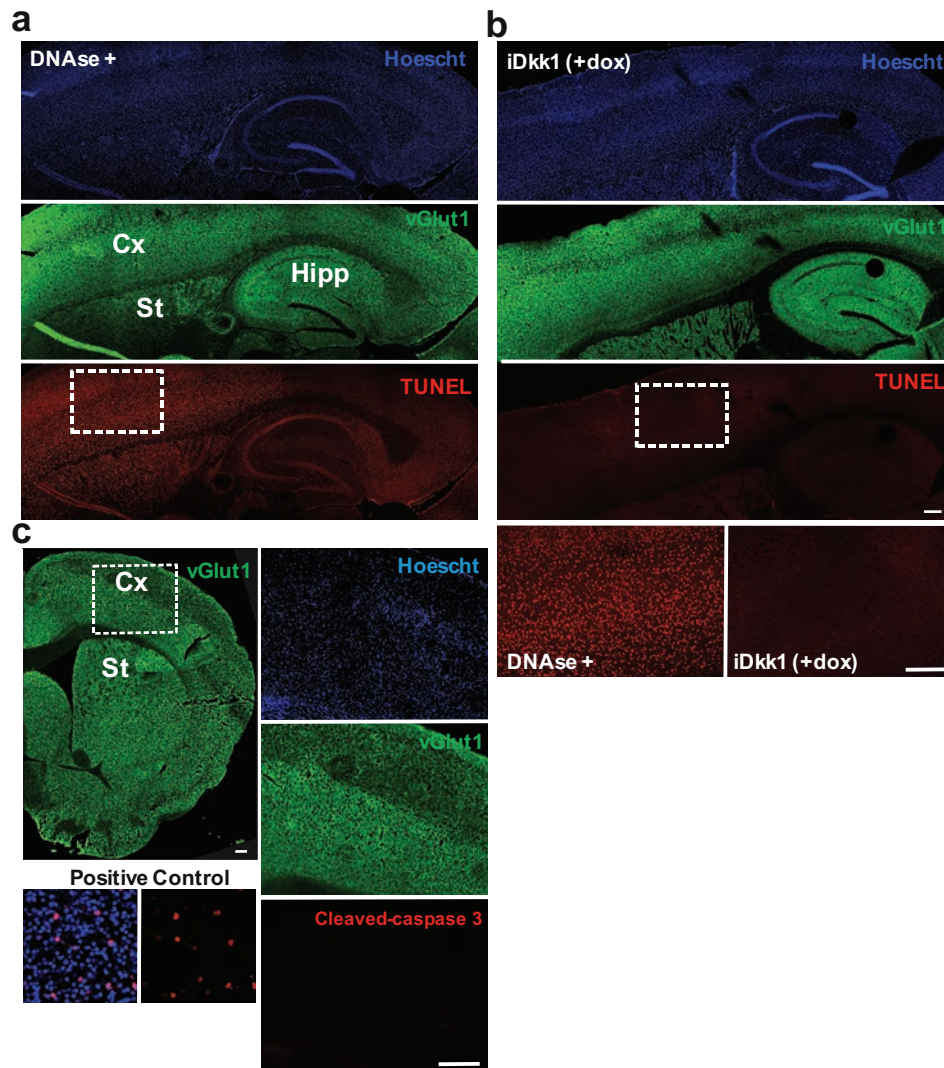
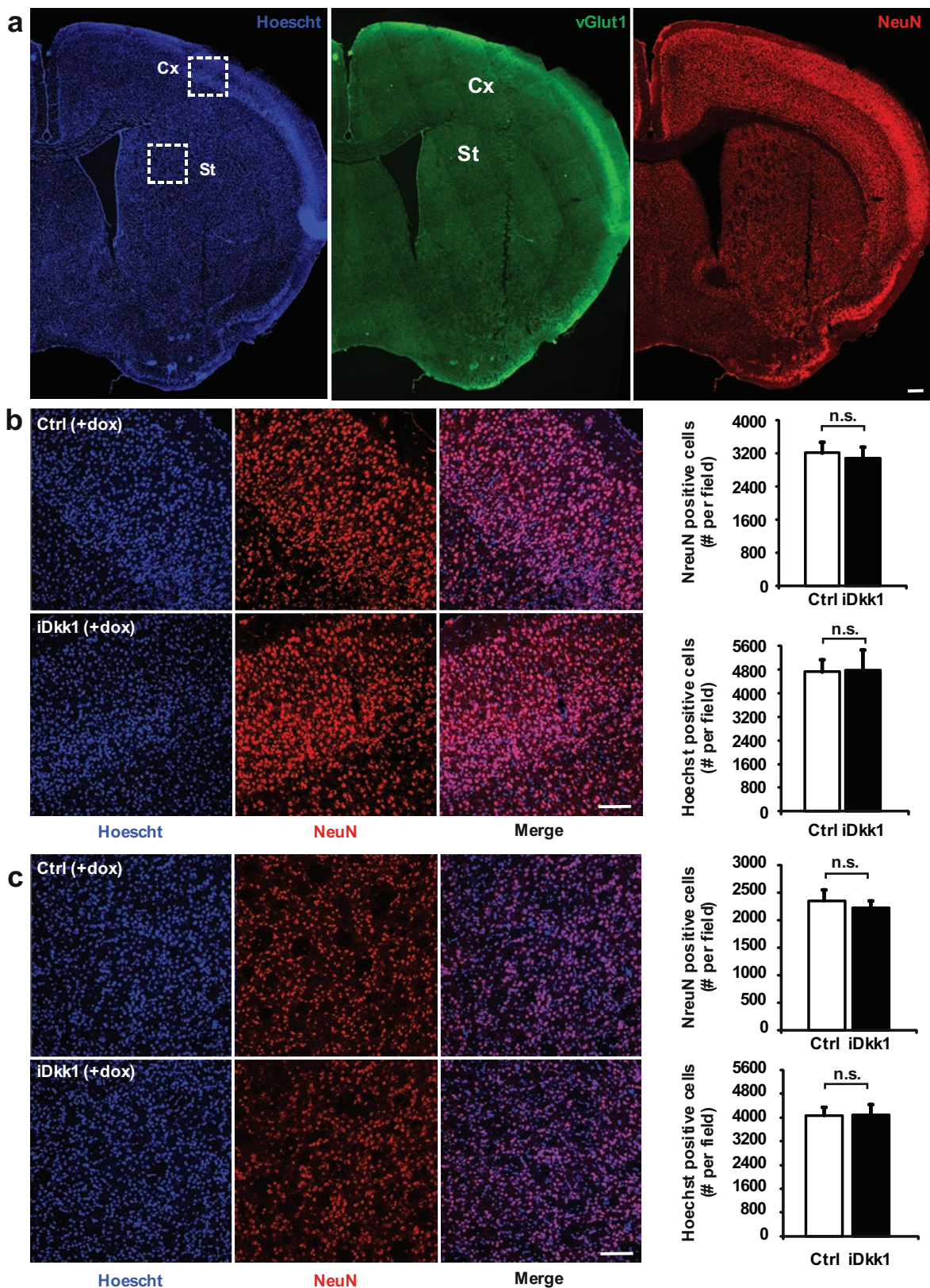


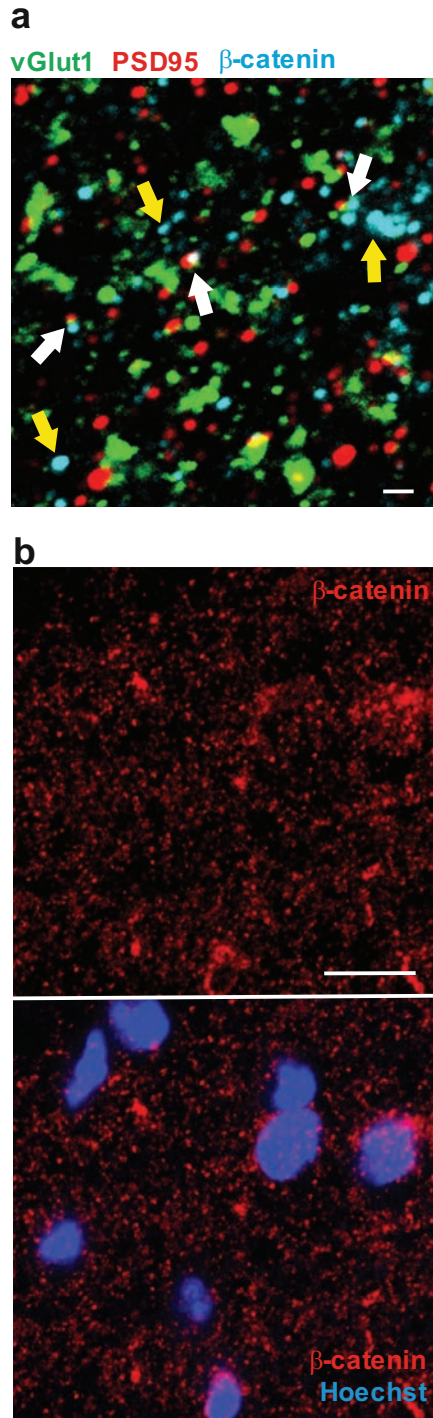
**Supplementary Figure 1:** Wnt signaling components are expressed in the striatum of young and adult mice. Striatum of young (P15) and adult (3 months old) mice were analyzed for mRNA expression of Wnts, Wnt receptors and secreted Wnt inhibitors by RT-PCR.



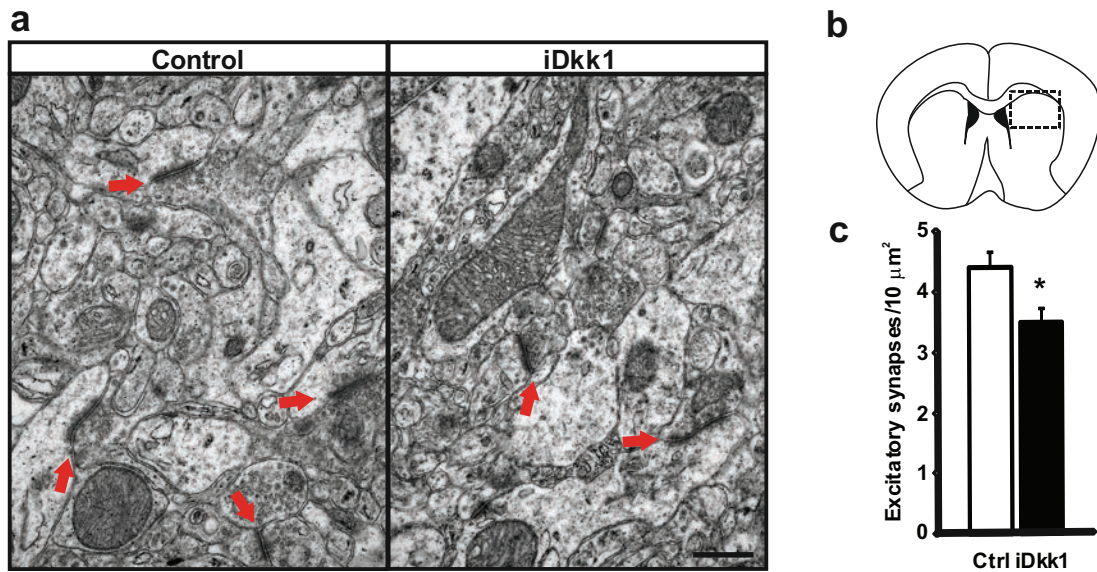
**Supplementary Figure 2:** Blockade of Wnt signaling does not induce cell death in the somatosensory cortex of iDkk1 mice. Apoptosis was evaluated by TUNEL assay of (a) positive control and (b) iDkk1 mice. Dorsal striatum (St), cortex (Cx) and hippocampus (Hipp) labeled with vGlut1, Hoechst and TUNEL. Brain slices treated with DNase I were used as positive controls. Higher magnification images from areas within the broken line box are depicted below. Scale bar, 100 μm. (c) Cleaved-caspase 3 immunostaining. Top right, panoramic of coronal slice (as in figure 1d) labeled with vGlut1 depicting striatum (St) and cortex (Cx). Scale bar, 200 μm. Right, high magnification images of area indicated in the white box. Scale bar, 100 μm. Positive control, as in figure 1.



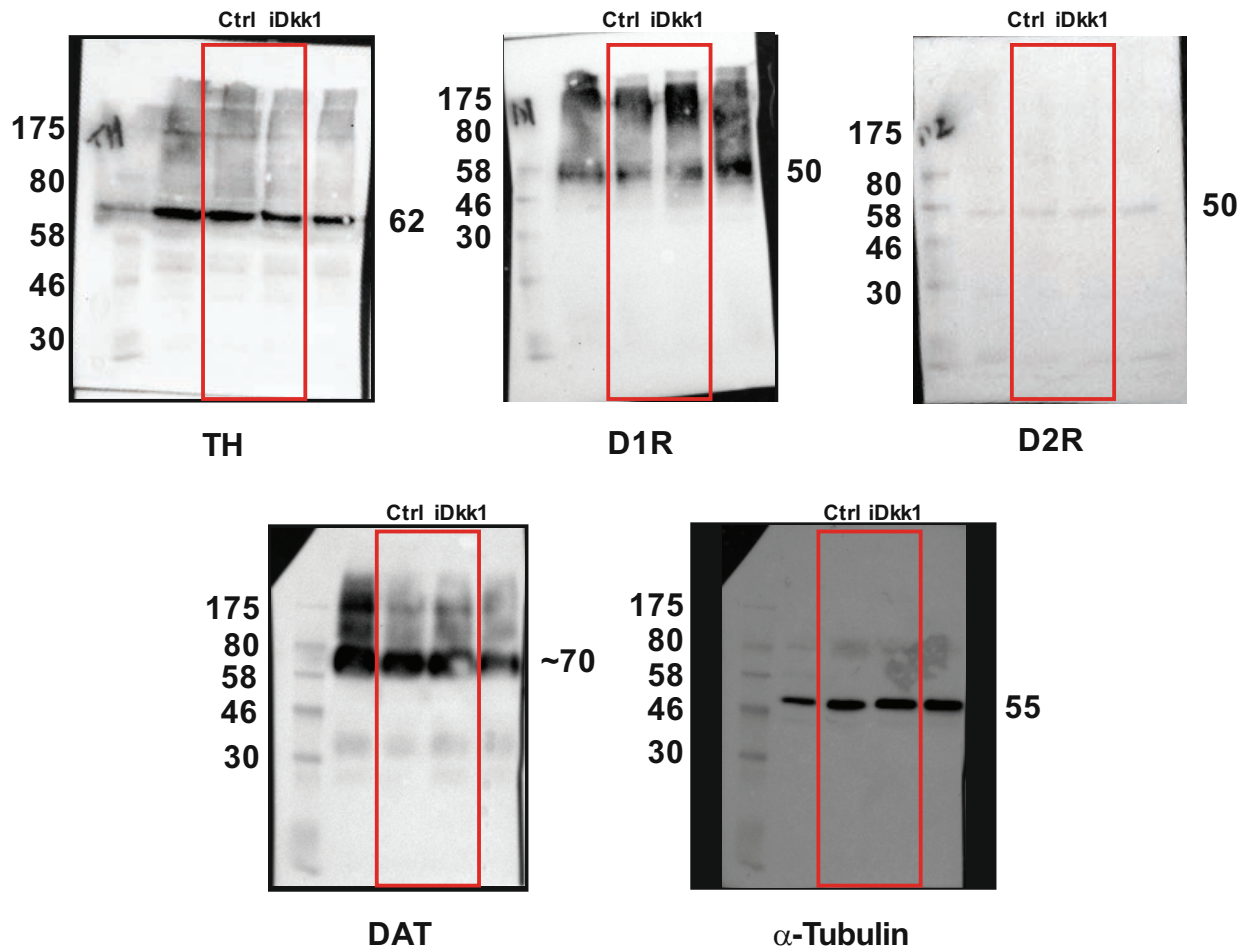
**Supplementary Figure 3:** Blockade of Wnt signaling does not affect neuronal viability in the striatum and cortex of iDkk1 mice. (a) Panoramic view showing the dorsal striatum (St) and cortex (Cx) labeled with vGlut1, Hoechst and NeuN. Scale bar 200  $\mu$ m. Higher magnification images from somatosensory cortex (b) or striatum (c) from representative areas highlighted in the white box in (a). Quantifications are shown on the right. 1-way ANOVA with replication, 6 images were taken from 6 slices from each mouse, and 4 mice were analyzed per condition. Scale bar, 100  $\mu$ m. Error bars represent s.e.m.



**Supplementary Figure 4:**  $\beta$ -catenin puncta localization. a) Maximum projection confocal images of dorsal striatal section showing presynaptic vGlut1, post-synaptic PSD95 and  $\beta$ -catenin puncta. White arrows indicate  $\beta$ -catenin puncta localized on cortico-striatal synapses. Yellow arrows indicate  $\beta$ -catenin puncta outside cortico-striatal synapses. Scale bar, 1  $\mu$ m. (b) Maximum projection confocal images of lower magnification. Images show that some nuclei labeled with Hoechst contain  $\beta$ -catenin puncta but a large number of  $\beta$ -catenin puncta are in other cellular compartments. Scale bar, 10  $\mu$ m.



**Supplementary Figure 5:** Deficient Wnt signaling causes loss of glutamatergic excitatory synapses in the adult dorsal striatum. (a) Electron micrographs showing asymmetric synapses (red arrows). (b) Schematic of coronal section depicting the area examined. (c) Quantification of synapse density. Scale bar, 0.5  $\mu\text{m}$ . Error bars represent s.e.m., \* $p < 0.011$ , Kruskal-Wallis ANOVA,  $n = 18-20$  images from each mice, 4 mice for each condition, were analyzed.



**Supplementary Figure 6:** Full western blots correspond to those shown in Figure 6. Molecular weight markers are indicated on the left (in kDa). Approximate molecular weight of TH, D1R, D2R, DAT and  $\alpha$ -tubulin are displayed on the right of blots. Red box encloses bands shown in Figure 6.

## Tables

**Supplementary table 1:** Primers used for the RT-PCR in figure S1

Gene	5' primer	3' primer
Wnt1	acagcaaccacagtcgtcag	Cttggaatccgtcaacaggt
Wnt2	caacagagctggaaggaag	acgaggtcatttttcgttg
Wnt2b	cacccggactgatcttgct	tgtttctgcactccttgac
Wnt3	acgagaactcccccaacttt	tgggacttcgatgaatggat
Wnt3a	atggctcctctcggatacct	gggcatgatctccacgtagt
Wnt4	ctggagaagtgtggctgtga	cagcctcgttgtgtgaaga
Wnt5a	ctggcaggactttctcaagg	gtctctcggctgcctatttg
Wnt5b	tggagacaacgtggagtacg	ggcgacatcagccatcttat
Wnt6	cggtagagctctcaggatgc	attctcgaacccccagtctt
Wnt7a	ctcttcggtggtagctctgg	ctcccgactccccacttga
Wnt7b	tactacaaccaggcgaagg	gtggccagcaagtttgg
Wnt8a	ccatcatgtacgcagtcacc	gccctgttgtgtgaagg
Wnt8b	gctgtgatgactcccgaat	ttacacgtgcgttcatggt
Wnt9a	tgcttctctacgccatct	ttgttggaagtccactcg
Wnt9b	ctacgctatgacacggctgt	gtacttgctggccggcaga
	catgagtgccagcatcagtt	aaccgcaagccttcagtta
Wnt10a	gacagttccccacggtta	attgcttagagcccgactga
Wnt10b	caggatccaagccaataaa	gacaggtagcgggtcttgag
Frizzled 1	ttctatgaacaggcctttcg	cctcgtgtagaacttctcc
Frizzled 2	ggagctcctgcgctactcac	gcgctcaccagaaacttat

Frizzled 3	catgctttgaatgggccagt	ttgctgtggacactccctgc
Frizzled 4	tgacaactttcacgccgct	gtacaagccagcatcgtagcc
Frizzled 5	gtgcacagtcgtcttctctt	gcctcgtagcgagttcaggt
Frizzled 6	ggcatttccaagtccatgg	ccagtgtaacatacatgtgc
Frizzled 7	ctacctagtgacatgctgcg	cgtagcacactccactgagtaggt
Frizzled 8	cggtgccgtgtgcaaaggc	caaccgatcgcagcgcagtc
Frizzled 9	aagacgggaggcaccaatac	aaccataactcacagcctag
Frizzled 10	ggtggccggactccctggat	gtgagcacggtgaaggcgct
Lrp 5	gatgtgctggctagtgatg	gcccgagatgacaatgttct
Lrp6	gggccgatgcaaaaactaat	cctctgttgctgaaagcat
Sfrp1	tgctcaaattgacaagttcc	atgagaaagttgtggctgaggt
Sfrp2	acttctctacaagcgcagcaac	gcaggcttcacacaccttg
Sfrp3	caagggacaccgtcaatctt	catatcccagcgttgactt
Sfrp4	gagtggcgttcaaggatga	gacttttgggggcacttct
Sfrp5	gaccgaaagttgattggagc	gcagcagctgtcccttact
Dkk1	attccaacgcgatcaagaac	gcttggcgcatacctgacct
Dkk2	catcctcaccacacatatcc	gaggcacataacggaagcactg
Dkk3	atctcatcacctgggaactg	cttcccatcctctcccttc
Dkk4	gaagactcaagcggttctgg	gcagtcggaggttctgagac