

TECHNICAL WHITE PAPER: INVENTORY OF BIOLOGICAL RESOURCES: TRANSGENIC MOUSE DRIVER LINES, REPORTER LINES AND VIRAL VECTORS

Table 1. Cre and other driver lines used in Transgenic characterization data sets (Trans Char), Allen Mouse Brain Connectivity Atlas (Conn Atlas), Allen Cell Types Database (Cell Types), and Allen Brain Observatory (Brain Obs)

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
A930038C07Rik-Tg1-Cre	Allen Institute for Brain Science	The Jackson Laboratory (017346)	B6.Cg-Tg(A930038C07Rik-cre)1Aibs/J	Widespread expression of reporter gene throughout brain. Enriched in restricted populations in olfactory areas, piriform cortex, hippocampus, cerebellum. Adult Cre expression observed in restricted populations of striatum, layer 5 neocortex, hypothalamus, pons, medulla. This is different from the A930038C07Rik gene itself which is specifically expressed in layer 1.	✓	✓		
A930038C07Rik-Tg4-Cre	Allen Institute for Brain Science	The Jackson Laboratory (009616)	B6;C3-Tg(A930038C07Rik-cre)4Aibs/J	Scattered populations within cortical layers 4/5, septum, thalamus, midbrain. In cortex, unlike A930038C07Rik which is specifically expressed in layer 1, Cre-directed reporter expression is found enriched in a scattered population in layer 5.	✓			
Adcyap1-2A-Cre	Allen Institute for Brain Science			Cre expression enriched in restricted populations in olfactory areas, hippocampus, striatum, thalamus, midbrain, pons, medulla. Expression scattered in isocortex and hypothalamus. Widespread reporter expression.	✓	✓		
Agrp-IRES-Cre	Bradford Lowell	The Jackson Laboratory (012899)	STOCK <i>Agrp</i> ^{tm1(cre)Low} /J	Enriched in the arcuate nucleus of the hypothalamus.	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Avp-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (023530)	B6.Cg-Avp ^{tm1.1(cre)Hze/J}	Expressed in restricted populations within the hypothalamus.	✓	✓		
Calb1-2A-dgCre	Allen Institute for Brain Science	The Jackson Laboratory (023531)	B6.Cg-Calb1 ^{tm1.1(folA/EGFP/cre)Hze/J}	Reporter expression enriched in layers 2/3, 4 of cortex and in restricted populations in olfactory areas, hippocampal formation, thalamus, midbrain, medulla, cerebellum. Widespread, scattered expression throughout many other brain regions.	✓	✓		
Calb1-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (028532)	B6;129S-Calb1 ^{tm2.1(cre)Hze/J}	Cre expression is enriched in layers 2/3 and 4 of cortex; and in restricted populations within hippocampal formation, striatum, thalamus, hypothalamus, midbrain, pons, medulla, and cerebellum.	✓			
Calb2-CreERT2	Z. Josh Huang	The Jackson Laboratory (013730)	B6(Cg)-Calb2 ^{tm2.1(cre/ERT2)Zjh/J}	Expressed in restricted populations throughout brain: thalamus, hippocampus, midbrain, amygdala, cerebellum, hypothalamus, olfactory bulb.	✓			
Calb2-IRES-Cre (Cr-IRES-Cre)	Z. Josh Huang	The Jackson Laboratory (010774)	B6(Cg)-Calb2 ^{tm1(cre)Zjh/J}	Enriched in restricted populations in olfactory areas, layer 2/3, 4 of neocortex, cortical subplate (amygdala), hypothalamus, thalamus, hippocampus, pons, medulla, cerebellum.	✓	✓		
Camk2a-Cre	Susumu Tonegawa	The Jackson Laboratory (005359)	B6.Cg-Tg(Camk2a-cre)T29-1Stl/J	Throughout the cortex, hippocampus, striatum, and other structures.	✓			
Camk2a-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (012362)	B6;129S6-Tg(Camk2a-cre/ERT2)1Aibs/J	Sparse populations of neurons in cortex, hippocampus, striatum, and other structures in absence of tamoxifen. After tamoxifen, reporter expression turns on in widespread populations of neurons in regions above.	✓			
Camk2a-tTA	Mark Mayford	The Jackson Laboratory (007004)	B6.Cg-Tg(Camk2a-tTA)1Mmay/MullMmmh	Scattered expression in restricted populations in cortex, striatum, cortical subplate (amygdala), piriform cortex, and hippocampus.	✓			✓
Cart-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (028533)	B6;129S-Cartpt ^{tm1.1(cre)Hze/J}	Area dependent, laminar enrichment in cortex and restricted expression in midbrain. Sparse but restricted expression within olfactory areas, striatum, pallidum, thalamus, hypothalamus, and medulla.	✓			
Cart-IRES2-Cre-neo	Allen Institute for Brain Science			Expression in layer 4 of the anterior cortical areas, and scattered expression in posterior cortical regions with enrichment in lateral areas. Restricted	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
				expression in the piriform area, amygdala, hypothalamus, and pons.				
Cart-Tg1-Cre	Allen Institute for Brain Science	The Jackson Laboratory (009615)	STOCK Tg(Cartpt-cre)1Aibs/J	Reporter expression is widespread in cortex, and scattered in hippocampus, thalamus, hypothalamus, midbrain, cerebellum. Cre expression is in restricted and/or sparse populations in hypothalamus and midbrain.	✓	✓		
Cck-CreERT2	Z. Josh Huang	The Jackson Laboratory (012710)	B6(Cg)-Cck ^{tm2.1(cre/ERT2)Zjh/J}	Strong scattered expression in cortex, enriched expression in various cortical layers and retrosplenial area. Strong sparse, scattered cells in hippocampus, thalamus, olfactory bulb, midbrain, pons, medulla, striatum, cerebellum, hypothalamus.	✓			
Cck-IRES-Cre	Z. Josh Huang	The Jackson Laboratory (012706)	B6(Cg)-Cck ^{tm2.1(cre/ERT2)Zjh/J}	Widespread expression in cortex, hippocampus, thalamus. Sparse, scattered expression elsewhere in brain. Strong expression in Purkinje cell layer in cerebellum. Enriched in restricted populations in pons and medulla.	✓	✓		
Cdh4-CreER	Joshua Sanes			Expressed in retinal ganglion cells.	✓	✓		
Cdh6-CreER (KO4CAD)	Joshua Sanes			Expressed in retinal ganglion cells.	✓	✓		
Cdhr1-Cre_KG66	Nathaniel Heintz and Charles Gerfen	MMRRC (030952)	STOCK Tg(Cdhr1-cre)KG66Gsat/Mmucd	Enriched in the mitral and tufted cell layer within the olfactory bulb.	✓	✓		
Chat-IRES-Cre	Bradford Lowell	The Jackson Laboratory (006410)	B6;129S6-Chat ^{tm1(cre)Lowl/J}	Expressed in cholinergic neurons: restricted populations in medulla, pons, thalamus, midbrain; and in scattered cells in striatum, basal forebrain, and very sparse population of cells in cortex.	✓	✓	✓	
Chat-IRES-CreER	Jeremy Nathans	The Jackson Laboratory (008364)	B6;129-Chat ^{tm1(cre/ERT)Nat/J}	Expressed in very sparse, restricted populations within the pallidum (basal forebrain; medial septal nuclei) and hypothalamus	✓			
Chrna2-Cre_OE25	Nathaniel Heintz and Charles Gerfen	MMRRC (036502)	STOCK Tg(Chrna2-cre)OE25Gsat/Mmucd	Enriched in cortical layer 5. Expressed in restricted populations throughout brain, including olfactory areas, hippocampus, lateral septal complex, pallidum, thalamus, hypothalamus, midbrain, hindbrain, cerebellum.	✓	✓	✓	
Chrna5-EGFP_IG16	Nathaniel Heintz and Charles Gerfen	MMRRC (030420)	STOCK Tg(Chrna5-EGFP)IG16Gsat/Mmucd	Very sparse expression throughout the brain.	✓			

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Chrnb4-Cre_OL57	Nathaniel Heintz and Charles Gerfen	MMRRC (036203)	STOCK Tg(Chrnb4-cre)OL57Gsat/Mmcd	Cre expression is enriched in cortical layers 2/3 and 5, and the habenula. Reporter expression is widespread.	✓	✓		
Cnm2-Cre_KD18	Nathaniel Heintz and Charles Gerfen	MMRRC (030951)	STOCK Tg(Cnm2-cre)KD18Gsat/Mmucd	Reporter expression is widespread, scattered throughout the brain, enriched within cortex, pons, striatum, habenula. Cre expression is enriched in habenula.	✓	✓		
Cort-T2A-Cre (Cst-T2A-Cre)	Z. Josh Huang	The Jackson Laboratory (010910)	STOCK <i>Cort^{tm1(cre)Zjh}/J</i>	Scattered interneuron expression in cortex and hippocampus. Enriched in olfactory bulb.	✓	✓		
Crh-IRES-Cre (BL)	Bradford Lowell			Enriched in restricted populations in medulla, pons, hypothalamus, thalamus. Scattered and restricted expression in neocortex.	✓	✓		
Crh-IRES-Cre (ZJH) (CRH-ires-CRE)	Z. Josh Huang	The Jackson Laboratory (012704)	B6(Cg)- <i>Crh^{tm1(cre)Zjh}/J</i>	Scattered expression in cortex. Enriched expression in piriform cortex, amygdala, hypothalamus, thalamus.	✓	✓		
Ctgf-2A-dgCre	Allen Institute for Brain Science	The Jackson Laboratory (028535)	B6.Cg- <i>Ctgf^{tm1.1(folA/cre)Hze}/J</i>	Cre expression is selective for layer 6b of cortex and in restricted populations within cortical subplate.	✓	✓	✓	
Ctgf-Tg1-Cre	Allen Institute for Brain Science			Cre expression is enriched in cortical layer 6 and restricted populations in cortical subplate, although reporter expression is widespread.	✓			
Ctgf-Tg2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (008844)	B6;C3-Tg(Ctgf-cre)2Aibs/J	Cre expression is enriched in layer 6b, although reporter expression is widespread, and in restricted populations in cortical subplate and hypothalamus.	✓			
Cux2-Cre	Ulrich Mueller	MMRRC (032778)	B6(Cg)- <i>Cux2^{tm2.1(cre)Mull}/Mmmh</i>	Cre expression is enriched in cortical layers 2/3/4. Reporter expression is widespread.	✓			
Cux2-CreERT2	Ulrich Mueller	MMRRC (032779)	B6(Cg)- <i>Cux2^{tm3.1(cre/ERT2)Mull}/Mmmh</i>	Enriched in cortical layers 2/3/4, thalamus, midbrain, pons, medulla and cerebellum.	✓	✓	✓	✓
Cux2-IRES-Cre	Ulrich Mueller	MMRRC (031778)	B6(Cg)- <i>Cux2^{tm1.1(cre)Mull}/Mmmh</i>	Cre expression is enriched in cortical layers 2/3/4. Reporter expression is widespread.	✓	✓		
Cyp39a1-Tg1-Cre	Allen Institute for Brain Science	The Jackson Laboratory (008839)	B6;C3-Tg(Cyp39a1-cre)1Aibs/J	Scattered expression throughout brain. Enriched in restricted populations within the hippocampus, cerebellum, pallidum, and olfactory areas.	✓			

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Cyp39a1-Tg7-Cre	Allen Institute for Brain Science	The Jackson Laboratory (009117)	B6;C3-Tg(Cyp39a1-cre)7Aibs/J	Cortex, hippocampus, cerebellum. In cortex reporter expression enriched in superficial layers 2/3. Cre expression is scattered throughout brain and in restricted populations in medulla and pons.	✓			
Dbh-Cre_KH212	Nathaniel Heintz and Charles Gerfen	MMRRC (032081)	STOCK Tg(Dbh-cre)KH212Gsat/Mmcd	Expression in restricted populations within the pons.	✓	✓		
Dbx1-IRES-Cre	Ulrich Mueller	MMRRC (031751)	B6(Cg)- <i>Dbx1^{tm1.1(cre)Mull}</i> /Mmmh	Enriched in piriform cortex, cortical subplate, midbrain, pons, medulla; in restricted populations in thalamus, hypothalamus, cerebellum.	✓			
Dcx-Cre-35	Ulrich Mueller	MMRRC (031752)	C57BL/6J-Tg(DCX-cre)35Mull/Mmmh	Widespread expression throughout the brain.	✓			
Dcx-Cre-38	Ulrich Mueller	MMRRC (031753)	C57BL/6J-Tg(DCX-cre)38Mull/Mmmh	Widespread, scattered expression throughout the brain.	✓			
Dcx-CreERT2	Ulrich Mueller	MMRRC (032780)	C57BL/6J-Tg(DCX-cre/ERT2)1Mull/Mmmh	Widespread expression throughout brain. Expressed in restricted populations in striatum, hippocampus, anterior olfactory nucleus, cortex. Strong expression in the lateral ventricle.	✓			
Dlg3-Cre_KG118	Nathaniel Heintz and Charles Gerfen	MMRRC (032809)	STOCK Tg(Dlg3-cre)KG118Gsat/Mmucd	Reporter expression enriched in layers 4, 5, 6 in cortex and in restricted populations in hippocampal formation, cortical subplate, thalamus, pons, medulla.	✓	✓		
Dlx1-CreERT2	Z. Josh Huang	The Jackson Laboratory (014551)	B6;129S4- <i>Dlx1^{tm1(cre/ERT2)Zjh}</i> /J	Expressed in strong scattered cells throughout the brain. Expression is more widespread in olfactory bulb and cortical subplate (amygdala).	✓			
Dlx5-CreERT2	Z. Josh Huang	The Jackson Laboratory (010705)	B6(Cg)- <i>Dlx5^{tm1(cre/ERT2)Zjh}</i> /J	Widespread, interneuron expression throughout cortex, striatum, amygdala, hippocampus, olfactory bulb, hypothalamus, and pallidum.	✓			
Drd1a-Cre (D1-Cre)	Richard Palmiter			Reporter expressed throughout cortex, hippocampus, striatum, other structures. Cre expression is enriched in piriform cortex and striatum; and in restricted populations in medulla, pons, cerebellum.	✓	✓		
Drd2-Cre_ER44 (D2-Cre)	Nathaniel Heintz and Charles Gerfen	MMRRC (032108)	B6.Cg-Tg(Drd2-cre)ER44Gsat/Mmcd	Enriched in striatum, restricted populations within cerebellum, cortex, thalamus, medulla, olfactory areas.	✓	✓		
Drd3-Cre_KI196	Nathaniel Heintz and Charles Gerfen	MMRRC (034610)	STOCK Tg(Drd3-cre)KI196Gsat	Cre expression enriched in layer 2/3 of somatosensory areas and retrosplenial area of cortex; and in restricted populations in hippocampal formation, cortical subplate, and striatum.	✓	✓		

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Drd3-Cre_KI198	Nathaniel Heintz and Charles Gerfen	MMRRC (031741)	STOCK Tg(Drd3-cre)KI198Gsat/Mmucd	Reporter expression enriched in restricted populations in olfactory areas, hippocampal formation, striatum.	✓	✓		
EE1578-lacZ-CreERT2-Tg2	Allen Institute for Brain Science			Expressed in cortex, striatum, hippocampus, choroid plexus, thalamus, hypothalamus and hindbrain.	✓			
EE313-lacZ-CreERT2-Tg2	Allen Institute for Brain Science			Restricted expression in septum, hypothalamus, and hindbrain, including locus coeruleus.	✓			
EE342-lacZ-CreERT2-Tg3	Allen Institute for Brain Science			Expressed throughout telencephalon, particularly in lateral cortex.	✓			
EE609-lacZ-CreERT2-Tg2	Allen Institute for Brain Science			Expressed in diencephalon, particularly ventral thalamus and prethalamus.	✓			
EE914-lacZ-CreERT2-Tg2	Allen Institute for Brain Science			Restricted expression in ventral cortex, thalamus, and main olfactory bulb.	✓			
EE914-lacZ-CreERT2-Tg3	Allen Institute for Brain Science			Very restricted expression in ventral cortex and main olfactory bulb.	✓			
EE921-lacZ-CreERT2-Tg2	Allen Institute for Brain Science			Restricted expression in subplate, ventral cortex, amygdala, hypothalamus and main olfactory bulb.	✓			
EE921-lacZ-CreERT2-Tg3	Allen Institute for Brain Science			Expressed in subplate, amygdala and hypothalamus.	✓			
Efr3a-Cre_NO108	Nathaniel Heintz and Charles Gerfen	MMRRC (036660)	STOCK Tg(Efr3a-cre)NO108Gsat/Mmucd	Enriched in cortical layers 5, 6a. Enriched in restricted populations in cortical subplate, thalamus, hypothalamus, medulla, pons, cerebellum. Widespread scattered expression in striatum, midbrain.	✓	✓		
Emx1-IRES-Cre	Kevin Jones	The Jackson Laboratory (005628)	B6.129S2- <i>Emx1</i> ^{tm1(cre)Krl/J}	Specific to the cortex and hippocampus.	✓	✓		✓

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Eno2-Cre (NSE39-Cre)	Judith Melki	The Jackson Laboratory (005938)	STOCK Tg(Eno2-cre)39Jme/J	Widespread, scattered expression throughout the brain.	✓			
Erb4-2A-CreERT2 (A207)	Allen Institute for Brain Science	The Jackson Laboratory (012360)	B6.Cg- <i>Erb4</i> ^{tm1.1(cre/ERT2)Aibs/J}	Scattered interneuron populations in cortex, hippocampus, and throughout the brain. Enriched in amygdala.	✓	✓		
Esr1-2A-Cre	David Anderson			Cre expression is restricted to specific populations within the hypothalamus.	✓	✓		
Esr2-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (030158)	B6;129S- <i>Esr2</i> ^{tm1.1(cre)Hze/J}	Scattered expression in cortical layer 6. Restricted expression in the hypothalamus and amygdala.	✓			
Et(cre/ERT2)119Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009575)	B6(129S4)-Et(cre/ERT2)119Rdav/J	Very sparse, scattered expression.	✓			
Et(cre/ERT2)1382Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009580)	B6(129S4)-Et(cre/ERT2)1382Rdav/J	Enriched in cortical subplate (amygdala) and sparse expression within restricted populations of pallidum and thalamus.	✓			
Et(cre/ERT2)13866Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012688)	B6(129S4)-Et(cre/ERT2)13866Rdav/J	Strong expression in the amygdala. Expressed in restricted populations in thalamus, midbrain, and hypothalamus.	✓			
Et(cre/ERT2)1642Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009581)	B6(129S4)-Et(cre/ERT2)1642Rdav/J	Enriched in restricted, sparse cells within pons.	✓			
Et(cre/ERT2)1645Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009582)	B6(129S4)-Et(cre/ERT2)1645Rdav/J	Strong expression in various regions throughout brain including amygdala, cortex, thalamic subnuclei, midbrain, hypothalamus. Strongly expressed in ventral hippocampus.	✓			
Et(cre/ERT2)1957Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009583)	B6(129S4)-Et(cre/ERT2)1957Rdav/J	Widespread, sparse, scattered expression throughout brain. Enriched in dentate gyrus.	✓			
Et(cre/ERT2)2007Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009584)	B6(129S4)-Et(cre/ERT2)2007Rdav/J	Widespread, scattered expression throughout brain. Enriched in deep layers of neocortex and piriform cortex, and in restricted populations within hippocampus.	✓			
Et(cre/ERT2)2047Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009585)	B6(129S4)-Et(cre/ERT2)2047Rdav/J	Expressed in strong scattered, widespread cells throughout brain, particularly in midbrain and hindbrain.	✓			

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Et(cre/ERT2)21Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009574)	B6(129S4)-Et(cre/ERT2)21Rdav/J	Expression in restricted populations within the medulla.	✓			
Et(cre/ERT2)25279Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (036019)	B6(129S)-Et(cre/ERT2)25279Rdav/Mmmh	Strong scattered, sparse expression throughout brain. Enriched expression in restricted populations in cortical subplate (amygdala), thalamus, midbrain, hindbrain, hypothalamus, cerebellum granular cell layer.	✓			
Et(cre/ERT2)25378Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (036020)	B6(129S)-Et(cre/ERT2)25378Rdav/Mmmh	Strong widespread expression in cortex. Strong scattered cells in striatum, hippocampus (esp. dentate gyrus), pons, medulla; enriched in subregions of cerebellar granular layer.	✓			
Et(cre/ERT2)25422Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (036021)	B6(129S)-Et(cre/ERT2)25422Rdav/Mmmh	Strong expression in restricted populations in dentate gyrus. Strong widespread expression in cerebellum granular cell layer.	✓			
Et(cre/ERT2)25463Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (036022)	B6(129S)-Et(cre/ERT2)25463Rdav/Mmmh	Strong scattered cells in restricted populations in dentate gyrus, thalamus, midbrain, hypothalamus, and cerebellum.	✓			
Et(cre/ERT2)278Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009576)	B6(129S4)-Et(cre/ERT2)278Rdav/J	Scattered expression within midbrain areas.	✓			
Et(cre/ERT2)296Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009577)	B6(129S4)-Et(cre/ERT2)296Rdav/J	Sparse expression throughout the brain, with a patchy pattern in cortex.	✓			
Et(cre/ERT2)398Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009578)	B6(129S4)-Et(cre/ERT2)398Rdav/J	Sparse, scattered expression in cortex, hippocampus, and cortical subplate (amygdala). Enriched in deep layers of cortex.	✓			
Et(cre/ERT2)4Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009573)	B6(129S4)-Et(cre/ERT2)4Rdav/J	No expression.	✓			
Et(cre/ERT2)6691Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010688)	B6(129S4)-Et(cre/ERT2)6691Rdav/J	Widespread, scattered expression throughout brain.	✓			
Et(cre/ERT2)6959Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010689)	B6(129S4)-Et(cre/ERT2)6959Rdav/J	Widespread, scattered expression throughout brain. Enriched in piriform cortex, restricted populations within hippocampus, and in layers 4 and 6 of cortex.	✓			

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Et(cre/ERT2)7089Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010690)	B6(129S4)-Et(cre/ERT2)7089Rdav/J	Widespread expression throughout the brain.	✓			
Et(cre/ERT2)7149Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010691)	B6(129S4)-Et(cre/ERT2)7149Rdav/J	Enriched in scattered cells of piriform cortex, hippocampus, thalamus, and midbrain.	✓			
Et(cre/ERT2)8120Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010693)	B6(129S4)-Et(cre/ERT2)8120Rdav/J	Widespread, scattered expression throughout brain. Enriched within piriform cortex and restricted populations of hippocampus.	✓			
Et(cre/ERT2)8131Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010694)	B6(129S4)-Et(cre/ERT2)8131Rdav/J	Widespread, sparse expression throughout brain.	✓			
Et(cre/ERT2)837Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009579)	B6(129S4)-Et(cre/ERT2)837Rdav/J	No expression.	✓			
Et(cre/ERT2)9699Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010695)	B6(129S4)-Et(cre/ERT2)9699Rdav/J	Widespread expression throughout the brain.	✓			
Et(EGFP/cre)16053Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034568)	B6(129S4)-Et(EGFP/cre)16053Rdav/Mmmh	Strong widespread expression throughout the brain.	✓			
Et(EGFP/cre)16055Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034569)	B6(129S4)-Et(EGFP/cre)16055Rdav/Mmmh	Widespread expression in amygdala, cortex and midbrain. Sparse, scattered expression in striatum, thalamus, and cerebellum. Enriched in restricted populations in hippocampus.	✓			
Et(EGFP/cre)16059Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034570)	B6(129S)-Et(EGFP/cre)16059Rdav/Mmmh	Strong, scattered, sparse expression throughout the brain. Enriched expression in choroid plexus and midbrain.	✓			
Et(EGFP/cre)16102Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034571)	B6(129S4)-Et(EGFP/cre)16102Rdav/Mmmh	Widespread expression throughout the brain. Scattered expression in striatum.	✓			
Et(EGFP/cre)16218Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034572)	B6(129S4)-Et(EGFP/cre)16218Rdav/Mmmh	Widespread expression in cortex, hippocampus, striatum, pallidum, hypothalamus, olfactory bulb, pons, medulla. Strong sparse, scattered cells in thalamus, midbrain, cerebellum.	✓			

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					Trans Char	Conn Atlas	Cell Types	Brain Obs
Et(EGFP/cre)16250Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034573)	B6(129S4)-Et(EGFP/cre)16250Rdav/Mmmh	Widespread expression throughout the brain.	✓			
Et(EGFP/cre)16255Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034574)	B6(129S4)-Et(EGFP/cre)16255Rdav/Mmmh	Strong widespread expression throughout the brain.	✓			
Et(EGFP/cre)16261Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034575)	B6(129S)-Et(EGFP/cre)16261Rdav/Mmmh	Widespread, sparse expression throughout brain. Enriched in cortical layer 6 and in restricted populations within hippocampus.	✓			
Et(EGFP/cre)16279Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034576)	B6(129S4)-Et(EGFP/cre)16279Rdav/Mmmh	Moderate/low scattered expression in various structures throughout the brain. Expressed in choroid plexus.	✓			
Et(icre)1402Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009587)	B6(129S4)-Et(icre)1402Rdav/J	Widespread expression throughout brain.	✓			
Et(icre)1470Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009588)	B6(129S4)-Et(icre)1470Rdav/J	Widespread, sparse, scattered expression throughout brain.	✓			
Et(icre)1555Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009589)	B6(129S4)-Et(icre)1555Rdav/J	Widespread, scattered expression throughout brain, with a patchy pattern in cortex.	✓			
Et(icre)21468Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034577)	B6(129S)-Et(icre)21468Rdav/Mmmh	Strong widespread expression throughout the brain. Sparser expression in superficial cortical layers, CA1, and thalamus.	✓			
Et(icre)21603Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034578)	B6(129S)-Et(icre)21603Rdav/Mmmh	Strong scattered cells in restricted vasculature-like cell populations throughout the brain.	✓			
Et(icre)21605Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034579)	B6(129S)-Et(icre)21605Rdav/Mmmh	Strong widespread expression throughout the brain.	✓			
Et(icre)21614Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034580)	B6(129S)-Et(icre)21614Rdav/Mmmh	Strong expression in various regions including amygdala, hippocampal CA3, olfactory bulb, midbrain, pons, medulla, thalamus, hypothalamus, pallidum, piriform area. Scattered cells in Purkinje cell layer of cerebellum.	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Et(cre)21733Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034581)	B6(129S)-Et(cre)21733Rdav/Mmmh	Strong widespread expression throughout the brain. Enriched expression in deep cortical layers. Strong scattered cells in Ammon's Horn.	✓			
Et(cre)22787Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034582)	B6(129S)-Et(cre)22787Rdav/Mmmh	Low level scattered expression throughout the brain.	✓			
Et(cre)23031Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034583)	B6(129S)-Et(cre)23031Rdav/Mmmh	Strong expression in striatum and hippocampus. Expressed in restricted populations in cortical subplate (amygdala), cortex, midbrain and hindbrain.	✓			
Et(cre)23033Rdav	Ronald L. Davis and Paul A. Overbeek	MMRRC (034584)	B6(129S)-Et(cre)23033Rdav/Mmmh	Strong expression in various regions including amygdala, cortex, thalamic subnuclei, midbrain, pons, medulla, hypothalamus. Strongly expressed in ventral hippocampus.	✓			
Et(cre)754Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (009586)	B6(129S4)-Et(cre)754Rdav/J	Very sparse expression in restricted populations within hippocampus and cortical subplate.	✓			
Et(cre/ERT2)10596Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010696)	B6(129S4)-Et(cre/ERT2)10596Rdav/J	Sparse, scattered expression throughout the brain. Enriched within restricted populations in pons and medulla.	✓			
Et(cre/ERT2)10727Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (010697)	B6(129S4)-Et(cre/ERT2)10727Rdav/J	Strong widespread expression throughout the brain.	✓			
Et(cre/ERT2)14163Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012689)	B6(129S4)-Et(cre/ERT2)14163Rdav/J	Strong expression in hippocampal subregions CA1, CA2, dentate gyrus. Strong scattered cells in cortex, cerebellum, pons, medulla, midbrain, olfactory bulb, striatum, hypothalamus.	✓			
Et(cre/ERT2)14208Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012690)	B6(129S4)-Et(cre/ERT2)14208Rdav/J	Low scattered expression throughout the brain.	✓			
Et(cre/ERT2)14374Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012691)	STOCK Et(cre/ERT2)14374Rdav/J	Strong widespread expression throughout the brain.	✓			
Et(cre/ERT2)14602Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012692)	STOCK Et(cre/ERT2)14602Rdav/J	Strong widespread expression throughout the brain. Sparser expression in thalamus.	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Et(icre/ERT2)14624Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012693)	STOCK Et(icre/ERT2)14624Rdav/J	Strong widespread expression throughout the brain. Enriched expression in cortex, striatum, hippocampus, and olfactory bulb.	✓			
Et(icre/ERT2)14915Rdav	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012694)	B6(129S4)-Et(icre/ERT2)14915Rdav/J	Strong widespread expression throughout the brain.	✓			
Etv1-CreERT2 (ER81-CreERT2)	Z. Josh Huang	The Jackson Laboratory (013048)	B6(Cg)-Etv1 ^{tm1.1(cre/ERT2)Zjh/J}	Enriched in neocortical layer 5, and restricted populations in cerebellum, thalamus, hippocampus, piriform cortex, cortical subplate (amygdala).	✓	✓		
Fezf1-2A-dCre	Allen Institute for Brain Science	The Jackson Laboratory (25110)	B6;129S-Fezf1 ^{tm1.1(cre/foxA)Hze/J}	Reporter expression is enriched in restricted populations within striatum and hypothalamus.	✓	✓		
Fos-tTA	Mark Mayford and Ulrich Mueller	MMRRC (031756)	C57BL/6J-Tg(Fos-tTA)1Mmay/MulIMmmh	Expressed in restricted populations in hippocampus, cortical subplate (amygdala), and cortex, particularly deep cortical layers.	✓			
Foxp2-IRES-Cre	Richard Palmiter			Expressed in retinal ganglion cells.	✓	✓		
Gabra6-IRES-Cre	William Wisden	MMRRC (015968)	B6.129P2-Gabra6 ^{tm2(cre)Wwis/Mmcd}	Cre is enriched in granular cell layer of the cerebellum. Reporter expression is scattered, widespread throughout most brain areas.	✓	✓		
Gabrr3-Cre_KC112	Nathaniel Heintz and Charles Gerfen	MMRRC (030709)	STOCK Tg(Gabrr3-cre)KC112Gsat/Mmcd	Strong widespread expression throughout the brain. Highly enriched in cortical layer 6, dorsal thalamus, subthalamic nucleus, pontine gray and subregions of striatum, among other brain areas.	✓	✓		
Gad2-CreERT2	Z. Josh Huang	The Jackson Laboratory (010702)	STOCK Gad2 ^{tm1(cre/ERT2)Zjh/J}	Strong widespread, scattered expression throughout brain. Enriched expression in cortical subplate (amygdala), striatum, olfactory bulb.	✓			
Gad2-IRES-Cre	Z. Josh Huang	The Jackson Laboratory (010802)	STOCK Gad2 ^{tm2(cre)Zjh/J}	Specific to GABAergic neurons. Enriched in striatum, piriform cortex, and in restricted populations in thalamus, hypothalamus, cerebellum, olfactory areas, and GABAergic interneurons of cortex.	✓	✓	✓	
GadGFP	John Swann	The Jackson Laboratory (003718)	FVB-Tg(GadGFP)45704Sw/J	Very sparse expression throughout the brain. Enriched in restricted populations within medulla.	✓			
Gal-Cre_KI87	Nathaniel Heintz and Charles Gerfen	MMRRC (031060)	STOCK Tg(Gal-cre)KI87Gsat/Mmcd	Expressed in specific restricted populations within the medulla, pons, thalamus, and hypothalamus.	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Gfap-Cre	Albee Messing	The Jackson Laboratory (004600)	FVB-Tg(GFAP-cre)25Mes/J	Reporter expressed throughout cortex, hippocampus, cerebellum, striatum, and other regions in neurons and glia. Cre expression is more scattered throughout brain and in restricted populations in cerebellum.	✓			
Glt25d2-Cre_NF107	Nathaniel Heintz and Charles Gerfen	MMRRC (036504)	STOCK Tg(Colgal2-cre)NF107Gsat/Mmucd	Reporter expression displays laminar enrichment in rostral cortex and in restricted populations within cortical subplate.	✓	✓		
Gnb4-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (029587)	B6.Cg-Gnb4 ^{tm1.1(cre)Hze} /J	Cre expression is enriched in restricted populations within cortical subplate (claustrum and endopiriform nucleus) and layers 5 and 6 of lateral areas of cortex.	✓	✓		
Gnb4-IRES2-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (030159)	B6.Cg-Gnb4 ^{tm1.1(cre/ERT2)Hze} /J	Expression is enriched in restricted populations within cortical subplate (claustrum and endopiriform nucleus) and layers 5 and 6 of lateral areas of cortex.	✓			
Gng7-Cre_KH71	Nathaniel Heintz and Charles Gerfen	MMRRC (031181)	STOCK Tg(Gng7-cre)KH71Gsat/Mmcd	Enriched in striatum and neocortical layers 2 and 5, and in restricted populations in medulla, pons, midbrain, hippocampus, hypothalamus, thalamus, and olfactory areas.	✓	✓		
Gnrh1-Cre (Lhrh-Cre)	Catherine Dulac	The Jackson Laboratory (021207)	STOCK Tg(Gnrh1-cre)1Dlc/J	Enriched in restricted populations in hypothalamus and olfactory areas. Strong expression in scattered cells of septum.	✓	✓		
Gpr26-Cre_KO250	Nathaniel Heintz and Charles Gerfen	MMRRC (033032)	STOCK Tg(Gpr26-cre)KO250Gsat/Mmucd	Enriched in frontal cortex, layers 5, 6b in other cortical regions, CA1 of hippocampus, thalamic subnuclei, and cerebellar Purkinje cells. Sparse expression in many other areas, including hindbrain, colliculus, striatum.	✓	✓		
Grik4-Cre (G32-4)	Susumu Tonegawa	The Jackson Laboratory (006474)	C57BL/6-Tg(Grik4-cre)G32-4Stl/J	Enriched in restricted populations within the hippocampus, cerebellum, cortical subplate (amygdala), medulla, pons, and thalamus.	✓	✓		
Grm2-Cre_MR90	Nathaniel Heintz and Charles Gerfen	MMRRC (034611)	STOCK Tg(Grm2-cre)MR90Gsat/Mmcd	Scattered, asymmetrical expression of reporter gene throughout brain. In hippocampus, reporter expression is restricted to dentate gyrus. Cre expression is more restricted to areas including cortex, thalamus, superior colliculus, PAG.	✓	✓		
Grp-Cre_KH288	Nathaniel Heintz and Charles Gerfen	MMRRC (031183)	STOCK Tg(Grp-cre)KH288Gsat/Mmucd	Enriched in layer 2/3 of frontal cortex. Expression in restricted populations in hippocampus, hypothalamus, thalamus and cerebellum.	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Hcrt-Cre	Takeshi Sakurai			Reporter expression is enriched in restricted populations within olfactory areas, hippocampal formation, striatum, pallidum, thalamus, hypothalamus, and cerebellum.	✓	✓		
Hdc-Cre_IM1	Nathaniel Heintz and Charles Gerfen	MMRRC (032079)	STOCK Tg(Hdc-cre)IM1Gsat	Enriched in restricted populations of cells in the hypothalamus (tuberomammillary nucleus).	✓	✓		
Htr1a-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (030160)	B6;129S- <i>Htr1a</i> ^{tm1.1(cre)Hze} /J	Expression in cortical layer 5 and layer 6, entorhinal cortex, hippocampus, and superior central nucleus raphe.	✓			
Htr2a-Cre_KM207	Nathaniel Heintz and Charles Gerfen	MMRRC (031150)	STOCK Tg(Htr2a-cre)KM207Gsat/Mmucd	Scattered expression throughout the brain. Enriched in layers 5 and 6b of cortex. Expression in restricted populations in septal complexes, hypothalamus and cerebellum.	✓	✓		
Htr3a-Cre_NO152	Nathaniel Heintz and Charles Gerfen	MMRRC (036680)	STOCK Tg(Htr3a-cre)NO152Gsat/Mmucd	Reporter expression detected in subset of cortical interneurons. Enrichment is also detected in restricted populations in olfactory areas, pallidum, hypothalamus, pons, medulla, cerebellum.	✓	✓	✓	
Ins2-Cre	Mark Magnuson	The Jackson Laboratory (003573)	B6.Cg-Tg(Ins2-cre)25Mgn/J	Widespread expression in cerebral cortex, cerebral nuclei, hypothalamus. Scattered expression in pons and medulla. Little-to-no expression in midbrain, thalamus, cerebellum.	✓	✓		
Jam2-Cre	Joshua Sanes			Expressed in retinal ganglion cells.	✓	✓		
Jam2-CreER (JAM-B-CreER)	Joshua Sanes			Expressed in retinal ganglion cells.	✓	✓		
Kcnc2-Cre	Susumu Tonegawa	The Jackson Laboratory (008582)	STOCK Tg(Kcnc2-Cre)K128Stl/LetJ	Enriched in piriform cortex, thalamus, and in restricted populations within the hippocampus, hypothalamus, cerebellum, and pons.	✓	✓		
Kcng4-Cre (KOKCNG)	Joshua Sanes			Reporter expression is widespread and scattered throughout the brain. Enriched in restricted populations within thalamus and hypothalamus. Expressed in retinal ganglion cells.	✓	✓		
Kiss1-Cre	Carol Elias	The Jackson Laboratory (023426)	STOCK Tg(Kiss1-cre)J2-4Cfe/J	Expression is enriched in specific nuclei of the hypothalamus (e.g. arcuate nucleus).	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Klk8-tTA	Mark Mayford and Ulrich Mueller	MMRRC (031780)	B6.Cg-Tg(Klk8-tTA)QMmay/MullMmmh	Expressed in restricted populations throughout the brain.	✓			
Lepr-IRES-Cre	Jeffrey Friedman	The Jackson Laboratory (008320)	B6.129- <i>Lepr</i> ^{tm2(cre)Rck} /J	Expressed in restricted populations within the hypothalamus.	✓	✓		
Lhx6-CreERT2	Z. Josh Huang	The Jackson Laboratory (010776)	B6(Cg)- <i>Lhx6</i> ^{tm1(cre/ERT2)Zjh} /J	Sparse, scattered expression throughout brain. Enriched in restricted populations within the cortical subplate (amygdala), and pallidum.	✓			
Lypd6-Cre_KL156	Nathaniel Heintz and Charles Gerfen			Expressed in restricted populations within the hippocampus, thalamus, hypothalamus, midbrain, pons, and medulla.	✓	✓		
Mybpc1-Cre (8030451F13Rik-Cre)	Allen Institute for Brain Science	The Jackson Laboratory (008848)	B6;C3-Tg(Mybpc1-cre)2Aibs/J	Widespread, scattered expression in most brain areas. Enriched expression of reporter gene in restricted populations of olfactory areas (piriform cortex), isocortex, hippocampal formation, cerebellum, cortical subplate, thalamus.	✓			
Ndnf-IRES2-dgCre	Allen Institute for Brain Science	The Jackson Laboratory (028536)	B6.Cg- <i>Ndnf</i> ^{tm1.1(folA/cre)Hze} /J	Cre expression is restricted to layer 1 of cortex and in restricted populations in olfactory areas, hippocampal formation, striatum, midbrain.	✓	✓	✓	
Nefh-Cre (mNF-H-cre)	Ashok Kulkarni	The Jackson Laboratory (009102)	STOCK Tg(Nefh-cre)12Kul/J	Widespread expression throughout the brain.	✓			
Nefl-IRES-CreER	Jeremy Nathans	The Jackson Laboratory (008363)	B6;129- <i>Nefl</i> ^{tm1(cre/Esr1)Nat} /J	Sparse, scattered expression in cortex and other areas. Enriched in specific populations within the medulla and pons.	✓			
Nes-Cre	Rüdiger Klein	MMRRC (031750)	B6.Cg-Tg(Nes-cre)1Kln/MullMmmh	Widespread expression throughout the brain.	✓			
Neto1-Cre (KONeto1)	Joshua Sanes			Expressed in retinal ganglion cells.	✓	✓		
Nkx2-1-CreERT2	Z. Josh Huang	The Jackson Laboratory (014552)	STOCK <i>Nkx2-1</i> ^{tm1.1(cre/ERT2)Zjh} /J	Strong scattered cells in restricted populations throughout the brain including striatum, cortical subplate (amygdala), hippocampus, and hypothalamus. Expressed in choroid plexus.	✓		✓	

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Nos1-CreERT2	Z. Josh Huang	The Jackson Laboratory (014541)	B6;129S- <i>Nos1^{tm1.1(cre/ERT2)Zjh}/J</i>	Expressed in molecular and granular layer in cerebellum. Strong expression in amygdala and olfactory bulb, particularly the accessory olfactory bulb, granular layer. Expressed in scattered cell populations in other brain regions.	✓	✓	✓	
Npr3-IRES2-Cre	Allen Institute for Brain Science			Cre expression is enriched in layer 5 of cortex and in restricted populations within hippocampal formation.	✓	✓		
Npy-IRES2-FlpO	Allen Institute for Brain Science	The Jackson Laboratory (030211)	B6.Cg- <i>Npy^{tm1.1(flpo)Hze}/J</i>	Expression is enriched in layer 6 of posterior cortical regions and in layer 4, layer 5, and layer 6 of anterior cortical regions. Expression is also scattered throughout the cortex in all layers. There is enrichment in populations of the hypothalamus, thalamus, striatum, olfactory bulb, and cerebellum.	✓			
Nr4a2-SA-IRES-Dre	Andras Nagy			Expressed in claustrum, endopiriform nucleus, and entorhinal area.	✓			
Nr5a1-Cre (Sf1-Cre)	Bradford Lowell	The Jackson Laboratory (006364)	FVB-Tg(Nr5a1-cre)2Lowl/J	Expressed in restricted populations within the hypothalamus (ventromedial hypothalamus), and in cortical layer 4.	✓	✓	✓	✓
Ntng2-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (029588)	B6.Cg- <i>Ntng2^{tm1.1(cre)Hze}/J</i>	Cre expression is enriched in layers 5 and 6 of cortex; and in restricted populations within hippocampal formation, cortical subplate, thalamus, hypothalamus, midbrain, pons, and medulla.	✓	✓		
Ntrk1-IRES-Cre	Louis F. Reichardt	MMRRC (015500)	B6;129S4- <i>Ntrk1^{tm1(cre)Lfr}/Mmucd</i>	Sparse, scattered expression throughout subcortical brain regions. Enriched in restricted populations in the thalamus, hypothalamus, midbrain, pons, and medulla.	✓	✓		
Ntsr1-Cre_GN220	Nathaniel Heintz and Charles Gerfen	MMRRC (030648)	B6.FVB(Cg)-Tg(Ntsr1-cre)GN220Gsat/Mmucd	Specific to cortical layer 6 neurons.	✓	✓	✓	
Nxph4-2A-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (022861)	B6.Cg- <i>Nxph4^{tm1.1(cre/ERT2)Hze}/J</i>	Strong expression in locus coeruleus and dorsal medial hypothalamus. Very sparse in other regions of hypothalamus, and layer 6b of cortex and other brain regions.	✓	✓		
Otof-Cre	Ulrich Mueller	MMRRC (032781)	B6(Cg)- <i>Otof^{tm1.1(cre)Mull}/Mmmh</i>	Sparse, scattered expression throughout the brain. Enriched in neocortical layer 6 and cingulate cortex, also in restricted populations within hippocampus, cortical subplate (amygdala).	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Otof-CreERT2	Ulrich Mueller	MMRRC (032782)	B6(Cg)-Otof ^{tm2.1(cre/ERT2)} Mull/Mmmh	Low level scattered expression throughout the brain.	✓			
Oxt-IRES-Cre (Oxy-ires-Cre)	Bradford Lowell			Expressed in restricted populations in hypothalamus (paraventricular and supraoptic nuclei).	✓	✓		
Oxtr-2A-Cre	Allen Institute for Brain Science			Cre expression is enriched in restricted populations within hippocampal formation, cortical subplate, striatum, thalamus, hypothalamus, and medulla. Sparse, scattered expression in cortex.	✓			
Oxtr-Cre_ON66	Nathaniel Heintz and Charles Gerfen	MMRRC (036545)	STOCK Tg(Oxtr-cre)ON66Gsat/Mmucd	Widespread expression throughout most of brain, except very sparse expression in striatum and restricted populations in thalamus, cerebellum.	✓	✓		
Pcdh9-Cre_NP276	Nathaniel Heintz and Charles Gerfen	MMRRC (036084)	STOCK Tg(Pcdh9-cre)NP276Gsat/Mmcd	Strong expression in olfactory bulb, olfactory tubercle and striatum. Sparse cells in cortex, hypothalamus, and subregions of cerebellum, midbrain and hindbrain.	✓	✓		
Pcp2-Cre (AM)	Andrew McMahon	The Jackson Laboratory (006207)	STOCK Tg(Pcp2-cre)1Amc/J	Cre expression restricted to Purkinje cells in cerebellum. Reporter expression also prominent in cerebellar Purkinje cells, and widely scattered throughout brain (possibly glia) and enriched in cortex and hippocampus.	✓			
Pcp2-Cre_GN135	Nathaniel Heintz and Charles Gerfen	MMRRC (030868)	B6.Cg-Tg(Pcp2-cre)GN135Gsat/Mmucd	Expressed in Purkinje cells within the cerebellum.	✓	✓		
Pdyn-T2A-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (030197)	B6;129S-Pdyn ^{tm1.1(cre/ERT2)} Hze/J	Sparse expression in cortical layer 5. Restricted expression in populations of the anterior hypothalamus and amygdala, and scattered expression in the posterior hypothalamus and amygdala.	✓	✓		
Pdzk1ip1-Cre_KD31 (Pdzk1-Cre)	Nathaniel Heintz and Charles Gerfen	MMRRC (030851)	STOCK Tg(Pdzk1ip1-cre)KD31Gsat/Mmucd	In restricted populations within the thalamus, midbrain, pons, and medulla.	✓	✓		
Penk-2A-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (022862)	B6.Cg-Penk ^{tm1.1(cre/ERT2)} Hze/J	Weak widespread expression throughout brain. Strong expression in striatum, olfactory tubercle, and very sparsely in dentate gyrus and cortex.	✓	✓		
Penk-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (025112)	B6;129S-Penk ^{tm2(cre)} Hze/J	Reporter expression is enriched in layers 2 and 6 of cortex and in restricted populations within olfactory areas, hippocampal formation, striatum, pallidum, and hypothalamus.	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Plxnd1-Cre_OG1	Nathaniel Heintz and Charles Gerfen	MMRRC (036631)	STOCK Tg(Plxnd1-cre)OG1Gsat/Mmucd	Widespread, scattered expression throughout brain. Enriched in cortex and in restricted populations within striatum, olfactory areas, hippocampal formation.	✓	✓		
Plxnd1-IRES2-dgFlpO	Allen Institute for Brain Science			Sparse expression in cortical layer 5.	✓			
Pmch-Cre (MCH-Cre)	Bradford Lowell	The Jackson Laboratory (014099)	STOCK Tg(Pmch-cre)1Lowl/J	Enriched in restricted populations within the hypothalamus.	✓	✓		
Pnmt-Cre	Steven Ebert			In restricted populations in medulla, and enriched in layers 2/3, 5a, 6 of cortex, and hippocampus.	✓	✓		
Pomc-Cre (BL) (Pomc1-Cre)	Bradford Lowell	The Jackson Laboratory (005965)	STOCK Tg(Pomc1-cre)16Lowl/J	Enriched in arcuate nuclei and sparsely in the dentate gyrus of the hippocampus.	✓	✓		
Pomc-Cre (ST) (Pomc-Cre)	Susumu Tonegawa	The Jackson Laboratory (010714)	B6.FVB-Tg(Pomc-cre)1Stl/J	Enriched in arcuate nuclei and dentate gyrus of the hippocampus. Also scattered in medulla and midbrain.	✓	✓		
Ppp1r17-Cre_NL146	Nathaniel Heintz and Charles Gerfen	MMRRC (036205)	STOCK Tg(Ppp1r17-cre)NL146Gsat/Mmucd	Cre expression is enriched in restricted populations in the hippocampus, cortical subplate, pallidum, thalamus, hypothalamus, midbrain, medulla, and cerebellum.	✓	✓		
Prkcd-GluCla-CFP-IRES-Cre	David Anderson			Scattered expression throughout brain. Enriched in layer 6a of cortex and restricted populations in thalamus, septal complexes, pons, cerebellum.	✓	✓		
Pvalb-2A-Cre (A201)	Allen Institute for Brain Science	The Jackson Laboratory (012358)	B6.Cg-Pvalb ^{tm1.1(cre)Aibs} /J	Expressed in scattered populations within the cerebellum, medulla, pons, midbrain, cortex, hippocampus, thalamus, and striatum.	✓			
Pvalb-2A-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (021189)	B6.Cg-Pvalb ^{tm1.1(cre/ERT2)Hze} /J	Scattered expression throughout cortex. Enriched in restricted populations in cerebellum, medulla, pons, pallidum, thalamus.	✓			
Pvalb-2A-dCre	Allen Institute for Brain Science	The Jackson Laboratory (022863)	B6.Cg-Pvalb ^{tm5.1(cre/foIA)Hze} /J	Scattered expression throughout the cortex. Enriched in restricted populations in the cerebellum, medulla, pons, pallidum, and thalamus.	✓			
Pvalb-2A-Dre	Allen Institute for Brain Science	The Jackson Laboratory (021190)	B6.Cg-Pvalb ^{tm3.1(dreo)Hze} /J	Dre expression scattered throughout many brain regions including cortex, hippocampal formation, pons, medulla; and in restricted populations in pallidum, thalamus, midbrain, and cerebellum.	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Pvalb-2A-Flpo	Allen Institute for Brain Science	The Jackson Laboratory (022730)	B6.Cg- <i>Pvalb</i> ^{tm4.1(FLPo)Hze/J}	Scattered expression throughout cortex. Enriched in restricted populations in cerebellum, medulla, pons, pallidum, thalamus.	✓			
Pvalb-CreERT2 (Pv-CreERT2)	Z. Josh Huang	The Jackson Laboratory (010777)	B6(Cg)- <i>Pvalb</i> ^{tm1(cre/ERT2)Zjh/J}	Very sparse, scattered expression. Enriched in restricted populations within the cerebellum.	✓			
Pvalb-IRES-Cre	Silvia Arber	The Jackson Laboratory (008069)	B6;129P2- <i>Pvalb</i> ^{tm1(cre)Arbr/J}	Expressed in restricted and/or sparse populations within the cerebellum, medulla, pons, midbrain, cortex, hippocampus, thalamus, and striatum.	✓	✓	✓	
Rasgrf2-2A-dCre	Allen Institute for Brain Science	The Jackson Laboratory (022864)	B6;129S- <i>Rasgrf2</i> ^{tm1.1(cre/foIA)Hze/J}	Scattered expression throughout cortex and enriched in layers 2/3. Scattered expression in striatum, amygdala, hypothalamus. Enriched expression in ventromedial hypothalamic nucleus and paraventricular nucleus of the thalamus.	✓	✓		
Rasgrf2-T2A-dgFlpO	Allen Institute for Brain Science	The Jackson Laboratory (029589)	B6.Cg- <i>Rasgrf2</i> ^{tm2.1(foIA/flpo)Hze/J}	Scattered expression in upper cortical layers. Enrichment in specific populations of the pons and hypothalamus.	✓			
Rbp4-Cre_KL100	Nathaniel Heintz and Charles Gerfen	MMRRC (031125)	STOCK Tg(Rbp4-cre)KL100Gsat/Mmucd	Enriched in cortical layer 5 and dentate gyrus.	✓	✓	✓	✓
Rorb-2A-tTA2	Allen Institute for Brain Science	The Jackson Laboratory (028537)	B6;129S- <i>Rorb</i> ^{tm2.1(tTA2)Hze/J}	Reporter expression is restricted to layer 4 of cortex.	✓			
Rorb-P2A-FlpO	Allen Institute for Brain Science			Expression in layer 4 and layer 5 of the cortex, pontine gray, thalamus, arcuate hypothalamic nucleus, and cortical amygdala.	✓			
Rorb-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (023526)	B6;129S- <i>Rorb</i> ^{tm1.1(cre)Hze/J}	Strong expression in zonal layer of superior colliculus and thalamus subregions. Dense patchy expression in layer 4; sparse expression in layers 5, 6 in cortex. Expressed in trigeminal nucleus and small patches of cells in cerebellum.	✓	✓	✓	✓
Rorb-IRES2-FlpO	Allen Institute for Brain Science	The Jackson Laboratory (029590)	B6.Cg- <i>Rorb</i> ^{tm3.1(flpo)Hze/J}	Expression is enriched in layer 4 of cortex; and in restricted populations within olfactory areas, thalamus, hypothalamus, midbrain, pons, and medulla.	✓			
Satb2-Cre_MO23	Nathaniel Heintz and Charles Gerfen	MMRRC (032908)	STOCK Tg(Satb2-cre)MO23Gsat/Mmucd	Highly enriched in cortex. Sparse expression in many other structures, including midbrain, hindbrain and olfactory bulb.	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Scnn1a-Tg1-Cre	Allen Institute for Brain Science	The Jackson Laboratory (009111)	B6;C3-Tg(Scnn1a-cre)1Aibs/J	Scattered expression throughout cortex, striatum, hippocampus and cerebellum. In the cortex, reporter expression is enriched in layer 4.	✓			
Scnn1a-Tg2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (009112)	B6;C3-Tg(Scnn1a-cre)2Aibs/J	Reporter expression in sparse and/or restricted regions of cortex (layer 4), thalamus, midbrain, medulla, pons, and cerebellum.	✓	✓	✓	
Scnn1a-Tg3-Cre	Allen Institute for Brain Science	The Jackson Laboratory (009613)	B6;C3-Tg(Scnn1a-cre)3Aibs/J	Enriched in cortical layer 4 and in restricted populations within cortex, thalamus, and in cerebellum.	✓	✓	✓	✓
Sdk2-CreER (KO2SDK)	Joshua Sanes			Expressed in retinal ganglion cells.	✓	✓		
Sepw1-Cre_NP39	Nathaniel Heintz and Charles Gerfen	MMRRC (036190)	STOCK Tg(Sepw1-cre)NP39Gsat/Mmucd	Reporter expression widespread in cortex, hippocampal formation, cortical subplate; and expressed in restricted populations in olfactory areas, pallidum, hypothalamus, medulla.	✓	✓		
Sim1-Cre	Bradford Lowell	The Jackson Laboratory (006451)	B6.FVB(129X1)-Tg(Sim1-cre)1Low/J	Enriched in restricted populations in cerebellum, midbrain, hypothalamus, hippocampus (CA1), cortical subplate (amygdala), thalamus; area-dependent enrichment in cortex layers 2/3, 4, 6b.	✓	✓		
Sim1-Cre_KJ18	Nathaniel Heintz and Charles Gerfen	MMRRC (031742)	STOCK Tg(Sim1-cre)KJ18Gsat/Mmucd	Enriched in restricted populations in layer 5 of cortex, striatum (amygdala), hypothalamus. Sparse, scattered expression elsewhere in brain.	✓	✓	✓	
Six3-Cre	Guillermo Oliver	The Jackson Laboratory (019755)	STOCK Tg(Six3-cre)69Frty/GcoJ	Enriched in cortical layer 4 and striatum. In scattered cells in cortex and throughout brain.	✓			
Slc17a6-IRES-Cre (VGLUT2-ires-Cre)	Bradford Lowell	The Jackson Laboratory (016963)	STOCK <i>Slc17a6</i> ^{Gtm2(cre)Low} /J	Widespread expression throughout most of brain, except very sparse expression in striatum and restricted populations within cerebellum, medulla, and pons.	✓	✓	✓	
Slc17a7-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (023527)	B6;129S- <i>Slc17a7</i> ^{tm1.1(cre)Hze} /J	Strong expression throughout cortex, olfactory bulb, anterior olfactory nuclei. Scattered expression in striatum, hippocampus. Enriched in restricted populations in pons, superior colliculus, anterodorsal nucleus of thalamus.	✓	✓	✓	
Slc17a8-iCre (VGLUT3 Cre)	Robert Edwards and Rebecca Seal	The Jackson Laboratory (018147)	Tg(Slc17a8-icre)1Edw/SealJ	Scattered expression in many brain regions. Expression is enriched in layers 5 and 6 of cortex;	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
				and in restricted populations within thalamus, midbrain, pons, medulla, and cerebellum.				
Slc17a8-IRES2-Cre (Vglut3-IRES2-Cre)	Allen Institute for Brain Science	The Jackson Laboratory (028534)	B6;129S-Slc17a8 ^{tm1.1(cre)Hze/J}	Scattered expression in many brain regions. Expression is enriched in layers 5 and 6 of cortex; and in restricted populations within pallidum, thalamus, midbrain, pons, medulla, and cerebellum.	✓	✓		
Slc18a2-Cre_OZ14 (VMAT2)	Nathaniel Heintz and Charles Gerfen	MMRRC (034814)	STOCK Tg(Slc18a2-cre)OZ14Gsat/Mmcd	Enriched in primary somatosensory area, layer 4 in cortex. Expression in restricted populations in striatum, thalamus, midbrain, pons, cerebellum.	✓	✓		
Slc32a1-2A-FlpO	Allen Institute for Brain Science	The Jackson Laboratory (029591)	B6.Cg-Slc32a1 ^{tm1.1(flpo)Hze/J}	Widespread, scattered expression throughout the brain. Expressed in restricted populations within thalamus, hypothalamus, midbrain, pons, and medulla.	✓			
Slc32a1-IRES-Cre (VGAT-ires-Cre)	Bradford Lowell	The Jackson Laboratory (016962)	STOCK Slc32a1 ^{tm2(cre)Lowl/J}	Specific to GABAergic neurons. Enriched in striatum and in restricted populations in thalamus, hypothalamus, cerebellum, olfactory areas, and GABAergic interneurons of the cortex.	✓	✓	✓	
Slc6a3-Cre (DAT-Cre)	Xiaoxi Zhuang			Relatively specific to dopaminergic neurons in midbrain, hypothalamus, olfactory bulb. Scattered populations of reporter positive cells in basal forebrain, corticoamygdala area, brainstem.	✓	✓		
Slc6a4-Cre_ET33	Nathaniel Heintz and Charles Gerfen	MMRRC (031028)	B6.Cg-Tg(Slc6a4-cre)ET33Gsat/Mmcd	Both Cre and reporter expression are observed in restricted populations (serotonergic neurons) within medulla, pons, midbrain. Additional reporter expression noted in thalamus.	✓	✓		
Slc6a4-CreERT2_EZ13	Nathaniel Heintz and Charles Gerfen	MMRRC (030071)	STOCK Tg(Slc6a4-cre/ERT2)EZ13Gsat/Mmcd	Both Cre and reporter expression observed in restricted populations (serotonergic neurons) in medulla, pons, midbrain. Additional reporter expression noted in sparse cells of hypothalamus.	✓	✓		
Slc6a5-Cre_KF109	Nathaniel Heintz and Charles Gerfen	MMRRC (030730)	STOCK Tg(Slc6a5-cre)KF109Gsat/Mmucd	Enriched in populations within the medulla and pons, and in a very restricted area of thalamus.	✓	✓		
Snap25-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (023525)	B6;129S-Snap25 ^{tm2.1(cre)Hze/J}	Strong widespread expression throughout the brain.	✓		✓	
Sst-Cre	Allen Institute for Brain Science			Sparse, scattered cells throughout most of the brain.	✓	✓		

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Sst-CreERT2 (SOM-CreERT2)	Z. Josh Huang	The Jackson Laboratory (010708)	B6(Cg)-Sst ^{tm1(cre/ERT2)Zjh/J}	Very sparse, scattered expression.	✓			
Sst-IRES-Cre	Z. Josh Huang	The Jackson Laboratory (013044)	STOCK Sst ^{tm2.1(cre)Zjh/J}	Strong scattered expression throughout brain. Localized areas of enrichment include restricted populations in thalamus, amygdala, midbrain, hindbrain, cortical subplate, Purkinje cell layer.	✓	✓	✓	
Syn1-Cre	Jamey Marth	The Jackson Laboratory (003966)	B6.Cg-Tg(Syn1-cre)671Jxm/J	Widespread expression throughout brain. Relatively sparser expression in striatum/ pallidum. Enriched in cortex, particularly layer 4.	✓			
Syn1-icre/mRFP1	Ronald L. Davis and Paul A. Overbeek	The Jackson Laboratory (012687)	B6(129S4)-Tg(SYN1-icre/mRFP1)9934Rdav/J	Expressed in restricted populations throughout the brain, including cortex, hippocampus, midbrain, hindbrain, cerebellum and olfactory bulb. Widespread expression in striatum.	✓			
Syt17-Cre_NO14	Nathaniel Heintz and Charles Gerfen	MMRRC (034355)	STOCK Tg(Syt17-cre)NO14Gsat/Mmucd	Enriched in layer 1 of frontal cortex; and in restricted populations in olfactory areas, hippocampal formation, piriform area, thalamus, midbrain, and medulla.	✓	✓		
Syt6-Cre_KI148	Nathaniel Heintz and Charles Gerfen	MMRRC (032012)	STOCK Tg(Syt6-cre)KI148Gsat/Mmucd	Sparse, scattered expression in brain areas including the medulla, pons, and midbrain. Enriched in specific areas within thalamus, layer 6a cortex, and olfactory areas.	✓	✓		
Tac1-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (021877)	B6;129S- <i>Tac1</i> ^{tm1.1(cre)Hze/J}	Scattered expression in caudate, septum, hypothalamus, midbrain, hindbrain, cerebellum. Dense expression in accessory olfactory bulb and anterior olfactory nucleus, thalamus, VMH and midbrain structures (superior colliculus). Cre expression pattern is similar but more sparse.	✓	✓		
Tac2-IRES2-Cre	Allen Institute for Brain Science	The Jackson Laboratory (021878)	B6;129S- <i>Tac2</i> ^{tm1.1(cre)Hze/J}	Cre expression is enriched in habenula and restricted populations of hypothalamus. Sparse expression in cortex, hippocampus, cerebellum.	✓	✓		
Tacr1-T2A-Cre	Allen Institute for Brain Science			Scattered expression in cortical and subcortical areas. Enrichment in the hippocampus and restricted expression in populations of the pons and cortical subplate.	✓			
Tacr1-T2A-Cre-neo	Allen Institute for Brain Science			Scattered expression in cortical and subcortical areas. Enrichment in the hippocampus and restricted expression in populations of the pons and cortical subplate.	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
Th-Cre_FI172	Nathaniel Heintz and Charles Gerfen	MMRRC (031029)	B6.FVB(Cg)-Tg(Thcre)FI172Gsat/Mmucd	Enriched in restricted populations in olfactory areas, cortical amygdalar area, hypothalamus, thalamus, midbrain, pons, medulla, cerebellum. Sparse, scattered expression in cerebral nuclei.	✓	✓		
Th-IRES-CreER	Jeremy Nathans	The Jackson Laboratory (008532)	B6;129- <i>Th^{tm1(cre/Esr1)Nat}/J</i>	Expressed in restricted and/or very sparse populations in hypothalamus, medulla, pons, midbrain.	✓	✓		
Thy1-Cre	Fred Van Leuven	The Jackson Laboratory (006143)	FVB/N-Tg(Thy1-cre)1Vln/J	Expressed in retinal ganglion cells.	✓	✓		
Thy1-YFPH	Joshua Sanes	The Jackson Laboratory (003782)	B6.Cg-Tg(Thy1-YFPH)2Jrs/J	Enriched in cortical layer 5 and hippocampus. Restricted and/or sparse populations in cortical subplate (amygdala), cerebellum, pons, medulla.	✓			
Tlx3-Cre_PL56	Nathaniel Heintz and Charles Gerfen	MMRRC (036547)	STOCK Tg(Tlx3-cre)PL56Gsat/Mmucd	Reporter expression enriched in layer 5a of cortex and in restricted populations of pons and medulla.	✓	✓	✓	
Trib2-2A-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (022865)	B6.Cg- <i>Trib2^{tm1.1(cre/ERT2)Hze}/J</i>	Enriched in superficial layer 5 neurons of cortex. In scattered cells in cortex and throughout brain. Widespread in vasculature.	✓	✓		
Ucn3-Cre_KF43	Nathaniel Heintz and Charles Gerfen	MMRRC (032078)	STOCK Tg(Ucn3-cre)KF43Gsat/Mmucd	Enriched in restricted and/or sparse populations in cerebellum, medulla, pons, midbrain, hypothalamus, thalamus, cortical subplate (amygdala), striatum.	✓	✓		
Vamp2-IRES-CreER	Jeremy Nathans	The Jackson Laboratory (008531)	B6;129- <i>Vamp2^{tm1(cre/Esr1)Nat}/J</i>	Scattered, widespread expression throughout brain.	✓			
Vip-IRES-Cre	Z. Josh Huang	The Jackson Laboratory (010908)	STOCK <i>Vip^{tm1(cre)Zjh}/J</i>	Strong scattered expression throughout brain. Enriched in superficial cortical layers and restricted populations in hindbrain and midbrain.	✓	✓	✓	
Vipr2-Cre_KE2	Nathaniel Heintz and Charles Gerfen	MMRRC (034281)	STOCK Tg(Vipr2-cre)KE2Gsat/Mmucd	Widespread reporter expression. Cre expression is restricted to sparse populations in thalamus.	✓	✓		
Vipr2-IRES2-Cre	Allen Institute for Brain Science			In subcortical areas, this Cre line has expression in arcuate hypothalamic nucleus, dorsal lateral geniculate nucleus, ventral nucleus of the thalamus, bed nuclei of the stria terminalis, and scattered expression in superior colliculus. In the cortex, there	✓			

Driver Line (Alias)	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
					Trans Char	Conn Atlas	Cell Types	Brain Obs
				is scattered expression in neurons and non-neuronal cells.				
Vipr2-IRES2-Cre-neo	Allen Institute for Brain Science			Expression is mostly restricted to subcortical areas, with enrichment in the geniculate complex of the thalamus, arcuate hypothalamic nucleus, and central amygdalar nucleus.	✓			
Wfs1-Tg2-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (009614)	B6.Cg-Tg(Wfs1-cre/ERT2)2Aibs/J	Enriched in superficial layer neurons of cortex and restricted populations in piriform cortex, hippocampal formation, cerebellum, pallidum, olfactory areas.	✓	✓		
Wfs1-Tg3-CreERT2	Allen Institute for Brain Science	The Jackson Laboratory (009103)	B6;C3-Tg(Wfs1-cre/ERT2)3Aibs/J	Enriched in piriform cortex and layer 2/3 of cortex; and in restricted populations within hippocampus, striatum, thalamus, cerebellum, olfactory areas. Without tamoxifen, reporter expression is restricted to entorhinal cortex.	✓	✓		
Wnt3a-IRES-Cre	Ulrich Mueller	MMRRC (031748)	B6(Cg)- <i>Wnt3a^{tm1.1(cre)Mull}</i> /Mmmh	Enriched in the thalamus and midbrain; and in restricted populations within the hippocampus, pons, and cerebellum.	✓			

Table 2. Reporter lines used in Transgenic characterization data sets (Trans Char), Allen Mouse Brain Connectivity Atlas (Conn Atlas), Allen Cell Types Database (Cell Types), and Allen Brain Observatory (Brain Obs)

Reporter Line	Expressed Gene	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
						Trans Char	Conn Atlas	Cell Types	Brain Obs
Ai2	EYFP	Allen Institute for Brain Science	The Jackson Laboratory (007920)	B6.Cg- <i>Gt(ROSA)26Sor^{tm2}(CA G-EYFP)Hze/J</i>	EYFP fluorescent protein is expressed in cytoplasm.	✓			
Ai3	EYFP	Allen Institute for Brain Science	The Jackson Laboratory (007903)	B6.Cg- <i>Gt(ROSA)26Sor^{tm3}(CA G-EYFP)Hze/J</i>	EYFP fluorescent protein is expressed in cytoplasm.	✓			
Ai6	ZsGreen	Allen Institute for Brain Science	The Jackson Laboratory (007906)	B6.Cg- <i>Gt(ROSA)26Sor^{tm6}(CA G-ZsGreen1)Hze/J</i>	ZsGreen fluorescent protein is expressed in cytoplasm.	✓			
Ai9	tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (007909)	B6.Cg- <i>Gt(ROSA)26Sor^{tm9}(CA G-tdTomato)Hze/J</i>	tdTomato fluorescent protein is expressed in cytoplasm.	✓			
Ai14	tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (007914)	B6.Cg- <i>Gt(ROSA)26Sor^{tm14}(CA G-tdTomato)Hze/J</i>	tdTomato fluorescent protein is expressed in cytoplasm.	✓		✓	
Ai27	hChR2(H134R)-tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (012567)	B6.Cg- <i>Gt(ROSA)26Sor^{tm27.1}(CAG-COP4*H134R/tdTomato)Hze/J</i>	Mammalianized channelrhodopsin mutant ChR2(H134R) fused to tdTomato fluorescent protein is expressed primarily along cell membrane.	✓			
Ai31	Syp-Emerald	Allen Institute for Brain Science			Emerald fluorescent protein fused to mouse synaptophysin gene (amino acids 7-314) is expressed in synaptic terminal areas.	✓			
Ai32	ChR2(H134R)-EYFP	Allen Institute for Brain Science	The Jackson Laboratory (012569)	B6;129S- <i>Gt(ROSA)26Sor^{tm32}(CA G-COP4*H134R/EYFP)Hze/J</i>	Channelrhodopsin mutant (H134R) fused to EYFP fluorescent protein is expressed primarily along the cell membrane.	✓			
Ai34	Syp-tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (012570)	B6;129S- <i>Gt(ROSA)26Sor^{tm34.1}(CAG-Syp/tdTomato)Hze/J</i>	tdTomato fluorescent protein fused to the mouse synaptophysin gene (amino acids 7-314) is expressed in synaptic terminal areas.	✓			

Reporter Line	Expressed Gene	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
						Trans Char	Conn Atlas	Cell Types	Brain Obs
Ai35	Arch-EGFP-ER2	Allen Institute for Brain Science	The Jackson Laboratory (012735)	B6;129S- <i>Gt(ROSA)26Sor^{tm35.1(CAG-AOP3/GFP)Hze/J}</i>	Light-activated proton pump Arch, isolated from Halorubrum sodomense, fused to EGFP fluorescent protein and ER-exporting signal is expressed primarily along the cell membrane.	✓			
Ai38	GCaMP3	Allen Institute for Brain Science	The Jackson Laboratory (014538)	B6;129S- <i>Gt(ROSA)26Sor^{tm38(CA G-GCaMP3)Hze/J}</i>	Calcium indicator GCaMP3 responds to an increase of intracellular calcium level upon neuronal activation.	✓			
Ai39	eNpHR3.0-EGFP	Allen Institute for Brain Science	The Jackson Laboratory (014539)	B6;129S- <i>Gt(ROSA)26Sor^{tm39(CA G-HOP/EYFP)Hze/J}</i>	eNpHR3.0, halorhodopsin optimized for mammalian expression fused to EGFP fluorescent protein is expressed primarily along the cell membrane.	✓			
Ai40	ArchT-EGFP	Allen Institute for Brain Science	The Jackson Laboratory (21188)	B6.Cg- <i>Gt(ROSA)26Sor^{tm40.1(CAG-aop3/EGFP)Hze/J}</i>	Light-activated proton pump isolated from Halorubrum genus fused to EGFP fluorescent protein is expressed primarily along cell membrane.	✓			
Ai47	Emerald, TagGFP2 and Renilla GFP	Allen Institute for Brain Science			Three green fluorescent proteins are expressed in cytoplasm.	✓			
Ai57(RCL-Jaws)	cruxhalorhodop in Jaws-GFP-ER2	Allen Institute for Brain Science			pCAG-driven expression of cruxhalorhodopin Jaws-GFP-ER2 is dependent on Cre recombinase activity.	✓			
Ai62(TITL-tdT)	tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (022731)	B6.Cg- <i>lil7^{tm62.1(tetO-tdTomato)Hze/J}</i>	Fluorescent marker expression is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai63(TIT-tdT)	tdTomato	Allen Institute for Brain Science			Expression of tdTomato fluorescent protein is dependent on activation of tetO promoter by tTA or rTA.	✓			
Ai65(RCFL-tdT)	tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (021875)	B6;129S- <i>Gt(ROSA)26Sor^{tm65.1(CAG-tdTomato)Hze/J}</i>	Expression of tdTomato fluorescent protein is dependent on both Cre and Flp recombinase activity.	✓			
Ai65F	tdTomato	Allen Institute for Brain Science			Expression of tdTomato fluorescent protein is dependent on Flp recombinase activity. Ai65F is a LSL-deleted version derived from Ai65(RCFL-tdT).	✓			
Ai66(RCRL-tdT)	tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (021876)	B6;129S- <i>Gt(ROSA)26Sor^{tm66.1(CAG-tdTomato)Hze/J}</i>	Expression of tdTomato fluorescent protein is dependent on both Cre and Dre recombinase activity.	✓			

Reporter Line	Expressed Gene	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
						Trans Char	Conn Atlas	Cell Types	Brain Obs
Ai75(RCL-nT)	tdTomato	Allen Institute for Brain Science	The Jackson Laboratory (025106)	B6;129S-Gt(ROSA)26Sor ^{tm75.1} (CAG-tdTomato) ^{Hze/J}	pCAG-driven expression of nuclear tdTomato fluorescent protein is dependent on Cre recombinase activity.	✓	✓		
Ai78(TITL-VSFPB)	VSFP-Butterfly 1.2	Allen Institute for Brain Science	The Jackson Laboratory (023528)	B6.Cg-Igs7 ^{tm78.1} (tetO-VSFPB1.2) ^{Hze/J}	Activity of voltage indicator VSFP-Butterfly 1.2 is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai79(TITL-Jaws)	cruxhalorhodop in Jaws-GFP-ER2	Allen Institute for Brain Science	The Jackson Laboratory (023529)	B6;129S-Igs7 ^{tm79.1} (tetO-hop/EGFP) ^{Hze/J}	Activity of cruxhalorhodopin Jaws-GFP-ER2 is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai82(TITL-GFP)	EGFP	Allen Institute for Brain Science	The Jackson Laboratory (023532)	B6;129S-Igs7 ^{tm82.1} (tetO-EGFP) ^{Hze/J}	EGFP fluorescent marker expression is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai85(TITL-iGluSnFr)	iGluSnFr	Allen Institute for Brain Science	The Jackson Laboratory (026260)	B6;129S-Igs7 ^{tm85.1} (tetO-gtll/GFP) ^{Hze/J}	Activity of glutamate indicator iGluSnFr is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai86(TITL-ArcLight)	ArcLight	Allen Institute for Brain Science			Activity of voltage indicator ArcLight is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai87(RCL-iGluSnFR)	iGluSnFr	Allen Institute for Brain Science			pCAG-driven expression of glutamate indicator iGluSnFR is dependent on Cre recombinase activity.	✓			
Ai90(TITL-Chronos)	Chronos	Allen Institute for Brain Science	The Jackson Laboratory (024100)	B6.Cg-Igs7 ^{tm90.1} (tetO-COP4 ⁺ /EGFP) ^{Hze/J}	Activity of channelrhodopsin Chronos is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai92(TITL-YCX2.60)	YCX2.60	Allen Institute for Brain Science	The Jackson Laboratory (026262)	B6;129S-Igs7 ^{tm92.1} (tetO-ECFP ⁺ /Venus) ^{Hze/J}	Activity of calcium indicator YCX2.60 is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai93(TITL-GCaMP6f)	GCaMP6f	Allen Institute for Brain Science	The Jackson Laboratory (024103)	B6;129S6-Igs7 ^{tm93.1} (tetO-GCaMP6f) ^{Hze/J}	Activity of calcium indicator GCaMP6f is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			✓
Ai94(TITL-GCaMP6s)	GCaMP6s	Allen Institute for Brain Science	The Jackson Laboratory (024104)	B6.Cg-Igs7 ^{tm94.1} (tetO-GCaMP6s) ^{Hze/J}	Activity of calcium indicator GCaMP6s is dependent on both Cre recombinase activity and activation of tetO promoter by tTA or rTA.	✓			
Ai95(RCL-GCaMP6f)	GCaMP6f	Allen Institute for Brain Science	The Jackson Laboratory (024105)	B6;129S-Gt(ROSA)26Sor ^{tm95.1} (CAG-GCaMP6f) ^{Hze/J}	pCAG-driven expression of the calcium indicator GCaMP6f is dependent on Cre recombinase activity.	✓			

Reporter Line	Expressed Gene	Originating Lab or Donating Investigator	Public Repository (Stock #)	Strain Name	Qualitative Expression Pattern Summary	Usage			
						Trans Char	Conn Atlas	Cell Types	Brain Obs
Ai96(RCL-GCaMP6s)	GCaMP6s	Allen Institute for Brain Science	The Jackson Laboratory (024106)	B6;129S6- <i>Gt(ROSA)26Sor^{tm96(CA G-GCaMP6s)Hze/J}</i>	pCAG-driven expression of calcium indicator GCaMP6s is dependent on Cre recombinase activity.	✓			
R26-stop-EYFP	EYFP	Frank Costantini	The Jackson Laboratory (006148)	B6.129X1- <i>Gt(ROSA)26Sor^{tm1(EYFP)Cos/J}</i>	EYFP fluorescent protein is expressed in cytoplasm.	✓			
ROSA26-ZtTA	tTA	Liqun Luo	The Jackson Laboratory (012266)	STOCK <i>Gt(ROSA)26Sor^{tm5(ACT B-tTA)Luo/J}</i>	Expression of tTA is dependent on Cre recombinase activity.	✓			
ROSA:LNL:tTA	tTA	Raymond P. Roos	The Jackson Laboratory (008603)	C.129P2(B6)- <i>Gt(ROSA)26Sor^{tm1(tTA)Roos/J}</i>	Expression of tTA is dependent on Cre recombinase activity.	✓			
Snap25-T2A-GCaMP6s	GCaMP6s	Allen Institute for Brain Science	The Jackson Laboratory (025111)	B6.Cg- <i>Snap25^{tm3.1Hze/J}</i>	Expression of calcium indicator GCaMP6s is limited to neurons.	✓			
Snap25-LSL-2A-GFP	EGFP	Allen Institute for Brain Science	The Jackson Laboratory (021879)	B6.Cg- <i>Snap25^{tm1.1Hze/J}</i>	Expression of EGFP fluorescent protein is limited to neurons.	✓			
tetO-EGFP/Cre-3	EGFP	Ulrich Mueller	MMRRC (031754)	C57BL/6J-Tg(tetO-cre,-EGFP)2MullMmmh	EGFP fluorescent protein and Cre recombinase are expressed in cytoplasm and nucleus, respectively.	✓			

Table 3. Viral vectors used as neuronal tracers in the Allen Mouse Brain Connectivity Atlas

Viral Vector Name	Source	Stock #	Expression Features
rAAV2/1.hSynapsin.EGFP.WPRE.bGH	Penn Vector Core	V1937, V2006, V2919, V4321	Robust labeling of dendrites, soma and axons.
rAAV2/1.CAG.FLEX.EGFP.WPRE.bGH	Penn Vector Core	V2163, V2957, V3675, V3900, V5749	Cre-dependent expression of EGFP results in robust labeling of dendrites, soma, and axons.
rAAV2/2.CAG.FLEX.EGFP.WPRE.bGH	Penn Vector Core	V2918, V4330	Cre-dependent expression of EGFP results in robust labeling of dendrites, soma, and axons (used for retinal injections).
rAAV2/1.phSyn.FLEX.EGFP.WPRE.bGH	Penn Vector Core	V2393	Cre-dependent expression of EGFP results in robust labeling of dendrites, soma, and axons.
rAAV2/1.pCAG.FLEX.SynaptophysinEGFP.WPRE.bGH	Penn Vector Core	V4276, V683	Cre-dependent expression of synaptophysin-EGFP results in robust labeling of presynaptic terminals.
CAV2-Cre	Viral Vector Production Unit at the Universitat Autònoma de Barcelona	V483, V795, V990	Retrogradely transported canine adenovirus 2 enables expression of Cre recombinase under the CMV promoter.