

Knock-in mice and alcohol Publications

Zamudio PA, Gioia DA, Lopez M, Homanics GE, Woodward JJ. The escalation in ethanol consumption following chronic intermittent ethanol exposure is blunted in mice expressing ethanol-resistant GluN1 or GluN2A NMDA receptor subunits. *Psychopharmacology (Berl)*. 2020 Oct 14. doi: 10.1007/s00213-020-05680-z. Epub ahead of print. PMID: 33052417.

Gallegos S, San Martin L, Araya A, Lovinger DM, Homanics GE, Aguayo LG. Reduced sedation and increased ethanol consumption in knock-in mice expressing an ethanol insensitive alpha 2 subunit of the glycine receptor. *Neuropsychopharmacology*. 2020 May 1. doi: 10.1038/s41386-020-0689-9. Epub ahead of print. PMID: 32357359.

Zamudio PA, Smothers TC, Homanics GE, Woodward JJ. Knock-in Mice Expressing an Ethanol-Resistant GluN2A NMDA Receptor Subunit Show Altered Responses to Ethanol. *Alcohol Clin Exp Res*. 2020 Feb;44(2):479-491. doi: 10.1111/acer.14273. Epub 2020 Jan 14. PMID: 31872888; PMCID: PMC7018579.

Mulligan MK, Abreo T, Neuner SM, Parks C, Watkins CE, Houseal MT, Shapaker TM, Hook M, Tan H, Wang X, Ingels J, Peng J, Lu L, Kaczorowski CC, Bryant CD, Homanics GE, Williams RW (2019) Identification of a functional non-coding variant in the GABA α receptor α 2 subunit of the C57BL/6J mouse reference genome: Major implications for neuroscience research. *Front Genet* 10:188. PMC6449455

Muñoz B, Gallegos S, Peters C, Murath P, Lovinger DM, Homanics GE, Aguayo LG. Influence of nonsynaptic α 1 glycine receptors on ethanol consumption and place preference. *Addict Biol*. 2020 Mar;25(2):e12726. doi: 10.1111/adb.12726. Epub 2019 Mar 18. PMID: 30884072; PMCID: PMC6751026.

Zamudio-Bulcock, P.A., Homanics, G.E., and Woodward, J.J. (2018). Loss of Ethanol inhibition of NMDAR-mediated currents and plasticity of cerebellar synapses in mice expressing the GluN1(F639A) subunit. *Alcohol Clin Exp Res* 42, 698-705. PMCID: PMC5880713

Henderson-Redmond AN, Lowe TE, Tian XB, Morgan DJ. Increased ethanol drinking in "humanized" mice expressing the mu opioid receptor A118G polymorphism are mediated through sex-specific mechanisms. *Brain Res Bull*. 2018 Apr;138:12-19. doi: 10.1016/j.brainresbull.2017.07.017. Epub 2017 Aug 2. PMID: 28780411; PMCID: PMC5796878.

den Hartog CR, Gilstrap M, Eaton B, Lench DH, Mulholland PJ, Homanics GE, Woodward JJ (2017) Effects of repeated ethanol exposures on NMDA receptor expression and locomotor sensitization in mice expressing ethanol resistant NMDA receptors. *Front Neurosci* 11:84. PMCID: PMC5318453

Blednov YA, Borghese CM, Ruiz CI, Cullins MA, Da Costa A, Osterndorff-Kahanek EA, Homanics GE, Harris RA. Mutation of the inhibitory ethanol site in GABA(A) $\rho 1$ receptors promotes tolerance to ethanol-induced motor incoordination. *Neuropharmacology*. 2017 Sep 1;123:201-209. doi: 10.1016/j.neuropharm.2017.06.013. Epub 2017 Jun 13. PMID: 28623169; PMCID: PMC5543808.

Mayfield J, Arends MA, Harris RA, Blednov YA. Genes and Alcohol Consumption: Studies with Mutant Mice. *Int Rev Neurobiol*. 2016;126:293-355. doi: 10.1016/bs.irn.2016.02.014. PMID: 27055617; PMCID: PMC5302130.

Burgos CF, Muñoz B, Guzman L, Aguayo LG. Ethanol effects on glycinergic transmission: From molecular pharmacology to behavior responses. *Pharmacol Res*. 2015 Nov;101:18-29. doi: 10.1016/j.phrs.2015.07.002. Epub 2015 Jul 6. PMID: 26158502; PMCID: PMC4623937.

Blednov YA, Benavidez JM, Black M, Leiter CR, Osterndorff-Kahanek E, Harris RA. Glycine receptors containing $\alpha 2$ or $\alpha 3$ subunits regulate specific ethanol-mediated behaviors. *J Pharmacol Exp Ther*. 2015 Apr;353(1):181-91. doi: 10.1124/jpet.114.221895. Epub 2015 Feb 12. PMID: 25678534; PMCID: PMC4366753.

Trudell JR, Messing RO, Mayfield J, Harris RA. Alcohol dependence: molecular and behavioral evidence. *Trends Pharmacol Sci*. 2014 Jul;35(7):317-23. doi: 10.1016/j.tips.2014.04.009. Epub 2014 May 25. PMID: 24865944; PMCID: PMC4089033.

Aguayo LG, Castro P, Mariqueo T, Muñoz B, Xiong W, Zhang L, Lovinger DM, Homanics GE. Altered sedative effects of ethanol in mice with $\alpha 1$ glycine receptor subunits that are insensitive to G $\beta\gamma$ modulation. *Neuropsychopharmacology*. 2014 Oct;39(11):2538-48. doi: 10.1038/npp.2014.100. Epub 2014 May 7. PMID: 24801766; PMCID: PMC4207329.

den Hartog CR, Beckley JT, Smothers TC, Lench DH, Holseberg ZL, Fedarovich H, Gilstrap MJ, Homanics GE, Woodward JJ. Alterations in ethanol-induced behaviors and consumption in knock-in mice expressing ethanol-resistant NMDA receptors. *PLoS One*. 2013 Nov 14;8(11):e80541. doi: 10.1371/journal.pone.0080541. PMID: 24244696; PMCID: PMC3828265.

Blednov YA, Benavidez JM, Black M, Chandra D, Homanics GE, Rudolph U, Harris RA. Linking GABA(A) receptor subunits to alcohol-induced conditioned taste aversion and recovery from acute alcohol intoxication. *Neuropharmacology*. 2013 Apr;67:46-56. doi: 10.1016/j.neuropharm.2012.10.016. Epub 2012 Nov 9. PMID: 23147414; PMCID: PMC3562427.

Borghese CM, Xiong W, Oh SI, Ho A, Mihic SJ, Zhang L, Lovinger DM, Homanics GE, Eger EI 2nd, Harris RA. Mutations M287L and Q266I in the glycine receptor $\alpha 1$

subunit change sensitivity to volatile anesthetics in oocytes and neurons, but not the minimal alveolar concentration in knockin mice. *Anesthesiology*. 2012 Oct;117(4):765-71. doi: 10.1097/ALN.0b013e31826a0d93. PMID: 22885675; PMCID: PMC3447119.

Blednov YA, Benavidez JM, Homanics GE, Harris RA. Behavioral characterization of knockin mice with mutations M287L and Q266I in the glycine receptor $\alpha 1$ subunit. *J Pharmacol Exp Ther*. 2012 Feb;340(2):317-29. doi: 10.1124/jpet.111.185124. Epub 2011 Oct 28. PMID: 22037202; PMCID: PMC3263963.

Borghese CM, Blednov YA, Quan Y, Iyer SV, Xiong W, Mihic SJ, Zhang L, Lovinger DM, Trudell JR, Homanics GE, Harris RA. Characterization of two mutations, M287L and Q266I, in the $\alpha 1$ glycine receptor subunit that modify sensitivity to alcohols. *J Pharmacol Exp Ther*. 2012 Feb;340(2):304-16. doi: 10.1124/jpet.111.185116. Epub 2011 Oct 28. PMID: 22037201; PMCID: PMC3263968.

Harris RA, Osterndorff-Kahanek E, Ponomarev I, Homanics GE, Blednov YA. Testing the silence of mutations: Transcriptomic and behavioral studies of GABA(A) receptor $\alpha 1$ and $\alpha 2$ subunit knock-in mice. *Neurosci Lett*. 2011 Jan 13;488(1):31-5. doi: 10.1016/j.neulet.2010.10.075. Epub 2010 Nov 5. PMID: 21056629; PMCID: PMC3033563.

Blednov YA, Borghese CM, McCracken ML, Benavidez JM, Geil CR, Osterndorff-Kahanek E, Werner DF, Iyer S, Swihart A, Harrison NL, Homanics GE, Harris RA. Loss of ethanol conditioned taste aversion and motor stimulation in knockin mice with ethanol-insensitive $\alpha 2$ -containing GABA(A) receptors. *J Pharmacol Exp Ther*. 2011 Jan;336(1):145-54. doi: 10.1124/jpet.110.171645. Epub 2010 Sep 27. PMID: 20876231; PMCID: PMC3014308.

Werner DF, Swihart A, Rau V, Jia F, Borghese CM, McCracken ML, Iyer S, Fanselow MS, Oh I, Sonner JM, Eger EI 2nd, Harrison NL, Harris RA, Homanics GE. Inhaled anesthetic responses of recombinant receptors and knockin mice harboring $\alpha 2$ (S270H/L277A) GABA(A) receptor subunits that are resistant to isoflurane. *J Pharmacol Exp Ther*. 2011 Jan;336(1):134-44. doi: 10.1124/jpet.110.170431. Epub 2010 Aug 31. PMID: 20807777; PMCID: PMC3014300.

Werner DF, Swihart AR, Ferguson C, Lariviere WR, Harrison NL, Homanics GE. Alcohol-induced tolerance and physical dependence in mice with ethanol insensitive alpha1 GABA(A) receptors. *Alcohol Clin Exp Res*. 2009 Feb;33(2):289-99. doi: 10.1111/j.1530-0277.2008.00832.x. Epub 2008 Nov 19. PMID: 19032579; PMCID: PMC2786059.

Lobo IA, Harris RA. GABA(A) receptors and alcohol. *Pharmacol Biochem Behav*. 2008 Jul;90(1):90-4. doi: 10.1016/j.pbb.2008.03.006. Epub 2008 Mar 14. PMID: 18423561; PMCID: PMC2574824.

Sanchis-Segura C, Cline B, Jurd R, Rudolph U, Spanagel R. Etomidate and propofol-hyposensitive GABA(A) receptor beta3(N265M) mice show little changes in acute alcohol sensitivity but enhanced tolerance and withdrawal. *Neurosci Lett*. 2007 Apr 18;416(3):275-8. doi: 10.1016/j.neulet.2007.02.024. Epub 2007 Feb 11. PMID: 17350761.

Crabbe JC, Phillips TJ, Harris RA, Arends MA, Koob GF. Alcohol-related genes: contributions from studies with genetically engineered mice. *Addict Biol*. 2006 Sep;11(3-4):195-269. doi: 10.1111/j.1369-1600.2006.00038.x. PMID: 16961758.

Borghese CM, Werner DF, Topf N, Baron NV, Henderson LA, Boehm SL 2nd, Blednov YA, Saad A, Dai S, Pearce RA, Harris RA, Homanics GE, Harrison NL. An isoflurane- and alcohol-insensitive mutant GABA(A) receptor alpha(1) subunit with near-normal apparent affinity for GABA: characterization in heterologous systems and production of knockin mice. *J Pharmacol Exp Ther*. 2006 Oct;319(1):208-18. doi: 10.1124/jpet.106.104406. Epub 2006 Jun 28. PMID: 16807363.

Werner DF, Blednov YA, Ariwodola OJ, Silberman Y, Logan E, Berry RB, Borghese CM, Matthews DB, Weiner JL, Harrison NL, Harris RA, Homanics GE. Knockin mice with ethanol-insensitive alpha1-containing gamma-aminobutyric acid type A receptors display selective alterations in behavioral responses to ethanol. *J Pharmacol Exp Ther*. 2006 Oct;319(1):219-27. doi: 10.1124/jpet.106.106161. Epub 2006 Jun 19. PMID: 16785315.

Findlay GS, Harris RA, Blednov YA. Male transgenic glycine receptor alpha1 (S267Q) mutant mice display a hyperekplexia-like increase in acoustic startle responses. *Pharmacol Biochem Behav*. 2005 Sep;82(1):215-22. doi: 10.1016/j.pbb.2005.08.011. PMID: 16168470.

Findlay GS, Phelan R, Roberts MT, Homanics GE, Bergeson SE, Lopreato GF, Mihic SJ, Blednov YA, Harris RA. Glycine receptor knock-in mice and hyperekplexia-like phenotypes: comparisons with the null mutant. *J Neurosci*. 2003 Sep 3;23(22):8051-9. doi: 10.1523/JNEUROSCI.23-22-08051.2003. PMID: 12954867; PMCID: PMC6740502.

Homanics GE, Quinlan JJ, Mihalek RM, Firestone LL. Alcohol and anesthetic mechanisms in genetically engineered mice. *Front Biosci*. 1998 Jun 8;3:D548-58. doi: 10.2741/a302. PMID: 9616129.