

SI Table 1. Summary of positive and negative findings of cellular phenotypes in SCZD hiPSC neurons.

Predicted Aspects of SCZD Cellular Pathology	Positive Findings in SCZD hiPSC Neurons	Negative Findings in SCZD hiPSC Neurons
Reduced neuronal connectivity	Decreased rabies trans-neuronal tracing	-
Reduced neurite outgrowth	Reduced neurite outgrowth	-
Reduced synaptic protein levels	Decreased PSD95	No change in vGLUT1, GLUR1, VGAT or GEPH
Reduced synaptic density	-	Not observed
Decreased synaptic function	-	No change in EPSCs, iPSCs, or the amplitude, frequency or spontaneity of spontaneous calcium transients
Antipsychotic treatment	Improved neuronal connectivity with Loxapine (10 µM)	No improvement with Clozapine (5 µM), Olanzapine (1 µM), Risperidone (10 µM) and Thioridazine (5 µM)

SI Table 2. Microarray and qPCR validation of changes in expression of glutamate receptor, cAMP and Wnt genes in SCZD hiPSC neurons.

Gene Symbol	RefSeq	Microarray Gene Expression		qPCR Gene Expression	
		Fold-Change (SCZD vs CNTL)	p-value	Fold-Change (SCZD vs CNTL)	p-value
GRIK1	NM_175611	-3.9	0.0039	-6.8	<0.0001
GRIK4	NM_014619	-1.9	0.0402	nd	nd
GRIN2A	NM_001134407	-1.7	0.0421	-4.3	<0.0001
GRM1	NM_001114329	1.3	0.0052	nd	nd
GRM7	NM_181874	-1.5	0.0190	-2.3	<0.0001
NRG1	NM_013958	1.7	0.0038	2.8	<0.0001
ADCY7	NM_001114	-1.3	0.0052	nd	nd
ADCY8	NM_001115	-2.0	0.0496	-4.9	<0.0001
ITPR2	NM_002223	-1.7	0.0081	nd	nd
PDE10A	NM_006661	1.3	0.0330	-1.5	0.1301
PDE1C	NM_005020	3.0	0.0414	nd	nd
PDE3A	NM_000921	1.3	0.0452	1.5	0.0016
PDE4D	NM_001104631	1.8	0.0001	2.2	<0.0001
PDE4DIP	NM_022359	1.5	0.0318	1.3	0.0076
PDE7B	NM_018945	3.2	0.0114	3.6	<0.0001
PRKAR2A	NM_004157	1.3	0.0391	nd	nd
PRKCA	NM_002737	-2.4	0.0219	-4.6	<0.0001
PRKG1	NM_001098512	-1.4	0.0112	nd	nd
PIP5K1B	NM_003558	2.0	0.0252	nd	nd
PTPRE	NM_006504	-1.7	0.0213	nd	nd
PTPRR	NM_002849	1.3	0.0487	nd	nd
PIK3R3	NM_003629	1.4	0.0329	nd	nd
RAP2A	NM_021033	-1.4	0.0066	-2.1	<0.0001
WNT2B	NM_024494	1.4	0.0308	nd	nd
WNT3	NM_030753	1.3	0.0077	nd	nd
WNT7A	NM_004625	-1.6	0.0120	-2.2	<0.0001
LRP5	NM_002335	-1.3	0.0135	-1.3	0.1920
AXIN2	NM_004655	1.4	0.0191	2.9	0.0096
TCF4	NM_001083962	1.3	0.0148	2.8	<0.0001
LEF1	NM_016269	2.1	0.0496	2.1	<0.0001

SI Table 3. Genes identified as significantly misexpressed ($p < 0.05$) with >1.30 -fold change in schizophrenic hiPSC neurons relative to controls.

Gene Symbol	RefSeq	Fold-Change (SCZD vs Control)	p-value	Published Associations with SCZD	Stanley Foundation SCZD Post-Mortem Microarray Gene Expression Studies Consistent with SCZD hiPSC Neuron Gene Expression							
					Altar- A	Altar- C	Bahn	Dobrin	Feinberg	Kato	Sklar- A	Sklar- B
PMP2	NM_002677	-10.372	0.020									
FLJ16686	AK304357	-5.671	0.036									
CHST9	NM_031422	-5.566	0.000									
AQP4	NM_001650	-4.838	0.022	Muratake, 2005 - PMID: 16194264			X			X		
PRSS35	NM_153362	-4.573	0.039									
HEY2	NM_012259	-4.409	0.004									
GRIK1	NM_175611	-3.894	0.004	Shibata, 2001 - PMID: 11702055								
CYYR1	NM_052954	-3.574	0.008									
PGM5	NM_021965	-3.568	0.001									
GFAP	NM_002055	-3.496	0.014	Jungerius, 2007 - PMID: 17893707								
SPP1	NM_001040058	-3.423	0.038	Jungerius, 2007 - PMID: 17893707								
SLC4A4	NM_001098484	-3.404	0.007						X	X		
CATSPERB	NM_024764	-3.279	0.038									
PGM5P2	NR_002836	-3.145	0.002									
CADPS2	NM_017954	-3.126	0.006									
SPARCL1	NM_001128310	-3.021	0.026	Kahler, 2008 - PMID: 18384059								
TSPAN12	NM_012338	-2.948	0.001									
PGM5P2	NR_002836	-2.943	0.003									
FAM189A2	NM_004816	-2.917	0.007							X		
C1orf61	NM_006365	-2.897	0.029									
LRIG3	NM_153377	-2.835	0.009									
SLC34A2	NM_006424	-2.572	0.005									
ARAP2	NM_015230	-2.514	0.001							X		
KLHDC8A	NM_018203	-2.494	0.016									
ADAMTS15	NM_139055	-2.494	0.014									
PTCH1	NM_001083603	-2.420	0.045									
C21orf63	NM_058187	-2.412	0.025									
PRKCA	NM_002737	-2.407	0.022	Carroll, 2009 - PMID: 19786960								
LRAT	NM_004744	-2.378	0.041									
RASGRP1	NM_005739	-2.355	0.017									
SOX6	NM_017508	-2.344	0.025									
MFSD2	NM_001136493	-2.343	0.008									

ACTN2	NM_001103	-2.325	0.002									
KCNJ16	NM_170742	-2.269	0.006									
SH3GL2	NM_003026	-2.266	0.009	Martins-de-Souza, 2009 - PMID: 19165527								
SLC44A5	NM_152697	-2.254	0.006									
ASTN1	NM_004319	-2.245	0.011	Kahler, 2008 - PMID: 18384059								
KCNJ10	NM_002241	-2.236	0.014	Shen, 2010 - PMID: 20933057								
GALNT13	NM_052917	-2.185	0.013									
ASCL1	NM_004316	-2.170	0.010	Ide, 2005 - PMID: 16021468							X	
ITGA6	NM_000210	-2.156	0.010									
ADHFE1	NM_144650	-2.139	0.013									
SDC3	NM_014654	-2.135	0.036									
GPT2	NM_133443	-2.131	0.014									
SPON1	NM_006108	-2.112	0.040			X				X		
ADCYAP1R1	NM_001118	-2.093	0.033	Hashimoto, 2007 - PMID: 17387318								
SLC47A2	NM_152908	-2.086	0.010									
HES6	NM_018645	-2.063	0.002									
ADCY8	NM_001115	-2.025	0.050									
IGSF9B	NM_014987	-2.018	0.010									
ALDH4A1	NM_003748	-2.010	0.019									
TACR1	NM_001058	-2.010	0.038	Giegling, 2007 - PMID: 17443717								
TC2N	NM_001128596	-2.009	0.046									
DBI	NM_020548	-1.992	0.031	Niu, 2004 - PMID: 14755437								
CD34	NM_001773	-1.984	0.022									
EGF	NM_001963	-1.981	0.021	Anttila, 2004 - PMID: 15129177								
NTN1	NM_004822	-1.979	0.016									
AQP7P1	NR_002817	-1.965	0.007									
KCND3	NM_004980	-1.960	0.003									
SERINC5	NM_178276	-1.959	0.009									
SLC6A9	NM_201649	-1.950	0.023	Deng, 2008 - PMID: 18638388								
C10orf72	NM_001031746	-1.950	0.031									
DLGAP1	NM_004746	-1.941	0.021	Aoyama, 2003 - PMID: 12950712								
RGMA	NM_020211	-1.926	0.025									
DLL1	NM_005618	-1.924	0.034									
AQP7P1	NR_002817	-1.922	0.007									
AQP7P1	NR_002817	-1.912	0.005									
AQP7P1	NR_002817	-1.911	0.006									

GRIK4	NM_014619	-1.904	0.040	Betcheva, 2009 - PMID: 19158809								
NOTCH1	NM_017617	-1.903	0.014	Jungerius, 2007 - PMID: 17893707								
HEPACAM	NM_152722	-1.897	0.001									
PLEKHB1	NM_021200	-1.896	0.020									
ARHGEF4	NM_032995	-1.894	0.003									
MAN1C1	NM_020379	-1.884	0.003									
C4A	NM_007293	-1.881	0.001	Rudduck, 1985 - PMID: 3875548				X		X		
LOC283174	NR_024344	-1.876	0.007									
PRDM8	NM_020226	-1.876	0.001									
ITGA7	NM_001144996	-1.868	0.035									
IGSF11	NM_001015887	-1.867	0.023									
PFKFB3	NM_004566	-1.860	0.031									
SLC38A3	NM_006841	-1.845	0.015									
SGEF	NM_015595	-1.842	0.009									
LYPD6	NM_194317	-1.815	0.005									
STAC	NM_003149	-1.814	0.014									
VWA5A	NM_001130142	-1.814	0.007									
S100A16	NM_080388	-1.810	0.001									
IGSF9B	NM_014987	-1.810	0.006									
NKX6-1	NM_006168	-1.807	0.002									
DDIT4L	NM_145244	-1.792	0.001									
MGST1	NM_145792	-1.791	0.019									
ALDH1L1	NM_012190	-1.782	0.000	Kurian, 2011 - PMID: 19935739	X		X			X		
RNF148	NM_198085	-1.773	0.021									
ATP1B2	NM_001678	-1.770	0.021									
LPAR6	NM_005767	-1.766	0.025		X							
MEGF10	NM_032446	-1.765	0.024	Chen, 2008 - PMID: 18179784								
SLC39A12	NM_001145195	-1.758	0.004									
ALDOC	NM_005165	-1.757	0.040	Martins-de-Souza, 2008 - PMID: 19110265								
ANKFN1	NM_153228	-1.754	0.042									
RNF133	NM_139175	-1.754	0.044									
NOG	NM_005450	-1.751	0.003									
LRRCC1	NM_033402	-1.751	0.006									
ACSBG1	NM_015162	-1.746	0.012							X		
WBSCR17	NM_022479	-1.746	0.027									
ITGA3	NM_002204	-1.740	0.017	Kahler, 2008 - PMID: 18384059								
PSRC1	NM_001032290	-1.738	0.002				X	X				
ROBO2	NM_002942	-1.737	0.028									

CCDC144A	NM_014695	-1.736	0.026									
ZBTB16	NM_006006	-1.735	0.002						X			
EFHD1	NM_025202	-1.732	0.028						X			
GRIN2A	NM_001134407	-1.725	0.042	Itokawa, 2003 - PMID: 12724619								
SOX2	NM_003106	-1.720	0.048									
ITPR2	NM_002223	-1.720	0.008					X		X		
NCAM1	NM_181351	-1.714	0.046	Atz, 2007 - PMID: 17413444							X	
SCARA3	NM_016240	-1.711	0.022									
RAB31	NM_006868	-1.711	0.014				X			X		X
SAMD4A	NM_015589	-1.703	0.018									
ZDHHC14	NM_024630	-1.702	0.008									
PTPRE	NM_006504	-1.702	0.021									
S1PR1	NM_001400	-1.701	0.044							X		
SLC35D2	NM_007001	-1.700	0.037									
LAMA5	NM_005560	-1.692	0.001									
C4orf22	BC034296	-1.691	0.033									
FAM181B	NM_175885	-1.690	0.003									
CNKSR3	NM_173515	-1.688	0.007						X			
SLC30A10	NM_018713	-1.687	0.028									
C18orf16	AK055069	-1.684	0.012									
KCNA4	NM_002233	-1.681	0.004									
CSPG5	NM_006574	-1.678	0.046	So, 2009 - PMID: 19367581		X						
SLC12A4	NM_005072	-1.673	0.005									
HNMT	NM_006895	-1.672	0.001	Yan, 2000 - PMID: 10898922								
CAV2	NM_001233	-1.662	0.032									
EDNRB	NM_001122659	-1.661	0.030							X		
UCP2	NM_003355	-1.660	0.000	Yasuno, 2006 - PMID: 17066476								
CTD-2514C3.1	NR_004846	-1.656	0.028									
PRCP	NM_199418	-1.653	0.000									
CYTSE	NM_001033553	-1.651	0.050									
SYNM	NM_145728	-1.651	0.006									
NEXN	NM_144573	-1.649	0.014									
NAT8L	NM_178557	-1.645	0.003									
LIX1	NM_153234	-1.642	0.016									
TMEM132A	NM_017870	-1.641	0.010									
LRP1B	NM_018557	-1.636	0.041									
TLE3	NM_005078	-1.636	0.001									
ITGB4	NM_000213	-1.635	0.041				X			X		
SEMA5B	NM_001031702	-1.630	0.043									

CCDC144A	NM_014695	-1.627	0.022									
WNT7A	NM_004625	-1.623	0.012									
CELSR2	NM_001408	-1.622	0.035								X	
TPST1	NM_003596	-1.617	0.037									
UNQ9374	AY358216	-1.615	0.012									
AK3L1	NM_001005353	-1.607	0.011									
ADRA1A	NM_000680	-1.603	0.039	Bolonna, 2000 - PMID: 10696813								
FMNL2	NM_052905	-1.597	0.013					X				
PRPH	NM_006262	-1.590	0.024									
ODZ4	NM_001098816	-1.584	0.019									
FAM84B	NM_174911	-1.579	0.024									
ARNTL2	NM_020183	-1.578	0.040	Mansour, 2009 - PMID: 19839995								
TYRO3	NM_006293	-1.578	0.003						X			
RNF220	NM_018150	-1.574	0.006									
LAP3	NM_015907	-1.574	0.016									
TRIM68	NM_018073	-1.569	0.043									
COBL	NM_015198	-1.567	0.015									
SYTL2	NM_206927	-1.566	0.021									
VAMP1	NM_199245	-1.563	0.004							X		
RXRG	NM_006917	-1.563	0.025									
CD9	NM_001769	-1.562	0.041								X	
SOCS2	NM_003877	-1.562	0.038									
KAT2B	NM_003884	-1.561	0.024						X			
MARCH3	NM_178450	-1.553	0.023									
PPP2R2B	NM_004576	-1.549	0.041	Chen, 2005 - PMID: 16054804		X						
TAAR3	BC095548	-1.548	0.004									
DNHD1	NM_144666	-1.547	0.049									
ABCD2	NM_005164	-1.546	0.041									
PRAGMIN	NM_001080826	-1.542	0.017									
B4GALT5	NM_004776	-1.541	0.015									
FJX1	NM_014344	-1.534	0.036									
MYH2	NM_017534	-1.524	0.019									
ATG4C	NM_032852	-1.522	0.034									
KCNMB1	NM_004137	-1.520	0.022									
CAT	NM_001752	-1.517	0.033									
ADAM32	NM_145004	-1.516	0.020									
PGM5	NM_021965	-1.508	0.004									
NOD1	NM_006092	-1.505	0.004									
KALRN	NM_001024660	-1.497	0.047									
FAM106A	NR_026809	-1.494	0.033									
TTYH2	NM_032646	-1.493	0.044									

MFHAS1	NM_004225	-1.488	0.013									
GRM7	NM_181874	-1.479	0.019	Bolonna, 2001 - PMID: 11163549								
RASL10A	NM_001007279	-1.478	0.023	Saito, 2010 - PMID: 20537721								
GMPR	NM_006877	-1.477	0.024	Lin, 2009 - PMID: 19694819								
CRISPLD1	NM_031461	-1.471	0.022									
TAS2R4	NM_016944	-1.468	0.009									
THUMPD2	NM_025264	-1.467	0.003									
LFNG	NM_001040167	-1.466	0.013									
PPP2R5A	NM_006243	-1.466	0.000									
LOC162632	NR_003190	-1.466	0.033									
URB1	NM_014825	-1.464	0.007									
RASA4	NM_006989	-1.462	0.024									
FLJ16734	AK131514	-1.461	0.050									
C1orf62	NM_152763	-1.453	0.048									
GLIPR2	NM_022343	-1.452	0.012									
RAB7L1	NM_003929	-1.450	0.025						X			
IMMP2L	NM_032549	-1.448	0.002									
IFIT2	NM_001547	-1.447	0.002									
NDST3	NM_004784	-1.445	0.014									
WASF2	NM_006990	-1.445	0.000									
FAM106A	NR_026809	-1.445	0.029									
SORD	NM_003104	-1.444	0.004									
B3GALT5	NM_033171	-1.442	0.038									
GRHL1	NM_198182	-1.440	0.009									
FBXL3	NM_012158	-1.439	0.006									
CACNG7	NM_031896	-1.439	0.024									
AQP7	NM_001170	-1.436	0.002									
QDPR	NM_000320	-1.435	0.049			X						
ABLIM1	NM_002313	-1.433	0.041									
TAF1C	NM_005679	-1.433	0.005									
BAG3	NM_004281	-1.431	0.025	Ikeda, 2009 - PMID: 19850283								
RNASEH2B	NM_024570	-1.430	0.011									
SNORA49	NR_002979	-1.429	0.017									
PHF17	NM_199320	-1.427	0.032									
C13orf38	NM_001144981	-1.426	0.008									
C9orf21	NM_153698	-1.423	0.012									
HIST1H4D	NM_003539	-1.423	0.009								X	
FAM106A	NR_026809	-1.422	0.023									
PBK	NM_018492	-1.422	0.041									
GNPDA1	NM_005471	-1.420	0.042			X						

LRRC61	NM_001142928	-1.420	0.018									
PRKG1	NM_001098512	-1.417	0.011									
F2R	NM_001992	-1.416	0.022									
RHPN1	NM_052924	-1.416	0.031									
RAP2A	NM_021033	-1.414	0.007									
MST1	NM_020998	-1.413	0.015									
DYNC1LI2	NM_006141	-1.413	0.027								X	
PLCD1	NM_006225	-1.412	0.007									
FUT8	NM_178155	-1.412	0.040									
SPTAN1	NM_001130438	-1.411	0.033	Murakami, 1999 - PMID: 10402491								
FGFR3	NM_000142	-1.409	0.008	Jungerius, 2007 - PMID: 17893707			X					
PITPNC1	NM_181671	-1.409	0.042									
CA13	NM_198584	-1.407	0.031									
EZR	NM_003379	-1.407	0.029									
MGC13005	NR_024005	-1.403	0.015									
DCHS2	NM_017639	-1.402	0.018									
SLC44A1	NM_080546	-1.401	0.034									
DNHD1	NM_173589	-1.400	0.024									
C8orf79	NM_020844	-1.396	0.046									
TMEM185B	NR_000034	-1.395	0.008									
SNORA41	NR_002590	-1.395	0.013									
CHST15	NM_015892	-1.394	0.024									
CCDC144C	NR_023380	-1.394	0.026									
UBQLN4	NM_020131	-1.394	0.043									
SEMA4B	NM_020210	-1.393	0.048									
C1orf183	NM_019099	-1.393	0.029									
NPNT	NM_001033047	-1.391	0.001									
ARID5A	NM_212481	-1.391	0.014									
WWP1	NM_007013	-1.386	0.004									
PAQR6	NM_024897	-1.385	0.000									
REV3L	NM_002912	-1.385	0.047									
SNORD52	NR_002742	-1.385	0.033									
KAT2A	NM_021078	-1.380	0.013								X	
BAI1	NM_001702	-1.378	0.014									
TRAF3IP2	NM_147686	-1.377	0.022									
CEP78	NM_001098802	-1.377	0.000									
EGLN3	NM_022073	-1.375	0.002									
FGD3	NM_001083536	-1.372	0.003									
MYBL1	NM_001080416	-1.372	0.028									
DLEU2	NR_002612	-1.372	0.047									
ALDH7A1	NM_001182	-1.371	0.014				X			X		

BLVRA	NM_000712	-1.368	0.003									
LCAT	NM_000229	-1.367	0.001									
LCTL	NM_207338	-1.367	0.024									
FABP4	NM_001442	-1.366	0.008									
DOCK7	NM_033407	-1.364	0.021									
CDK5RAP2	NM_018249	-1.363	0.014									
SOBP	NM_018013	-1.362	0.042									
SEMA4C	NM_017789	-1.362	0.044									
MSTP9	NR_002729	-1.362	0.017									
C16orf93	NM_001014979	-1.360	0.034									
CLN8	NM_018941	-1.359	0.011									
METTL7A	NM_014033	-1.358	0.045							X		
CLN8	NM_018941	-1.358	0.028									
SGCG	NM_000231	-1.357	0.030									
ESCO2	NM_001017420	-1.356	0.023									
TANC1	NM_033394	-1.356	0.041									
SPTB	NM_001024858	-1.355	0.013									
SEPN1	NM_020451	-1.354	0.047									
KIAA1618	NM_020954	-1.354	0.006									
ERI1	NM_153332	-1.354	0.029									
LOC400464	AK127420	-1.351	0.014									
THBS4	NM_003248	-1.348	0.001									
RNF213	NM_020914	-1.347	0.029					X				
SLC35D1	NM_015139	-1.347	0.011									
SNRPG	NM_003096	-1.346	0.002									
GPR37L1	NM_004767	-1.345	0.014									
GAL3ST4	NM_024637	-1.343	0.037									
FAM53B	NM_014661	-1.343	0.035									
LSM6	NM_007080	-1.340	0.013									
ZFP36L1	NM_004926	-1.339	0.006									
MAML2	NM_032427	-1.338	0.031									
SNORD109A	NR_001295	-1.336	0.037									
SNORD109A	NR_001295	-1.336	0.037									
TM7SF2	NM_003273	-1.333	0.037								X	
UNQ9370	AY358254	-1.333	0.016									
PINK1	NM_032409	-1.331	0.010	Funayama, 2008 - PMID: 18546294			X					
GPR155	NM_001033045	-1.330	0.031									
TST	NM_003312	-1.330	0.019			X	X			X		
ZNF436	NM_001077195	-1.328	0.031									
LRRN2	NM_006338	-1.327	0.048									
TCEA3	NM_003196	-1.327	0.049									
NHSL1	AK299585	-1.326	0.034									

FAM182A	NR_026713	-1.323	0.010									
ARL6IP6	NM_152522	-1.321	0.035									
SCARNA17	NR_003003	-1.317	0.006									
NBEA	NM_015678	-1.317	0.032				X					
FAM182A	NR_026713	-1.316	0.011									
DNHD1	NM_144666	-1.314	0.014									
PIK3IP1	NM_052880	-1.314	0.013									
FNTB	NM_002028	-1.313	0.001									
CNN3	NM_001839	-1.313	0.046									
CENPQ	NM_018132	-1.313	0.022									
COQ2	NM_015697	-1.311	0.004					X				
ADCY7	NM_001114	-1.310	0.005									
PSENN	NM_172341	-1.310	0.009									
LOC440957	NM_001124767	-1.310	0.035									
NACC2	NM_144653	-1.308	0.032									
FAM181A	BC009073	-1.308	0.022									
C14orf149	NM_144581	-1.308	0.028									
DAG1	NM_004393	-1.307	0.013									
HSD17B3	NM_000197	-1.307	0.002									
FLJ00049	AK024457	-1.306	0.007									
VASH1	NM_014909	-1.306	0.028									
NR2F1	NM_005654	-1.305	0.029								X	
MAN2A2	NM_006122	-1.305	0.003			X						
KCNG4	NM_172347	-1.302	0.006									
OR2J3	NM_001005216	-1.302	0.042									
FAM168A	EF363480	-1.301	0.023			X						
FAM3C	NM_014888	-1.301	0.021									
SH3KBP1	AY423734	-1.301	0.010									
C17orf61	BC030270	-1.300	0.015									
ARHGEF17	NM_014786	-1.300	0.039									
SLC25A12	NM_003705	1.300	0.026	Hong, 2007 - PMID: 17693006		X						
KIAA0802	BC040542	1.300	0.018									
CPD	NM_001304	1.301	0.030								X	
MKNK2	NM_199054	1.301	0.008									
PRICKLE2	NM_198859	1.301	0.006									
SESNI	NM_014454	1.304	0.026					X				
FOXN3	NM_001085471	1.304	0.004			X						
HIVEP1	NM_002114	1.304	0.000									
SLAIN2	NM_020846	1.306	0.005					X				
KREMEN1	NM_001039570	1.306	0.022	Aleksic, 2010 - PMID: 20153141								
ADAMTSL1	NM_001040272	1.306	0.004									

PNOC	NM_006228	1.307	0.001	Blaveri, 2001 - PMID: 11436130						X		
WNT3	NM_030753	1.308	0.008									
AP2M1	NM_004068	1.310	0.018									
ST7	NM_018412	1.311	0.024									
FAM35A	NM_019054	1.312	0.032									
ZNF618	NM_133374	1.312	0.015									
FLJ13197	NR_026804	1.313	0.005		X							
LRP4	NM_002334	1.315	0.046									
C9orf125	BC033550	1.317	0.039									
FAM35A	NM_019054	1.318	0.028									
EIF2A	NM_032025	1.320	0.005									
SBNO1	NM_018183	1.320	0.042									
KLF12	NM_007249	1.321	0.039									
ZNF124	NM_003431	1.323	0.023									
SMYD3	NM_022743	1.323	0.014			X						
KLHL29	BC015667	1.324	0.001									
AKR1C3	NM_003739	1.326	0.036									
ZNF217	NM_006526	1.326	0.022									
PDE10A	NM_006661	1.326	0.033									
TCF4	NM_001083962	1.330	0.015	Bowen, 2000 - PMID: 10909126	X	X						
AMOTL2	NM_016201	1.333	0.044								X	
RHOBTB1	NR_024556	1.333	0.023									
POLB	NM_002690	1.333	0.038			X						
ZNF616	NM_178523	1.334	0.045									
SEC31A	NM_014933	1.335	0.042								X	
SMC5	NM_015110	1.338	0.034									
ADORA2B	NM_000676	1.339	0.003							X		
BOC	NM_033254	1.342	0.004									
KCTD10	NM_031954	1.344	0.011					X				
SPRY4	NM_030964	1.347	0.031	Zaharieva, 2008 - PMID: 18298822								
NTF3	NM_002527	1.349	0.026	Arinami, 1996 - PMID: 8925252								
NUP93	NM_014669	1.356	0.022									
CNGA3	NM_001298	1.361	0.023									
KLF9	NM_001206	1.361	0.004									
AUTS2	NM_015570	1.361	0.007									
FARP1	NM_005766	1.363	0.043									
P2RX3	NM_002559	1.364	0.024									
HS3ST3A1	NM_006042	1.365	0.032									
ZNF616	BC032805	1.369	0.038									
CNTN2	NM_005076	1.372	0.046	Jungerius, 2007 - PMID: 17893707								

SNORD36B	NR_000017	1.376	0.016									
STK24	NM_003576	1.376	0.007					X				
UNQ3028	AY358789	1.377	0.010									
C17orf75	NM_022344	1.378	0.037			X						
ZIC5	NM_033132	1.378	0.005									
CASP1	NM_033292	1.382	0.004									
FAM19A4	NM_182522	1.383	0.034									
EIF4B	NM_001417	1.385	0.005									
AXIN2	NM_004655	1.385	0.019									
PDP1	NM_001161778	1.386	0.016									
FRMD4A	NM_018027	1.386	0.037									
SLMO2	NM_016045	1.386	0.017									
INADL	NM_176877	1.388	0.034						X			
RPL21	NM_000982	1.389	0.019								X	
KIRREL3	NM_032531	1.391	0.003									
TNFAIP3	NM_006290	1.392	0.009						X			
GPR137C	NM_001099652	1.395	0.041									
SCPEP1	NM_021626	1.396	0.011									
CRTC3	NM_022769	1.400	0.001									
PIK3R3	NM_003629	1.403	0.033									
ZNF823	NM_001080493	1.405	0.004									
WNT2B	NM_024494	1.407	0.031	Proitsi, 2008 - PMID: 17553464								
GAS2L3	NM_174942	1.409	0.009									
DGKE	NM_003647	1.412	0.025									
TSC22D2	NM_014779	1.412	0.002									
ZNF583	NM_152478	1.414	0.025									
ZNF618	NM_133374	1.417	0.009									
ATF3	NM_001040619	1.418	0.039	Drexhage, 2010 - PMID: 20633309								
MAPK8	NM_002750	1.420	0.044									
ATOH8	NM_032827	1.423	0.014									
CA11	NM_001217	1.424	0.011									
MYT1	NM_004535	1.425	0.036	Jungerius, 2007 - PMID: 17893707								
C2CD2	NM_015500	1.427	0.002									
SALL4	NM_020436	1.427	0.015									
TTC6	BC103915	1.428	0.037									
SLC41A2	NM_032148	1.428	0.040									
QPCT	NM_012413	1.432	0.020									
TRIB1	NM_025195	1.433	0.010									
TRPS1	NM_014112	1.434	0.005									
B3GALT1	NM_020981	1.436	0.037									
TIMP2	NM_003255	1.438	0.018									

ROBO3	NM_022370	1.441	0.030									
FAM107B	BC072452	1.442	0.005					X				
HFM1	NM_001017975	1.444	0.036									
STOX2	NM_020225	1.446	0.004									
ZNF626	NM_145297	1.461	0.009									
LGALS8	NM_006499	1.462	0.039					X				
ZNF841	NM_001136499	1.463	0.003									
DUSP5P	NR_002834	1.463	0.026									
HSPA1B	NM_005346	1.464	0.006	Kim, 2008 - PMID: 18299791								
HSPA1B	NM_005346	1.464	0.005	Kim, 2008 - PMID: 18299792								
HSPA1B	NM_005346	1.464	0.005	Kim, 2008 - PMID: 18299793								
ZYG11A	NM_001004339	1.468	0.023									
ZIC2	NM_007129	1.474	0.018	Fallin, 2005 - PMID: 16380905								
PTGDS	NM_000954	1.475	0.026	Li, 2008 - PMID: 18349703							X	
PDE4DIP	NM_022359	1.475	0.032					X		X		
IFI44	NM_006417	1.480	0.023									
RNASEL	NM_021133	1.482	0.017									
HECTD2	NM_182765	1.486	0.023									
ZNF295	NM_001098402	1.491	0.015									
C1QTNF6	NM_031910	1.496	0.002	Takahashi, 2003 - PMID: 12815732								
XRRA1	NM_182969	1.498	0.001									
CACNA2D2	NM_001005505	1.501	0.049								X	
ADAMTS18	NM_199355	1.507	0.008									
JAZF1	NM_175061	1.514	0.033									
EPB41	NM_203342	1.517	0.006						X			
CMIP	NM_198390	1.519	0.006									
MRAS	NM_012219	1.520	0.005									
S1PR3	NM_005226	1.521	0.001									
SAMD9	NM_017654	1.526	0.036									
MYL12A	NM_006471	1.528	0.009									
FGD6	NM_018351	1.532	0.010									
ZNF536	NM_014717	1.533	0.006									
MSX2	NM_002449	1.534	0.028									
HSPA1A	NM_005345	1.534	0.018	Kim, 2008 - PMID: 18299791								
DISP1	NM_032890	1.540	0.033									
HSPA1A	NM_005345	1.540	0.018	Kim, 2008 - PMID: 18299792								
BMI1	NM_005180	1.542	0.024								X	
WT1	NM_024424	1.542	0.010									

NOX4	NR_026571	1.543	0.013									
LMNA	NM_170707	1.557	0.031						X			
SPOCK3	NM_001040159	1.567	0.046			X			X			
VASH2	NM_024749	1.567	0.017					X				
MAP3K13	NM_004721	1.570	0.029					X				
TOX3	NM_001080430	1.574	0.030									
C10orf118	NM_018017	1.574	0.002									
EDIL3	NM_005711	1.575	0.033		X						X	
CPS1	NM_001875	1.577	0.049									
DCT	NM_001922	1.579	0.009									
ZNF737	NM_001159293	1.581	0.024									
DEPDC6	NM_022783	1.588	0.034									
CDC42EP3	NM_006449	1.595	0.003						X		X	
SIPA1L2	NM_020808	1.599	0.003									
GLRA1	NM_001146040	1.603	0.031									
PRSS12	NM_003619	1.605	0.026									
BSCL2	NM_001130702	1.606	0.044									
FGFR1	NM_023110	1.608	0.001	Jungerius, 2007 - PMID: 17893707								
PARP14	NM_017554	1.619	0.050									
RHOBTB3	NM_014899	1.625	0.032				X		X	X		
DUSP5P	AK055963	1.632	0.017									
LRRC55	NM_001005210	1.642	0.034									
VEGFC	NM_005429	1.647	0.022									
KIAA1199	NM_018689	1.653	0.026									
SFRP2	NM_003013	1.657	0.042									
FAM190A	NM_001145065	1.668	0.048									
CCNG1	NM_004060	1.685	0.001									
NRG1	NM_013958	1.691	0.004	Addington, 2006 - PMID: 17033632								
ENPP2	NM_006209	1.695	0.041			X					X	
RARB	NM_000965	1.697	0.007									
ATL3	ENST00000398868	1.697	0.029									
CAMK1D	NM_153498	1.699	0.012									
KRTAP5-2	NM_001004325	1.702	0.026									
RBM24	NM_001143942	1.704	0.027	Lin, 2009 - PMID: 19694819								
ZFH3	NM_006885	1.705	0.004									
IGFBPL1	NM_001007563	1.708	0.009									
LAMA4	NM_001105206	1.716	0.023									
ANKRD44	NM_153697	1.717	0.018									
MAL	NM_002371	1.720	0.048	Jungerius, 2007 - PMID: 17893707								
PCDHB2	NM_018936	1.721	0.037									

MYOF	NM_013451	1.736	0.023									
SLAIN1	NM_001040153	1.738	0.037									
RBM9	NM_001082578	1.745	0.039	Amagane, 2010 - PMID: 20188514		X					X	
NR4A2	NM_006186	1.748	0.028	Buervenich, 2000 - PMID: 11121187	X		X	X		X		
RLBP1L1	NM_173519	1.749	0.045									
DUSP4	NM_001394	1.750	0.039									
CA14	NM_012113	1.755	0.002									
ATL3	NM_015459	1.761	0.028									
RIMS2	NM_001100117	1.764	0.031	Weidenhofer, 2009 - PMID: 18490030								
GCNT4	NM_016591	1.765	0.011									
GDF10	NM_004962	1.774	0.012									
PLEKHG4B	NM_052909	1.777	0.020									
LINGO2	NM_152570	1.779	0.018									
CYFIP2	NM_001037332	1.790	0.003									
DDX60L	NM_001012967	1.796	0.032									
ADAMTSL1	NM_001040272	1.801	0.043									
PHLDA1	NM_007350	1.827	0.027					X				
NQO1	NM_000903	1.833	0.047	Hori, 2003 - PMID: 12834817								
PDE4D	NM_001104631	1.843	0.000	Tomppo, 2009 - PMID: 19251251								
LNK1	NM_001126328	1.844	0.017									
RTL1	NM_001134888	1.849	0.027									
GRB10	NM_001001555	1.852	0.005									
ZNF423	NM_015069	1.881	0.012									
RND3	NM_005168	1.881	0.024									
C11orf41	NM_012194	1.885	0.045									
NALCN	NM_052867	1.894	0.031	Souza, 2010c - PMID: 20674038								
SH3BP5	NM_004844	1.897	0.015									
STXBP5	NM_001127715	1.900	0.037									
STMN4	NM_030795	1.902	0.021									
IFITM3	NM_021034	1.906	0.018						X			X
PPARGC1A	NM_013261	1.935	0.030	Christoforou, 2007 - PMID: 17457313		X						
COL4A2	NM_001846	1.950	0.022						X			
FLJ41170	AK123165	1.972	0.033									
BZW2	NM_001159767	1.987	0.031									
GLI3	NM_000168	1.994	0.001									
NKAIN2	NM_001040214	1.996	0.014									
TLE1	NM_005077	2.000	0.007									
SETBP1	NM_015559	2.000	0.010									

NET1	NM_001047160	2.013	0.001									
TNFRSF11B	NM_002546	2.016	0.011									
PIP5K1B	NM_003558	2.032	0.025	Ikeda, 2009 - PMID: 19850283								
ZNF154	NM_001085384	2.036	0.005									
CHMP1B	NM_020412	2.070	0.012									
LEF1	NM_016269	2.071	0.050									
GFPT2	NM_005110	2.097	0.010								X	
ARHGAP18	NM_033515	2.106	0.002	Potkin, 2009 - PMID: 19065146								
COL4A1	NM_001845	2.137	0.038									
DUSP1	NM_004417	2.145	0.029		X							
HECW1	NM_015052	2.148	0.016									
ANGPT1	NM_001146	2.149	0.005									
IFITM2	NM_006435	2.154	0.048									
NRP2	NM_201266	2.157	0.008									
LRRTM4	NM_024993	2.197	0.041									
ZIC4	NM_032153	2.238	0.005									
MST131	ENST00000423322	2.269	0.012									
NT5E	NM_002526	2.276	0.015									
CFI	NM_000204	2.291	0.035									
GNG2	NM_053064	2.330	0.046									
SLIT2	NM_004787	2.342	0.019					X				
PLXNA2	NM_025179	2.376	0.014	Betcheva, 2009 - PMID: 19158809						X		
EPAS1	NM_001430	2.379	0.038					X				
SLC16A9	NM_194298	2.379	0.006									
TOX	NM_014729	2.424	0.007								X	
SV2C	NM_014979	2.437	0.014		X							
C6orf142	NM_138569	2.448	0.035									
EBF1	NM_024007	2.455	0.008									
MAMDC2	NM_153267	2.489	0.035									
CYP26A1	NM_000783	2.498	0.000									
NEFL	NM_006158	2.508	0.033	Fallin, 2005 - PMID: 16380905						X		
LOC151760	ENST00000383686	2.513	0.014									
ANK3	NM_020987	2.522	0.026	Athanasiau, 2010 - PMID: 20185149		X						
FGF14	NM_175929	2.527	0.038	Jungerius, 2007 - PMID: 17893707								
PXDNL	NM_144651	2.554	0.031									
CACNA2D3	NM_018398	2.558	0.003									
UNC5C	NM_003728	2.564	0.003	Ikeda, 2009 - PMID: 19850283								
EFNA5	NM_001962	2.595	0.004									
FRAS1	NM_025074	2.623	0.015									

DACH1	NM_080759	2.674	0.026									
GNAL	NM_182978	2.675	0.046	Schwab, 1998 - PMID: 9758604								
ECEL1	NM_004826	2.877	0.016									
ARHGAP29	NM_004815	2.893	0.002									
COL12A1	NM_004370	2.916	0.035									
MATN2	NM_002380	2.920	0.001									
EBF3	NM_001005463	2.936	0.012	O'Donovan, 2008 - PMID: 18677311								
PDE1C	NM_005020	2.963	0.041									
HS3ST3B1	NM_006041	3.091	0.022									
ALPK2	NM_052947	3.124	0.029									
THSD7A	NM_015204	3.142	0.020									
PDE7B	NM_018945	3.155	0.011	Amann- Zalcenstein, 2006 - PMID: 16773125								
PAPPA	NM_002581	3.165	0.016									
FAM46A	NM_017633	3.188	0.004									
FIGN	NM_018086	3.202	0.020									
DCC	NM_005215	3.302	0.027	Speight, 2000 - PMID: 10889538								
CNTN3	NM_020872	3.355	0.016									
CTSC	NM_001814	3.375	0.017									
SLFN5	NM_144975	3.405	0.034									
ATP8A1	NM_006095	3.528	0.043									
MAB21L1	NM_005584	3.567	0.049									
NEFM	NM_005382	3.676	0.020	Fallin, 2005 - PMID: 16380905								
RUNX1T1	NM_175634	3.906	0.012									
ASS1	NM_000050	3.975	0.011									
FAT4	NM_024582	4.384	0.005									
ZMAT4	NM_024645	4.434	0.009									
VGLL3	NM_016206	4.557	0.003									
IFITM1	NM_003641	4.844	0.028									
SNORD113-3	NR_003231	5.036	0.043									
SNORD114-3	NR_003195	5.156	0.047									
SERPINI1	NM_001122752	5.615	0.005									
PAX3	NM_181458	6.139	0.006	Jungerius, 2007 - PMID: 17893707								

SI Table 4. GO analysis of microarray data identified significantly affected pathways in SCZD hiPSC neurons.

p-value	Network Objects	Statistically Significant GO Pathways	Genes Significantly Up, Fold Change	Genes Significantly Down, Fold Change
2.93E-06	21/111	Cytoskeleton Remodeling via TGF and Wnt	WNT2B, 1.41 WNT3, 1.31 AXIN2, 1.39 LEF1, 2.07 TCF4, 1.33 PIK3R3, 1.4 COL4A1, 2.14 COL4A2, 1.95	WNT7A, -1.62 ACTN2, -2.33
6.39E-06	13/50	Function of MEF2		ITPR2, -1.72 PRKCA, -2.41 KAT2B, -1.56
1.10E-05	12/45	α 6- β 4-integrins	NRG1, 1.69 PDPK1, 1.26	EGF, -1.98 ERBB3, -1.21 MST1, -1.41 PRKCA, -2.41 ITPR2, -1.72
2.34E-05	10/34	Erk signal transduction	GRIN1, 1.16 PTPRR, 1.27	GRIN2A, -1.72 PTPRE, -1.7 PRKCA, -2.41 CAMK1, -1.12
3.91E-05	11/43	Notch signaling pathway	HDAC2, 1.29	PSENEN, -1.31 NOTCH1, -1.9 DLL1, -1.92 HEY2, -4.41 KAT2B, -1.56 KAT2A, -1.38
6.48E-05	12/53	Wnt signaling pathway	WNT2B, 1.41 WNT3, 1.31 WNT7B, 1.14 AXIN, 1.39, LEF1, 2.07 TCF4, 1.33	WNT7A, -1.62 LRP5, -1.29
6.76E-05	10/38	cAMP signaling pathway	GNG2, 2.33 PRKAR2A, 1.25 PPP3CB, 1.23	ADCY7, -1.31 ADCY8, -2.03 PRKCA, -2.41
8.52E-05	15/80	NMDA-dependent postsynaptic long-term potentiation	GRIN1, 1.16 GRM1, 1.27 PRKAR2A, 1.25	GRIN2A, -1.72 ADCY8, -2.03 PRKCA, -2.41

SI Table 5. Analysis of microarray data of genes affected by CNVs identified in SCZD patients.

Affected Patient	Type of CNV	CNV location	Gene Affected	CNV p-value	Fold-Change (Affected Patient vs Control)	Expression p-value	Predicted By Genotype (p<0.05)
Patient 1	deletion	chr2:78551233-78576088	BC024248	3.3E-11	-1.04	0.1062	
Patient 1	duplication	chr5:17669005-17706691	none	4.4E-09	na	na	
Patient 1	deletion	chr7:110838909-110985533	IMMP2L	7.2E-48	-1.11	0.0360	X
Patient 1	deletion	chr8:3607327-3648499	CSMD1	1.0E-46	-1.31	0.0010	X
Patient 1	duplication	chr8:36372115-36392410	none	5.8E-13	na	na	
Patient 1	duplication	chr10:44529265-44679123	AK056518	0.0E+00	nd	nd	
Patient 1	duplication	chr12:89860232-89930609	EPYC	0.0E+00	-1.04	0.1767	
Patient 1	duplication	chr12:89860232-89930609	C12Orf12	0.0E+00	-1.06	0.1217	
Patient 1	deletion	chr18:40170762-40333519	BC051727	5.1E-110	nd	nd	
Patient 2	deletion	chr2:17083353-17103531	none	3.1E-11	na	na	
Patient 2	duplication	chr3:156964346-156985822	C3orf33	1.7E-07	-1.06	0.1658	
Patient 2	deletion	chr4:8408598-8424007	ACOX3	1.1E-20	-1.02	0.0509	
Patient 2	deletion	chr4:8408598-8424007	AX746755	1.1E-20	nd	nd	
Patient 2	deletion	chr5:27642965-27665975	none	2.2E-15	na	na	
Patient 2	duplication	chr6:74514699-74534191	CD109	1.1E-16	-1.00	0.9222	
Patient 2	deletion	chr8:2126589-2147674	AY156957	1.0E-10	nd	nd	
Patient 2	deletion	chr8:2126589-2147674	AX747124	1.0E-10	nd	nd	
Patient 2	deletion	chr8:3969433-4064034	CSMD1 (Intron)	1.0E-36	-1.04	0.5377	
Patient 2	deletion	chr8:18896564-18912764	PSD3 (Intron)	1.7E-07	-1.00	0.9401	
Patient 2	duplication	chr16:55217605-55276937	MT1E	7.7E-14	-1.03	0.4904	
Patient 2	duplication	chr16:55217605-55276937	MT1M	7.7E-14	-1.01	0.7144	
Patient 2	duplication	chr16:55217605-55276937	MTB	7.7E-14	nd	nd	
Patient 2	duplication	chr16:55217605-55276937	MT1A	7.7E-14	-1.04	0.1029	
Patient 2	duplication	chr16:55217605-55276937	MT1B	7.7E-14	-1.02	0.1023	
Patient 2	duplication	chr16:55217605-55276937	MTM	7.7E-14	nd	nd	
Patient 2	duplication	chr16:55217605-55276937	MT1F	7.7E-14	-1.08	0.0198	
Patient 2	duplication	chr16:55217605-55276937	MT1G	7.7E-14	-1.03	0.3647	
Patient 2	duplication	chr16:55217605-55276937	MT1H	7.7E-14	-1.04	0.2343	
Patient 2	duplication	chr16:55217605-55276937	MT1IP	7.7E-14	-1.02	0.2244	
Patient 2	duplication	chr16:55217605-55276937	MTW	7.7E-14	nd	nd	
Patient 2	duplication	chr16:55217605-55276937	MT1X	7.7E-14	-1.08	0.0407	
Patient 2	duplication	chr19:34010221-34052245	none	0.0E+00	na	na	
Patient 3	duplication	chr1:119726536-119739044	HAO2	2.2E-16	1.01	0.7481	
Patient 3	deletion	chr2:17083353-17103531	none	5.7E-12	na	na	
Patient 3	deletion	chr4:8408598-8422722	ACOX3	6.5E-27	-1.03	0.0112	X
Patient 3	deletion	chr4:8408598-8422722	AX746755	6.5E-27	nd	nd	
Patient 3	duplication	chr6:74514699-74532358	CD109	9.7E-10	-1.04	0.4356	
Patient 3	deletion	chr8:2126589-2147674	AY156957	9.2E-12	nd	nd	
Patient 3	deletion	chr8:2126589-2147674	AX747124	9.2E-12	nd	nd	
Patient 3	deletion	chr8:18896564-18909227	PSD3 (Intron)	3.0E-08	1.07	0.0006	
Patient 3	deletion	chr18:1894094-1974770	none	1.9E-14	na	na	
Patient 3	duplication	chr19:50838214-50889101	EML2	1.1E-16	-1.02	0.3370	

Patient 3	duplication	chr19:50838214-50889101	GIPR	1.1E-16	1.05	0.0016	X
Patient 3	duplication	chr19:50838214-50889101	SNRPD2	1.1E-16	1.07	0.0001	X
Patient 4	duplication	chr3:199196414-199382747	LMLN	3.1E-13	-1.03	0.0161	
Patient 4	duplication	chr3:199196414-199382747	LOC348840	3.1E-13	-1.01	0.8604	
Patient 4	duplication	chr5:160951572-160965569	GABRB2 (5' Intergenic)	1.4E-12	-1.04	0.0000	
Patient 4	duplication	chr5:160951572-160965569	GABRA6 (5' Intergenic)	1.4E-12	1.01	0.5703	
Patient 4	duplication	chr6:162538658-162595733	PARK2	0.0E+00	1.01	0.6628	
Patient 4	deletion	chr7:151346486-151441286	GALNT5	1.0E-59	1.69	0.0000	
Patient 4	deletion	chr7:151346486-151441286	GALNT11	1.0E-59	-1.10	0.0000	X
Patient 4	deletion	chr8:15464189-15485502	TUSC3 (Intron)	8.3E-25	-1.01	0.3024	
Patient 4	deletion	chr10:84525405-84556365	NRG3 isoform 2	6.9E-24	-1.22	0.0005	X
Patient 4	deletion	chr10:96489466-96533096	CYP2C19	4.4E-18	1.04	0.1978	
Patient 4	deletion	chr11:18556183-18577561	UEVLD	2.2E-20	-1.13	0.0018	X
Patient 4	deletion	chr12:8211354-8666816	ZNF705A	2.1E-40	1.03	0.4175	
Patient 4	deletion	chr12:8211354-8666816	FAM90A1	2.1E-40	-1.03	0.0540	
Patient 4	deletion	chr12:8211354-8666816	CLEC6A	2.1E-40	1.06	0.1207	
Patient 4	deletion	chr12:8211354-8666816	CLEC4D	2.1E-40	-1.02	0.7962	
Patient 4	deletion	chr12:8211354-8666816	CLEC4E	2.1E-40	-1.04	0.5424	
Patient 4	deletion	chr12:8211354-8666816	AICDA	2.1E-40	1.03	0.0545	
Patient 4	deletion	chr12:8211354-8666816	CR611653	2.1E-40	nd	nd	
Patient 4	duplication	chr12:50517243-50577958	ANKRD33	0.0E+00	1.02	0.5990	
Patient 4	duplication	chr12:69784529-69797993	TSPAN8 (3' Intergenic)	2.9E-12	1.15	0.1061	
Patient 4	duplication	chr15:50782920-50827258	KIAA1370 (5' Intergenic)	0.0E+00	-1.06	0.0125	
Patient 4	duplication	chr15:50782920-50827258	ONECUT1 (3' Intergenic)	0.0E+00	1.00	0.8738	
Patient 4	duplication	chr16:9803856-9814779	GRIN2A (Intron)*	9.9E-07	-1.16	0.0000	
Patient 4	duplication	chr17:9923061-10356441	GAS7	0.0E+00	1.08	0.0137	X
Patient 4	duplication	chr17:9923061-10356441	MYH13	0.0E+00	1.02	0.0825	
Patient 4	duplication	chr17:9923061-10356441	MYH8	0.0E+00	1.02	0.5058	
Patient 4	duplication	chr17:9923061-10356441	MYH4	0.0E+00	1.33	0.0065	X
Patient 4	duplication	chr17:9923061-10356441	MYH1	0.0E+00	1.89	0.0000	X
Patient 4	deletion	chr18:156081-166915	USP14*	8.3E-07	1.03	0.0299	
Patient 4	deletion	chr20:61385006-61408612	ARFGAP1	6.1E-09	-1.02	0.0047	X
Patient 4	deletion	chr20:61385006-61408612	COL20A1	6.1E-09	1.16	0.0001	
Patient 4	deletion	chr20:61385006-61408612	KIAA1510	6.1E-09	nd	nd	

SI Table 6. Expression analysis of top Affymetrix transcripts misexpressed at well-characterized SCZD CNVs.

Transcript ID	Cytoband	Gene Symbol	p-value (Diagnosis)	Fold-Change (SCZD vs Control)
7919168	1q21.1	PDE4DIP	0.03176	1.48
7919243	1q21.1	CD160	0.06112	1.10
7904907	1q21.1	BCL9	0.06162	1.16
7919226	1q21.1	POLR3C	0.06511	1.17
7919195	1q21.1		0.06621	-1.08
7904883	1q21.1	CHD1L	0.06630	-1.22
7904480	1q21.1		0.06819	-1.24
7904963	1q21.1		0.06819	-1.24
7919193	1q21.1	NUDT4P1	0.02777	-1.27
7919299	1q21.1	LOC100130236	0.09582	-1.10
7981775	15q11.2	DKFZP547L112	0.01185	-1.19
7981781	15q11.2	OR4M2	0.03283	-1.23
7986685	15q11.2	DEXI	0.04303	-1.12
7986601	15q11.2	LOC440243	0.04308	1.12
7981773	15q11.2		0.05008	-1.15
7981752	15q11.2	GOLGA8D	0.11046	-1.11
7981785	15q11.2	OR4N3P	0.11468	1.11
7986563	15q11.2	LOC646057	0.11968	-1.14
7981824	15q11.2	CYFIP1	0.13054	-1.14
7986603	15q11.2	LOC646214	0.16966	1.09
7986820	15q13.1		0.09880	-1.07
7982102	15q13.1	GABRA5	0.15919	1.18
7982127	15q13.1		0.53415	-1.03
7986789	15q13.1	ATP10A	0.53850	1.09
7986822	15q13.1	GABRB3	0.70732	-1.08
7982117	15q13.1	GABRG3	0.84759	-1.07
7982100	15q13.1		0.91167	-1.01
7986836	15q13.1		0.93823	1.00
7982131	15q13.2	GOLGA8G	0.07137	-1.12
7986922	15q13.2	GOLGA8G	0.07137	-1.12
7991695	15q13.2	GOLGA8D	0.14069	-1.11
7986947	15q13.2	GOLGA9P	0.28404	-1.13
7986863	15q13.2	HERC2	0.41947	1.05
7982129	15q13.2	RPL41	0.50117	1.07
7986945	15q13.2		0.61305	-1.06
7982152	15q13.2		0.62512	-1.03
7986943	15q13.2		0.62512	-1.03
7982154	15q13.2	HERC2P2	0.78350	1.03
7986838	15q13.2	OCA2	0.80749	-1.05
7987048	15q13.3	MTMR10	0.03792	-1.27
7982299	15q13.3	LOC390561	0.03795	-1.28
7982185	15q13.3	DEXI	0.04303	-1.12

7982252	15q13.3	DKFZP434L187	0.12698	1.28
7982254	15q13.3		0.16920	1.37
7982230	15q13.3	GOLGA9P	0.21265	-1.14
7982271	15q13.3	GOLGA9P	0.21375	-1.16
7987097	15q13.3		0.24477	-1.08
7986960	15q13.3	FAM189A1	0.28169	-1.10
7982204	15q13.3	HMG2	0.31280	1.07
7982290	15q13.3		0.32056	-1.24
7987012	15q13.3	CHRFAM7A	0.35454	1.13
7995320	16p11.1		0.00256	-1.13
7995348	16p11.1		0.02650	-1.12
7995338	16p11.1		0.07405	-1.06
7995322	16p11.1		0.08523	-1.11
8001111	16p11.1	UBE2MP1	0.17026	1.16
7995336	16p11.1		0.18118	-1.11
7995324	16p11.1		0.19448	-1.10
7995330	16p11.1		0.19978	-1.14
7995334	16p11.1		0.21771	-1.06
7995326	16p11.1		0.26439	-1.09
7995206	16p11.2	TGFB11I	0.00371	-1.28
7995007	16p11.2	HSD3B7	0.02001	-1.16
7995292	16p11.2	SLC6A8	0.02141	-1.10
7994541	16p11.2	LAT	0.02255	-1.10
8000932	16p11.2	C16orf93	0.03374	-1.36
8000582	16p11.2	SULT1A2	0.03606	-1.25
7994371	16p11.2	NPIPL3	0.03871	-1.12
8000791	16p11.2	YPEL3	0.04007	-1.20
8000748	16p11.2	HIRIP3	0.04325	-1.12
8003583	16p11.2	KIF22	0.04398	-1.11
7994620	16p11.2	KIF22	0.04517	-1.11
8071206	22q11.21	MRPL40	0.00560	-1.21
8074194	22q11.21	OR11H1	0.00893	-1.06
8074591	22q11.21	RIMBP3B	0.01867	-1.17
8071212	22q11.21	CDC45L	0.03503	-1.20
8071368	22q11.21	TMEM191A	0.04611	1.15
8074204	22q11.21	XKR3	0.04841	1.04
8074569	22q11.21	GGT3P	0.05390	-1.08
8071063	22q11.21	psiTPTE22	0.06227	-1.16
8071259	22q11.21	SEPT5	0.06754	1.24
8074316	22q11.21	GGT3P	0.07437	-1.10
8074890	22q11.23		0.00112	-1.16
8071768	22q11.23	SMARCB1	0.01106	1.08
8074769	22q11.23	RIMBP3C	0.02656	-1.13
8074958	22q11.23		0.09232	1.06
8071545	22q11.23		0.10165	-1.05
8071564	22q11.23		0.11648	-1.15
8074867	22q11.23	POM121L1P	0.12617	1.05

8071737	22q11.23	MIF	0.14101	-1.26
8071676	22q11.23	RAB36	0.14176	-1.25
8074748	22q11.23	PI4KAP2	0.14569	-1.21
8074931	22q11.23	ZNF70	0.16735	1.06

SI Table 7. Analysis of inheritance of CNVs identified in SCZD patient 4.

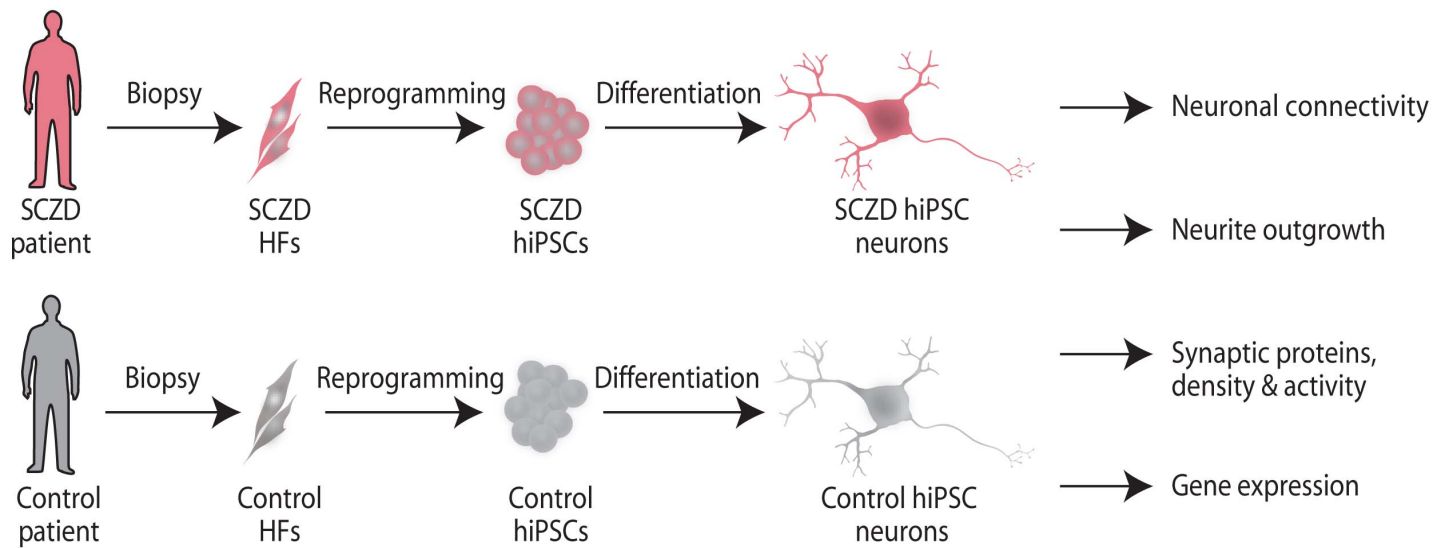
Relation to Proband	Type of CNV	CNV location	CNV p-value
Father	deletion	chr2:6684377-6870214	3.87E-85
Patient 5	deletion	chr2:6683379-6870214	2.23E-119
Patient 5	deletion	chr3:128418717-128432973	8.82E-32
Mother	duplication	chr3:199195203-199367408	7.86E-08
Patient 4	duplication	chr3:199196414-199376895	1.18E-11
Father	duplication	chr6:162541018-162595733	3.59E-13
Patient 4	duplication	chr6:162541018-162595733	1.98E-13
Patient 5	duplication	chr6:162541018-162595733	2.22E-16
Patient 5	deletion	chr6:170195821-170206320	4.81E-12
Father	deletion	chr7:111514132-111536768	1.66E-37
Father	deletion	chr7:151348062-151439868	7.98E-39
Patient 4	deletion	chr7:151350927-151437530	7.98E-37
Patient 5	deletion	chr7:151350927-151439868	1.47E-55
Father	deletion	chr8:18891576-18910636	7.79E-07
Patient 4	deletion	chr8:15456201-15484626	9.45E-10
Mother	duplication	chr10:30514430-30526183	4.68E-10
Patient 4	deletion	chr10:84521261-84556365	5.26E-16
Patient 5	deletion	chr10:84522764-84556365	1.62E-28
Patient 4	deletion	chr10:96489466-96535919	3.39E-08
Patient 5	deletion	chr10:96489466-96554411	3.23E-11
Father	deletion	chr11:18563533-18577561	4.79E-07
Patient 4	deletion	chr11:18562081-18579036	7.72E-08
Patient 5	deletion	chr11:18563533-18577561	4.84E-13
Father	deletion	chr12:8493239-8667968	1.26E-34
Patient 4	deletion	chr12:8493239-8673506	1.64E-38
Mother	duplication	chr12:50517243-50578630	2.55E-15
Patient 4	duplication	chr12:50517243-50577958	2.44E-15
Patient 5	duplication	chr12:50517243-50577958	0.00E+00
Father	duplication	chr12:50975625-51067874	1.68E-14
Father	duplication	chr12:69784529-69797993	7.13E-08

Patient 4	duplication	chr12:69785475-69805349	5.45E-08
Patient 4	duplication	chr15:50782920-50827258	0.00E+00
Father	duplication	chr17:9929175-10356441	0.00E+00
Patient 4	duplication	chr17:9929175-10356441	0.00E+00

SI Table 8. qPCR primers

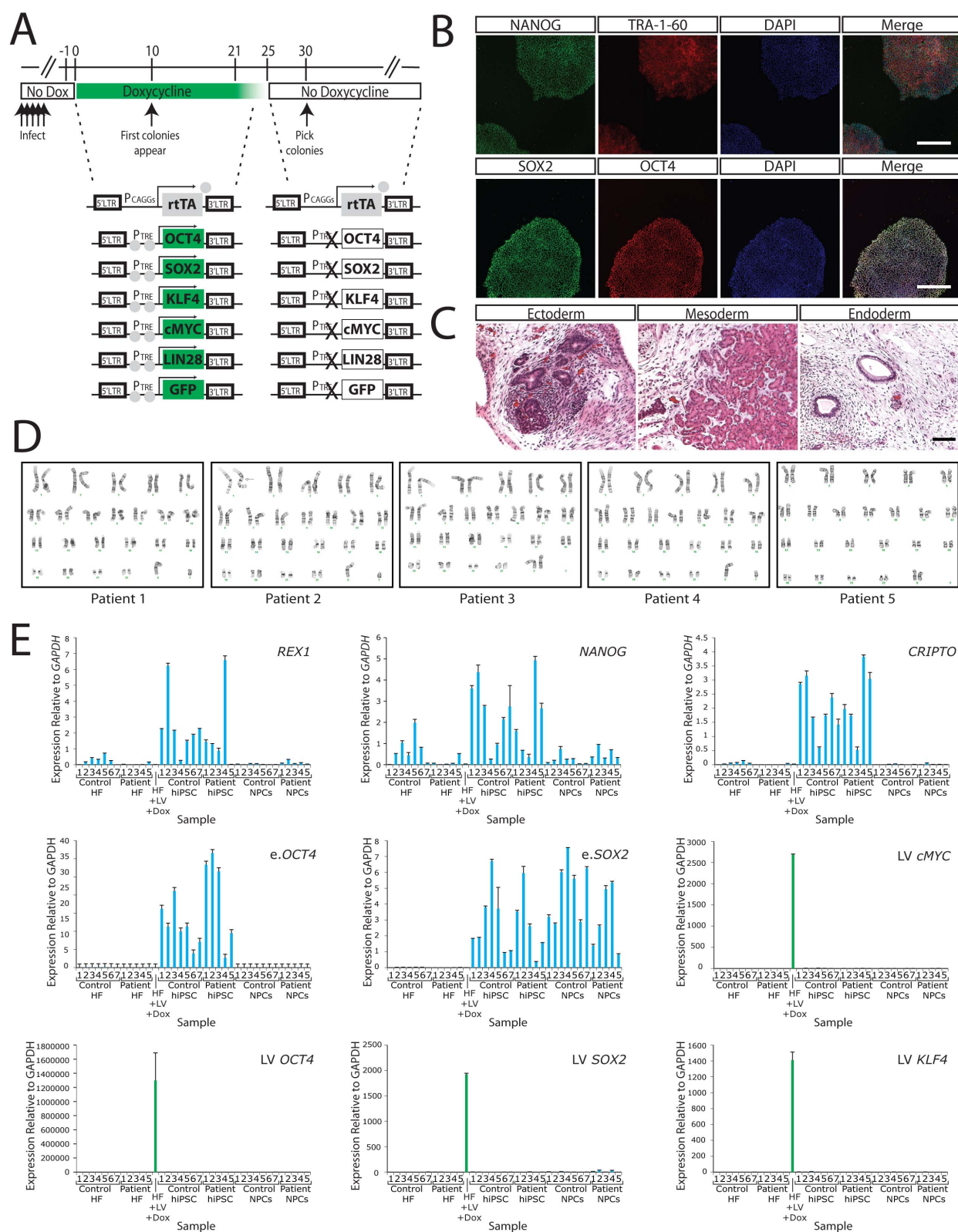
Gene	Forward	Reverse
GAPDH	TGTTGCCATCAATGACCCCTT	CTCCACGACGTACTCAGCG
Actin	AAACTGGAACGGTGAAGGTG	AGAGAAGTGGGGTGGCTTTT
β III-tubulin	ACCTCAACCACCTGGTATCG	TTCTTGGCATCGAACATCTG
GRIK1	AAAGGTTACGGAGTGGGAAC	TCTTTGTTGTCTTCCTCGGG
GRIN2A	CTTGCTTCAGTTTGTGGGTG	AGCCAGCATGTAGAATACGC
GRM1	AGCTTGTGACTTGGGATGG	TCGATGTTGCTCCACTCAAG
GRM7	CCCGAGAATTTTAACGAAGCC	ATGGAGATTGTAAGCGTGGTAG
ADCY7	CACTCCTTCAACTCCTTCCG	TCTCCAGTGCTTTCCATTCTG
ADCY8	TGCTGACTTCGATGAGTTGC	ATGTCCCCACTTGTCTTCAC
PDE3A	GCGATGAGTCAGGAGATACTG	AGAGGTGCTGAGTTATTTGGC
PDE4D	AGATAAGCCCCATGTGTGAC	CCTCCAAAGTGTCCAAAATATCC
PDE4DIP	CAGAAGGAGAGCATGGAACAG	ATGGTTCCTGGAAGGCAAG
PDE7B	TGCAATCCTTGTAGAATCTGGG	ACTAGGGATGGAATCTTTCTGTTG
PDE8A	GCATCCCCAAATCCCCAAATC	TCATTTTCGTCCAGTCCTTTCC
PDE10A	GAATTCTGGGCTGAGGGTG	GGGTAAGGGTTGTATAGCAGG
PRKCA	CACCATTCAAGCCCCAAAGTG	CATACGAGAACCCTTCAAAATCAG
RAP2A	GGCTTCATCCTCGTCTACAG	TCACTTTCCAGGTCCACTTTG
RAP1A	AGTGTATGCTCGAAATCCTGG	AACGTGGACTGAGCTGTAATAG
WNT7A	AAGGTCTTTGTGGATGCCC	GCACTTACATTCCAGCTTCATG
LRP5	CACTGCGAGACCGTACAG	GTCCGAGTTCAAATCCAGGTAG
AXIN2	CAGAGGGACAGGAATCATTCTG	AACCAACTCACTGGCCTG
TCF4	GAACCTGCAAGACACGAAATC	CTTCTCACGCTCTGCCTTC
LEF1	CATATGCAGCTTTATCCAGGC	CACCATGTTTCAGATGTAGGC
DISC1	ACTCACCTCATCCCCTCTC	CACACTTTTCTCCAAGTTCTG
NRG1	ACAAGGCACACAGATCCAAA	AAGGCCAAGGGGTCTTAGAG
NRG2	CAGAAGAGGGTCCTGACCAT	GAGGTGGTTGTGCATCTGCT
NRG3	AAAGGACCTGGTGGGCTATT	AGAATTCGGATCTGCTCCTG
ERBB4	GGAGTATGTCCACGAGCACAA	TCGAGTCGTCTTTCTTCCAG
PSD-95	ACAAGCGGATCACAGAGGAG	CAGATGTAGGGGCCTGAGAG

PSD-93	AGCCTGTTACAAGGCAGGAA	GCCATCCACCTCGTAGTCTC
CYP2C19	AAACGGATTTGTGTGGGAGA	ATAGAAGGGCGGGACAGAAG
GABRA6	AAGGCTATGACAATCGGCTGC	TCAGTCCAGGTCTGGCGGAAA
GABRB2	TGCCTGCATGATGGACCTAA	TCCTGTTACTGCATTATCAT
Lentiviral OCT4	CCCCTGTCTCTGTCACCACT	CCACATAGCGTAAAAGGAGCA
Lentiviral SOX2	ACACTGCCCCTCTCACACAT	CATAGCGTAAAAGGAGCAACA
Lentiviral cMYC	AAGAGGACTTGTTGCGGAAA	TTGTAATCCAGAGGTTGATTATCG
Lentiviral KLF4	GACCACCTCGCCTTACACAT	CATAGCGTAAAAGGAGCAACA
Endogenous OCT4	TGTACTCCTCGGTCCCTTTC	TCCAGGTTTTCTTTCCCTAGC
Endogenous SOX2	GCTAGTCTCCAAGCGACGAA	GCAAGAAGCCTCTCCTTGAA
Endogenous cMYC	CGGAACTCTTGTGCGTAAGG	CTCAGCCAAGGTTGTGAGGT
Endogenous KLF4	TATGACCCACACTGCCAGAA	TGGGAACTTGACCATGATTG
NANOG	CAGTCTGGACACTGGCTGAA	CTCGCTGATTAGGCTCCAAC
TDGF1 (CRIPTO)	AAGATGGCCCGCTTCTCTTAC	AGATGGACGAGCAAATTCCTG
ZFP42 (REX1)	AACGGGCAAAGACAAGACAC	GCTGACAGGTTCTATTTCCGC

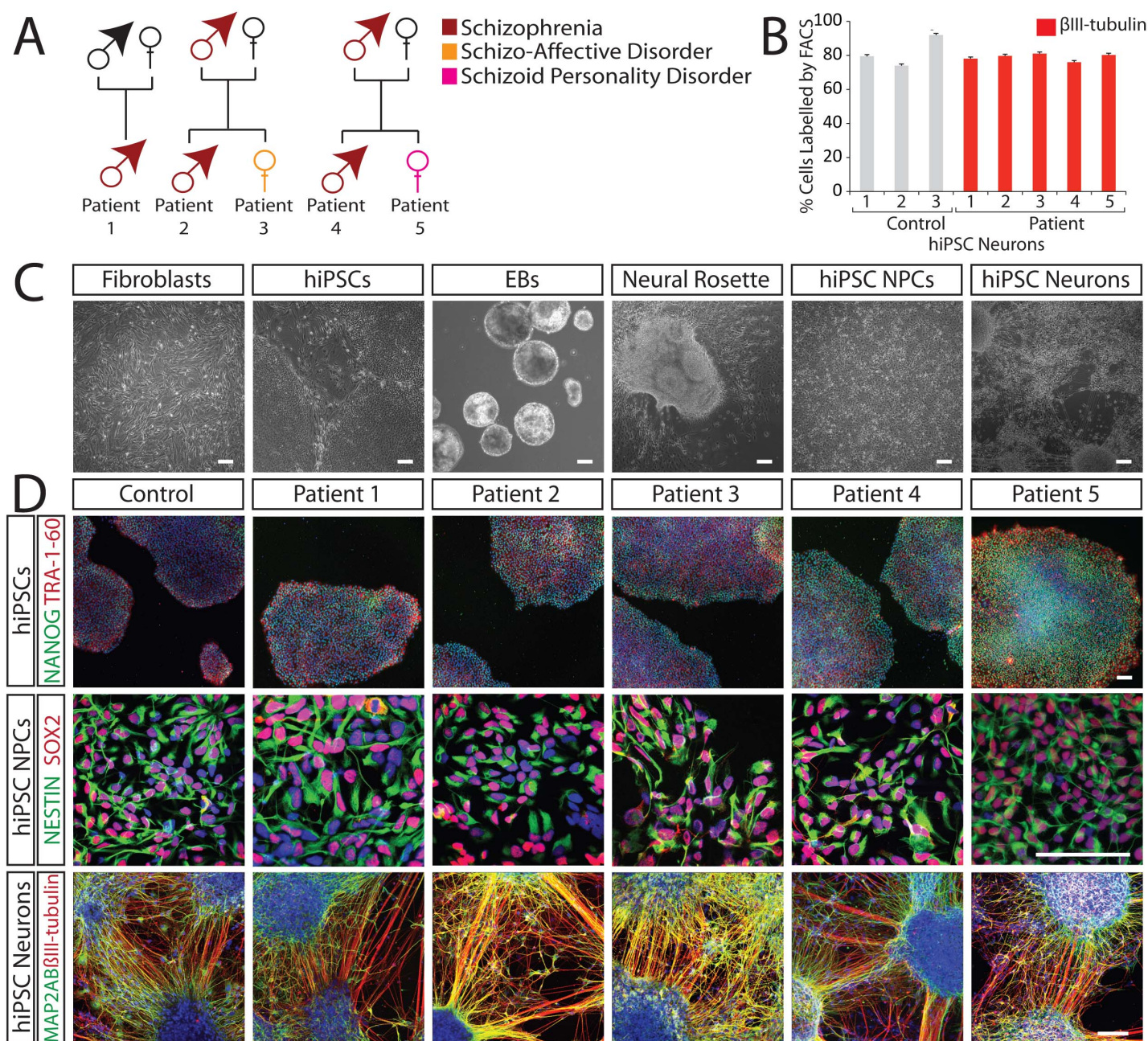


SI Fig. 1. Experimental schematic of hiPSC modeling of SCZD.

Control and SCZD fibroblasts were obtained from cell repositories and were reprogrammed with tetracycline-inducible lentiviruses expressing the transcription factors *OCT4*, *SOX2*, *KLF4*, *cMYC* and *LIN28*. hiPSCs were differentiated first to replicating NPCs and then to mature neurons. Assays for neuronal connectivity, neurite outgrowth, synaptic protein expression, synaptic density, electrophysiology, spontaneous calcium transient imaging and gene expression were used to compare control and SCZD hiPSC neurons.

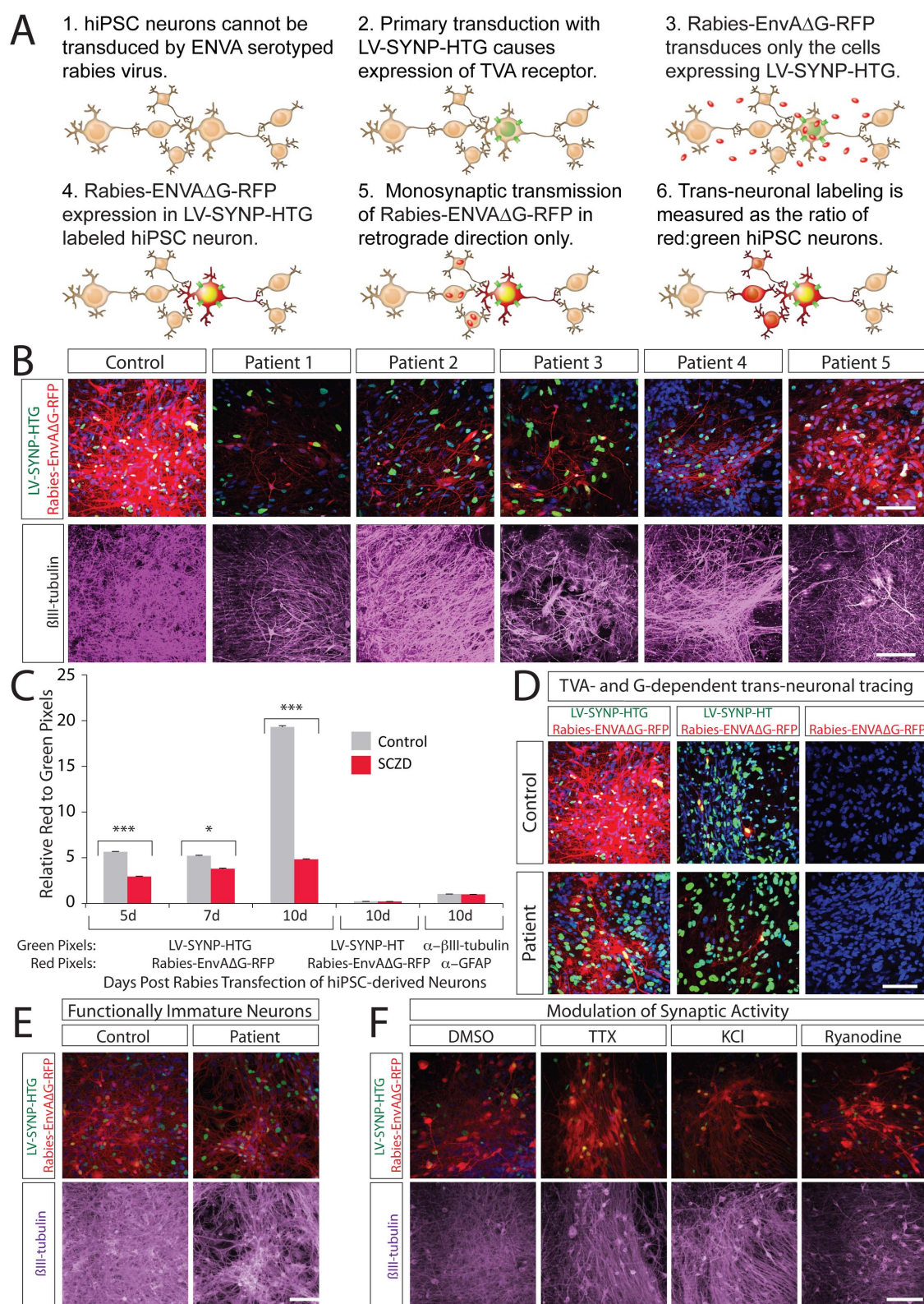


doxycycline-inducible expression of *OCT4*, *SOX2*, *KLF4*, *cMYC*, *LIN28* and GFP. **B, Top.** hiPSCs express NANOG (green) and TRA-1-60 (red). DAPI (blue). 400x, scale bar 80 μ m. **B, Bottom.** hiPSCs coexpress the transcription factors SOX2 (green) and OCT4 (red). DAPI (blue). 400x, scale bar 80 μ m. **C.** Representative teratoma assay for pluripotency. Teratomas containing all three germ layers were generated from every hiPSC-line utilized. 200x, scale bar 80 μ m. **D.** Karyotyping of hiPSCs from SCZD and control patients revealed that all patients had normal karyotypes except for patient 2, who had an inversion of chromosome 1 between 1p13.3 and 1q13 that was also present in the HF. **E.** qPCR analysis of endogenous (blue) and lentiviral (LV) (green) pluripotency gene expression in every control and SCZD HF, hiPSC and hiPSC NPC line was performed. Transcripts specific to lentiviral *OCT4*, *SOX2*, *KLF4* and *cMYC* were not detected in hiPSC or NPC cell lines.



SI Fig. 3. Patient-specific hiPSCs, NPCs and neurons.

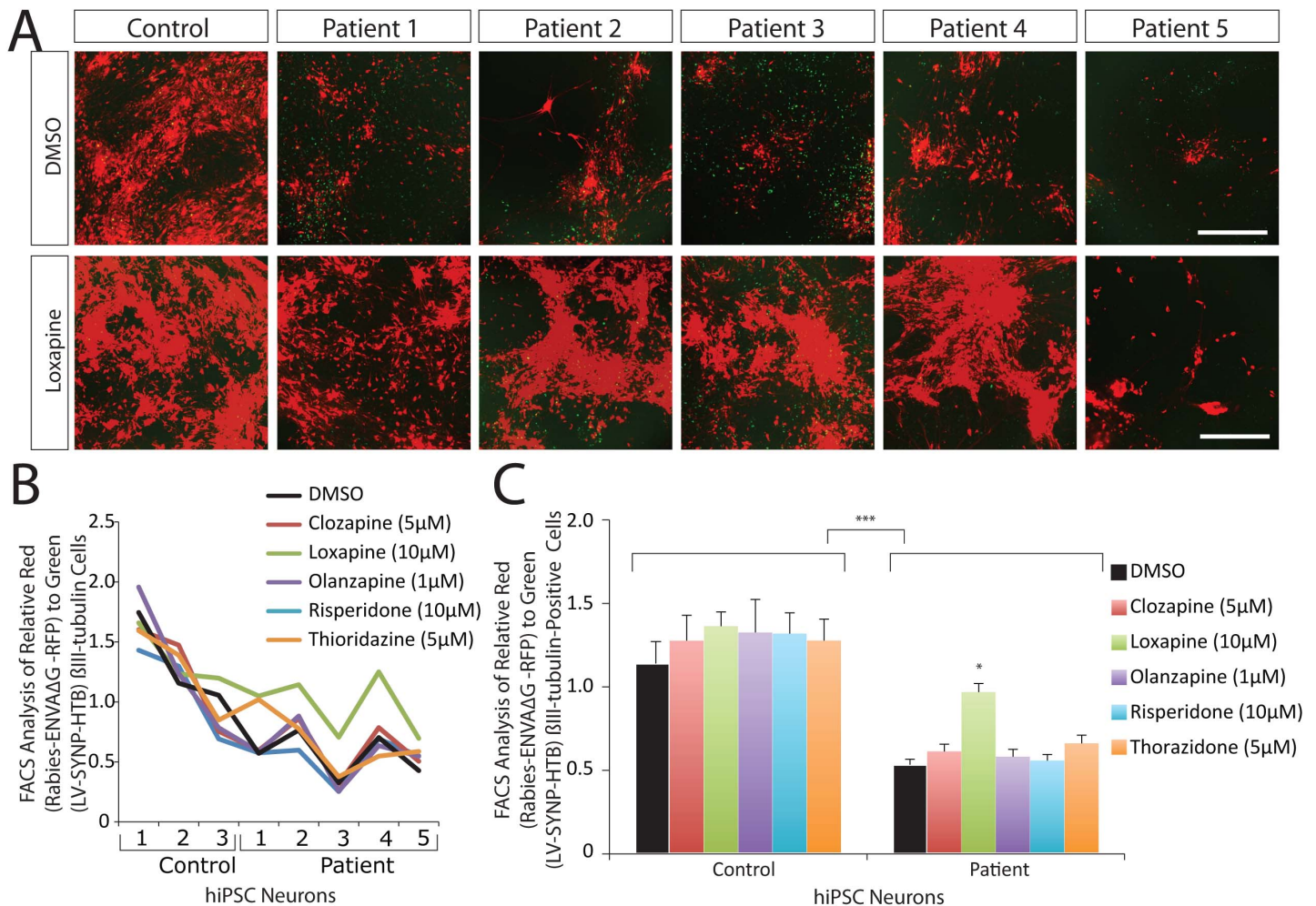
A. Family pedigrees of patients. **B.** FACS analysis shows ~80% of hiPSC NPC lines differentiate to β III-tubulin+ cells. Error bars are SE. **C.** Brightfield images of hiPSC neural differentiation. 100x, scale bar 100 μ m. **D, Top.** hiPSCs express NANOG (green) and TRA-1-60 (red). DAPI (blue). 100x, scale bar 100 μ m. **D, Middle.** hiPSC neural progenitor cells (NPCs) express NESTIN (green) and SOX2 (red). DAPI (blue). 600x, scale bar 100 μ m. **D, Bottom.** hiPSC neurons express β III-tubulin (red) and the dendritic marker MAP2AB (green). DAPI (blue). 200x, scale bar 100 μ m.



SI Fig. 4. Controls validating observations of decreased neuronal connectivity in SCZD hiPSC neurons.

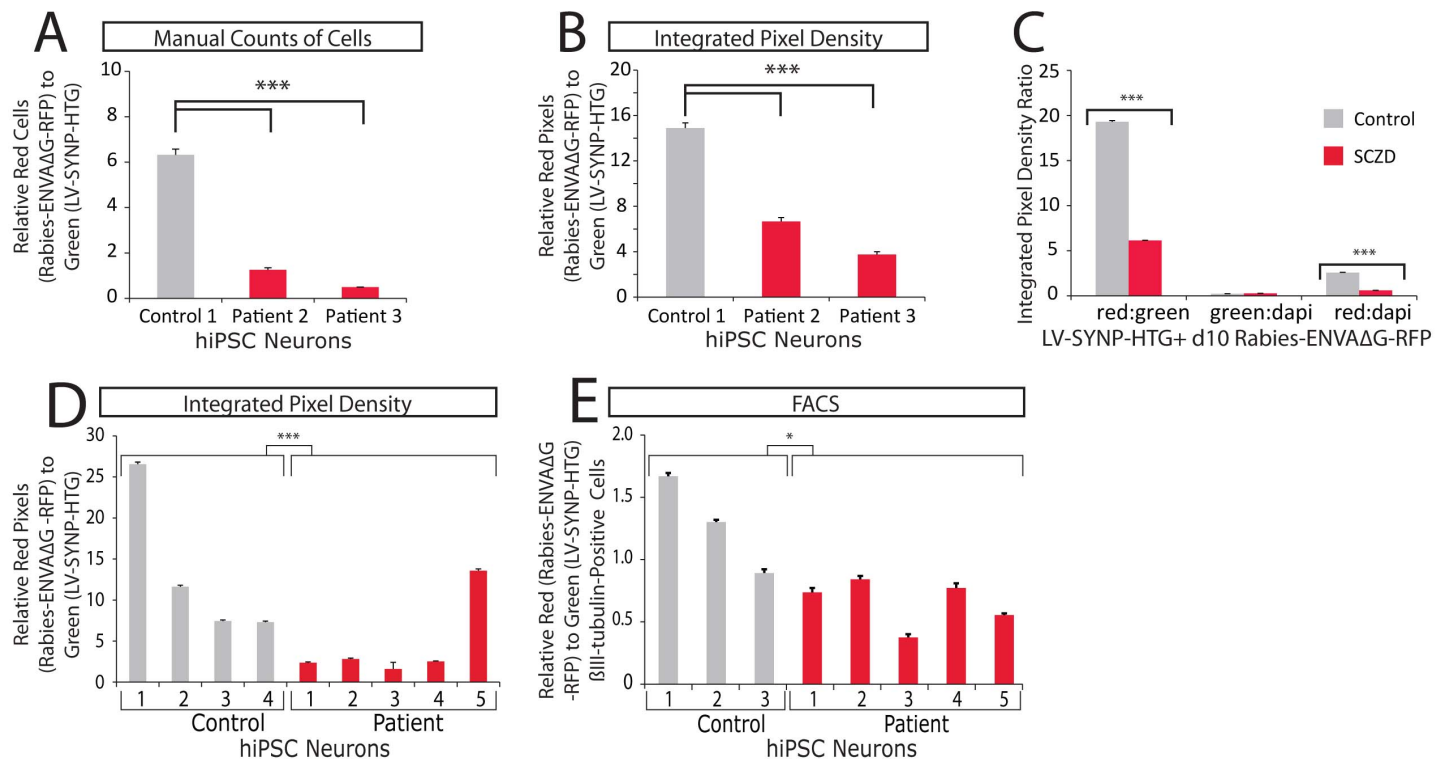
A. Schematic of rabies trans-neuronal tracing. **B.** Representative images of control and SCZD hiPSC neurons cotransduced with LV-SYNP-HTG and Rabies-ENVAΔG-RFP, 10

days post rabies transduction. All images were captured using identical laser power and gain settings. β III-tubulin staining (purple) of the field is shown below each panel. 400x, scale bar 80 μ m. **C.** Graph showing relative red pixels to green pixels of control and SCZD hiPSC neurons. hiPSC neurons were transduced with Rabies-ENVA Δ G-RFP and either LV-SYNP-HTG or LV-SYNP-HT and assayed either 5, 7 or 10 days post Rabies-ENVA Δ G-RFP transduction. Defects in SCZD hiPSC neuronal connectivity are more apparent with time post-rabies transduction, likely reflecting the signal amplification that occurs across the neuronal network when Rabies-ENVA Δ G-RFP travels from one SYNP-HTG neuron to a second SYNP-HTG neuron. Error bars are SE. Asterisks used as follows: * $p < 0.05$, *** $p < 0.001$. **D.** Representative images of control and SCZD hiPSC neurons sequentially transduced with LV-SYNP-HTG and Rabies-ENVA Δ G-RFP, or LV-SYNP-HT and Rabies-ENVA Δ G-RFP, or Rabies-ENVA Δ G-RFP alone. Images taken 10 days post rabies transduction. 400x, scale bar 80 μ m. **E.** Functionally immature one-month-old hiPSC neurons are capable of trans-neuronal tracing. 400x, scale bar 80 μ m. **F.** Representative images demonstrating that trans-neuronal tracing occurs even in the presence of three drugs known to affect synaptic transmission: tetrodotoxin, KCl and ryanodine. 400x, scale bar 80 μ m.



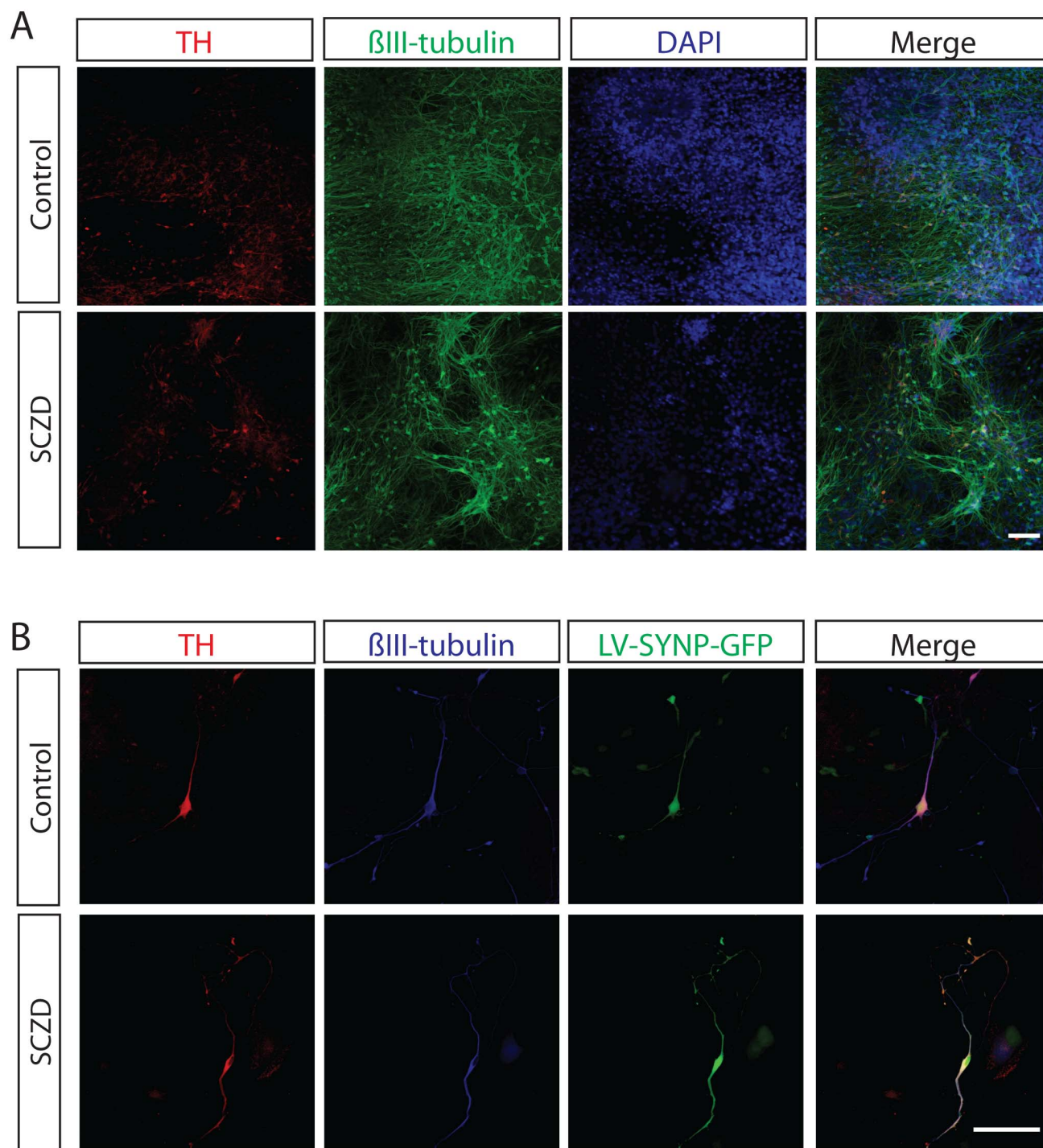
SI Fig. 5. Ability of antipsychotic medications to ameliorate decreased neuronal connectivity in SCZD hiPSC neurons.

A. Representative images showing improved neuronal connectivity in SCZD three-month-old hiPSC neurons following three-week culture with loxapine. Images taken 10 days post rabies transduction. 200x, scale bar 200 μ m. **B,C.** Graphs showing FACS analysis of control and SCZD three-month-old hiPSC neurons cultured with DMSO, Clozapine, Loxapine, Olanzapine, Risperidone and Thioridazine for the last three weeks of neuronal differentiation and sequentially transduced with LV-SYNP-HTG and Rabies-ENVAΔG-RFP. Only β III-tubulin-positive events were counted. Error bars are SE. Asterisk used as follows: *** $p < 0.001$.



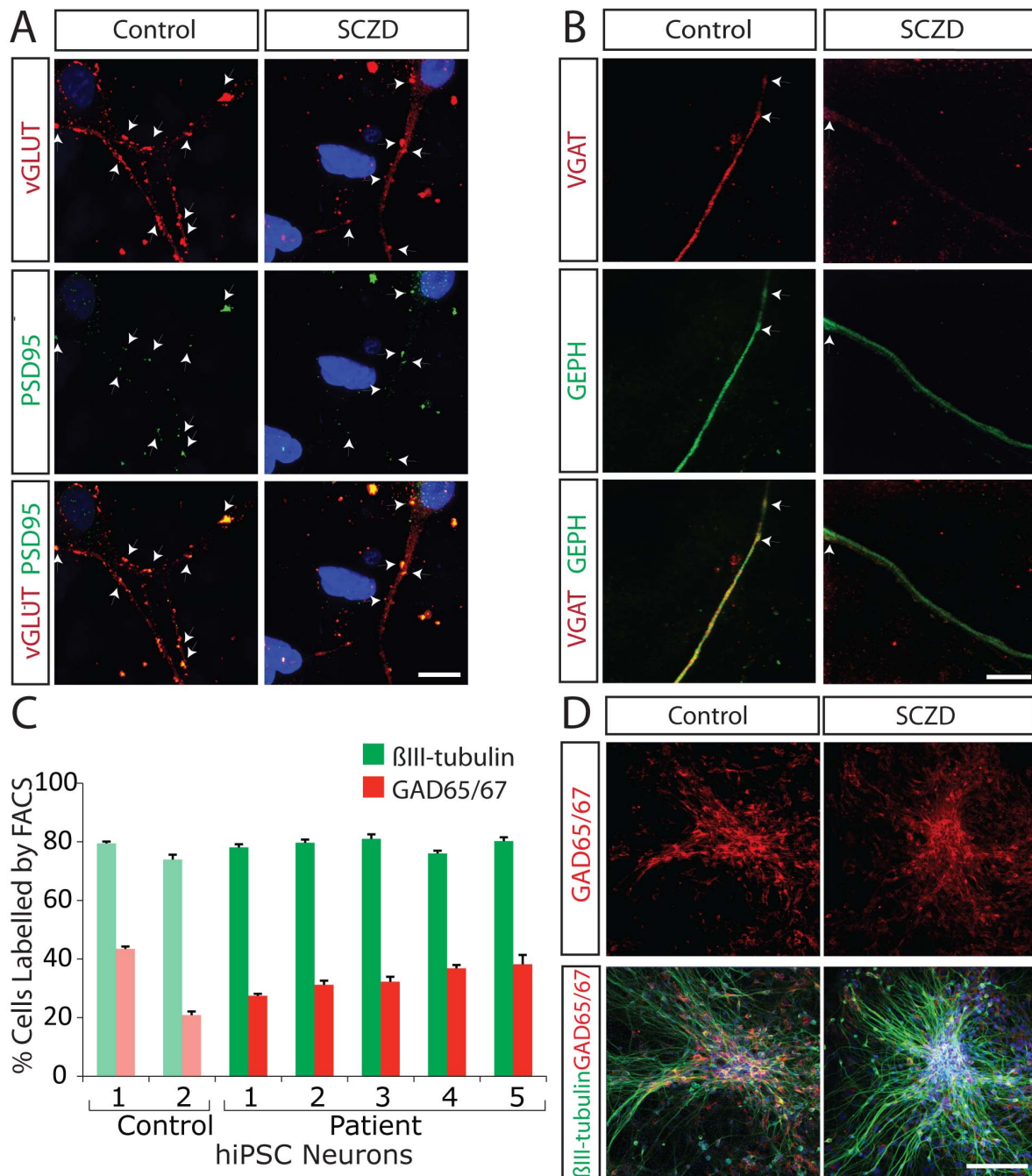
SI Fig. 6. Additional controls validating observations of decreased neuronal connectivity in SCZD hiPSC neurons.

A,B. Comparison of manual counts (**A**) of Rabies-ENVAΔG-RFP-labeled and LV-SYNP-HTG-labeled cells and integrated pixel density ratios (**B**) of Rabies-ENVAΔG-RFP-positive pixels to LV-SYNP-HTG-positive pixels show very similar results between control and SCZD hiPSC neurons. **C.** Graph showing relative red:green, green:dapi and red:dapi pixels of averaged control and SCZD hiPSC neurons, when cultured following sequential transduction with LV-SYNP-HTG and Rabies-ENVAΔG-RFP for 10 days. There was no significant difference in the green:dapi pixel ratio between control and SCZD hiPSC neurons, but there was a significant decrease in the red:green and red:dapi pixel ratios between control and SCZD hiPSC neurons. **D.** Graph showing relative red:green pixels of averaged control and SCZD hiPSC neurons, when cultured following sequential transduction with LV-SYNP-HTG and Rabies-ENVAΔG-RFP for 10 days. **E.** Graph showing FACS analysis of control and SCZD three-month-old hiPSC neurons cultured on astrocytes and sequentially transduced with LV-TVA-H2BGFP and Rabies-ENVAΔG-RFP. Only βIII-tubulin-positive events were counted. Error bars are SE. Asterisks used as follows: * $p < 0.05$, *** $p < 0.001$.



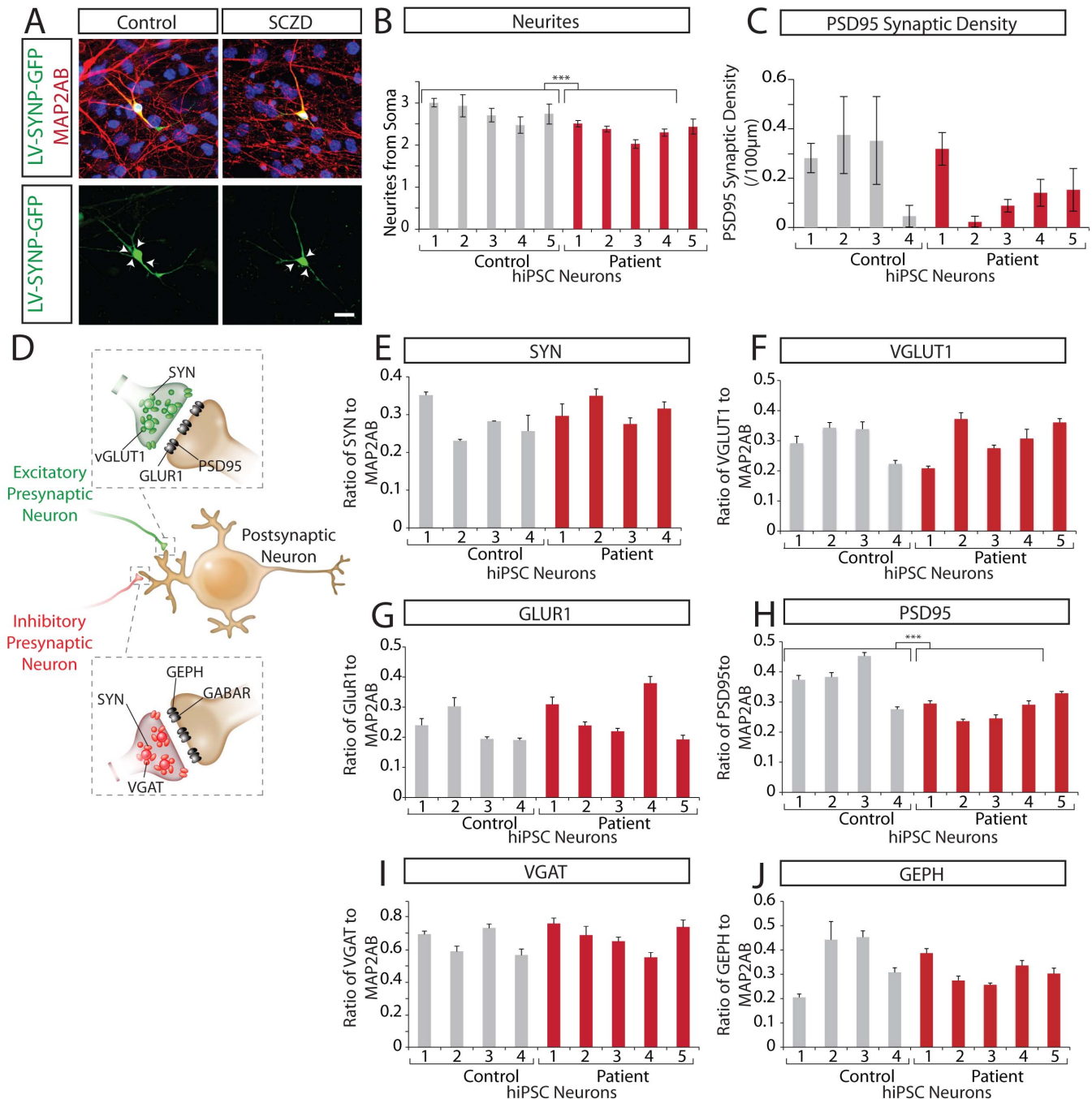
SI Fig. 7. Dopaminergic TH-positive SCZD hiPSC neurons.

A. Representative images showing TH-positive (red) neurons in three-month-old hiPSC control and SCZD neural populations, costained with β III-tubulin (green) and DAPI (blue). 200x, scale bar 80 μ m. **B.** Representative images showing single TH-positive neurons (red) in three-month-old hiPSC control and SCZD neural populations, costained with β III-tubulin (blue). Mature neurons are marked with a LV-SYNP-GFP reporter. 400x, scale bar 80 μ m.



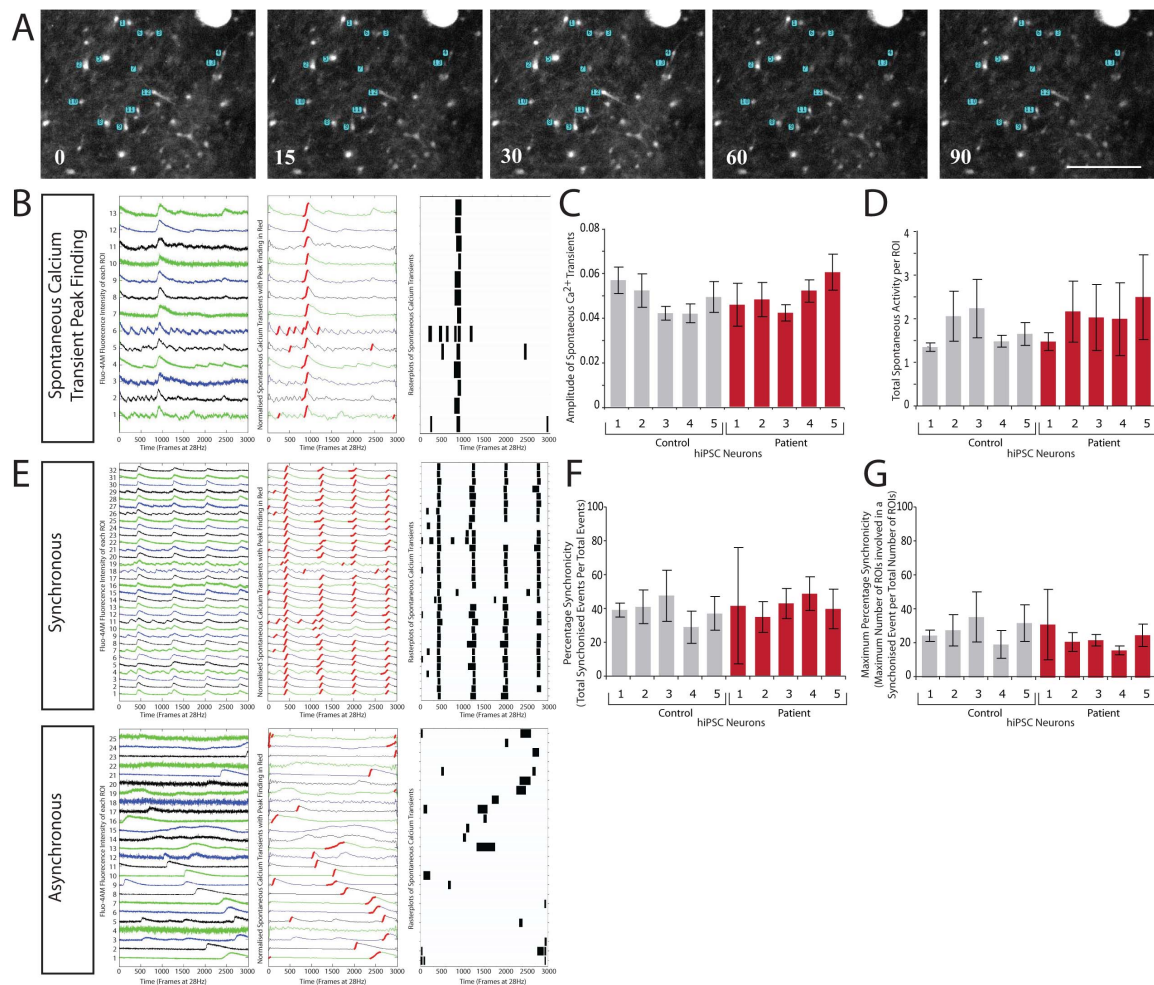
SI Fig. 8. Synaptic protein levels in control and SCZD hiPSC neurons.

A. Representative images showing colocalization (indicated by white arrowheads) of VGLUT1-positive (red) and PSD95-positive (green) synaptic densities on neuronal dendrites. 2400x, scale bar 10 μ m. **B.** Representative images showing colocalization (indicated by white arrowheads) of VGAT-positive (red) and GEPH-positive (green) synaptic densities on control and SCZD hiPSC neurons. 2400x, scale bar 10 μ m. **C.** FACS analysis shows ~30% of hiPSC NPC lines differentiate to GAD65/67+ cells. Error bars are SE. **D.** Representative images showing colocalization of GAD65/67-positive (red) and β III-tubulin-positive (green) in control and SCZD hiPSC neurons. 200x, scale bar 200 μ m.



SI Fig. 9. Decreased neurites and synaptic protein levels in SCZD hiPSC neurons.

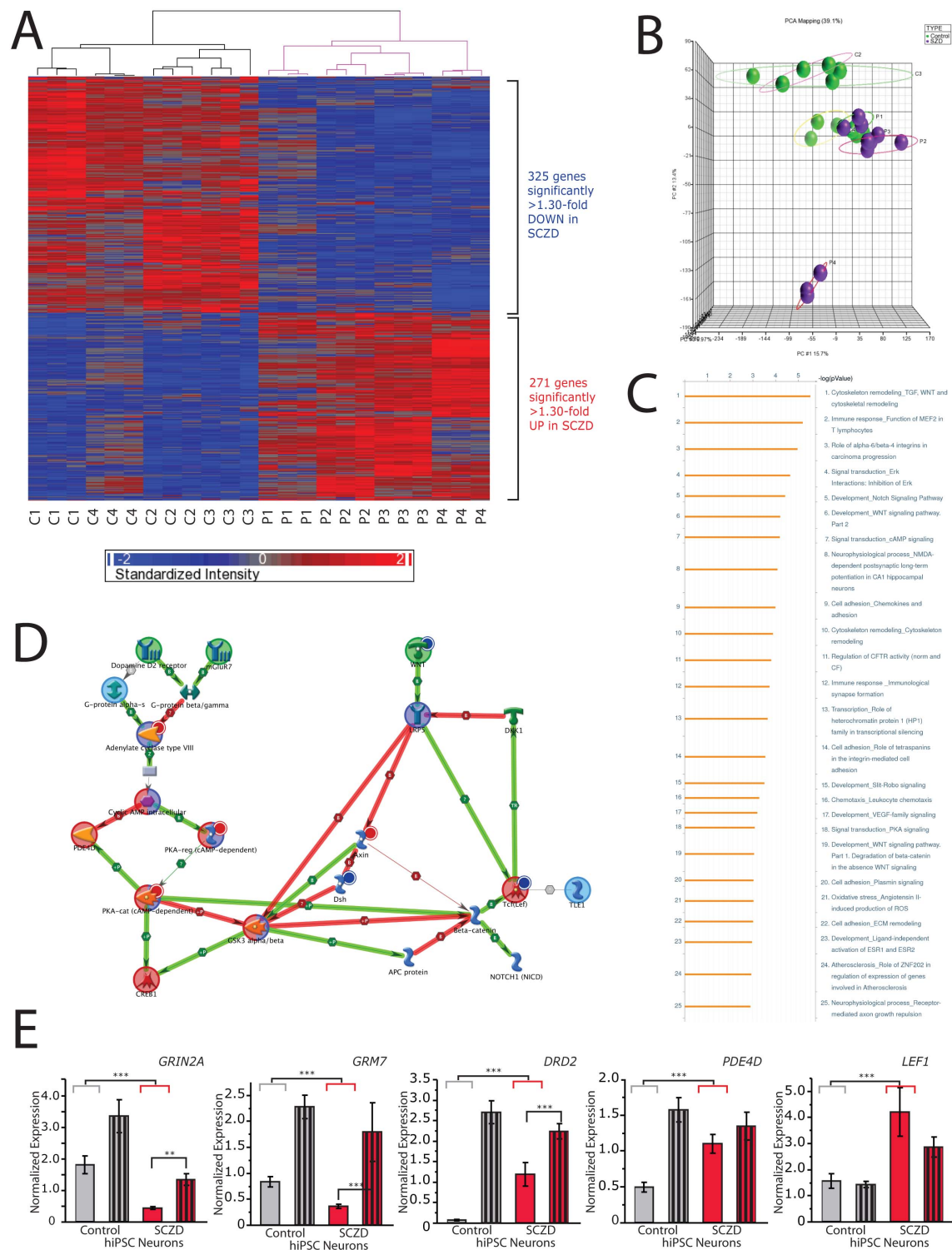
A. Representative images of rare labeling of individual hiPSC neurons by low titer LV-SYNP-GFP. 800x, scale bar 20 µm. Neurites indicated by white arrows. **B.** Graph showing decreased neurites in SCZD hiPSC neurons. **C.** Graph showing a trend of decreased PSD95 synaptic density in SCZD hiPSC neurons. **D.** Schematic of synaptic localization of various synaptic proteins. **E–J.** Graphs of synapse protein levels relative to MAP2AB for control and SCZD hiPSC neurons. Synaptic proteins assayed include SYN (**E**), VGLUT1 (**F**), GLUR1 (**G**), PSD95 (**H**), VGAT (**I**) and GEPH (**J**). Error bars are SE. Asterisks used as follows: *** $p < 0.001$.



SI Fig. 10. Calcium transient analysis shows no difference in basal spontaneous activity between control and SCZD hiPSC neurons.

A. Following incubation with the calcium binding dye Fluo-4AM, hiPSC neurons show spontaneous changes in Fluo-4AM fluorescence. Frames of a calcium time-lapse movie of a control hiPSC neuron culture at 0, 15, 30, 60 and 90 seconds. 13 ROIs with fluctuating calcium levels throughout movie are numbered. 100x, scale bar 400 μm . **B.** Calcium traces (**B, Left**), plotting fluorescent intensity versus time, for individual ROIs in the movie shown above. One trace is shown per ROI. Spike events (**B, Middle**) are automatically identified throughout 3,000 frames of a 90-second movie. The red outline indicates spike events, which are identified based on the amplitude and slope (dF/F) of the calcium trace. Raster plots (**B, Right**) of spike events occurring at each ROI over time. **C.** Graph showing no difference between the spike amplitude of spontaneous calcium transients of control and SCZD hiPSC neurons. **D.** Graph showing no difference between the total numbers of spontaneous calcium transients per total number of ROIs in cultures of control and SCZD hiPSC neurons. **E.** Representative analysis of synchronized and unsynchronized spontaneous calcium transient activity. Calcium traces (**E, Left**), spike events (**E, Middle**) and raster plots (**E, Right**) of spike events occurring at each ROI over time are shown. **F.** Graph showing no change in percentage synchronicity (total synchronized events per total events) between control and SCZD hiPSC neurons. **G.** Graph showing no change in maximum percentage synchronicity (maximum number of

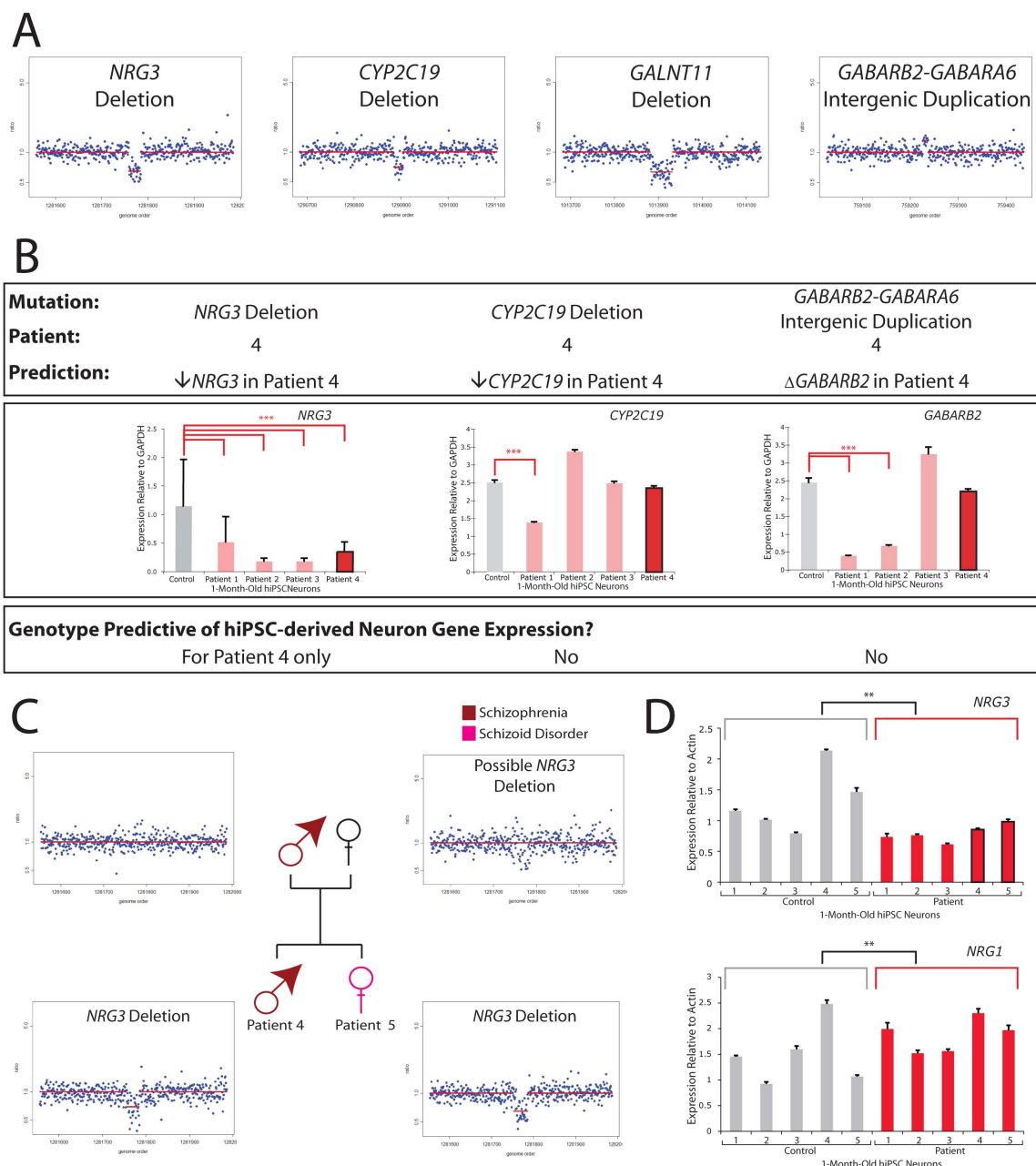
ROIs involved in a synchronized event per total number of ROIs) between control and SCZD hiPSC neurons. Error bars are SE.



SI Fig. 11. Microarray gene analysis of control and SCZD hiPSC neurons.

A. Heat map showing differential expression of 596 unique genes (271 upregulated and 325 downregulated) showing greater than 1.30-fold expression changes between SCZD and control hiPSC neurons **B.** Principle component analysis of gene expression of three independent differentiations of hiPSC neurons from each of four control and four SCZD patients. **C.** GO analysis revealed the pathways most significantly affected in SCZD

hiPSC neurons. **D.** Pathway map showing how perturbations in glutamate receptor, dopamine receptor, cAMP and WNT gene expression may be linked in SCZD. Green indicates activating and red indicates repressive interactions. **E.** qPCR validation of altered expression of *GRIN2A*, *GRM7*, *DRD2*, *PDE4D*, and *LEF1*, as well as response to three weeks of treatment with Loxapine (striped bars) in six-week-old hiPSC neurons. Asterisks used as follows: *** $p < 0.001$.



SI Fig. 12. Genotyping of patients and gene expression analysis in hiPSC neurons.

A. CNV analysis of SCZD patients. No CNVs in genes already implicated in SCZD or BD were identified in families 1 (patient 1) or 2 (patients 2 and 3). Patient 4 and 5 (family 3) showed numerous mutations, including deletion of the first exon of *NRG3* isoform 2, deletions of *CYP2C19* and *GALNT11*, and intergenic duplication of *GABARB2-GABARA6*. **B.** qPCR analysis for three candidate genes identified by CNV analysis reveals that genotype did not accurately predict gene expression changes in 1-month-old hiPSC neurons. **C.** CNV data showing the *NRG3* deletion in patients 4 and 5 was likely inherited from the unaffected mother. **D.** qPCR reveals decreased *NRG3* and increased *NRG1* expression in 1-month-old hiPSC neurons in all patients relative to controls, irrespective of CNV status. Error bars are SE. Asterisks used as follows: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.