Suggested Publications

Amelie Baud, *European Bioinformatics Institute- Cambridge*

Baud A, Guryev V, Hummel O, et al. Genomes and phenomes of a population of outbred rats and its progenitors. Scientific Data. 2014 June. doi: 10.1038/sdata.2014.11.

Rat Genome Sequencing and Mapping Consortium, Baud A, Hermsen R, et al. Combined sequence-based and genetic mapping analysis of complex traits in outbred rats. Nat Genet. 2013 Jul; 45(7): 767-775. doi: 10.1038/ng.2644. PMID: 23708188. PMCID: PMC3821058.

Elissa Chesler, *The Jackson Laboratory*

Dickson PE, Ndukum J, Wilcox T, Clark J, Roy B, Zhang L, Li Y, Lin DT, Chesler EJ. Association of novelty-related behaviors and intravenous cocaine self-administration in Diversity Outbred mice. Psychopharmacology (Berl). 2014 Sep 20. [Epub ahead of print] PubMed PMID: 25238945.

Recla JM, Robledo RF, Gatti DM, Bult CJ, Churchill GA, Chesler EJ. Precise genetic mapping and integrative bioinformatics in Diversity Outbred mice reveals Hydin as a novel pain gene. Mamm Genome. 2014 Jun;25(5-6):211-22. doi: 10.1007/s00335-014-9508-0. Epub 2014 Apr 5. PubMed PMID: 24700285; PubMed Central PMCID: PMC4032469.

Chesler EJ. Out of the bottleneck: the Diversity Outcross and Collaborative Cross mouse populations in behavioral genetics research. Mamm Genome. 2014 Feb;25(1-2):3-11. doi: 10.1007/s00335-013-9492-9. Epub 2013 Nov 23. Review. PubMed PMID: 24272351; PubMed Central PMCID: PMC3916706.

Logan RW, Robledo RF, Recla JM, Philip VM, Bubier JA, Jay JJ, Harwood C, Wilcox T, Gatti DM, Bult CJ, Churchill GA, Chesler EJ. High-precision genetic mapping of behavioral traits in the diversity outbred mouse population. Genes Brain Behav. 2013 Jun;12(4):424-37. doi: 10.1111/gbb.12029. Epub 2013 Mar 20. PubMed PMID: 23433259; PubMed Central PMCID: PMC3709837.

Campbell JH, Foster CM, Vishnivetskaya T, Campbell AG, Yang ZK, Wymore A, Palumbo AV, Chesler EJ, Podar M. Host genetic and environmental effects on mouse intestinal microbiota. ISME J. 2012 Nov;6(11):2033-44. doi: 10.1038/ismej.2012.54. Epub 2012 Jun 14. PubMed PMID: 22695862; PubMed Central PMCID: PMC3475380.

Bubier JA, Chesler EJ. Accelerating discovery for complex neurological and behavioral disorders through systems genetics and integrative genomics in the laboratory mouse. Neurotherapeutics. 2012 Apr;9(2):338-48. doi:10.1007/s13311-012-0111-3. Review. PubMed PMID: 22422471; PubMed Central PMCID: PMC3325414.

Philip VM, Sokoloff G, Ackert-Bicknell CL, Striz M, Branstetter L, Beckmann MA, Spence JS, Jackson BL, Galloway LD, Barker P, Wymore AM, Hunsicker PR, Durtschi DC, Shaw GS, Shinpock S, Manly

KF, Miller DR, Donohue KD, Culiat CT, Churchill GA, Lariviere WR, Palmer AA, O'Hara BF, Voy BH, Chesler EJ. Genetic analysis in the Collaborative Cross breeding population. Genome Res. 2011 Aug;21(8):1223-38. doi: 10.1101/gr.113886.110. Epub 2011 Jul 6. PubMed PMID: 21734011; PubMed Central PMCID: PMC3149490.

Chesler EJ, Miller DR, Branstetter LR, Galloway LD, Jackson BL, Philip VM, Voy BH, Culiat CT, Threadgill DW, Williams RW, Churchill GA, Johnson DK, Manly KF. The Collaborative Cross at Oak Ridge National Laboratory: developing a powerful resource for systems genetics. Mamm Genome. 2008 Jun;19(6):382-9. doi: 10.1007/s00335-008-9135-8. Epub 2008 Aug 21. PubMed PMID: 18716833; PubMed Central PMCID: PMC2745091.

Weihsueh Chiu, *Texas A&M University*

Zeise L, Bois FY, Chiu WA, et al. Addressing human variability in next-generation human health risk assessments of environmental chemicals. Environ Health Perspect. 2013 Jan; 121(1):23-31. doi: 10.1289/ehp.1205687. Epub 2012 Oct 19. PMID: 23086705

Krewski D, Westphal M, Andersen ME, et al. A framework for the next generation of risk science. Environ Health Perspect. 2014 Aug;122(8):796-805. doi: 10.1289/ehp.1307260. Epub 2014 Apr 9. PMID: 24727499

WHO/IPCS. 2014. Guidance Document on Evaluating and Expressing Uncertainty in Hazard Characterization. World Health Organization, Geneva, IPCS Harmonization Project Document No. 11. http://www.who.int/ipcs/methods/harmonization/areas/hazard_assessment/en/

Martin Ferris, *University of North Carolina- Chapel Hill*

Rasmussen AL, Okumura A, Ferris MT, et al. Host genetic diversity enables Ebola hemorrhagic fever pathogenesis and resistance. Science. 2014 Nov 21;346(6212):987-91. doi: 10.1126/science.1259595. Epub 2014 Oct 30.

Samir Kelada, *University of North Carolina- Chapel Hill*

Kelada SNP, Aylor DL, Peck BCE, et al. Genetic Analysis of Hematological Parameters in Incipient Lines of the Collaborative Cross. G3: Genes|Genomes|Genetics 2012, 2(2):157-165.

Kelada SNP, Carpenter DE, Aylor DL, et al. Integrative Genetic Analysis of Allergic Inflammation in the Murine Lung. American journal of respiratory cell and molecular biology 2014, 51(3):436-445.

Rutledge H, Aylor DL, Carpenter DE, et al. Genetic Regulation of Zfp30, CXCL1, and Neutrophilic Inflammation in Murine Lung. Genetics 2014, 198(2):735-745.

Brian Parks, *University of California, Los Angeles*

Parks BW, Sallam T, Mehrabian M, et al. Genetic architecture of insulin resistance in the mouse. Cell Metabolism. 2015 Feb; 21: 1-13. doi: 10.1016/j.cmet.2015.01.002.

Orozco LD, Bennett BJ, Farber CR, et al. Unraveling inflammatory responses using systems genetics and gene-environment interactions in macrophages. Cell. 2012 Oct; 151: 658-670. Doi: 10.1016/j.cell.2012.08.043.

Bennett BJ, Farber CR, Orozco L, et al. A high-resolution association mapping panel for the dissection of complex traits in mice. Genome Research. 2010; 20: 281-290. doi: 10.1101/gr.099234.109.

Ghazalpour A, Bennett BJ, Shih D, et al. Genetic regulation of mouse liver metabolite levels. Molecular Systems Biology. 2014; 10: 790. doi: 10.15252/msb.20135004.

Richard Paules, *National Institute of Environmental Health Science (NIEHS)*

Collins FS, Gray GM, Bucher JR. Toxicology. Transforming environmental health protection. Science. 2008 Feb 15;319(5865):906-7.

Kavlock RJ, Austin CP, Tice RR. Toxicity Testing in the 21st Century: Implications for Human Health Risk Assessment, Risk Analysis 2009; 29(4):485-487

NAS Report – "Toxicity Testing in the 21st Century: A Vision and a Strategy" (http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/Toxicity_Testing_final.pdf)

Abdo N, et al. Population-Based in Vitro Hazard and Concentration-Response Assessment of Chemicals: The 1000 Genomes High-Throughput Screening Study. Environ Health Perspect. 2015 Jan 13 (Epub).

French JE, et al. Diversity Outbred Mice Identify Population-Based Exposure Thresholds and Genetic Factors that Influence Benzene-Induced Genotoxicity. Environ Health Perspect. 2014 Nov 6 (Epub).

Daniel Pomp, *University of North Carolina- Chapel Hill*

Aylor DL, Valdar W, Foulds-Mathes W, et al. Genetic analysis of complex traits in the emerging Collaborative Cross. Genome Res. 2011 Aug; 21(8):1213-22. doi: 10.1101/gr.111310.110. PMID: 21406540. PMCID: PMC3149489.

Mathes WF, Aylor DL, Miller DR, et al. Architecture of energy balance traits in emerging lines of the Collaborative Cross. Am J Physiol Endocrinol Metab. 2011 Jun; 300(6):E1124-34. doi: 10.1152/ajpendo.00707.2010. PMID: 21427413. PMCID: PMC3118585.

Collaborative Cross Consortium. The genome architecture of the Collaborative Cross mouse genetic reference population. Genetics. 2012 Feb; 190(2):389-401. doi: 10.1534/genetics.111.132639. PMID: 22345608. PMCID: PMC3276630.

Gatti DM, Svenson KL, Shabalin A, et al. Quantitative trait locus mapping methods for diversity outbred mice. G3 (Bethesda). 2014 Sep 18; 4(9):1623-33. doi: 10.1534/g3.114.013748. PMID: 25237114 [PubMed - in process]. PMCID: PMC4169154.

Smallwood TL, Gatti DM, Quizon P, et al. High-resolution genetic mapping in the diversity outbred mouse population identifies Apobec1 as a candidate gene for atherosclerosis. G3 (Bethesda). 2014 Oct 23; 4(12):2353-63. doi: 10.1534/g3.114.014704. PMID: 25344410. PMCID: PMC4267931.

Ivan Rusyn, *Texas A&M University*

Abdo N, Xia M, Brown CC, et al. Population-Based in Vitro Hazard and Concentration-Response Assessment of Chemicals: The 1000 Genomes High-Throughput Screening Study. Environ Health Perspect. 2015 Jan 13. PMID: 25622337

Yoo HS, Bradford BU, Kosyk O, et al. Comparative analysis of the relationship between trichloroethylene metabolism and tissue-specific toxicity among inbred mouse strains: Kidney effects. J Toxicol Environ Health A. 2015;78(1):32-49. doi: 10.1080/15287394.2015.958418. PubMed PMID: 25424545.

Yoo HS, Bradford BU, Kosyk O, et al. Comparative analysis of the relationship between trichloroethylene metabolism and tissue-specific toxicity among inbred mouse strains: liver effects. J Toxicol Environ Health A. 2015;78(1):15-31. doi: 10.1080/15287394.2015.958417. PubMed PMID: 25424544.

Chiu WA, Campbell JL Jr, Clewell HJ 3rd, et al. Physiologically based pharmacokinetic (PBPK) modeling of interstrain variability in trichloroethylene metabolism in the mouse. Environ Health Perspect. 2014 May;122(5):456-63. doi: 10.1289/ehp.1307623. Epub 2014 Feb 10. PubMed PMID: 24518055; PubMed Central PMCID: PMC4014769.

Pogribny IP, Kutanzi K, Melnyk S, et al. Strain-dependent dysregulation of one-carbon metabolism in male mice is associated with choline- and folate-deficient diet-induced liver injury. FASEB J. 2013 Jun;27(6):2233-43. doi: 10.1096/fj.12-227116. Epub 2013 Feb 25. PubMed PMID: 23439872.

Tryndyak V, de Conti A, Kobets T, et al. Interstrain differences in the severity of liver injury induced by a choline- and folate-deficient diet in mice are associated with dysregulation of genes involved in lipid metabolism. FASEB J. 2012 Nov;26(11):4592-602. doi: 10.1096/fj.12-209569. Epub 2012 Aug 7. PubMed PMID: 22872676; PubMed Central PMCID: PMC3475259.

Tsuchiya M, Ji C, Kosyk O, et al. Interstrain differences in liver injury and one-carbon metabolism in alcohol-fed mice. Hepatology. 2012 Jul;56(1):130-9. doi: 10.1002/hep.25641. Epub 2012 Jun 6. PubMed PMID: 22307928; PubMed Central PMCID: PMC3350836.

Tryndyak VP, Latendresse JR, Montgomery B, et al. Plasma microRNAs are sensitive indicators of inter-strain differences in the severity of liver injury induced in mice by a choline- and folate-deficient diet. Toxicol Appl Pharmacol. 2012 Jul 1;262(1):52-9. doi: 10.1016/j.taap.2012.04.018. Epub 2012 Apr 24. PubMed PMID: 22561871.

Koturbash I, Scherhag A, Sorrentino J, et al. Epigenetic mechanisms of mouse interstrain variability in genotoxicity of the environmental toxicant 1,3-butadiene. Toxicol Sci. 2011 Aug;122(2):448-56. doi:

10.1093/toxsci/kfr133. Epub 2011 May 20. PubMed PMID: 21602187; PubMed Central PMCID: PMC3155089.

Bradford BU, Lock EF, Kosyk O, et al. Interstrain differences in the liver effects of trichloroethylene in a multistrain panel of inbred mice. Toxicol Sci. 2011 Mar;120(1):206-17. doi: 10.1093/toxsci/kfq362. Epub 2010 Dec 6. PubMed PMID: 21135412; PubMed Central PMCID: PMC3044200.

Pogribny IP, Starlard-Davenport A, Tryndyak VP, et al. Difference in expression of hepatic microRNAs miR-29c, miR-34a, miR-155, and miR-200b is associated with strain-specific susceptibility to dietary nonalcoholic steatohepatitis in mice. Lab Invest. 2010 Oct;90(10):1437-46. doi: 10.1038/labinvest.2010.113. Epub 2010 Jun 14. PubMed PMID: 20548288.

Harrill AH, Watkins PB, Su S, et al. 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. doi: 10.1101/gr.090241.108. Epub 2009 May 5. PubMed PMID: 19416960; PubMed Central PMCID: PMC2752130.

Pogribny IP, Tryndyak VP, Bagnyukova TV, et al. Hepatic epigenetic phenotype predetermines individual susceptibility to hepatic steatosis in mice fed a lipogenic methyl-deficient diet. J Hepatol. 2009 Jul;51(1):176-86. doi: 10.1016/j.jhep.2009.03.021. Epub 2009 May 3. PubMed PMID: 19450891; PubMed Central PMCID: PMC2773516.

Harrill AH, Ross PK, Gatti DM, et al. Population-based discovery of toxicogenomics biomarkers for hepatotoxicity using a laboratory strain diversity panel. Toxicol Sci. 2009 Jul; 110(1):235-43. doi: 10.1093/toxsci/kfp096. Epub 2009 May 6. PubMed PMID: 19420014; PubMed Central PMCID: PMC2696330.

Rusyn I, Gatti DM, Wiltshire T, et al. Toxicogenetics: population-based testing of drug and chemical safety in mouse models. Pharmacogenomics. 2010 Aug; 11(8): 1127-1136. Doi: 10.2217/pgs.10.100. PMID: 20704464 PMCID: PMC3035927

Boris Tabakoff, *University of Colorado- Denver*

Saba LM, Bennett B, Hoffman PL, Barcomb K, Ishii T, Kechris K, Tabakoff B. A systems genetic analysis of alcohol drinking by mice, rats and men: Influence of brain GABAergic transmission. Neuropharmacology. 2011 Jun; 60(7-8):1269-80. doi: 10.1016/j.neuropharm.2010.12.019. Epub 2010 Dec 23. PMID: 21185315

Vanderlinden LA, Saba LM, Printz MP, Flodman P, Koob G, Richardson HN, Hoffman PL, Tabakoff B. Is the alcohol deprivation effect genetically mediated? Studies with HXB/BXH recombinant inbred rat strains. Alcohol Clin Exp Res. 2014 Jul; 38(7):2148-57. doi: 10.1111/acer.12471. Epub 2014 Jun 24. PMID: 24961585 [PubMed - in process]

Tabakoff B, Saba L, Printz M, Flodman P, Hodgkinson C, Goldman D, Koob G, Richardson HN, Kechris K, Bell RL, Hübner N, Heinig M, Pravenec M, Mangion J, Legault L, Dongier M, Conigrave KM, Whitfield JB, Saunders J, Grant B, Hoffman PL; WHO/ISBRA Study on State and Trait Markers of Alcoholism. Genetical genomic determinants of alcohol consumption in rats and humans. BMC Biol. 2009 Oct 27; 7:70. doi: 10.1186/1741-7007-7-70. PMID: 19874574

David Threadgill, *Texas A&M University*

Threadgill DW, Hunter KW, Williams RW. Genetic dissection of complex and quantitative traits: From fantasy to reality via a community effort. Mammalian Genome. 2002; 13: 175-178. DOI: 10.1007/s00335-001-4001-Y.

The Complex Trait Consortium. The Collaborative Cross, a community resource for the genetic analysis of complex traits. Nature Genetics. 2004 Nov; 36(11): 1133-1137.

Church RJ, Gatti DM, Urban TJ, et al. Sensitivity to hepatotoxicity due to epigallocatechin gallate is affected by genetic background in diversity outbred mice. Food and Chemical Toxicology. 2014; 76: 19-26. DOI: 10.1016/j.fct.2014.11.008

Threadgill DW and Churchill GA. Ten years of the Collaborative Cross. Genetics. 2012 Feb; 190: 291-294. DOI: 10.1534/genetics.111.138032.

Harrill AH, Watkins PB, Su S, et al. Mouse population-guided resequencing reveals that variants in CD44 contribute to acetaminophen-induced liver injury in humans. Genome Research. 2009; 19: 1507-1515. DOI: 10.1101/gr.090241.108.

Harrill AH, Ross PK, Gatti DM, et al. Population-based discovery of toxicogenomics biomarkers for hepatoxicity using a laboratory strain diversity panel. Tox Sci. 2009; 110(1): 235-243. DOI: 10.1093/toxsci/kfp096.

Bradford BU, Lock EF, Kosyk O, et al. Interstrain differences in the liver effects of trichloroethylene in a multistrain panel of inbred mice. Tox Sci. 2011; 120(1): 206-217. DOI: 10.1093/toxsci/kfq362.

Nigel Walker, *National Institute of Environmental Health Sciences (NIEHS)*

French JE, Gatti DM, Morgan DL, et al. Diversity Outbred Mice Identify Population-Based Exposure Thresholds and Genetic Factors that Influence Benzene-Induced Genotoxicity. Environ Health Perspect. 2014 Nov 6. [Epub ahead of print] PMID: 25376053

Tim Wiltshire, *University of North Carolina- Chapel Hill*

Wiltshire's lab research focuses mainly on pharmacogenetics and broad aspects of drug toxicity. They have used the mouse as an extremely useful model for this work. One of the confounding factors in the response of an organism to a drug or compound is the genetic variance on which the drug is tested. Standard models of drug testing have routinely used only one strain of mouse or rat, but this approach does not take into account the complexity of response that is apparent because of genetic variation. They have used a wide selection of inbred mouse strains, and more recently the Collaborative Cross mice, to screen for variable phenotypic responses to drug. They have focused largely on toxicity responses in in vivo mouse models, but also have championed the use of in vitro "cellular genetics" approaches to identify variable drug response. The key to understanding the variable drug response is to be able to provide associated genetic analysis and identify the genetic variation responsible. Using these mouse models they have been able to identify genes that impact specific drug response pathways.

Frick A, Fedoriw Y, Richards K, et al. Immune cell-based screening assay for response to anticancer agents: Applications in pharmacogenomics. Pharmacogenomics and personalized medicine. 2015; 8:1-18

Suzuki OT, Frick A, Parks BB, et al. 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.

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

Benton CS, Miller BH, Skwerer S, et al. Evaluating Genetic Markers and Neurobiochemical Analytes for Fluoxetine Response Using a Panel of Mouse Inbred Strains Psychopharmacology (Berl). 2011 Nov 24. PMID: 22113448

Additional Background Information

Crowley JJ, Zhabotynsky V, Sun W, Huang S, et al. Analyses of allele-specific gene expression in highly divergent mouse crosses identifies pervasive allelic imbalance. Nat Genet. 2015 Jan 26. [Epub ahead of print] doi: 10.1038/ng.3222.

Didion JP, Morgan AP, Clayshulte AMF, McMullan RC, et al. A multi-megabase copy number gain causes maternal transmission ratio distortion on mouse chromosome 2. PLOS Genet. 2015 Feb; 11(2): e1004850. Doi: 10.1371/journal.pgen.1004850.

Rogala AR, Morgan AP, Christensen AM, Gooch TJ, et al. The Collaborative Cross as a resource for modeling human disease: CC011/Unc, a new mouse model for spontaneoud colitis. Mamm Genome. 2013 Dec. doi: 10.1007/s00335-013-9499-2.

Spheres of Influence. Diversity Outbred: A new generation of mouse model. Environ Health Perspect. 2015 Mar; 123(3): A64-A67. Doi: 10.1289/ehp.123-A64.

French JE, Gatti DM, Morgan DL, Kissling GE, et al. Diversity outbred mice identify population-based exposure thresholds and genetic factors that influence benzene-induced genotoxicity. Environ Health Perspect 123: 237-245. Doi: 10.1289/ehp.1408202.

Jackson lab tumor frequency grid: http://www.informatics.jax.org/mtbwi/tumorFrequencyGrid.do
Fibrogenesis & Tissue Repair 2013, **6**:18 doi:10.1186/1755-1536-6-18.