculty Search Committee – Genetics Dept.
UNC School of Medicine

UNC Eshelman School of Pharmacy

Member, Conflict of Interest committee (COIC)

Interviewer – graduate program applicants

Institute of Pharmacogenomics and individualized Therapy
Associate Director for Pre-Clinical Studies

Professional Memberships

American Association for Advancement of Science (AAAS)	1993 - present
American Society of Human Genetics (ASHG)	2005 - present
International Mouse Genome Society Elected member of Nominations committee	1997 - present 2010

Awards

Post-Primary Teachers Association New Zealand Teacher of the year award. Nominated by students	1986
University of Tennessee - Science Alliance Graduate Student Award of Excellence, 1994 and 1995	
University of Tennessee Chancellors Award Excellence and Extraordinary Professional Promise,	1996
Mouse population-guided resequencing reveals that variants in CD44 contribute to acetaminophen-induced liver injury in humans. Published in Genome Research awarded a best paper award for 2009, Society of Toxicology.	

Publications

1. 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.
2. 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 Jul 23. [Epub ahead of print] PubMed PMID: 20659173.
3. 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.
4. 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.
5. 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.
 6. 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.
 7. 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.
 8. 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.
 9. Bryant CD, Chang HP, Zhang J, Wiltshire T, Tarantino LM, Palmer AA. A major QTL on chromosome 11 influences psychostimulant and opioid sensitivity in mice. *Genes Brain Behav*. 2009 Nov;8(8):795-805. Epub 2009 Jul 21. PubMed PMID: 19694818.
 10. Grillet N, Schwander M, Hildebrand MS, Sczaniecka A, Kolatkar A, Velasco J, Webster JA, Kahrizi K, Najmabadi H, Kimberling WJ, Stephan D, Bahlo M, Wiltshire T, Tarantino LM, Kuhn P, Smith RJ, Müller U. Mutations in LOXHD1, an evolutionarily conserved stereociliary protein, disrupt hair cell function in mice and cause progressive hearing loss in humans. *Am J Hum Genet*. 2009 Sep;85(3):328-37. PubMed PMID: 19732867; PubMed Central PMCID: PMC2771534.
 11. Harrill AH, Watkins PB, Su S, Ross PK, Harbourt DE, Stylianou IM, Boorman GA, Russo MW, Sackler RS, Harris SC, Smith PC, Tennant R, Bogue M, Paigen K, Harris C, Contractor T, Wiltshire T, Rusyn I, Threadgill DW. Mouse population-guided resequencing reveals that variants in CD44 contribute to acetaminophen-induced liver injury in humans. *Genome Res*. 2009 Sep;19(9):1507-15. Epub 2009 May 5. PubMed PMID: 19416960; PubMed Central PMCID: PMC2752130.
 12. Schwander M, Xiong W, Tokita J, Lelli A, Elledge HM, Kazmierczak P, Sczaniecka A, Kolatkar A, Wiltshire T, Kuhn P, Holt JR, Kachar B, Tarantino L, Müller U. A mouse model for nonsyndromic deafness (DFNB12) links hearing loss to defects in tip links of mechanosensory hair cells. *Proc Natl Acad Sci U S A*. 2009 Mar 31;106(13):5252-7. Epub 2009 Mar 6. PubMed PMID: 19270079; PubMed Central PMCID: PMC2664065.
 13. Barouch-Bentov R, Che J, Lee CC, Yang Y, Herman A, Jia Y, Velentza A, Watson J, Sternberg L, Kim S, Ziaee N, Miller A, Jackson C, Fujimoto M, Young M, Batalov S, Liu Y, Warmuth M, Wiltshire T, Cooke MP, Sauer K. A conserved salt bridge in the G loop of multiple protein kinases is important for catalysis and for in vivo Lyn function. *Mol Cell*. 2009 Jan 16;33(1):43-52. PubMed PMID: 19150426; PubMed Central PMCID: PMC2683036.

14. Williams R 4th, Lim JE, Harr B, Wing C, Walters R, Distler MG, Teschke M, Wu C, Wiltshire T, Su AI, Sokoloff G, Tarantino LM, Borevitz JO, Palmer AA. A common and unstable copy number variant is associated with differences in Glo1 expression and anxiety-like behavior. *PLoS One*. 2009;4(3):e4649. Epub 2009 Mar 6. PubMed PMID: 19266052; PubMed Central PMCID: PMC2650792.
15. Bailey JS, Grabowski-Boase L, Steffy BM, Wiltshire T, Churchill GA, Tarantino LM. Identification of quantitative trait loci for locomotor activation and anxiety using closely related inbred strains. *Genes Brain Behav*. 2008 Oct;7(7):761-9. PubMed PMID: 19130624; PubMed Central PMCID: PMC2888940.
16. 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; PubMed Central PMCID: PMC2563687.
17. Howden R, Liu E, Miller-DeGraff L, Keener HL, Walker C, Clark JA, Myers PH, Rouse DC, Wiltshire T, Kleeberger SR. The genetic contribution to heart rate and heart rate variability in quiescent mice. *Am J Physiol Heart Circ Physiol*. 2008 Jul;295(1):H59-68. Epub 2008 May 2. PubMed PMID: 18456734; PubMed Central PMCID: PMC2494744.
18. Wu C, Delano DL, Mitro N, Su SV, Janes J, McClurg P, Batalov S, Welch GL, Zhang J, Orth AP, Walker JR, Glynne RJ, Cooke MP, Takahashi JS, Shimomura K, Kohsaka A, Bass J, Saez E, Wiltshire T, Su AI. Gene set enrichment in eQTL data identifies novel annotations and pathway regulators. *PLoS Genet*. 2008 May 9;4(5):e1000070. PubMed PMID: 18464898; PubMed Central PMCID: PMC2346558.
19. Lattin JE, Schroder K, Su AI, Walker JR, Zhang J, Wiltshire T, Saijo K, Glass CK, Hume DA, Kellie S, Sweet MJ. Expression analysis of G Protein-Coupled Receptors in mouse macrophages. *Immunome Res*. 2008 Apr 29;4:5. PubMed PMID: 18442421; PubMed Central PMCID: PMC2394514.
20. Cheli Y, Jensen D, Marchese P, Habart D, Wiltshire T, Cooke M, Fernandez JA, Ware J, Ruggeri ZM, Kunicki TJ. The Modifier of hemostasis (Mh) locus on chromosome 4 controls in vivo hemostasis of Gp6^{-/-} mice. *Blood*. 2008 Feb 1;111(3):1266-73. Epub 2007 Nov 8. PubMed PMID: 17991808; PubMed Central PMCID: PMC2214743.
21. Labialle S, Yang L, Ruan X, Villemain A, Schmidt JV, Hernandez A, Wiltshire T, Cermakian N, Naumova AK. Coordinated diurnal regulation of genes from the Dlk1-Dio3 imprinted domain: implications for regulation of clusters of non-paralogous genes. *Hum Mol Genet*. 2008 Jan 1;17(1):15-26. Epub 2007 Sep 27. PubMed PMID: 17901046.
22. McClurg P, Janes J, Wu C, Delano DL, Walker JR, Batalov S, Takahashi JS, Shimomura K, Kohsaka A, Bass J, Wiltshire T, Su AI. Genomewide association analysis in diverse inbred mice: power and population structure. *Genetics*. 2007 May;176(1):675-83. Epub 2007 Apr 3. PubMed PMID: 17409088; PubMed Central PMCID: PMC1893038.
23. Wiltshire T, Senft J, Wang Y, Konat GW, Wenger SL, Reed E, Wang W. BRCA1 contributes to cell cycle arrest and chemoresistance in response to the anticancer agent irifolven. *Mol Pharmacol*. 2007 Apr;71(4):1051-60. Epub 2007 Jan 17. PubMed PMID: 17229870.
24. Schwander M, Sczaniecka A, Grillet N, Bailey JS, Avenarius M, Najmabadi H, Steffy BM, Federe GC, Lagler EA, Banan R, Hice R, Grabowski-Boase L, Keithley EM, Ryan AF, Housley GD, Wiltshire T, Smith RJ, Tarantino LM, Müller U. A forward genetics screen in mice identifies recessive deafness traits and reveals that pejvakin is essential for outer hair cell function. *J Neurosci*. 2007 Feb 28;27(9):2163-75. PubMed PMID: 17329413.
25. Walker JR, Wiltshire T. Databases of free expression. *Mamm Genome*. 2006 Dec;17(12):1141-6. Epub 2006 Dec 1. Review. PubMed PMID: 17143588.

26. Reijmers LG, Coats JK, Pletcher MT, Wiltshire T, Tarantino LM, Mayford M. A mutant mouse with a highly specific contextual fear-conditioning deficit found in an N-ethyl-N-nitrosourea (ENU) mutagenesis screen. *Learn Mem.* 2006 Mar-Apr;13(2):143-9. PubMed PMID: 16585790; PubMed Central PMCID: PMC1409825.
27. Moran JL, Bolton AD, Tran PV, Brown A, Dwyer ND, Manning DK, Bjork BC, Li C, Montgomery K, Siepka SM, Vitaterna MH, Takahashi JS, Wiltshire T, Kwiatkowski DJ, Kucherlapati R, Beier DR. Utilization of a whole genome SNP panel for efficient genetic mapping in the mouse. *Genome Res.* 2006 Mar;16(3):436-40. Epub 2006 Feb 3. PubMed PMID: 16461637; PubMed Central PMCID: PMC1415208.
28. McClurg P, Pletcher MT, Wiltshire T, Su AI. Comparative analysis of haplotype association mapping algorithms. *BMC Bioinformatics.* 2006 Feb 9;7:61. PubMed PMID: 16466585; PubMed Central PMCID: PMC1409800.
29. Tabeta K, Hoebe K, Janssen EM, Du X, Georgel P, Crozat K, Mudd S, Mann N, Sovath S, Goode J, Shamel L, Herskovits AA, Portnoy DA, Cooke M, Tarantino LM, Wiltshire T, Steinberg BE, Grinstein S, Beutler B. The Unc93b1 mutation 3d disrupts exogenous antigen presentation and signaling via Toll-like receptors 3, 7 and 9. *Nat Immunol.* 2006 Feb;7(2):156-64. Epub 2006 Jan 15. PubMed PMID: 16415873.
30. Fries S, Grosser T, Price TS, Lawson JA, Kapoor S, DeMarco S, Pletcher MT, Wiltshire T, FitzGerald GA. Marked interindividual variability in the response to selective inhibitors of cyclooxygenase-2. *Gastroenterology.* 2006 Jan;130(1):55-64. PubMed PMID: 16401468.
31. Ishimori N, Li R, Walsh KA, Korstanje R, Rollins JA, Petkov P, Pletcher MT, Wiltshire T, Donahue LR, Rosen CJ, Beamer WG, Churchill GA, Paigen B. Quantitative trait loci that determine BMD in C57BL/6J and 129S1/SvImJ inbred mice. *J Bone Miner Res.* 2006 Jan;21(1):105-12. Epub 2005 Sep 9. PubMed PMID: 16355279.
32. Delano DL, Montesinos MC, Desai A, Wilder T, Fernandez P, D'Eustachio P, Wiltshire T, Cronstein BN. Genetically based resistance to the antiinflammatory effects of methotrexate in the air-pouch model of acute inflammation. *Arthritis Rheum.* 2005 Aug;52(8):2567-75. PubMed PMID: 16059892; PubMed Central PMCID: PMC1343510.
33. Owens SE, Broman KW, Wiltshire T, Elmore JB, Bradley KM, Smith JR, Southard-Smith EM. Genome-wide linkage identifies novel modifier loci of aganglionosis in the Sox10Dom model of Hirschsprung disease. *Hum Mol Genet.* 2005 Jun 1;14(11):1549-58. Epub 2005 Apr 20. PubMed PMID: 15843399.
34. Bystrykh L, Weersing E, Dontje B, Sutton S, Pletcher MT, Wiltshire T, Su AI, Vellenga E, Wang J, Manly KF, Lu L, Chesler EJ, Alberts R, Jansen RC, Williams RW, Cooke MP, de Haan G. Uncovering regulatory pathways that affect hematopoietic stem cell function using 'genetical genomics'. *Nat Genet.* 2005 Mar;37(3):225-32. Epub 2005 Feb 13. PubMed PMID: 15711547.
35. Delano DL, Montesinos MC, D'Eustachio P, Wiltshire T, Cronstein BN. An interaction between genetic factors and gender determines the magnitude of the inflammatory response in the mouse air pouch model of acute inflammation. *Inflammation.* 2005 Feb;29(1):1-7. PubMed PMID: 16502340.
36. Sandberg ML, Sutton SE, Pletcher MT, Wiltshire T, Tarantino LM, Hogenesch JB, Cooke MP. c-Myb and p300 regulate hematopoietic stem cell proliferation and differentiation. *Dev Cell.* 2005 Feb;8(2):153-66. PubMed PMID: 15691758.
37. Pletcher MT, McClurg P, Batalov S, Su AI, Barnes SW, Lagler E, Korstanje R, Wang X, Nusskern D, Bogue MA, Mural RJ, Paigen B, Wiltshire T. Use of a dense single nucleotide polymorphism map for in silico mapping in the mouse. *PLoS Biol.* 2004

- Dec;2(12):e393. Epub 2004 Nov 9. PubMed PMID: 15534693; PubMed Central PMCID: PMC526179.
38. Churchill GA, Airey DC, Allayee H, Angel JM, Attie AD, Beatty J, Beavis WD, Belknap JK, Bennett B, Berrettini W, Bleich A, Bogue M, Broman KW, Buck KJ, Buckler E, Burmeister M, Chesler EJ, Cheverud JM, Clapcote S, Cook MN, Cox RD, Crabbe JC, Crusio WE, Darvasi A, Deschepper CF, Doerge RW, Farber CR, Forejt J, Gaile D, Garlow SJ, Geiger H, Gershenfeld H, Gordon T, Gu J, Gu W, de Haan G, Hayes NL, Heller C, Himmelbauer H, Hitzemann R, Hunter K, Hsu HC, Iraqi FA, Ivandic B, Jacob HJ, Jansen RC, Jepsen KJ, Johnson DK, Johnson TE, Kempermann G, Kendziora C, Kotb M, Kooy RF, Llamas B, Lammert F, Lassalle JM, Lowenstein PR, Lu L, Luskis A, Manly KF, Marcucio R, Matthews D, Medrano JF, Miller DR, Mittleman G, Mock BA, Mogil JS, Montagutelli X, Morahan G, Morris DG, Mott R, Nadeau JH, Nagase H, Nowakowski RS, O'Hara BF, Osadchuk AV, Page GP, Paigen B, Paigen K, Palmer AA, Pan HJ, Peltonen-Palotie L, Peirce J, Pomp D, Pravenec M, Prows DR, Qi Z, Reeves RH, Roder J, Rosen GD, Schadt EE, Schalkwyk LC, Seltzer Z, Shimomura K, Shou S, Sillanpää MJ, Siracusa LD, Snoeck HW, Spearow JL, Svenson K, Tarantino LM, Threadgill D, Toth LA, Valdar W, de Villena FP, Warden C, Whatley S, Williams RW, Wiltshire T, Yi N, Zhang D, Zhang M, Zou F; Complex Trait Consortium. The Collaborative Cross, a community resource for the genetic analysis of complex traits. *Nat Genet.* 2004 Nov;36(11):1133-7. PubMed PMID: 15514660.
 39. Su AI, Wiltshire T, Batalov S, Lapp H, Ching KA, Block D, Zhang J, Soden R, Hayakawa M, Kreiman G, Cooke MP, Walker JR, Hogenesch JB. A gene atlas of the mouse and human protein-encoding transcriptomes. *Proc Natl Acad Sci U S A.* 2004 Apr 20;101(16):6062-7. Epub 2004 Apr 9. PubMed PMID: 15075390; PubMed Central PMCID: PMC395923.
 40. Wen BG, Pletcher MT, Warashina M, Choe SH, Ziaee N, Wiltshire T, Sauer K, Cooke MP. Inositol (1,4,5) trisphosphate 3 kinase B controls positive selection of T cells and modulates Erk activity. *Proc Natl Acad Sci U S A.* 2004 Apr 13;101(15):5604-9. Epub 2004 Apr 2. PubMed PMID: 15064401; PubMed Central PMCID: PMC397439.
 41. 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; PubMed Central PMCID: PMC545590.
 42. Panda S, Provencio I, Tu DC, Pires SS, Rollag MD, Castrucci AM, Pletcher MT, Sato TK, Wiltshire T, Andahazy M, Kay SA, Van Gelder RN, Hogenesch JB. Melanopsin is required for non-image-forming photic responses in blind mice. *Science.* 2003 Jul 25;301(5632):525-7. Epub 2003 Jun 26. PubMed PMID: 12829787.
 43. Wiltshire T, Pletcher MT, Batalov S, Barnes SW, Tarantino LM, Cooke MP, Wu H, Smylie K, Santrosyan A, Copeland NG, Jenkins NA, Kalush F, Mural RJ, Glynne RJ, Kay SA, Adams MD, Fletcher CF. Genome-wide single-nucleotide polymorphism analysis defines haplotype patterns in mouse. *Proc Natl Acad Sci U S A.* 2003 Mar 18;100(6):3380-5. Epub 2003 Feb 28. PubMed PMID: 12612341; PubMed Central PMCID: PMC152301.
 44. Su AI, Cooke MP, Ching KA, Hakak Y, Walker JR, Wiltshire T, Orth AP, Vega RG, Sapinoso LM, Moqrich A, Patapoutian A, Hampton GM, Schultz PG, Hogenesch JB. Large-scale analysis of the human and mouse transcriptomes. *Proc Natl Acad Sci U S A.* 2002 Apr 2;99(7):4465-70. Epub 2002 Mar 19. PubMed PMID: 11904358; PubMed Central PMCID: PMC123671.
 45. Crabtree J, Wiltshire T, Brunk B, Zhao S, Schug J, Stoeckert CJ Jr, Bucan M. High-resolution BAC-based map of the central portion of mouse chromosome 5. *Genome Res.*

- 2001 Oct;11(10):1746-57. PubMed PMID: 11591652; PubMed Central PMCID: PMC311151.
46. Pletcher MT, Wiltshire T, Cabin DE, Villanueva M, Reeves RH. Use of comparative physical and sequence mapping to annotate mouse chromosome 16 and human chromosome 21. *Genomics*. 2001 May 15;74(1):45-54. PubMed PMID: 11374901.
 47. Tarantino LM, Feiner L, Alavizadeh A, Wiltshire T, Hurlle B, Ornitz DM, Webber AL, Raper J, Lengeling A, Rowe LB, Bucan M. A high-resolution radiation hybrid map of the proximal portion of mouse chromosome 5. *Genomics*. 2000 May 15;66(1):55-64. PubMed PMID: 10843805.
 48. Moreira ES, Wiltshire TJ, Faulkner G, Nilforoushan A, Vainzof M, Suzuki OT, Valle G, Reeves R, Zatz M, Passos-Bueno MR, Jenne DE. Limb-girdle muscular dystrophy type 2G is caused by mutations in the gene encoding the sarcomeric protein telethonin. *Nat Genet*. 2000 Feb;24(2):163-6. PubMed PMID: 10655062.
 49. Wiltshire T, Pletcher M, Cole SE, Villanueva M, Birren B, Lehoczky J, Dewar K, Reeves RH. Perfect conserved linkage across the entire mouse chromosome 10 region homologous to human chromosome 21. *Genome Res*. 1999 Dec;9(12):1214-22. PubMed PMID: 10613844; PubMed Central PMCID: PMC311004.
 50. Lengeling A, Wiltshire T, Otmani C, Bucan M. A sequence-ready BAC contig of the GABAA receptor gene cluster Gabrg1-Gabra2-Gabrb1 on mouse chromosome 5. *Genome Res*. 1999 Aug;9(8):732-8. PubMed PMID: 10447508; PubMed Central PMCID: PMC310801.
 51. Wallis DE, Roessler E, Hehr U, Nanni L, Wiltshire T, Richieri-Costa A, Gillissen-Kaesbach G, Zackai EH, Rommens J, Muenke M. Mutations in the homeodomain of the human SIX3 gene cause holoprosencephaly. *Nat Genet*. 1999 Jun;22(2):196-8. PubMed PMID: 10369266.
 52. Cole SE, Wiltshire T, Rue EE, Morrow D, Hieter P, Brahe C, Fisher EM, Katsanis N, Reeves RH. High-resolution comparative physical mapping of mouse chromosome 10 in the region of homology with human chromosome 21. *Mamm Genome*. 1999 Mar;10(3):229-34. PubMed PMID: 10051316.
 53. Cabin DE, McKee-Johnson JW, Matesic LE, Wiltshire T, Rue EE, Mjaatvedt AE, Huo YK, Korenberg JR, Reeves RH. Physical and comparative mapping of distal mouse chromosome 16. 5 p5. *Genome Res*. 1998 Sep;8(9):940-50. PubMed PMID: 9750193; PubMed Central PMCID: PMC310775.
 54. Cole SE, Wiltshire T, Reeves RH. Physical mapping of the evolutionary boundary between human chromosomes 21 and 22 on mouse chromosome 10. *Genomics*. 1998 May 15;50(1):109-11. PubMed PMID: 9628829.
 55. Fang Y, Spisz TS, Wiltshire T, D'Costa NP, Bankman IN, Reeves RH, Hoh JH. Solid-state DNA sizing by atomic force microscopy. *Anal Chem*. 1998 May 15;70(10):2123-9. PubMed PMID: 9608850.
 56. Wiltshire T, Park C, Handel MA. Chromatin configuration during meiosis I prophase of spermatogenesis. *Mol Reprod Dev*. 1998 Jan;49(1):70-80. PubMed PMID: 9406197.
 57. Caldwell KA, Wiltshire T, Handel MA. A genetic strategy for differential screening of meiotic germ-cell cDNA libraries. *Mol Reprod Dev*. 1996 Apr;43(4):403-13. PubMed PMID: 9052930.
 58. Wiltshire T, Park C, Caldwell KA, Handel MA. Induced premature G2/M-phase transition in pachytene spermatocytes includes events unique to meiosis. *Dev Biol*. 1995 Jun;169(2):557-67. PubMed PMID: 7781899.
 59. Handel MA, Caldwell KA, Wiltshire T. Culture of pachytene spermatocytes for analysis of meiosis. *Dev Genet*. 1995;16(2):128-39. PubMed PMID: 7736663

Invited Reviews and Commentaries

1. 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.
2. 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; PubMed Central PMCID: PMC2563687.
3. Walker JR, Wiltshire T. Databases of free expression. *Mamm Genome*. 2006 Dec;17(12):1141-6. Epub 2006 Dec 1. Review. PubMed PMID: 17143588. Pletcher M,
4. Wiltshire T. Can we find the genes involved in complex traits? *Genome Biol*. 2004;5(10):347. Epub 2004 Sep 22. PubMed PMID: 15461809; PubMed Central PMCID: PMC545590.

Recent Invited Presentations 2008 -

- Society of Biological Psychiatry Symposium Society May 1-3, 2008
63rd Annual Scientific Meeting, Washington, DC. Mapping Complex Traits for Addictive and Psychiatric Disorders in Mice.
- Pfizer, Groton CT Pre-Clinical assessment group meeting. Sept 7th 2008
Pre-clinical testing using mouse models University of Pennsylvania School of Medicine
- IPIT Seminar Series, University of North Carolina Sept 8th, 2009
Genetic variation in mice: modeling disease, pharmacogenetics, and basic biology
- NIEHS Genetic analysis in toxicology Seminar Series Sept 14th, 2009
Toxicogenetics using mouse models
- University of Pennsylvania School of Medicine - Department of Pharmacology Sept. 21, 2009
Seminar series: Using genetic variation in mice for pharmacogenetic studies.
- COMBIO (Australian and New Zealand molecular biology and biochemistry societies)
Christchurch New Zealand Dec 9th. 2009
Plenary Lecture, Genetic variation in mice: modeling disease, and pharmacogenetics
- Society of Toxicology (SOT) Annual Meeting in Salt Lake City, Utah March 7-11, 2010
Symposium session Genetics: The Link Between Exposures, Gene x Environment Interaction, and Toxicity
- NC TraCS Symposium: March 19th 2010
Translational Research to Address Health Disparities Across the Lifespan

5th Helsinki Biomedical Graduate School Student Council Symposium
Helsinki, Finland: Pharmacogenetics: disease models using mice

May 4 - 5th 2010

24th International Mammalian Genome Conference Heraklion, Crete
Importance of Cadm1 and cell adhesion in depressive behavior.

October 17-21, 2010

Recent Abstracts/Posters 2006 -

1. Tarantino LM, Bailey JS, Grabowski L, Steffy BM and Wiltshire T. Identification of ENU ENU-induced mutants with hyperactivity and abnormal responses to psychostimulants and acute stress. Gordon Conference: Genes and Behavior, Ventura, California, USA, 2006.
2. 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.
3. 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.
4. 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.
5. 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.
6. Globalization of Pharmaceuticals Education Network, 7th International Meeting, Gene Expression Networks in Anxiety and Depression. September 2008
7. Cristina Santos, Brooke Miller, Matthew Pletcher, Brian Steffy, Lisa Tarantino, Andrew Su, Tim Wiltshire. Identifying Candidate Gene Expression Markers in Depression Models International Mammalian Genome Conference, 23rd Meeting, October 2009
8. Eisener-Dorman AF, Bailey JS, Grabowski-Boase L, Steffy BM, Wiltshire T and 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
9. Eisener-Dorman AF, Bailey JS, Grabowski L, Roberts AJ, Steffy BM, Wiltshire T, and Tarantino LM. Highper, an ENU-induced mutant that exhibits abnormal psychostimulant and stress responses. International Mammalian Genome Conference, San Diego, California, USA, 2009.
10. Eisener-Dorman AF, Bailey JS, Grabowski L, Roberts AJ, Steffy BM, Wiltshire T, and Tarantino LM. Highper, an ENU-induced mutant that exhibits abnormal psychostimulant and stress responses. International Behavioural and Neural Genetics Society, Dresden, Germany, 2009.
11. 9th Annual meeting Complex Trait Community Chicago, IL, May 7-10, 2010
Evolution of the Meiotic Recombination Rate across the House Mouse Genome
12. 9th annual meeting of the Complex Trait Community Chicago, IL, May 7-10, 2010

QTL mapping of hybrid male sterility

13. Andrea G. Nackley, , Gary Slade, John Walker, Brian Steffy, Lisa M Tarantino, Luda Diatchenko Tim Wiltshire. 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 29th Annual Scientific Meeting, Baltimore, MD May 6-8, 2010
14. Huiqing Li, Sheila M. Cherry, Cheryl L. Maslen, Tim Wiltshire, Roger H. Reeves Genetic modifiers predisposing to congenital heart disease in a sensitized population. Weinstein Cardiovascular Development Conference Amsterdam, The Netherlands 20-22 May, 2010
15. Cristina Santos, Brooke Miller, Matthew Pletcher, Andrew Su, Lisa Tarantino, Tim Wiltshire. Modeling Depression in Mice to Identify Genetic Mechanisms of Mood Disorder. Models of Human Diseases, 1st International Annual Conference, June 2010
16. Kazuhiro Shimomura, Phillip L. Lowrey, Vivek Kumar, Jason Chong, Ethan D. Buhr, Sharon S. Low, Chiaki Omura, Debbie Fenner, Marc Richards, Heekyung Hong, Martha H. Vitaterna, Mathew T. Pletcher, Tim Wiltshire, John B. Hogenesch, Akiko Hida, Kazuo Mishima, Hiroshi Kadotani and Joseph S. Takahashi. 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 May 22-26, 2010
17. O.Suzuki, N Butz, M Pletcher, A Su, B Steffy, D Scoville, A Frick, J Trask, R Thomas, and Tim Wiltshire. A Cellular Genetics Platform to identify pharmacogenetic toxicity pathways. 24th International Mammalian Genome Conference, Heraklion, Crete October 17-21, 2010
18. C. Santos, B. Miller, M. Pletcher, A. Su, L. Tarantino, T. Wiltshire. Importance of Cadm1 and cell adhesion in Depressive Behavior. 24th International Mammalian Genome Conference, Heraklion, Crete October 17-21, 2010
19. C. Santos, B. Miller, M. Pletcher, A. Su, L. Tarantino, T. Wiltshire. Unique Systems Biology Approach to Identify Biomarkers for Depression and Anxiety International Conference on Systems Biology, 11th Annual Meeting, October 2010
20. Huiqing Li, Sheila M. Cherry, Cheryl L. Maslen, Tim Wiltshire, Roger H. Reeves Genetic modifiers predisposing to congenital heart disease in a sensitized population. ASHG Washington DC Nov 2010
21. Eisener-Dorman AF, Bailey JS, Grabowski-Boase L, Steffy BM, Wiltshire T and 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.
22. Cristina Santos, Andrew Su, Lisa Tarantino, Tim Wiltshire. A Survey of Neurobiochemical Levels in a Panel of Genetically Diverse Mouse Inbred Strains to Identify a Biomarker for Anxiety and Mood Disorder. Globalization of Pharmaceuticals Education Network, 8th International Meeting, November 2010.

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 2009 - present
DPET 838 – Methods in Pharmacogenetics

Lecturer 2008 - present
DPET 832 – Pharmacogenomics

Advisor 2008 -present
DPET 991 – Research in DPET

Dissertation Committees

Division of Pharmacotherapy and Experimental Therapeutics
Cristina Santos (Major Advisor)
Amber Frick (Major Advisor)
Shawn Watson (Committee Chair)
Venita Gresham completed defense April, 2010

Graduate Program Curriculum of Genetics and Molecular Biology, University of North Carolina
Samantha Segall (Major Advisor) – completed defense September 2010
Yuying Xie – (Threadgill major advisor) completed defense July 2010

Graduate Program Curriculum in Toxicology, Environmental Genetics Group, NIEHS
Monica High - completed defense March 2010 (Kleeberger - major advisor)
Jennifer Nicholls (Kleeberger - major advisor)

Graduate Program – Department of Cell and Molecular Physiology
Shiliang Wang (Faber – major advisor)

Department of Biostatistics, School of Public Health
Yi Gong (Zou - major advisor)

Post-Doctoral Advisor

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
Current post-doctoral fellows
Natasha Butz
Oscar Suzuki

Current Research Support

1R01MH077251-01A1 (Wiltshire) 7/01/2007 - 4/31/2012
NIMH \$250,000
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.

1 R01 DOA022392-01(Tarantino) Co-PI -10% 7/01/2007 – 7/01/2011

NIDA \$250,000
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.

5R01DA023690-02 (Tarantino, Wiltshire, coPIs) 8/01/2010 – 7/31/2011
NIDA \$390,000
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.

Completed Research Support

Novartis Grant SFP-1407. Internal special project funding support within Novartis to develop SNP mapping technologies.