Supplemental Methods

Tissue Preparation

The gray-white matter boundary of prefrontal area 9 in a tissue block from each subject was carefully scored with a scalpel blade where the gray matter had uniform thickness and the gray-white matter boundary was easily delineated. The scored gray matter region of the tissue block was then digitally photographed, and the number of tissue sections (40 μm) required to collect ~30 mm^3 of gray matter was determined for each subject. The calculated number of required tissue sections for each subject was then cut by cryostat, and gray matter was separately collected into a tube containing TRIzol reagent in a manner that ensured minimal white matter contamination and excellent RNA preservation.

Quantitative PCR

cDNA samples from both subjects in the same pair were processed together on a single quantitative PCR plate, and a different plate was utilized for each of the 42 subject pairs. Four replicate measures were performed for each transcript for each subject with a detection threshold for each gene applied consistently for all subjects. The mean coefficient of variance (±SD) of the replicate measures were parvalbumin 0.032 (±0.015); somatostatin 0.023 (±0.012); calretinin 0.045 (±0.025); Lhx6 0.032 (±0.021); and Sox6 0.040 (±0.020). Control studies in which the cDNA template was not included in the qPCR reaction resulted in a complete lack of amplification.

In Situ Hybridization

For each subject within a pair, 3 sections separated by at least 320 μm were chosen and sections with the same rostral-caudal level were paired. One pair of sections from each subject pair was processed side by side in an in situ hybridization run. Following fixation with 4% paraformaldehyde in 0.1M phosphate-buffered saline, sections were hybridized with ^{35}S–labeled riboprobes in a standard hybridization buffer at 56°C for 16 hours. Sections were subsequently washed in a solution containing 50% formamide at 63°C, treated with RNase A at 37°C, and washed in 0.1×SSC (150 mM sodium chloride, 15mM sodium citrate) at 66°C. Sections were then dehydrated through a graded ethanol series, air-dried, and exposed to BioMax MR film (Eastman Kodak, Rochester, New York) for five days. Sections were then coated with NTB emulsion (Eastman Kodak), exposed for 28 days at 4°C, developed with D-19 developer (Eastman Kodak), and counterstained with cresyl violet.

Film Analysis of Lhx6 mRNA Expression

Levels of Lhx6 mRNA expression were quantified using a Microcomputer Imaging Device system (Imaging Research Inc, London, Ontario, Canada) without knowledge of diagnosis or subject number by random coding of film autoradiograms. Optical density was measured in the gray matter of prefrontal area 9 and expressed as nCi/g of tissue by reference to radioactive carbon 14 standards (American Radiolabeled Chemicals, St Louis) exposed on the same film. Lhx6 mRNA expression in cortical layers was measured in approximately 1-mm-wide cortical traverses extending from the pial surface to the white matter. Three cortical traverses per section (9 traverses per subject) were placed in locations where the tissue section was cut perpendicular to the pial surface as determined by the presence of pyramidal neurons with vertically oriented apical dendrites in adjacent Nissl-stained sections. Each traverse was

divided into 50 equal bins parallel to the pial surface, and the optical density was determined for each bin. These bins were then combined into six zones (i.e., bins 1–5, 6–10, 11–25, 26–30, 31–40, and 41–50) that approximated the laminar boundaries in the prefrontal cortex and corresponded to cortical layers 1-6, respectively (2;7).

Cellular Grain Counting Analysis of Lhx6 mRNA Expression

Evaluation of Lhx6 mRNA expression at the cellular level was performed by measuring silver grain accumulation in emulsion-dipped, Nissl-counterstained sections. Using the MCID system coupled to a microscope equipped with a motor-driven stage, two regions of interest in layers 3 and 6, respectively, were defined in 1-mm-wide cortical traverses (3/section, 9/subject). The layer 3 region of interest extended from 20% to 50% of the distance from the pial surface to the white matter, and the layer 6 region of interest extended from 80% to 100% (2;7). Four sampling frames (120×170 μm) were placed in each region of interest such that the centers of the frames were equidistant from the borders of the region of interest and the center of the next frames.

Within each frame, a circle with a fixed diameter of 22 μm (380 μm^2) was placed over each Nissl-stained neuronal nucleus under brightfield illumination using an unbiased inclusion and exclusion rule (Figure 3A), and then the number of grains within the circle was counted in the corresponding darkfield image (Figure 3B). Because RNase A treatment during the in situ hybridization procedure degrades Nissl-stainable substances within the cytoplasm, it was not possible to draw contours around the soma of neurons. In a previous study, we determined that the largest cross-sectional area of human prefrontal cortical GABA neurons is ~400 μm^2 (8). Thus, in order to include the maximal number of grains/neuron, we utilized a fixed 22 μm

diameter (380 μm^2) circle, which would include most grains from the largest interneurons as previously described (5). Using the same sampling frames, background grain density was determined for each section by counting the number of grains in the 22 μm diameter circles placed over glial nuclei. The smaller size and intense cresyl violet staining of glial nuclei distinguished them from the larger, more faintly stained neuronal nuclei (Figure 3A). Total neuron numbers sampled in layer 3 were 8,081 and 8,018 for control and schizophrenia groups, respectively. Total neuron numbers sampled in the layer 6 were 8,237 and 7,991 for control and schizophrenia groups, respectively.

As illustrated in Figure 3A, sometimes two neurons were located close enough to each other such that the two respective 22 μm diameter sampling circles partially overlapped, raising the possibility of sampling the same grain twice for two different neurons. Therefore, we established the following *a priori* sampling criteria to avoid duplicate sampling of grains: When one neuron was enriched in grains and the other neuron was not, we first sampled grain density over the labeled neuron using the sampling circle. We then sampled grain density over the unlabeled neuron excluding the overlapping region with the labeled neuron. If two closely neighbored neurons both appeared enriched with grains, we drew a line between the two points at which the two sampling circles intersected and grains were counted for each neuron in the area defined by the respective sampling circle and this line. However, Lhx6-containing neurons represent a small proportion of total cortical cells because Lhx6 is only expressed by parvalbumin and somatostatin neurons and not other GABA neurons, pyramidal neurons, or glial cells (1;3;6). Consequently, we rarely encountered a situation where two neurons enriched with grains were located close enough to each other such that sampling circles overlapped. Finally, for

the background calculations, the 22 μm diameter circle was only placed over glial nuclei that did not overlap with neuronal nuclei.

Grain density per neuron (i.e. number of grains within the 22 μm diameter circle) was calculated for all neurons and a threshold of grain density per neuron was established to indentify specifically labeled neurons (5). For both control and schizophrenia groups, histograms of the grain density per neuron ($\log_{10}$ transformed) of sampled neurons revealed a distribution that appear to be bimodal, representing the modes of unlabeled neurons and specifically labeled neurons (4). Similar histograms of only neurons with grain density >5× background showed a distribution that appeared normal and unimodal in both subject groups. Therefore, the threshold of >5× background provided a cutoff at the point of rarity in the distribution of sampled neurons and permitted the identification of specifically labeled neurons, referred to as Lhx6 mRNA-positive neurons. For each subject, the density of Lhx6 mRNA-positive neurons and grain density per positive neuron were determined in layers 3 and 6.

Antipsychotic-exposed Monkeys

The expression levels of the reference genes (beta actin, cyclophilin A, and GAPDH) did not differ between haloperidol-exposed, olanzapine-exposed, and placebo-exposed monkeys ($F_{(2,10)} \leq 1.3$, $p \geq 0.32$).

References

1. Cobos I, Long JE, Thwin MT, Rubenstein JL: Cellular patterns of transcription factor expression in developing cortical interneurons. Cereb Cortex 2006; 16 Suppl 1:i82-i88

2. Eggan SM, Hashimoto T, Lewis DA: Reduced cortical cannabinoid 1 receptor messenger RNA and protein expression in schizophrenia. Arch Gen.Psychiatry 2008; 65:772-784

3. Georgiev, D, Minabe, Y, Lewis, DA, and Hashimoto, T. Identification of molecular markers for parvalbumin- or somatostatin-positive GABA neurons in the human dorsolateral prefrontal cortex. Society for Neuroscience Abstract, 2010.

4. Gerfen CR, McGinty JF, Young WS: Dopamine differentially regulates dynorphin, substance P, and enkaphalin expression in striatal neurons: in situ hybridization histochemical analysis. J Neurosci. 1991; 11:1016-1031

5. Hashimoto T, Volk DW, Eggan SM, Mirnics K, Pierri JN, Sun Z, Sampson AR, Lewis DA: Gene expression deficits in a subclass of GABA neurons in the prefrontal cortex of subjects with schizophrenia. J Neurosci 2003; 23:6315-6326

6. Liodis P, Denaxa M, Grigoriou M, Akufo-Addo C, Yanagawa Y, Pachnis V: Lhx6 activity is required for the normal migration and specification of cortical interneuron subtypes. J Neurosci 2007; 27:3078-3089

7. Maldonado-Aviles JG, Curley AA, Hashimoto T, Morrow AL, Ramsey AJ, O'Donnell P, Volk DW, Lewis DA: Altered markers of tonic inhibition in the dorsolateral prefrontal cortex of subjects with schizophrenia. Am J Psychiatry 2009; 166:450-459

8. Volk DW, Austin MC, Pierri JN, Sampson AR, Lewis DA: Decreased glutamic acid decarboxylase67 messenger RNA expression in a subset of prefrontal cortical gamma-aminobutyric acid neurons in subjects with schizophrenia. Arch Gen Psychiatry 2000; 57:237-245

Supplemental Figure Legends

Supplemental Figure 1. Sampling strategy for grain counting analysis of Lhx6 mRNA expression. (A) Brightfield image of a representative cortical traverse from a prefrontal cortical tissue section counterstained with cresyl violet. (A') Darkfield image of an adjacent emulsion-dipped section hybridized with an antisense ^{35}S-labeled probe for Lhx6 mRNA. Lhx6 mRNA positive neurons are detected as accumulations of silver grains. Two regions of interest (large dashed rectangles) were placed in layers 3 and 6, respectively. Four 120 × 170 μm sampling frames (smaller dashed rectangles) were placed in each region of interest such that the top or bottom edges of each frame were equidistant to each other and to the borders of the region of interest. Circles with a diameter of 22 μm were centered over all neuronal nuclei in every counting frame, and the number of grains in each circle was counted in the corresponding darkfield image (Figure 3).

Supplemental Figure S2. Effects of demographic and postmortem tissue characteristics on target mRNA levels. Pearson correlation analysis revealed a significant relationship between somatostatin mRNA level and age and between Lhx6 mRNA level and freezer storage time.

Supplemental Figure S3. Correlations of Lhx6 and Sox6 mRNA levels in schizophrenia and healthy comparison subjects. Consistent with their colocalization to the same interneuron subpopulations, Lhx6 and Sox6 mRNA levels were strongly correlated in healthy subjects ($r=0.56$, $p<.001$), but not in schizophrenia subjects ($r=0.06$, $p=.71$), which is consistent with a disease effect on Lhx6 but not Sox6.

Supplemental Figure S4. Effects of substance abuse and psychotropic medications on Lhx6 mRNA levels in schizophrenia. Schizophrenia subjects were divided into subgroups based on the presence of substance abuse or dependence at time of death and antipsychotic, antidepressant, or benzodiazepine and valproic acid medications at time of death. Data shown are mean Lhx6 mRNA levels for each schizophrenia subgroup, open circles indicate data points from individual schizophrenia subjects, and number of subjects in each subgroup are provided in each column. No statistically significant differences were found for any of the schizophrenia subgroups.

Supplemental Figure S5. Lhx6 mRNA levels in prefrontal area 9 of antipsychotic-exposed monkeys. qPCR analysis revealed no statistically significant differences in Lhx6 mRNA expression in monkeys chronically exposed to either haloperidol or olanzapine compared to placebo. Mean values are shown as horizontal black bars.

Supplemental Table S1. Demographic, postmortem, and clinical characteristics of human subjects used in this study.

Healthy Comparison Subjects									Subjects with Schizophrenia											
Pair	Case	Sex/ Race	Age	PMI[a]	Storage Time[b]	RIN	pH	Cause of Death	Case	DSM IV diagnosis	Sex/ Race	Age	PMI[a]	Storage Time[b]	RIN	pH	Cause of Death	Previously Studied for PV, SST or CR mRNA	Antipsychotic ATOD	Antidepressant ATOD	Benzodiazepine/ VPA ATOD
1	592	M/B	41	22.1	174	9.0	6.7	ASCVD	533	Chronic undifferentiated schizophrenia	M/W	40	29.1	184	8.4	6.8	Accidental Asphyxiation	PV, SST, CR	Y	N	N
2	567	F/W	46	15.0	178	8.9	6.7	Mitral valve prolapse	537	Schizoaffective disorder	F/W	37	14.5	183	8.6	6.7	Suicide by hanging	PV, SST, CR	N	N	N
3	516	M/B	20	14.0	185	8.4	6.9	Homicide by gun shot	547	Schizoaffective disorder	M/B	27	16.5	182	7.4	7.0	Heat Stroke	PV, SST, CR	Y	Y	Y
	*1406**	*M/B*	*27*	*14.6*	*56*	*8.3*	*6.3*	*Peritonitis*													
4	630	M/W	65	21.2	168	9.0	7.0	ASCVD	566	Chronic undifferentiated schizophrenia; AAR	M/W	63	18.3	179	8.0	6.8	ASCVD	PV, SST, CR	Y	Y	Y
5	604	M/W	39	19.3	172	8.6	7.1	Hypoplastic coronary artery	581	Chronic paranoid schizophrenia; ADC; OAC	M/W	46	28.1	176	7.9	7.2	Accidental combined drug overdose	PV, SST, CR	Y	N	Y
6	546	F/W	37	23.5	182	8.6	6.7	ASCVD	587	Chronic undifferentiated schizophrenia; AAR	F/B	38	17.8	175	9.0	7.0	Myocardial hypertrophy	PV, SST, CR	Y	N	Y
7	551	M/W	61	16.4	181	8.3	6.6	Cardiac tamponade	625	Chronic disorganized schizophrenia; AAC	M/B	49	23.5	169	7.6	7.3	ASCVD	PV, SST, CR	Y	Y	N
8	685	M/W	56	14.5	161	8.1	6.6	Hypoplastic coronary artery	622	Chronic undifferentiated schizophrenia	M/W	58	18.9	169	7.4	6.8	Right MCA infarction	PV, SST, CR	N	N	N
9	681	M/W	51	11.6	162	8.9	7.2	Hypertrophic cardio-myopathy	640	Chronic paranoid schizophrenia	M/W	49	5.2	167	8.4	6.9	Pulmonary embolism	PV, SST, CR	Y	Y	N
10	806	M/W	57	24.0	141	7.8	6.9	Pulmonary embolism	665	Chronic paranoid schizophrenia; ADC	M/B	59	28.1	165	9.2	6.9	Intestinal hemorrhage	PV, SST, CR	Y	Y	N
11	822	M/B	28	25.3	138	8.5	7.0	ASCVD	787	Schizoaffective disorder; ODC	M/B	27	19.2	144	8.4	6.7	Suicide by gun shot	PV, SST, CR	Y	N	N
12	727	M/B	19	7.0	155	9.2	7.2	Trauma	829	Schizoaffective disorder; ADC; OAR	M/W	25	5.0	136	9.3	6.8	Suicide by salicylate overdose	PV, SST, CR	N	N	Y
13	871	M/W	28	16.5	128	8.5	7.1	Trauma	878	Disorganized schizophrenia; ADC	M/W	33	10.8	127	8.9	6.7	Myocardial fibrosis	PV, SST, CR	Y	Y	Y
14	575	F/B	55	11.3	177	9.6	6.8	ASCVD	517	Disorganized schizophrenia; ADC	F/W	48	3.7	186	9.3	6.7	Intracerebral hemorrhage	PV, SST, CR	Y	N	N
15	700	M/W	42	26.1	160	8.7	7.0	ASCVD	539	Schizoaffective disorder; ADR	M/W	50	40.5	184	8.1	7.1	Suicide by combined drug overdose	PV, SST, CR	Y	Y	Y
16	988	M/W	82	22.5	106	8.4	6.2	Trauma	621	Chronic undifferentiated schizophrenia	M/W	83	16.0	170	8.7	7.3	Accidental asphyxiation	SST only	N	N	N
17	686	F/W	52	22.6	162	8.5	7.0	ASCVD	656	Schizoaffective disorder; ADC	F/B	47	20.1	166	9.2	7.3	Suicide by gun shot	SST only	Y	N	N
18	634	M/W	52	16.2	168	8.5	7.0	ASCVD	722	Chronic undifferentiated schizophrenia; ODR; OAR	M/B	45	9.1	156	9.2	6.7	Upper GI bleeding	SST only	Y	N	N
19	852	M/W	54	8.0	131	9.1	6.8	Cardiac tamponade	781	Schizoaffective disorder; ADR	M/B	52	8.0	146	7.7	6.7	Peritonitis	PV, SST, CR	Y	Y	N
20	987	F/W	65	21.5	107	9.1	6.8	ASCVD	802	Schizoaffective disorder; ADC; ODR	F/W	63	29.0	142	9.2	6.4	Right ventricular dysplasia	SST only	Y	N	Y
21	818	F/W	67	24.0	140	8.4	7.1	Anaphylactic reaction	917	Chronic undifferentiated schizophrenia	F/W	71	23.8	120	7.0	6.8	ASCVD	PV, SST, CR	Y	N	N
22	857	M/W	48	16.6	130	8.9	6.7	ASCVD	930	Disorganized schizophrenia; ADR; OAR	M/W	47	15.3	116	8.2	6.2	ASCVD	PV, SST, CR	Y	N	Y
23	739	M/W	40	15.8	155	8.4	6.9	ASCVD	933	Disorganized schizophrenia	M/W	44	8.3	116	8.1	5.9	Myocarditis	PV, SST, CR	Y	Y	Y
24	1047	M/W	43	13.8	98	9.0	6.6	ASCVD	1209	Schizoaffective disorder	M/W	35	9.1	78	8.7	6.5	Suicide by diphenhydramine overdose	No	Y	N	N
25	1086	M/W	51	24.2	92	8.1	6.8	ASCVD	10025	Disorganized schizophrenia; OAR	M/B	52	27.1	71	7.8	6.7	ASCVD	No	N	N	N
26	1092	F/B	40	16.6	91	8.0	6.8	Mitral Valve Prolapse	1178	Schizoaffective disorder	F/B	37	18.9	83	8.4	6.1	Pulmonary embolism	No	Y	N	Y
27	10005	M/W	42	23.5	79	7.4	6.7	Trauma	1256	Undifferentiated schizophrenia	M/W	34	27.4	71	7.9	6.4	Suicide by hanging	No	Y	N	N
28	1336	M/W	65	18.4	56	8.0	6.8	Cardiac Tamponade	1173	Disorganized schizophrenia; ADR	M/W	62	22.9	83	7.7	6.4	ASCVD	No	Y	N	N
29	1122	M/W	55	15.4	88	7.9	6.7	Cardiac Tamponade	1105	Schizoaffective disorder	M/W	53	7.9	90	8.9	6.2	ASCVD	No	Y	N	N

Healthy Comparison Subjects									Subjects with Schizophrenia											
Pair	**Case**	**Sex/ Race**	**Age**	**PMI[a]**	**Storage Time[b]**	**RIN**	**pH**	**Cause of Death**	**Case**	**DSM IV diagnosis**	**Sex/ Race**	**Age**	**PMI[a]**	**Storage Time[b]**	**RIN**	**pH**	**Cause of Death**	**Previously Studied for PV, SST or CR mRNA**	**Antipsychotic ATOD**	**Antidepressant ATOD**	**Benzodiazepine/ VPA ATOD**
30	1284	M/W	55	6.4	67	8.7	6.8	ASCVD	1188	Undifferentiated schizophrenia; AAR; OAR	M/W	58	7.7	81	8.4	6.2	ASCVD	No	Y	N	N
31	1191	M/B	59	19.4	80	8.4	6.2	ASCVD	1263	Undifferentiated schizophrenia; ADR	M/W	62	22.7	70	8.5	7.1	Accidental asphyxiation	No	Y	Y	N
32	970	M/W	42	25.9	109	7.2	6.4	ASCVD	1222	Undifferentiated schizophrenia; AAC	M/W	32	30.8	76	7.5	6.4	Suicide by combined drug overdose	No	Y	Y	N
33	10003	M/W	49	21.2	80	8.4	6.5	Trauma	1088	Undifferentiated schizophrenia; ADC; OAC	M/W	49	21.5	91	8.1	6.5	Accidental combined drug overdose	No	Y	Y	N
34	1247	F/W	58	22.7	73	8.4	6.4	ASCVD	1240	Undifferentiated schizophrenia; ADR	F/B	50	22.9	73	7.7	6.3	ASCVD	No	Y	N	N
35	1324	M/W	43	22.3	59	7.3	7	Aortic Dissection	10020	Paranoid schizophrenia; AAC; OAC	M/W	38	28.8	73	7.4	6.6	Suicide by salicylate overdose	No	Y	Y	Y
36	1099	F/W	24	9.1	91	8.6	6.5	Cardiomyopathy	10023	Disorganized schizophrenia	F/B	25	20.1	72	7.4	6.7	Suicide by drowning	No	Y	N	Y
37	1307	M/B	32	4.8	62	7.6	6.7	ASCVD	10024	Paranoid schizophrenia	M/B	37	6.0	72	7.5	6.1	ASCVD	No	N	N	N
38	1391	F/W	51	7.8	48	7.1	6.6	ASCVD	1189	Schizoaffective disorder;	F/W	47	14.4	81	8.3	6.4	Suicide by	No	Y	Y	Y
39	1282	F/W	39	24.5	67	7.5	6.8	ASCVD	1211	Schizoaffective disorder	F/W	41	20.1	79	7.8	6.3	Sudden unexplained death	No	Y	Y	N
40	1159	M/W	51	16.7	85	7.6	6.5	ASCVD	1296	Undifferentiated schizophrenia	M/W	48	7.8	65	7.3	6.5	Pneumonia	No	Y	Y	N
41	1326	M/W	58	16.4	59	8.0	6.7	ASCVD	1314	Undifferentiated schizophrenia	M/W	50	11.0	62	7.2	6.2	ASCVD	No	Y	Y	N
42	902	M/W	60	23.6	124	7.7	6.7	ASCVD	1361	Schizoaffective disorder; ODC	M/W	63	23.2	54	7.7	6.4	Cardiomyopathy	No	Y	N	Y
		Mean	47.7	17.7	120.7	8.3	6.8					47.0	18.1	121.0	8.2	6.6			36Y/6N	17Y/25N	15Y/27N
		SD	13.6	5.9	43.6	0.6	0.2					12.8	8.7	46.1	0.7	0.4					

[a] PMI, postmortem interval (hours); [b] Storage time (months) at -80C; [c] First degree relative with schizophrenia; * Due to limited availability of fresh frozen tissue sections, comparison subject 1046 was substituted for subject 516 in pair 3 for the in situ hybridization study only. Other abbreviations: ASCVD, arteriosclerotic cardiovascular disease; MCA, middle coronary artery; ATOD, at time of death; ADC, alcohol dependence, current at time of death; ADR, alcohol dependence, in remission at time of death; AAC, alcohol abuse, current at time of death; AAR, alcohol abuse, in remission at time of death; ODC, other substance dependence, current at time of death; ODR, other substance dependence, in remission at time of death; OAC, other substance abuse, current at time of death; OAR, other substance abuse, in remission at time of death; U, unknown; VPA, valproic acid; ISP, index of social position.

Subjects with Schizophrenia (continued)

Case	DSM IV diagnosis	Family History[c]	Age at Onset of Illness	History of Marriage	Hollingshead Two Factor ISP	Living Independently ATOD
533	Chronic undifferentiated schizophrenia	N	25	N	20	N
537	Schizoaffective disorder	N	29	Y	20	Y
547	Schizoaffective disorder	N	18	N	17	N
566	Chronic undifferentiated schizophrenia; AAR	N	43	Y	16	N
581	Chronic paranoid schizophrenia; ADC; OAC	Y	16	Y	19	Y
587	Chronic undifferentiated schizophrenia; AAR	N	18	N	17	N
625	Chronic disorganized schizophrenia; AAC	Y	35	Y	34	N
622	Chronic undifferentiated schizophrenia	N	42	N	27	N
640	Chronic paranoid schizophrenia	N	21	N	63	N
665	Chronic paranoid schizophrenia; ADC	Y	27	N	16	Y
787	Schizoaffective disorder; ODC	N	24	N	30	N
829	Schizoaffective disorder; ADC; OAR	Y	20	N	22	N
878	Disorganized schizophrenia; ADC	N	16	N	57	N
517	Disorganized schizophrenia; ADC	N	28	Y	53	N
539	Schizoaffective disorder; ADR	N	19	Y	45	Y
621	Chronic undifferentiated schizophrenia	Y	28	N	8	N
656	Schizoaffective disorder; ADC	Y	17	N	19	Y
722	Chronic undifferentiated schizophrenia; ODR; OAR	N	26	N	24	N
781	Schizoaffective disorder; ADR	N	37	Y	24	N
802	Schizoaffective disorder; ADC; ODR	N	20	N	42	Y
917	Chronic undifferentiated schizophrenia	Y	24	Y	19	N
930	Disorganized schizophrenia; ADR; OAR	N	19	N	17	N
933	Disorganized schizophrenia	N	22	N	27	N
1209	Schizoaffective disorder	N	21	Y	35	Y
10025	Disorganized schizophrenia; OAR	N	22	N	27	N
1178	Schizoaffective disorder	N	26	N	40	N
1256	Undifferentiated schizophrenia	N	28	N	36	N
1173	Disorganized schizophrenia; ADR	N	29	Y	16	Y
1105	Schizoaffective disorder	N	48	N	24	N

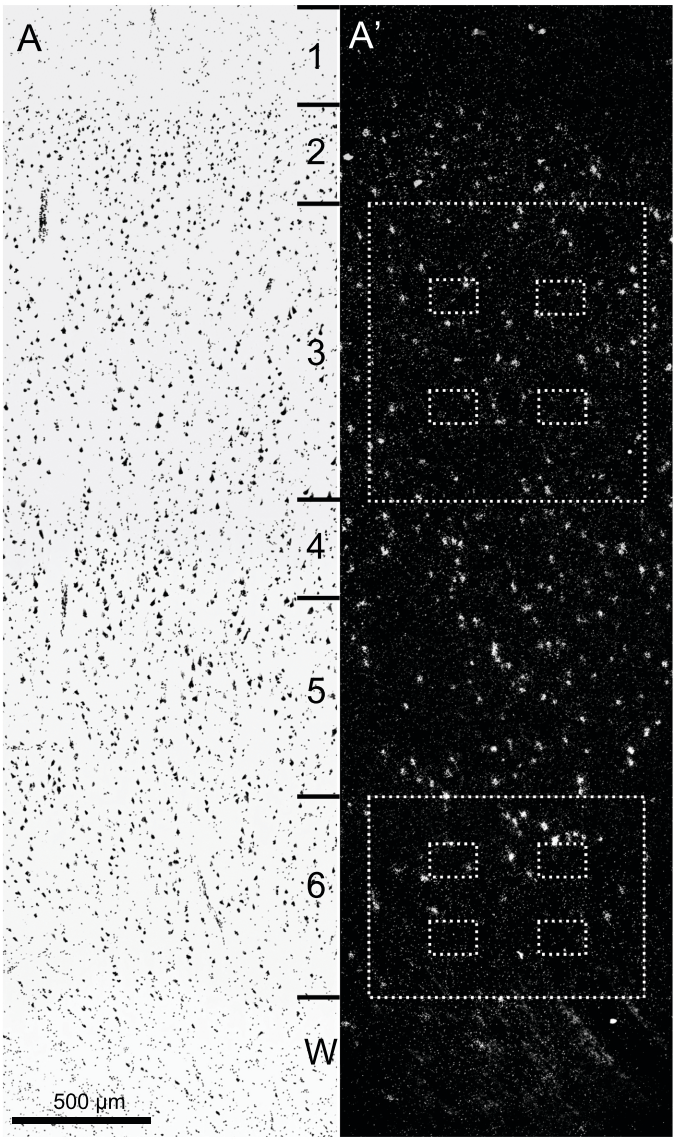
Subjects with Schizophrenia (continued)

Case	DSM IV diagnosis	Family History[c]	Age at Onset of Illness	History of Marriage	Hollingshead Two Factor ISP	Living Independently ATOD
1188	Undifferentiated schizophrenia; AAR; OAR	Y	25	N	45	N
1263	Undifferentiated schizophrenia; ADR	N	21	N	11	N
1222	Undifferentiated schizophrenia; AAC	N	16	N	14	Y
1088	Undifferentiated schizophrenia; ADC; OAC	N	25	Y	45	N
1240	Undifferentiated schizophrenia; ADR	N	25	N	32	N
10020	Paranoid schizophrenia; AAC; OAC	N	18	N	27	N
10023	Disorganized schizophrenia	Y	15	N	17	Y
10024	Paranoid schizophrenia	N	20	Y	27	N
1189	Schizoaffective disorder;	N	43	N	66	Y
1211	Schizoaffective disorder	N	29	Y	30	N
1296	Undifferentiated schizophrenia	N	13	N	14	N
1314	Undifferentiated schizophrenia	N	17	N	19	N
1361	Schizoaffective disorder; ODC	N	16	N	17	N
		9Y/33N		13Y/29N		11Y/31N

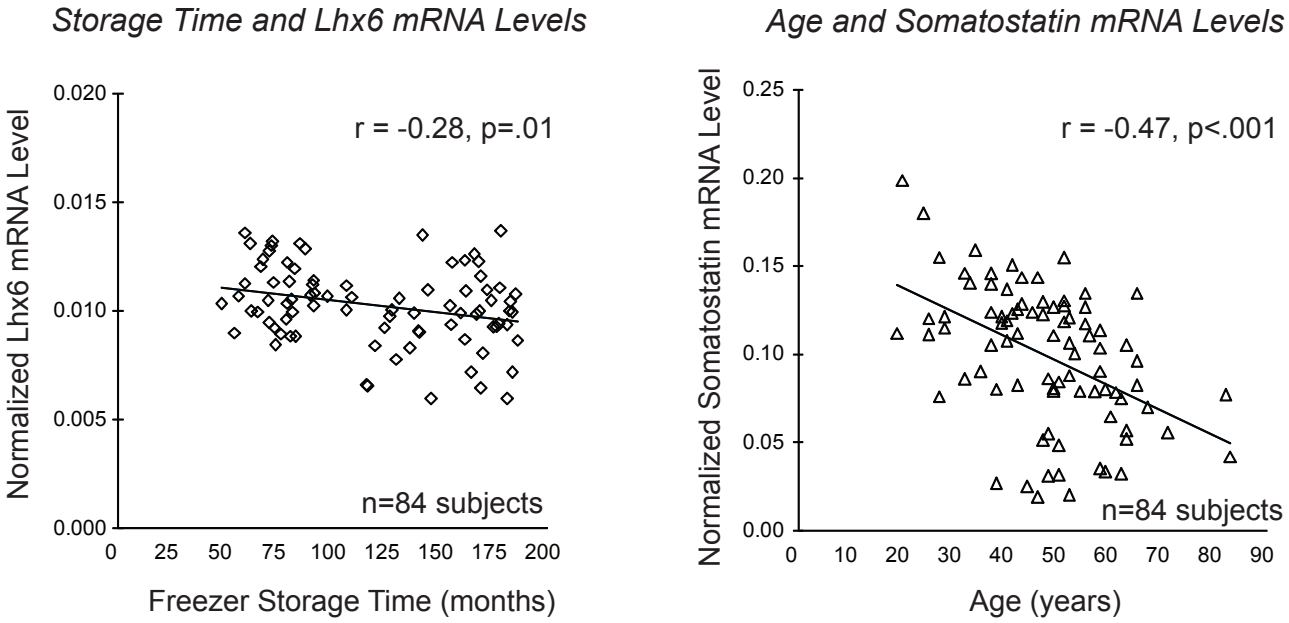
Supplemental Table S2: qPCR primer design

Gene	Species	Accession #	Amplicon Size (bp)	Position	Forward Primer (F) Reverse Primer (R)
Parvalbumin	Human	NM_002854	99	112-210	(F) CTACCGACTCCTTCGACCA (R) CCTTGTCCAGCATGTGAAA
Somatostatin	Human	NM_001048	93	319-411	(F) ATGCCCTGGAACCTGAAGAT (R) CCATAGCCGGGTTTGAGTTA
Calretinin	Human	NM_007087	145	395-539	(F) AGCGCCGAGTTTATGGAG (R) GGGTGTATTCCTGGAGCTTG
Lhx6	Human	NM_014368	96	642-737	(F) CGACACCATGATTGAGAACC (R) TTGGGTTGACTGTCCTGTTC
Sox6	Human	NM_017508	66	1759-1824	(F) AGAACGCGCTTTGAGAATTT (R) GCCCAGTTTTCCATCTTCAT
Beta actin	Human	NM_001101	101	1146-1246	(F) GATGTGGATCAGCAAGCA (R) AGAAAGGGTGTAACGCAACTA
Cyclophilin	Human	NM_021130	126	159-284	(F) GCAGACAAGGTCCCAAAG (R) GAAGTCACCACCCTGACAAC
Glyceraldehyde-3-phosphate dehydrogenase (GAPDH)	Human	NM_002046	87	556-642	(F) TGCACCACCAACTGCTTAGC (R) GGCATGGACTGTGGTCATGAG
Lhx6	Macaca mulatta	XM_001088818	74	1078-1151	(F) TCCGACGACATCCACTACAC (R) TCAATGTAGCCGTGCAGAGT
Beta actin	Macaca mulatta	NM_001033084	101	1087-1187	(F) GATGTGGATCAGCAAGCA (R) AGAAAGGGTGTAACGCAACTA
Cyclophilin	Macaca mulatta	NM_001032809	126	76-201	(F) GCAGACAAGGTTCCAAAG (R) GAAGTCACCACCCTGACAC
GAPDH	Macaca mulatta	XM_001105471	93	527-619	(F) TGCACCACCAACTGCTTAGC (R) AGTGATGGCGTGGACTGTG

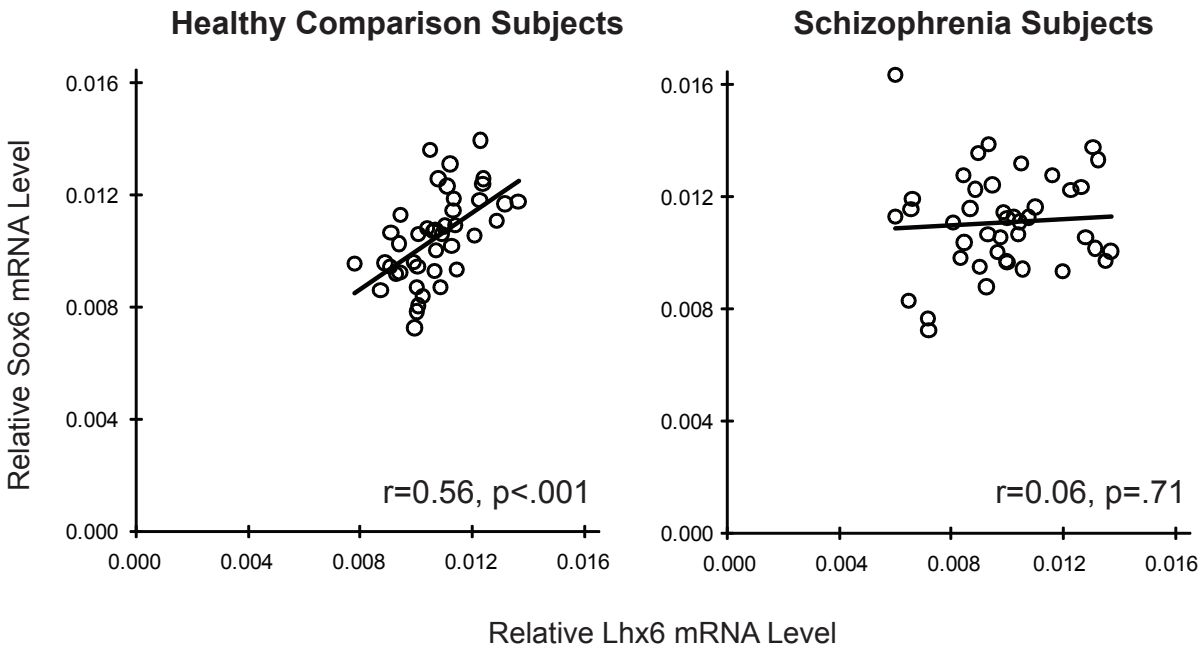
Supplemental Figure S1



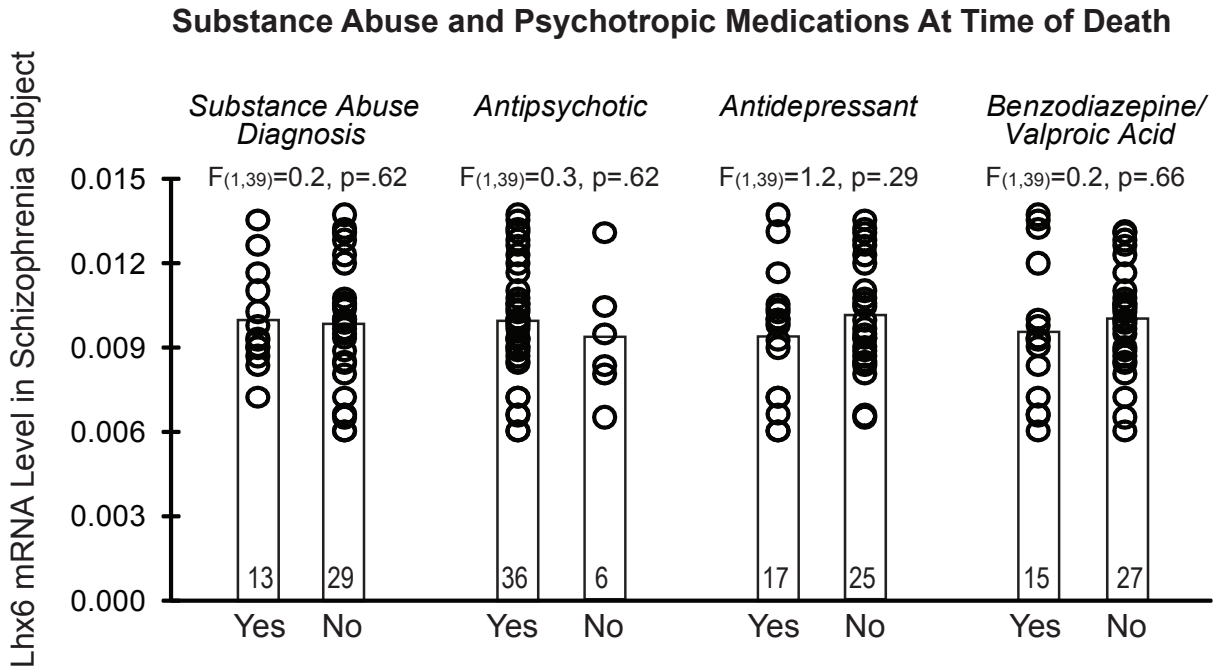
Supplemental Figure S2



Supplemental Figure S3



Supplemental Figure S4



Supplemental Figure S5