

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

Unaffected 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	Tobacco ATOD	Anti-psychotic ATOD	Anti- depressant ATOD	Benzodiazepine/ Anticonvulsant ATOD
1	592	M/B	41	22.1	213	9.0	6.7	ASCVD	533	Chronic undifferentiated schizophrenia	M/W	40	29.1	222	8.4	6.8	Accidental Asphyxiation	Unknown	Yes	No	No
2	567	F/W	46	15.0	217	8.9	6.7	Mitral valve prolapse	537	Schizoaffective disorder	F/W	37	14.5	222	8.6	6.7	Suicide by hanging	Unknown	No	No	No
3	516	M/B	20	14.0	224	8.4	6.9	Homicide by gun shot	547	Schizoaffective disorder	M/B	27	16.5	220	7.4	7.0	Heat Stroke	Unknown	Yes	Yes	Yes
4	630	M/W	65	21.2	210	9.0	7.0	ASCVD	566	Chronic undifferentiated schizophrenia; AAR	M/W	63	18.3	221	8.0	6.8	ASCVD	Yes	Yes	Yes	Yes
5	604	M/W	39	19.3	214	8.6	7.1	Hypoplastic coronary artery	581	Chronic paranoid schizophrenia; ADC; OAC	M/W	46	28.1	218	7.9	7.2	Accidental combined drug overdose	Unknown	Yes	No	Yes
6	546	F/W	37	23.5	221	8.6	6.7	ASCVD	587	Chronic undifferentiated schizophrenia; AAR	F/B	38	17.8	213	9.0	7.0	Myocardial hypertrophy	Yes	Yes	No	Yes
7	551	M/W	61	16.4	219	8.3	6.6	Cardiac tamponade	625	Chronic disorganized schizophrenia; AAC	M/B	49	23.5	207	7.6	7.3	ASCVD	Yes	Yes	Yes	No
8	685	M/W	56	14.5	200	8.1	6.6	Hypoplastic coronary artery	622	Chronic undifferentiated schizophrenia	M/W	58	18.9	207	7.4	6.8	Right MCA infarction	Unknown	No	No	No
9	681	M/W	51	11.6	200	8.9	7.2	Hypertrophic cardiomyopathy	640	Chronic paranoid schizophrenia	M/W	49	5.2	205	8.4	6.9	Pulmonary embolism	Unknown	Yes	Yes	No
10	806	M/W	57	24.0	179	7.8	6.9	Pulmonary embolism	665	Chronic paranoid schizophrenia; ADC	M/B	59	28.1	203	9.2	6.9	Intestinal hemorrhage	Yes	Yes	Yes	No
11	822	M/B	28	25.3	176	8.5	7.0	ASCVD	787	Schizoaffective disorder; ODC	M/B	27	19.2	182	8.4	6.7	Suicide by gun shot	No	Yes	No	No
12	727	M/B	19	7.0	193	9.2	7.2	Trauma	829	Schizoaffective disorder; ADC; OAR	M/W	25	5.0	174	9.3	6.8	Suicide by salicylate overdose	Yes	No	No	Yes
13	871	M/W	28	16.5	166	8.5	7.1	Trauma	878	Disorganized schizophrenia; ADC	M/W	33	10.8	165	8.9	6.7	Myocardial fibrosis	Yes	Yes	Yes	Yes
14	575	F/B	55	11.3	215	9.6	6.8	ASCVD	517	Disorganized schizophrenia; ADC	F/W	48	3.7	224	9.3	6.7	Intracerebral hemorrhage	Yes	Yes	No	No
15	700	M/W	42	26.1	198	8.7	7.0	ASCVD	539	Schizoaffective disorder; ADR	M/W	50	40.5	222	8.1	7.1	Suicide by combined drug overdose	Unknown	Yes	Yes	Yes
16	988	M/W	82	22.5	144	8.4	6.2	Trauma	621	Chronic undifferentiated schizophrenia	M/W	83	16.0	208	8.7	7.3	Accidental asphyxiation	Unknown	No	No	No
17	686	F/W	52	22.6	199	8.5	7.0	ASCVD	656	Schizoaffective disorder; ADC	F/B	47	20.1	204	9.2	7.3	Suicide by gun shot	Yes	Yes	No	No
18	634	M/W	52	16.2	207	8.5	7.0	ASCVD	722	Chronic undifferentiated schizophrenia; ODR; OAR	M/B	45	9.1	194	9.2	6.7	Upper GI bleeding	Yes	Yes	No	No
19	852	M/W	54	8.0	169	9.1	6.8	Cardiac tamponade	781	Schizoaffective disorder; ADR	M/B	52	8.0	184	7.7	6.7	Peritonitis	Yes	Yes	Yes	No
20	987	F/W	65	21.5	144	9.1	6.8	ASCVD	802	Schizoaffective disorder; ADC; ODR	F/W	63	29.0	180	9.2	6.4	Right ventricular dysplasia	Yes	Yes	No	Yes
21	818	F/W	67	24.0	177	8.4	7.1	Anaphylactic reaction	917	Chronic undifferentiated schizophrenia	F/W	71	23.8	157	7.0	6.8	ASCVD	Yes	Yes	No	No
22	857	M/W	48	16.6	167	8.9	6.7	ASCVD	930	Disorganized schizophrenia; ADR; OAR	M/W	47	15.3	154	8.2	6.2	ASCVD	Yes	Yes	No	Yes
23	739	M/W	40	15.8	192	8.4	6.9	ASCVD	933	Disorganized schizophrenia	M/W	44	8.3	153	8.1	5.9	Myocarditis	No	Yes	Yes	Yes
24	1047	M/W	43	13.8	135	9.0	6.6	ASCVD	1209	Schizoaffective disorder	M/W	35	9.1	116	8.7	6.5	Suicide by diphenhydramine overdose	No	Yes	No	No
25	1086	M/W	51	24.2	129	8.1	6.8	ASCVD	10025	Disorganized schizophrenia; OAR	M/B	52	27.1	109	7.8	6.7	ASCVD	Yes	No	No	No
26	1092	F/B	40	16.6	129	8.0	6.8	Mitral valve prolapse	1178	Schizoaffective disorder	F/B	37	18.9	120	8.4	6.1	Pulmonary embolism	Yes	Yes	No	Yes
27	10005	M/W	42	23.5	117	7.4	6.7	Trauma	1256	Undifferentiated schizophrenia	M/W	34	27.4	108	7.9	6.4	Suicide by hanging	No	Yes	No	No
28	1336	M/W	65	18.4	93	8.0	6.8	Cardiac tamponade	1173	Disorganized schizophrenia; ADR	M/W	62	22.9	120	7.7	6.4	ASCVD	Yes	Yes	No	No
29	1122	M/W	55	15.4	125	7.9	6.7	Cardiac tamponade	1105	Schizoaffective disorder	M/W	53	7.9	127	8.9	6.2	ASCVD	Yes	Yes	No	No

Unaffected Comparison Subjects									Subjects with Schizophrenia												
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30	1284	M/W	55	6.4	104	8.7	6.8	ASCVD	1188	Undifferentiated schizophrenia; AAR; OAR	M/W	58	7.7	118	8.4	6.2	ASCVD	Yes	Yes	No	No
31	1191	M/B	59	19.4	118	8.4	6.2	ASCVD	1263	Undifferentiated schizophrenia; ADR	M/W	62	22.7	107	8.5	7.1	Accidental asphyxiation	Yes	Yes	Yes	No
32	970	M/W	42	25.9	146	7.2	6.4	ASCVD	1222	Undifferentiated schizophrenia; AAC	M/W	32	30.8	113	7.5	6.4	Suicide by combined drug overdose	No	Yes	Yes	No
33	10003	M/W	49	21.2	117	8.4	6.5	Trauma	1088	Undifferentiated schizophrenia; ADC; OAC	M/W	49	21.5	129	8.1	6.5	Accidental combined drug overdose	Yes	Yes	Yes	No
34	1247	F/W	58	22.7	110	8.4	6.4	ASCVD	1240	Undifferentiated schizophrenia; ADR	F/B	50	22.9	110	7.7	6.3	ASCVD	Yes	Yes	No	No
35	1324	M/W	43	22.3	96	7.3	7	Aortic dissection	10020	Schizophrenia, paranoid type; AAC; OAC	M/W	38	28.8	110	7.4	6.6	Suicide by salicylate overdose	Yes	Yes	Yes	Yes
36	1099	F/W	24	9.1	128	8.6	6.5	Cardiomyopathy	10023	Disorganized schizophrenia	F/B	25	20.1	109	7.4	6.7	Suicide by drowning	No	Yes	No	Yes
37	1307	M/B	32	4.8	99	7.6	6.7	ASCVD	10024	Paranoid schizophrenia	M/B	37	6.0	108	7.5	6.1	ASCVD	No	No	No	No
38	1391	F/W	51	7.8	85	7.1	6.6	ASCVD	1189	Schizoaffective disorder; AAR	F/W	47	14.4	118	8.3	6.4	Suicide by combined drug overdose	Yes	Yes	Yes	Yes
39	1282	F/W	39	24.5	104	7.5	6.8	ASCVD	1211	Schizoaffective disorder	F/W	41	20.1	115	7.8	6.3	Sudden unexplained death	Yes	Yes	Yes	No
40	1159	M/W	51	16.7	121	7.6	6.5	ASCVD	1296	Undifferentiated schizophrenia	M/W	48	7.8	102	7.3	6.5	Pneumonia	Yes	Yes	Yes	No
41	1326	M/W	58	16.4	95	8.0	6.7	ASCVD	1314	Undifferentiated schizophrenia	M/W	50	11.0	98	7.2	6.2	ASCVD	No	Yes	Yes	No
42	902	M/W	60	23.6	161	7.7	6.7	ASCVD	1361	Schizoaffective disorder; ODC	M/W	63	23.2	91	7.7	6.4	Cardiomyopathy	Yes	Yes	No	Yes
43	1374	M/W	43	21.7	89	7.2	6.6	ASCVD	904	Schizoaffective disorder	M/W	33	28.0	160	7.1	6.2	Pneumonia	Yes	Yes	No	Yes
44	1555	M/W	17	15.1	54	7.9	6.9	Trauma	1649	Undifferentiated schizophrenia	M/B	17	21.4	39	8.1	6.9	Suicide by hanging	No	Yes	Yes	No
45	1268	M/B	49	19.9	107	7.9	7.1	ASCVD	1230	Undifferentiated schizophrenia	M/W	50	16.9	112	8.2	6.6	Suicide by doxepin overdose	Yes	Yes	Yes	No
46	1466	F/B	64	20.0	70	8.8	6.7	Trauma	1341	Schizoaffective disorder; ODC	F/W	44	24.5	92	8.8	6.6	Trauma	No	Yes	No	Yes
47	1518	M/W	50	20.7	60	7.7	6.4	ASCVD	1367	Schizoaffective disorder; ADC; ODR	M/W	47	28.9	90	7.2	6.6	Combined drug overdose	No	No	No	No
48	1386	M/W	46	21.2	85	8.3	6.7	ASCVD	1420	Schizoaffective disorder; AAR; ODC; OAR	M/W	47	23.4	79	8.2	6.8	Suicide by jump	Yes	Yes	Yes	No
49	1472	M/W	61	23.8	74	8.0	6.5	Pulmonary embolism	1453	Paranoid schizophrenia; ADR	M/W	62	11.1	77	8.2	6.4	Trauma	Yes	Yes	No	Yes
50	1026	M/W	59	19.8	141	7.4	6.3	ASCVD	1454	Paranoid schizophrenia; AAR; ODC	M/W	59	24.1	76	7.6	6.1	Trauma	Yes	Yes	Yes	No
51	694	M/W	38	20.7	199	7.7	7.0	Subarachnoid hemorrhage	1455	Paranoid schizophrenia; AAR; OAC	M/W	42	8.2	73	7.7	6.4	Peritonitis	Yes	Yes	No	Yes
52	1350	M/W	21	24.2	92	7.3	6.4	Trauma	1474	Schizoaffective disorder; ADR	M/W	37	39.9	71	7.0	6.7	Suicide by hanging	No	No	No	No
53	1792	F/W	36	28.1	14	7.5	6.5	Pulmonary embolism	1506	Schizoaffective disorder; ADC	F/W	47	14.1	65	7.5	6.6	Combined drug overdose	Yes	Yes	Yes	No
54	1524	M/W	66	9.4	59	8.1	6.4	Intestinal infarction	1542	Paranoid schizophrenia	M/W	65	17.4	56	7.8	6.7	Combined drug overdose	Yes	Yes	Yes	Yes
55	1270	F/W	73	19.7	106	7.7	6.7	Trauma	1579	Schizoaffective disorder; ADR; ODC	F/W	69	16.1	50	7.7	6.7	ASCVD	Yes	Yes	No	Yes
56	1372	M/W	37	20.5	89	9.0	6.6	Asphyxiation	1581	Paranoid schizophrenia; ODC; OAC	M/W	32	18.4	49	9.0	6.8	ASCVD	Yes	Yes	Yes	No
57	1543	F/W	45	17.9	55	7.4	6.8	Subarachnoid hemorrhage	10026	Undifferentiated schizophrenia	F/W	46	23.8	108	7.6	6.6	Suicide by thermal injuries	Yes	Yes	Yes	No
58	1583	M/W	58	19.1	49	8.2	6.8	Trauma	1686	Schizophrenia, paranoid type; AAR	M/B	56	14.1	32	8.3	6.2	ASCVD	Yes	Yes	Yes	Yes
59	1554	M/W	50	23.2	54	7.6	6.5	ASCVD	1691	Schizophrenia, paranoid type; ADR; ODC	M/W	51	31.9	30	7.7	6.6	Combined drug overdose	Yes	Yes	No	Yes

Unaffected Comparison Subjects									Subjects with Schizophrenia												
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60	1635	M/W	66	25.3	41	8.2	6.8	Cardiac tamponade	1706	Schizoaffective disorder; AAR; ODC; OAR	M/B	60	28.1	27	8.4	6.8	Sepsis	Yes	Yes	No	No
61	1384	M/W	67	21.9	86	7.0	6.6	ASCVD	1712	Schizoaffective disorder; ADR; ODC	M/W	63	15.1	24	7.1	6.2	ASCVD	No	Yes	Yes	Yes
62	1558	M/W	54	24.4	52	7.7	6.9	ASCVD	1734	Schizophrenia, undifferentiated type; AAR; ODC; OAR	M/W	54	28.6	21	7.7	6.1	Pneumonia	Yes	Yes	No	No
		Mean	48.7	18.8	132.8	8.18	6.7					47.7	19.2	129.0	8.1	6.6		41Y/13N/8U nk	54Y/8N	27Y/35N	24Y/38N
		SD	13.8	5.5	56.8	0.6	0.2					12.7	8.5	61.3	0.6	0.3					

^aPMI, postmortem interval (hours); ^b Storage time (months) at -80C; Other abbreviations: ASCVD, arteriosclerotic cardiovascular disease; MCA, middle cerebral 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; M, male; F, female; W, white; B, black.

Supplemental Table S2: Primer sets for quantitative PCR

Gene	Species	Accession #	Amplicon Size (bp)	Position	Forward Primer (F) Reverse Primer (R)
Arx	Human	NM_139058	51	250-300	(F) GCCCGAGTGCAAAAGTAAAT (R) TCGATGCAGTAGGAGGAGAG
cMaf	Human	NM_005360	86	1800-1885	(F) AAGTCGACCACCTCAAGCAG (R) GCTGCTCACCAACTTCTCG
Dlx1	Human	NM_178120	78	216-293	(F) GCCAGAAAAGTCTCAACAGCC (R) GGAGACATTTGCTGGTTGGG
Dlx5	Human	NM_005221	55	286-340	(F) TATGCACCATCCGTCTCAGG (R) ATCGGTAGCTGAAGACTCGG
Dlx6	Human	NM_005222	93	422-514	(F) GAGGGGACGACACAGATCAA (R) TCCGAGGCTTCCGAATCTTT
FgfR1	Human	NM_023110	57	1948-2004	(F) GCAGGGGAGTATACGTGCTT (R) TGCAGAGTGATGGGAGAGTC
MafB	Human	NM_005461	56	610-665	(F) CGACCGAACAGAAGACACAC (R) CTGGTAGTTGCTCGCCATC
Nkx6.2	Human	NM_177400	92	782-873	(F) GAGGACGACGACGAATACAA (R) AAGTTCGAGGGTTTGTGCTT
PGC-1 α	Human	NM_013261	107	1766-1872	(F) ATTCTGTGTCACCACCCAAA (R) GGAATATGGTGATCGGGAAC
SATB1	Human	NM_002971	86	1863-1918	(F) GAAGGCTTGGGAGTACAGGT (R) GCCCGAGTGTTTAAAGGCA
ST8SIA4	Human	NM_005668	84	343-426	(F) AGGAAGAGGTGGACGATCTG (R) CTGGTGCTCCTCAGTCTTG
Sip1/Zeb2	Human	NM_014795	54	1213-1266	(F) AAGTACCGCCACGAGAAGAA (R) GTAGCTACAGAGAGGGCAGG
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
FgfR1	Macaca mulatta	NM_001266647	57	1948-2004	(F) GCAGGGGAGTATACGTGCTT (R) TGCAGAGTGATGGGAGAGTC
MafB	Macaca mulatta	XM_001101624	56	610-665	(F) CGACCGAACAGAAGACACAC (R) CTGGTAGTTGCTCGCCATC
PGC-1 α	Macaca mulatta	XM_001105289	107	1766-1872	(F) ATTCCGTGTCACCACCCAAA (R) GGAATATGGTGATCGGGAAC
Beta actin	Macaca mulatta	NM_001033084	101	1087-1187	(F) GATGTGGATCAGCAAGCA (R) AGAAAGGGTGTAACGCAACTA
Cyclophilin	Macaca mulatta	NM_001032809	126	76-201	(F) GCAGACAAGGTTCCCAAAG (R) GAAGTCACCACCCTGACAC
GAPDH	Macaca mulatta	XM_001105471	93	527-619	(F) TGCACCACCAACTGCTTAGC (R) AGTGATGGCGTGGACTGTG

Supplemental Figure Legends

Supplemental Figure S1. Correlations between MafB mRNA levels and mRNA levels for GAD67 and parvalbumin in the PFC of unaffected comparison subjects and schizophrenia subjects. MafB mRNA levels are significantly correlated with mRNA levels for GAD67 (A) and parvalbumin (C) in unaffected comparison subjects (open circles) but not in schizophrenia subjects (B, D, respectively; dark gray circles).

Supplemental Figure S2. Correlations between PGC-1 α mRNA levels and mRNA levels for GAD67 and parvalbumin in the PFC of unaffected comparison subjects and schizophrenia subjects. PGC-1 α mRNA levels are nearly significantly correlated with GAD67 mRNA levels (A) and significantly correlated with parvalbumin mRNA levels (C) in unaffected comparison subjects (open circles) but not in schizophrenia subjects (B, D, respectively; dark gray circles).



