Glutamate Receptors and Regulatory Proteins

Gene Knockout/ Overexpression	Background	Operant	2BC	4BC	DID	SHAC	References
Glutamate receptor 3 (*Gria3*)	B6N	—	— ↓ ADE, day 1				Sanchis-Segura et al., 2006 [110]
Glutamate receptor 1 (*Gria1*)	B6N		— — ADE — post-stress				Cowen et al., 2003 [121]
Metabotropic glutamate receptor 2, mGluR2 (*Grm2*)	CD1		↑ intake				Zhou et al., 2013 [271]
mGluR4 (*Grm4*)	CD1 × 129/SvJ		— males/females				Blednov et al., 2004 [89]
mGluR5 (*Grm5*)	B6 × 129/SvJ		— males/females	↓ females	— (2 h, 1B; females) ↓ (3 h, 2BC; females)	— (30 min; females)	Blednov and Harris, 2008 [175]
	B6		↓				Bird et al., 2008 [176]
Glutamate receptor ionotropic, NMDA 2A (*Grin2a*)	B6		—				Boyce-Rustay and Holmes, 2006 [130]
Homer protein homolog 2 (*Homer2*)	Not specified		↓				Szumlinski et al., 2003 [62]
Homer2	B6 × 129Xi/SvJ		↓ 12%, males/females				Szumlinski et al., 2005 [135]
	B6 × 129Xi/SvJ				— (2 h)		Lum et al., 2014 [311]
*Homer2b**	B6	↑ (21 min)					Szumlinski et al., 2008 [164]
Period circadian protein homolog 1, mPER1 (*Per1*^{Brdm1})	129SvEv^{Brd}/ B6-Tyr$^{c\text{-}Brd}$	—	— — ADE				Zghoul et al., 2007 [144]
mPER2 (*Per2*^{Brdm1})	129SvEv^{Brd}/ B6-Tyr$^{c\text{-}Brd}$	↑	↑ 8-16% ↓ after acamprosate				Spanagel et al., 2005 [78]
Epidermal growth factor receptor kinase substrate 8 (*Eps8)*	B6		↑ males/females				Offenhauser et al., 2006 [136]
Excitatory amino acid transporter 1,	B6		↓ males/females				Karlsson et al., 2012 [261]

GLAST, EAAT1 (*Slc1a3*)				
Neuronal pentraxin-2, NARP (*Nptx2*)	129Sv × B6		↓ intake, no escalation	Ary et al., 2012 [265]
NMDA receptor GluN2A subunit (*Grin2a*)	B6	— pre-CIE ↓ post-CIE		Jury et al., 2018 [365]

–, ↓, ↑: no significant difference, decreased ethanol intake and/or preference, or increased ethanol intake and/or preference, respectively, in knockout/mutant mice (or mice overexpressing *Homer2**) *vs*. wildtype mice. Males were tested unless otherwise indicated. Ethanol intake in the two- and four-bottle choice (2BC, 4BC) tests was measured in continuous 24-h sessions. Drinking session times for the other tests are indicated in parenthesis. DID, drinking in the dark; SHAC, scheduled high alcohol consumption; 1B, one bottle; ADE, alcohol deprivation effect; CIE, chronic intermittent exposure to alcohol vapor. Recommended mouse protein and gene (in italics) names are from Uniprot. B6 refers to C57BL/6J mice.