

**Table S3. Report of the statistics used.**

<b>Student's t test</b>				
	Comparison	Condition	Test	t and p values
Fig. 1F	Control vs amphetamine	Fluorescence amplitude (AU)	Two-tailed Student's unpaired t-test	t=-2.48, p=0.017
Fig. 1F	Control vs amphetamine	Rise time (s)	Two-tailed Student's unpaired t-test	t=-3.19, p=0.002
Fig. 1F	Control vs amphetamine	Response width (s)	Two-tailed Student's unpaired t-test	t=-3.19, p=0.026
Fig. 2B	Basal vs DA	Control	Two-tailed Student's paired t-test	t=-4.32, p=0.007
Fig. 2B	Basal vs DA	Flupenthixol	Two-tailed Student's paired t-test	t=-0.81, p=0.811
Fig. 2B	Basal vs DA	SCH23390	Two-tailed Student's paired t-test	t=-0.88, p=0.428
Fig. 2B	Basal vs DA	Sulpiride	Two-tailed Student's paired t-test	t=-7.4, p<0.001
Fig. 2B	Basal vs DA	Cocktail	Two-tailed Student's paired t-test	t=-5.577, p<0.001
Fig. 2D	Basal vs Optostim.	Control	Two-tailed Student's paired t-test	t=-6.22, p<0.001
Fig. 2D	Basal vs Optostim.	Flupenthixol	Two-tailed Student's paired t-test	t=0.139, p=0.892
Fig. 2D	Basal vs Optostim.	SCH23390	Two-tailed Student's paired t-test	t=-0.337, p=0.75
Fig. 2D	Basal vs Optostim.	Sulpiride	Two-tailed Student's paired t-test	t=-7.587, p<0.001
Fig. 2D	Basal vs Optostim.	Cre negative	Two-tailed Student's paired t-test	t=0.645, p=0.554
Fig. 4B	Basal vs DA	Calcium event probability: Control	Two-tailed Student's paired t-test	t=-8.836, p<0.001
Fig. 4B	Basal vs DA	Calcium event probability: GDPβS	Two-tailed Student's paired t-test	t=-0.397, p=0.718
Fig. 4B	Basal vs DA	Calcium event probability: IP <sub>3</sub> R2 <sup>-/-</sup>	Two-tailed Student's paired t-test	t=-0.312, p=0.76
Fig. 4B	Basal vs DA	EPSC amplitude (%): Control	Two-tailed Student's paired t-test	t=3.731, p=0.007
Fig. 4B	Basal vs DA	EPSC amplitude (%): GDPβS	Two-tailed Student's paired t-test	t=0.152, p=0.885
Fig. 4B	Basal vs DA	EPSC amplitude (%): IP <sub>3</sub> R2 <sup>-/-</sup>	Two-tailed Student's paired t-test	t=0.188, p=0.856
Fig. 4D	GFAP-D <sub>1</sub> <sup>WT</sup> vs GFAP-D <sub>1</sub> <sup>-/-</sup>	Baseline	Two-tailed Student's unpaired t-test	t=3.239, p=0.006
Fig. 4D	Basal vs DA	GFAP-D <sub>1</sub> <sup>WT</sup>	Two-tailed Student's paired t-test	t=-8.725, p<0.001
Fig. 4D	Basal vs DA	GFAP-D <sub>1</sub> <sup>-/-</sup>	Two-tailed Student's paired t-test	t=-1.335, p=0.219
Fig. 4D	Basal vs ATP	GFAP-D <sub>1</sub> <sup>WT</sup>	Two-tailed Student's paired t-test	t=-13.502, p<0.001
Fig. 4D	Basal vs ATP	GFAP-D <sub>1</sub> <sup>-/-</sup>	Two-tailed Student's paired t-test	t=-21.548, p<0.001
Fig. 4E	Basal vs DA	GFAP-D <sub>1</sub> <sup>WT</sup>	Two-tailed Student's paired t-test	t=10.203, p<0.001
Fig. 4E	Basal vs DA	GFAP-D <sub>1</sub> <sup>-/-</sup>	Two-tailed Student's paired t-test	t=1.867, p=0.104
Fig. 5A	Basal vs DA	Control	Two-tailed Student's paired t-test	t=-5.679, p=0.002

Fig. 5A	Basal vs DA	CPT	Two-tailed Student's paired t-test	t=-4.74, p=0.005
Fig. 5A	Basal vs Optostim.	Control	Two-tailed Student's paired t-test	t=-5.425, p<0.001
Fig. 5A	Basal vs Optostim.	CPT	Two-tailed Student's paired t-test	t=-7.752, p=0.001
Fig. 5B	Basal vs DA	Control	Two-tailed Student's paired t-test	t=10.279, p<0.001
Fig. 5B	Basal vs DA	CPT	Two-tailed Student's paired t-test	t=-0.0938, p=0.929
Fig. 5B	Basal vs Optostim.	Control	Two-tailed Student's paired t-test	t=5.474, p=0.002
Fig. 5B	Basal vs Optostim.	CPT	Two-tailed Student's paired t-test	t=-1.451, p=0.197
Fig. 5E	Basal vs DA	Control	Two-tailed Student's paired t-test	t=6.607, p=0.001
Fig. 5E	Basal vs DA	GDPβS	Two-tailed Student's paired t-test	t=0.26, p=0.802
Fig. 5E	Basal vs DA	IP <sub>3</sub> R2 <sup>-/-</sup>	Two-tailed Student's paired t-test	t=1.804, p=0.121
Fig. 5E	Basal vs Ado	Control	Two-tailed Student's paired t-test	t=4.282, p=0.008
Fig. 5E	Basal vs Ado	GDPβS	Two-tailed Student's paired t-test	t=3.804, p=0.007
Fig. 5E	Basal vs Ado	IP <sub>3</sub> R2 <sup>-/-</sup>	Two-tailed Student's paired t-test	t=6.753, p<0.001
Fig. 6B	Basal vs CNO	Control	Two-tailed Student's paired t-test	t=-2.965, p=0.041
Fig. 6B	Basal vs CNO	CPT	Two-tailed Student's paired t-test	t=-3.355, p=0.028
Fig. 6B	Basal vs CNO	mCherry	Two-tailed Student's paired t-test	t=-0.474, p=0.656
Fig. 6C	Basal vs CNO	Control	Two-tailed Student's paired t-test	t=3.468, p=0.007
Fig. 6C	Basal vs CNO	CPT	Two-tailed Student's paired t-test	t=-1.244, p=0.260
Fig. 6C	Basal vs CNO	mCherry	Two-tailed Student's paired t-test	t=0.326, p=0.757
Fig. 7D	Basal vs Amphetamine	Control	Two-tailed Student's paired t-test	t=-4.752, p=0.005
Fig. 7D	Basal vs Amphetamine	Flupenthixol	Two-tailed Student's paired t-test	t=-0.242, p=0.821
Fig. 7D	Basal vs Amphetamine	IP <sub>3</sub> R2 <sup>-/-</sup>	Two-tailed Student's paired t-test	t=-1.484, p=0.176
Fig. 7D	Basal vs Amphetamine	CPT	Two-tailed Student's paired t-test	t=-3.187, p=0.013
Fig. 7D	Basal vs Amphetamine	GDPβS	Two-tailed Student's paired t-test	t=-0.0473, p=0.962
Fig. 7D	Basal vs Amphetamine	GFAP-D <sub>1</sub> <sup>WT</sup>	Two-tailed Student's paired t-test	t=-2.68, p=0.044
Fig. 7D	Basal vs Amphetamine	GFAP-D <sub>1</sub> <sup>-/-</sup>	Two-tailed Student's paired t-test	t=-1.581, p=0.145
Fig. 7G	Basal vs Amphetamine	Control	Two-tailed Student's paired t-test	t=5.444, p=0.006
Fig. 7G	Basal vs Amphetamine	Flupenthixol	Two-tailed Student's paired t-test	t=0.228, p=0.831

Fig. 7G	Basal vs Amphetamine	IP <sub>3</sub> R2 <sup>-/-</sup>	Two-tailed Student's paired t-test	t=1.509, p=0.192
Fig. 7G	Basal vs Amphetamine	CPT	Two-tailed Student's paired t-test	t=1.036, p=0.34
Fig. 7G	Basal vs Amphetamine	GDPβS	Two-tailed Student's paired t-test	t=0.08, p=0.939
Fig. 7G	Basal vs Amphetamine	GFAP-D <sub>1</sub> <sup>WT</sup>	Two-tailed Student's paired t-test	t=2.824, p=0.022
Fig. 7G	Basal vs Amphetamine	GFAP-D <sub>1</sub> <sup>-/-</sup>	Two-tailed Student's paired t-test	t=-0.031, p=0.977
Fig. 7I	WT vs IP <sub>3</sub> R2 <sup>-/-</sup>	Saline	Two-tailed Student's unpaired t-test	t=-0.796, p=0.432
Fig. 7I	WT vs IP <sub>3</sub> R2 <sup>-/-</sup>	Amphetamine	Two-tailed Student's unpaired t-test	t=4.604, p<0.001
Fig. 7I	GFAP-D <sub>1</sub> <sup>WT</sup> vs GFAP-D <sub>1</sub> <sup>-/-</sup>	Saline	Two-tailed Student's unpaired t-test	t=0.051, p=0.96
Fig. 7I	GFAP-D <sub>1</sub> <sup>WT</sup> vs GFAP-D <sub>1</sub> <sup>-/-</sup>	Amphetamine	Two-tailed Student's unpaired t-test	t=2.395, p=0.038
Fig. S3C	Basal vs DA	PPR	Two-tailed Student's paired t-test	t=-4.98, p<0.001
Fig. S3D	Basal vs DA	Control	Two-tailed Student's paired t-test	t=5.23, p=0.003
Fig. S3D	Basal vs DA	Flupenthixol	Two-tailed Student's paired t-test	t=1.348, p=0.249
Fig. S3D	Basal vs DA	Control	Two-tailed Student's paired t-test	t=3.808, p=0.005
Fig. S3D	Basal vs DA	SCH23390	Two-tailed Student's paired t-test	t=0.72, p=0.498
Fig. S3D	Basal vs DA	Control	Two-tailed Student's paired t-test	t=2.743, p=0.029
Fig. S3D	Basal vs DA	Sulpiride	Two-tailed Student's paired t-test	t=4.178, p=0.004
Fig. S3G	Basal vs Optostim.	PPR	Two-tailed Student's paired t-test	t=-4.321, p<0.001
Fig. S3H	Basal vs Optostim.	Control	Two-tailed Student's paired t-test	t=4.081, p=0.027
Fig. S3H	Basal vs Optostim.	Flupenthixol	Two-tailed Student's paired t-test	t=0.599, p=0.591
Fig. S3H	Basal vs Optostim.	Control	Two-tailed Student's paired t-test	t=3.692, p=0.021
Fig. S3H	Basal vs Optostim.	SCH23390	Two-tailed Student's paired t-test	t=0.46, p=0.665
Fig. S3H	Basal vs Optostim.	Control	Two-tailed Student's paired t-test	t=4.44, p=0.007
Fig. S3H	Basal vs Optostim.	Sulpiride	Two-tailed Student's paired t-test	t=2.943, p=0.032
Fig. S3H	Basal vs Optostim.	Cre negative	Two-tailed Student's paired t-test	t= -0.441, p=0.667
Fig. S4E	SKF vs SKF+SCH	Δ amplitude (%)	Two-tailed Student's unpaired t-test	t=-8.209, p<0.001
Fig. S4F	GFAP-D <sub>1</sub> <sup>WT</sup> vs GFAP-D <sub>1</sub> <sup>-/-</sup>	Δ amplitude (%)	Two-tailed Student's unpaired t-test	t=-0.046, p=0.964
Fig. S5D	Basal vs CNO	PPR	Two-tailed Student's paired t-test	t=-3.264, p=0.009

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