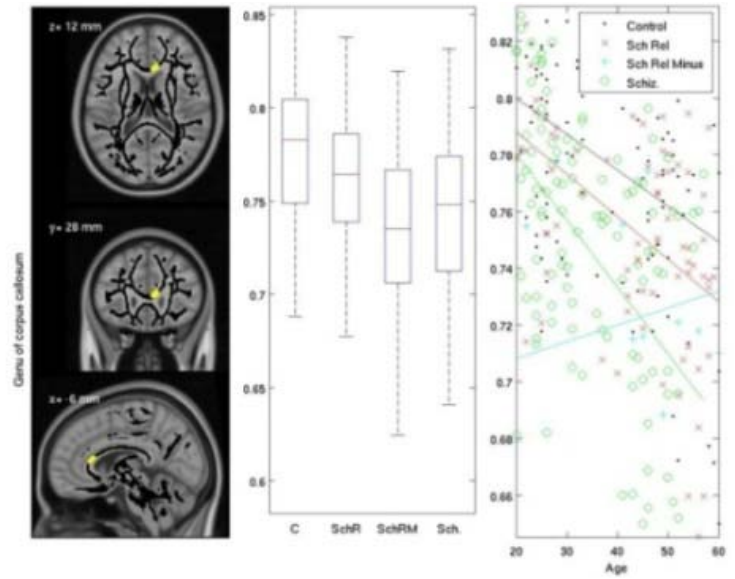
Online supplement data :

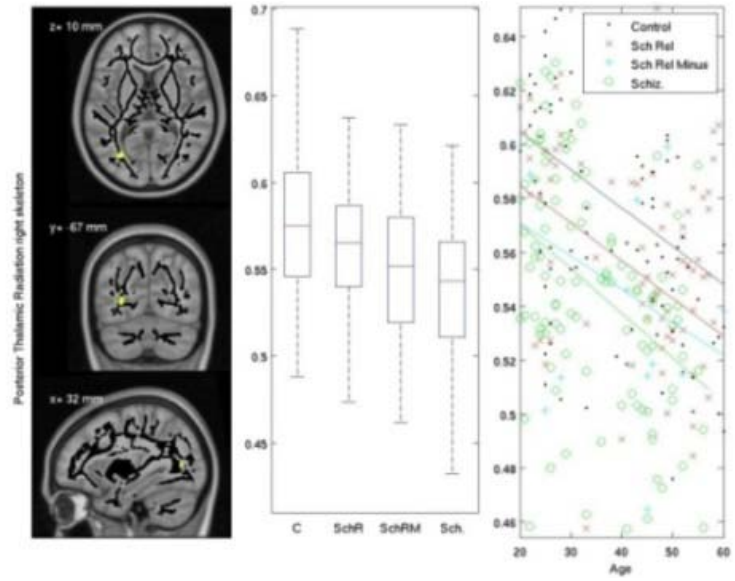
ROI	ROI name	MNI coord (mm)	HC>SZ	HC>SZR	HC>PBP	HC>PBPR	Heritability h^2	Heritability p-value
MCP	Middle cerebellar peduncle	0 -41 -44	2.05	2.12	1.63	0.69	0.38	0.004473
PCT	Pontine crossing tract	-0 -28 -37	0.72	2.34	-0.71	1.82	0.39	0.011130
GCC	Genu of corpus callosum	-0 29 12	5.40	1.71	5.35	0.81	0.36	0.007500
BCC	Body of corpus callosum	-0 -4 30	4.80	1.29	4.35	0.39	0.31	0.028200
SCC	Splenium of corpus callosum	-0 -43 19	4.68	2.12	2.71	0.60	0.71	0.000001
FX	Fornix (column and body of fornix)	-0 -6 16	3.30	0.21	2.68	0.85	0.38	0.007370
RLIC-L	Retrolenticular Internal Capsule Post. aspect left	-32 -28 6	1.23	1.32	0.18	-0.54	0.63	0.000015
ML-L	Medial lemniscus left	-8 -21 -35	0.27	0.72	0.86	0.44	0.23	0.059700
ML-R	Medial lemniscus right	7 -21 -35	1.13	1.54	1.55	1.50	0.55	0.000103
ICP-L	Inferior cerebellar peduncle left	-6 -35 -40	0.97	1.17	2.30	-0.07	0.32	0.014960
ICP-R	Inferior cerebellar peduncle right	5 -34 -40	0.55	0.43	1.76	-0.57	0.48	0.000630
SCP-L	Superior cerebellar peduncle left	-10 -43 -43	1.41	2.00	1.27	0.98	0.52	0.000313
SCP-R	Superior cerebellar peduncle right	9 -43 -44	0.99	1.00	1.36	0.69	0.53	0.000267
CP-L	Cerebral peduncle left	-7 -38 -30	2.15	1.61	3.84	0.16	0.61	0.000016
CP-R	Cerebral peduncle right	6 -38 -30	2.26	0.35	3.39	1.48	0.70	0.000002
CST-L	Corticospinal tract left	-14 -16 -14	1.53	1.16	1.38	-0.38	0.26	0.040700
CST-R	Corticospinal tract right	13 -16 -15	0.85	0.21	0.38	-0.86	0.39	0.006110
ALIC-L	Anterior limb of internal capsule left	-18 10 9	3.92	1.87	2.97	1.39	0.38	0.004700
ALIC-R	Anterior limb of internal capsule right	17 10 9	4.79	2.09	3.56	0.86	0.76	0.000000
PLIC-L	Posterior limb of internal capsule left	-22 -10 8	-2.10	-0.41	-1.55	-1.78	0.73	0.000000
PLIC-R	Posterior limb of internal capsule right	20 -10 8	-1.40	-0.75	-0.96	-1.65	0.52	0.000294
RLIC-R	Retrolenticular Internal Capsule Post. aspect right	31 -29 5	1.81	1.04	0.64	-0.67	0.87	0.000000
ACR-L	Anterior corona radiata left	-23 30 12	5.33	3.02	4.14	1.13	0.13	0.173200
ACR-R	Anterior corona radiata right	21 30 13	5.51	2.93	3.42	0.90	0.32	0.017000
SCR-L	Superior corona radiata left	-25 -8 34	2.07	2.13	1.93	-0.13	0.59	0.000075
SCR-R	Superior corona radiata right	24 -7 34	2.24	2.09	1.82	0.24	0.69	0.000012
PCR-L	Posterior corona radiata left	-25 -39 30	3.04	2.14	2.78	0.00	0.51	0.000318
PCR-R	Posterior corona radiata right	24 -37 31	4.08	2.30	4.03	0.95	0.33	0.018600
PTR-L	Posterior thalamic radiation left	-34 -56 7	3.90	1.71	3.57	0.83	0.22	0.072020
PTR-R	Posterior thalamic radiation right	33 -55 7	3.26	1.14	2.92	0.19	0.46	0.001382
SS-L	Sagittal stratum left	-40 -28 -12	3.27	1.77	2.52	0.31	0.50	0.000267
SS-R	Sagittal stratum right	40 -28 -12	3.96	2.53	3.16	1.11	0.53	0.000167
EC-L	External capsule left	-31 1 8	1.14	1.26	1.35	-1.30	0.67	0.000004
EC-R	External capsule right	30 1 8	2.01	1.48	1.89	-0.19	0.72	0.000000
CGC-L	Cingulum (cingulate gyrus) left	-9 -11 34	3.54	2.91	2.69	2.09	0.22	0.063800
CGC-R	Cingulum (cingulate gyrus) right	8 -10 34	3.23	1.83	2.74	2.23	0.17	0.123700
CGH-L	Cingulum (hippocampus) left	-23 -29 -18	1.69	2.98	1.77	1.43	0.76	0.000001
CGH-R	Cingulum (hippocampus) right	21 -31 -17	2.02	2.01	1.94	1.87	0.72	0.000003
FX/ST-L	Fornix (cres) / Striaterminalis left	-29 -24 -6	2.43	1.25	2.24	1.22	0.50	0.000303
FX/ST-R	Fornix (cres) / Striaterminalis right	28 -25 -5	2.72	1.44	2.94	0.96	0.49	0.000518
SLF-L	Superior longitudinal fasciculus left	-37 -25 28	3.49	1.74	3.12	0.09	0.27	0.034800
SLF-R	Superior longitudinal fasciculus right	37 -25 27	3.95	2.03	3.52	0.47	0.53	0.000138
SFO-L	Superior fronto-occipital fasciculus left	-23 7 24	2.89	2.40	3.56	0.84	0.22	0.059560
SFO-R	Superior fronto-occipital fasciculus right	21 5 24	2.23	2.04	1.93	0.82	0.52	0.000427
IFO-L	Inferior fronto-occipital fasciculus left	-31 6 -8	2.26	1.02	1.85	-0.16	0.58	0.000027
IFO-R	Inferior fronto-occipital fasciculus right	30 7 -8	2.05	0.82	2.58	0.76	0.44	0.002090
UNC-L	Uncinate fasciculus left	-34 4 -16	0.72	0.42	1.43	-0.14	0.55	0.000080
UNC-R	Uncinate fasciculus right	35 1 -17	0.59	0.44	2.41	0.44	0.69	0.000008
TAP-L	Tapatum left	-31 -38 16	3.98	1.59	3.74	0.53	0.13	0.215600
TAP-R	Tapatum right	27 -51 19	2.87	2.21	3.35	-0.36	0.63	0.000138
SCRar	Superior Corona Radiata Anterior	13 6 58	2.30	0.42	1.74	-0.70	0.19	0.106890

	aspect right							
SCRal	Superior Corona Radiata Anterior aspect left	-15 8 57	2.58	1.32	1.89	-0.98	0.28	0.024720
SCRpr	Superior Corona Radiata Posterior aspect right	16 -20 61	1.69	-0.82	1.72	-1.27	0.25	0.070600
SCRpl	Superior Corona Radiata Posterior aspect left	-20 -20 61	1.86	0.46	2.13	-0.82	0.40	0.006440
PCRsr	Posterior Corona Radiata Superior aspect right	17 -40 57	4.83	1.63	4.22	0.93	0.46	0.001100
PCRsl	Posterior Corona Radiata Superior aspect left	-17 -40 56	4.29	1.94	3.71	0.81	0.57	0.000196
ACRsr	Anterior Corona Radiata Superior aspect right	15 41 34	4.76	3.12	3.58	2.32	0.15	0.148600
ACRsl	Anterior Corona Radiata Superior aspect left	-16 42 34	4.19	2.83	2.88	1.58	0.26	0.049880
ACRil	Anterior Corona Radiata Inferior aspect left	14 52 -4	3.60	1.65	2.82	0.47	0.26	0.048700
ACRil	Anterior Corona Radiata Inferior Aspect right	-15 52 -4	4.42	2.14	3.11	1.16	0.37	0.010900
RLICr	Retrolenticular Interior Capsule Ant. aspect right	15 -14 -6	2.70	1.69	2.32	0.99	0.66	0.000007
RLICl	Retrolenticular Interior Capsule Ant. aspect left	-11 -9 -2	2.43	0.98	1.22	1.31	0.67	0.000006
LMCr	Lateral Middle Cerebellum (dentate nuclei) right	28 -65 -43	2.69	3.18	1.63	0.72	0.68	0.000008
LMCl	Lateral Middle Cerebellum (dentate nuclei) left	-31 -66 -43	3.28	3.95	2.93	2.08	0.35	0.015500
ACRr	Anterior Corona Radiata right MFG WM	36 19 28	5.28	2.10	3.80	1.59	0.40	0.010500
ACRl	Anterior Corona Radiata left MFG WM	-34 21 28	5.37	2.57	4.02	1.21	0.54	0.000678
SLFr	Superior Longitudinal Fasciculus right	47 -2 27	4.26	2.04	2.85	0.64	0.20	0.105500
SLFl	Superior Longitudinal Fasciculus left	-46 -3 28	5.11	2.30	3.39	1.71	0.10	0.262700
SLFpr	Superior Longitudinal Fasciculus Post. asp. right	41 -53 35	5.20	2.37	3.60	1.03	0.35	0.014500
SLFpl	Superior Longitudinal Fasciculus Post. asp. left	-42 -47 37	4.72	2.16	3.41	1.21	0.28	0.045000
PCRr	Superior Occipital Gyrus WM right skeleton	18 -70 28	4.66	1.96	3.57	0.89	0.57	0.000132
PCRl	Superior Occipital Gyrus WM left skeleton	-19 -69 30	4.66	2.35	3.68	1.55	0.20	0.084900
PTRr	Posterior Thalamic Radiation right skeleton	25 -81 -3	4.12	1.04	3.05	0.33	0.49	0.001000
PTRl	Posterior Thalamic Radiation left skeleton	-24 -80 -1	3.79	1.35	3.49	1.22	0.17	0.133600
STGr	Superior Temporal Gyrus WM right skeleton	41 4 -28	3.00	2.30	2.14	1.92	0.75	0.000000
STGl	Superior Temporal Gyrus WM left skeleton	-44 4 -24	3.63	1.88	2.51	2.62	0.56	0.000137
Brain	Whole Brain	-1 -20 10	4.82	2.69	3.69	1.40	0.45	0.001200

Table 1S

List of all anatomically defined regions with t-test values from GLM contrast comparing healthy comparison subjects and each probands and relative groups.Last two columns show h^2 value and significance of heritability estimate. Heritability was estimated using SOLAR with scanner used as a covariate. The heritability inversely correlate with clinical contrast (regions with high heritability tends to show lower difference between probands and healthy controls). This trend is present even when only healthy controls are used in the heritability estimate so it is not an artifact of sample that contains many probands and their related healthy relatives.


z= 12 mm
y= 28 mm
x= -6 mm
Genu of corpus callosum
C
SchR
SchRM
Sch.
Control
Sch Rel
Sch Rel Minus
Schiz.
Age


z= 10 mm
y= -67 mm
x= 32 mm
Posterior Thalamic Radiation right skeleton
C
SchR
SchRM
Sch.
Control
Sch Rel
Sch Rel Minus
Schiz.
Age

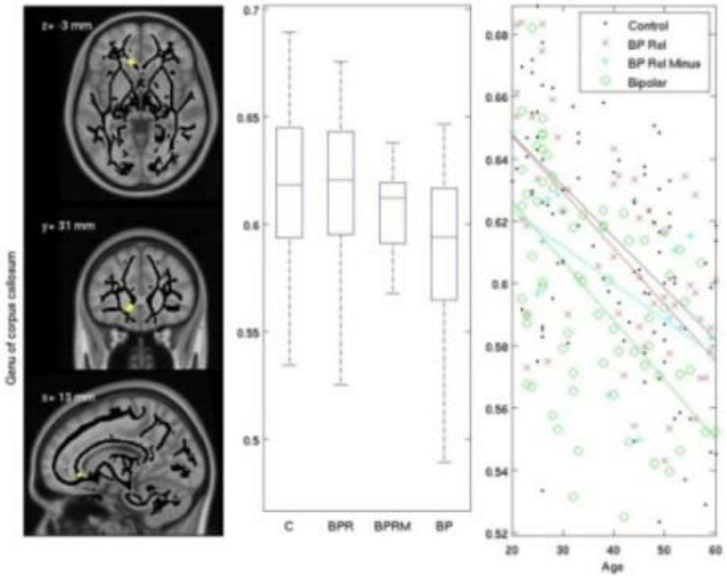


Figure 1S

Regions showing differences between subgroups of relatives (cluster A subjects more similar to patients than other relatives). Two top panels show genus of Corpus Callosum and right posterior thalamic radiation are centered around voxel showing high difference between schizophrenia subjects and control. Lower region is defined within genu of Corpus Callosum but is centered around voxel maximizing the difference between PBP probands and healthy controls. Schizophrenia data show progressive lowering of FA values between groups while Bipolar show unaffected relatives similar to controls and cluster A relatives more similar patients.

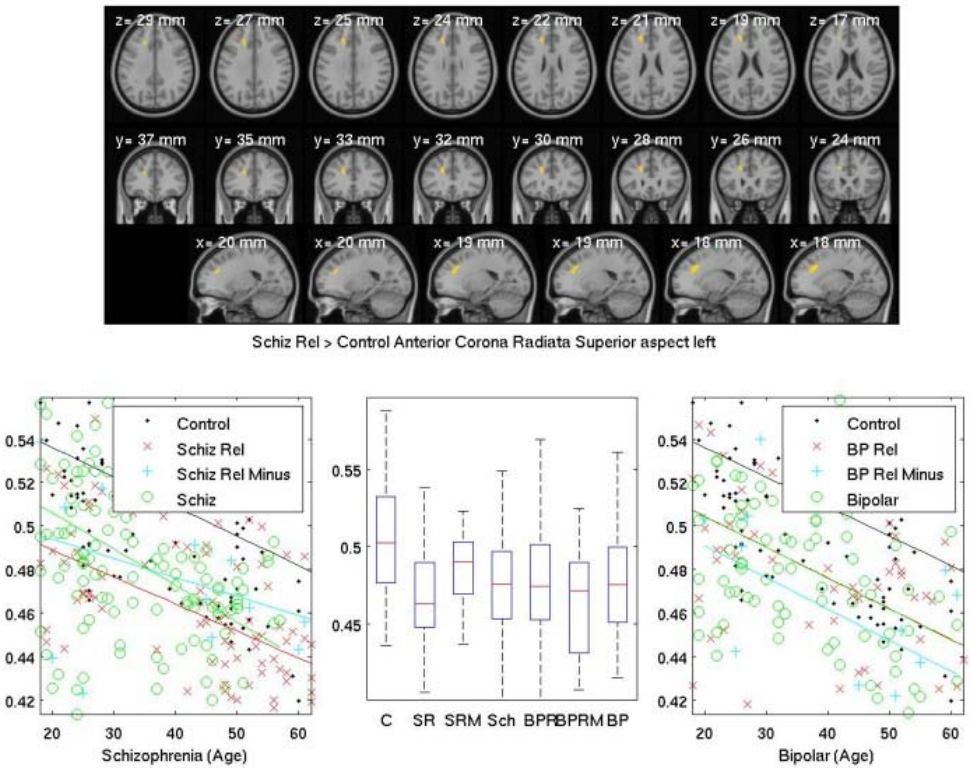


Figure 2S

Cluster within superior aspect of left anterior corona radiata detected in analysis contrasting healthy schizophrenia relatives with healthy controls at $p<0.05$, whole brain volume corrected using Threshold Free Cluster Enhancement (TFCE). FA shows similar age decrease in both clinical groups. Similar slightly weaker differences between clinical groups were found in its right hemisphere homologue.

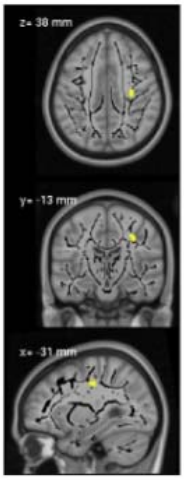


Figure 3S

Cluster in the left Superior Longitudinal Fasciculus at MNI coordinate (-33,-19,41) showing high correlation between Schizophrenia-Bipolar Scale (SBS) and FA. PBP probands show higher FA values (are more similar to healthy controls) than SZ probands.