

Supplementary Material

On brain atlas choice and automatic segmentation methods: a comparison of MAPER & FreeSurfer using three atlas databases

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Supplementary Methods: Masking to achieve compatibility between HM and the other atlases

We carried out brain extraction in five steps: 1) binarizing the manually generated labels to generate Mask A for later use, 2) generating a brain mask with FSL BET on each full image with -f and -g parameters optimized per subject to achieve visually satisfactory masking, 3) eroding the result of Step 2 in four iterations to generate Mask B, 4) combining Mask A and Mask B using Boolean OR, 5) multiplying the MR image with the mask resulting from Step 4.

Supplementary Table A1. Summary of atlas databases.

	HM	DKT40	MGC2012
Scanner	1.5T GE Signa Echospeed	n=19: 1.5T Siemens Vision n=11: 3T Philips Achieva n=10: 3T Phillips	1.5T Siemens Vision
Sequence	3D Cor IR-SPGR	n=19: 3D Sag MP-RAGE n=11: 3D Sag MP-RAGE n=10: 3D Unknown	3D Sag MP-RAGE
Voxel Size (mm)	0.9375×0.9375×1.5	n=19: 1×1×1.25 n=11: 1×1×1.2 n=10: 1×1×1	1×1×1.25
Number of Regions	95	62	138
Atlas Voxel Size (mm)	0.9375×0.9375×0.9375	n=29: 1×1×1 n=11: 1×1×1.2	1×1×1
Number of Subjects	30	40	30
Age Range (mean ± SD)	20–54 (31.0 ± 7.8)	19–61 (26.4 ± 7.3)	18–90 (34.3 ± 20.7)
Gender (F/M)	15/15	20/20	20/10
Handedness (R/L)	25/5	37/1 [†]	30/0

Cor: coronal, Sag: sagittal, IR-SPGR: inversion recovery prepared fast spoiled gradient recall sequence, MP-RAGE: magnetization prepared rapid gradient-echo.

[†]2 unknown handedness

Supplementary Table A2. List of 95 cortical and sub-cortical labels for HM atlas.

Abbreviations: L = left, R = right, gyr. = gyrus, cort. = cortex, ant. = anterior, post. = posterior, sup. = superior, inf. = inferior, med. = medial, lat. = lateral, temp. = temporal.

No.	Region Name				
1	hippocampus R	24	cingulate gyrus, ant. L	48	lat. ventricle, temp. horn L
2	hippocampus L	25	cingulate gyrus, ant. R	49	third ventricle
3	amygdala R	26	cingulate gyrus, post. L	50	precentral gyr. L
4	amygdala L	27	cingulate gyrus, post. R	51	precentral gyr. R
5	ant. temp. lobe, med. R	28	middle frontal gyr. L	52	straight gyr. L
6	ant. temp. lobe, med. L	29	middle frontal gyr. R	53	straight gyr. R
7	ant. temp. lobe, lat. R	30	post. temp. lobe L	54	ant. orbital gyr. L
8	ant. temp. lobe, lat. L	31	post. temp. lobe R	55	ant. orbital gyr. R
9	parahippocampal gyr. R	32	angular gyr. L	56	inf. frontal gyr. L
10	parahippocampal gyr. L	33	angular gyr. R	57	inf. frontal gyr. R
11	sup. temp. gyr., post. R	34	caudate nucleus L	58	sup. frontal gyr. L
12	sup. temp. gyr., post. L	35	caudate nucleus R	59	sup. frontal gyr. R
13	middle & inf. temp. gyr. R	36	nucleus accumbens L	60	postcentral gyr. L
14	middle & inf. temp. gyr. L	37	nucleus accumbens R	61	postcentral gyr. R
15	fusiform gyr. R	38	putamen L	62	sup. parietal gyr. L
16	fusiform gyr. L	39	putamen R	63	sup. parietal gyr. R
17	cerebellum R	40	thalamus L	64	lingual gyr. L
18	cerebellum L	41	thalamus R	65	lingual gyr. R
19	brainstem	42	pallidum L	66	cuneus L
20	insula, post. long gyr. L	43	pallidum R	67	cuneus R
21	insula, post. long gyr. R	44	corpus callosum	68	med. orbital gyr. L
22	occipital lobe L	45	lat. ventricle, main R	69	med. orbital gyr. R
23	occipital lobe R	46	lat. ventricle, main L	70	lat. orbital gyr. L
		47	lat. ventricle, temp. horn R	71	lat. orbital gyr. R
				72	post. orbital gyr. L
				73	post. orbital gyr. R
				74	substantia nigra L
				75	substantia nigra R
				76	subgenual frontal cort. L
				77	subgenual frontal cort. R
				78	subcallosal area L
				79	subcallosal area R
				80	pre-subgenual frontal cort. L
				81	pre-subgenual frontal cort. R
				82	sup. temp. gyr., ant. L
				83	sup. temp. gyr., ant. R
				84	supramarginal gyr. L
				85	supramarginal gyr. R
				86	insula, ant. short gyr. L
				87	insula, ant. short gyr. R
				88	insula, middle short gyr. L
				89	insula, middle short gyr. R
				90	insula, post. short gyr. L
				91	insula, post. short gyr. R
				92	insula, ant. inf. cort. L
				93	insula, ant. inf. cort. R
				94	insula, ant. long gyr. L
				95	insula, ant. long gyr. R

Supplementary Table A3. List of 62 cortical labels for DKT40 atlas.

Abbreviations: L = left, R = right, gyr. = gyrus, cort. = cortex, ant. = anterior, post. = posterior, sup. = superior, inf. = inferior, med. = medial, lat. = lateral, temp. = temporal.

No.	Region Name	No.	Region Name
1	cingulate gyr., caudal ant. L	32	cingulate gyr., caudal ant. R
2	middle frontal gyr., caudal L	33	middle frontal gyr., caudal R
3	cuneus L	34	cuneus R
4	entorhinal cort. L	35	entorhinal cort. R
5	fusiform gyr. L	36	fusiform gyr. R
6	inf. parietal gyr. L	37	inf. parietal gyr. R
7	inf. temp. gyr. L	38	inf. temp. gyr. R
8	cingulate gyr., isthmus L	39	cingulate gyr., isthmus R
9	lat. occipital lobe L	40	lat. occipital lobe R
10	lat. orbitofrontal L	41	lat. orbitofrontal R
11	lingual gyr. L	42	lingual gyr. R
12	med. orbitofrontal L	43	med. orbitofrontal R
13	middle temp. gyr. L	44	middle temp. gyr. R
14	parahippocampal gyr. L	45	parahippocampal gyr. R
15	paracentral gyr. L	46	paracentral gyr. R
16	pars opercularis L	47	pars opercularis R
17	pars orbitalis L	48	pars orbitalis R
18	pars triangularis L	49	pars triangularis R
19	pericalcarine cort. L	50	pericalcarine cort. R
20	postcentral gyr. L	51	postcentral gyr. R
21	cingulate gyr., post. L	52	cingulate gyr., post. R
22	precentral gyr. L	53	precentral gyr. R
23	precuneus L	54	precuneus R
24	cingulate gyr., rostral ant. L	55	cingulate gyr., rostral ant. R
25	middle frontal gyr., rostral L	56	middle frontal gyr., rostral R
26	sup. frontal gyr. L	57	sup. frontal gyr. R
27	sup. parietal gyr. L	58	sup. parietal gyr. R
28	sup. temp. gyr. L	59	sup. temp. gyr. R
29	supramarginal gyr. L	60	supramarginal gyr. R
30	transverse temp. gyr. L	61	transverse temp. gyr. R
31	insula cort. L	62	insula cort. R

Supplementary Table A4. List of 132 cortical and sub-cortical labels for MGC2012 atlas.

Abbreviations: L = left, R = right, gyr. = gyrus, cort. = cortex, ant. = anterior, post. = posterior, sup. = superior, inf. = inferior, med. = medial, lat. = lateral, temp. = temporal.

No.	Region Name	30	ventral diencephalon L	57	gyrus rectus R	87	occipital fusiform gyr. R	115	sup. frontal gyr. R
1	third ventricle	31	optic chiasm	58	gyrus rectus L	88	occipital fusiform gyr. L	116	sup. frontal gyr. L
2	fourth ventricle	32	cerebellar vermal lobules	59	inf. occipital gyr. R	89	inf. frontal gyr., opercular R	117	supplementary motor cort. R
3	accumbens area R		I-V	60	inf. occipital gyr. L				
4	accumbens area L	33	cerebellar vermal lobules	61	inf. temp. gyr. R	90	inf. frontal gyr., opercular L	118	supplementary motor cort. L
5	amygdala R		VI-VII	62	inf. temp. gyr. L				
6	amygdala L	34	cerebellar vermal lobules	63	lingual gyr. R	91	inf. frontal gyr., orbital R	119	supramarginal gyr. R
7	brainstem		VIII-X	64	lingual gyr. L	92	inf. frontal gyr., orbital L	120	supramarginal gyr. L
8	caudate R	35	cingulate gyrus, ant. R	65	lat. orbital gyr. R	93	cingulate gyrus, post. R	121	sup. occipital gyr. R
9	caudate L	36	cingulate gyrus, ant. L	66	lat. orbital gyr. L	94	cingulate gyrus, post. L	122	sup. occipital gyr. L
10	cerebellum exterior R	37	ant. insula R	67	cingulate gyrus, middle R	95	precuneus R	123	sup. parietal lobule R
11	cerebellum exterior L	38	ant. insula L	68	cingulate gyrus, middle L	96	precuneus L	124	sup. parietal lobule L
12	cerebellar white matter R	39	ant. orbital gyr. R	69	med. frontal cort. R	97	parahippocampal gyr. R	125	sup. temp. gyr. R
13	cerebellar white matter L	40	ant. orbital gyr. L	70	med. frontal cort. L	98	parahippocampal gyr. L	126	sup. temp. gyr. L
14	cerebral white matter R	41	angular gyrus R	71	middle frontal gyr. R	99	post. insula R	127	temporal pole R
15	cerebral white matter L	42	angular gyrus L	72	middle frontal gyr. L	100	post. insula L	128	temporal pole L
16	cerebrospinal fluid	43	calcarine cort. R	73	middle occipital gyr. R	101	parietal operculum R	129	inf. frontal gyr., triangular R
17	hippocampus R	44	calcarine cort. L	74	middle occipital gyr. L	102	parietal operculum L		
18	hippocampus L	45	central operculum R	75	med. orbital gyr. R	103	postcentral gyr. R	130	inf. frontal gyr., triangular L
19	inf. lateral ventricle R	46	central operculum L	76	med. orbital gyr. L	104	postcentral gyr. L		
20	inf. lateral ventricle L	47	cuneus R	77	postcentral gyr., med. R	105	post. orbital gyr. R	131	transverse temp. gyr. R
21	lateral ventricle R	48	cuneus L	78	postcentral gyr., med. L	106	post. orbital gyr. L	132	transverse temp. gyr. L
22	lateral ventricle L	49	entorhinal area R	79	precentral gyr., med. R	107	planum polare R		
23	pallidum R	50	entorhinal area L	80	precentral gyr., med. L	108	planum polare L		
24	pallidum L	51	frontal operculum R	81	sup. frontal gyr., med. R	109	precentral gyr. R		
25	putamen R	52	frontal operculum L	82	sup. frontal gyr., med. L	110	precentral gyr. L		
26	putamen L	53	frontal pole R	83	middle temp. gyr. R	111	planum temporale R		
27	thalamus (proper) R	54	frontal pole L	84	middle temp. gyr. L	112	planum temporale L		
28	thalamus (proper) L	55	fusiform gyr. R	85	occipital pole R	113	subcallosal area R		
29	ventral diencephalon R	56	fusiform gyr. L	86	occipital pole L	114	subcallosal area L		

Supplementary Table B1. Region properties in HM atlas database.

Region volumes (mm³), coefficient of variation (CV) and surface-to-volume ratio (SVR) for all subjects in the HM atlas database. Volumes are expressed as a fraction of ICV multiplied by 10⁴. Abbreviations: gyr. = gyrus, cort. = cortex, ant. = anterior, post. = posterior, sup. = superior, inf. = inferior, med. = medial, lat. = lateral, temp. = temporal. np: non-paired regions.

Region	Right Hemisphere			Left Hemisphere		
	Volume (mean ± SD)	CV	SVR (mean ± SD)	Volume (mean ± SD)	CV	SVR (mean ± SD)
<i>Temporal lobe</i>						
hippocampus	13.6 ± 1.79	0.132	0.81 ± 0.11	12.7 ± 1.62	0.128	0.84 ± 0.09
amygdala	9.35 ± 1.39	0.149	0.69 ± 0.05	9.98 ± 1.91	0.191	0.67 ± 0.08
ant. temp. lobe, med.	27.6 ± 5.95	0.216	1.11 ± 0.21	26.7 ± 4.54	0.170	1.03 ± 0.17
ant. temp. lobe, lat.	14.3 ± 3.88	0.271	1.27 ± 0.22	13.7 ± 3.75	0.274	1.17 ± 0.17
parahippocampal gyr.	18.5 ± 2.40	0.130	1.25 ± 0.11	19.5 ± 2.13	0.109	1.27 ± 0.11
sup. temp. gyr., post.	42.9 ± 5.29	0.123	1.24 ± 0.09	42.9 ± 5.76	0.134	1.03 ± 0.08
middle & inf. temp. gyr.	55.4 ± 6.58	0.119	1.17 ± 0.13	53.1 ± 8.23	0.155	1.13 ± 0.12
fusiform gyr.	16.1 ± 2.84	0.176	1.37 ± 0.16	17.0 ± 3.47	0.205	1.24 ± 0.14
post. temp. lobe	146 ± 16.9	0.116	1.03 ± 0.08	141 ± 19.6	0.139	1.07 ± 0.09
sup. temp. gyr., ant.	19.3 ± 3.81	0.198	1.21 ± 0.17	20.3 ± 4.60	0.227	1.01 ± 0.14
<i>Insula and cingulate gyri</i>						
insula, post. long gyr.	7.74 ± 1.49	0.192	1.26 ± 0.15	7.66 ± 1.34	0.175	1.27 ± 0.11
insula, ant. short gyr.	5.96 ± 1.39	0.233	1.17 ± 0.15	6.58 ± 1.05	0.160	1.19 ± 0.13
insula, middle short gyr.	3.60 ± 1.26	0.350	1.30 ± 0.19	3.69 ± 0.83	0.224	1.36 ± 0.12
insula, post. short gyr.	5.85 ± 1.28	0.218	1.16 ± 0.13	5.70 ± 1.37	0.239	1.18 ± 0.10
insula, ant. inf. cort.	8.07 ± 2.45	0.304	1.28 ± 0.22	8.50 ± 2.51	0.296	1.18 ± 0.18
insula, ant. long gyr.	8.34 ± 1.26	0.151	1.17 ± 0.10	8.43 ± 1.45	0.172	1.16 ± 0.12
cingulate gyrus, ant.	27.6 ± 6.96	0.252	1.06 ± 0.13	28.6 ± 7.06	0.247	1.09 ± 0.14
cingulate gyrus, post.	28.7 ± 4.82	0.168	1.04 ± 0.09	28.0 ± 3.61	0.129	1.12 ± 0.11
<i>Frontal lobe</i>						
middle frontal gyr.	122 ± 18.4	0.151	1.16 ± 0.08	128 ± 16.7	0.131	1.03 ± 0.07
precentral gyr.	84.1 ± 11.2	0.133	1.25 ± 0.09	87.2 ± 8.49	0.097	1.17 ± 0.09
ant. orbital gyr.	21.0 ± 3.82	0.182	1.27 ± 0.13	20.4 ± 3.73	0.183	1.23 ± 0.13
inf. frontal gyr.	56.3 ± 11.3	0.200	1.13 ± 0.11	61.0 ± 11.2	0.183	1.09 ± 0.09
sup. frontal gyr.	161 ± 22.1	0.138	1.02 ± 0.08	160 ± 22.6	0.141	1.03 ± 0.08
med. orbital gyr.	18.5 ± 3.71	0.201	1.56 ± 0.17	19.5 ± 4.25	0.218	1.50 ± 0.16
lat. orbital gyr.	15.3 ± 5.56	0.364	1.29 ± 0.15	14.3 ± 4.89	0.342	1.36 ± 0.15
post. orbital gyr.	17.5 ± 3.16	0.181	1.22 ± 0.13	17.9 ± 3.75	0.209	1.19 ± 0.15
subgenual frontal cort.	3.14 ± 1.15	0.366	1.48 ± 0.26	3.49 ± 1.10	0.314	1.45 ± 0.27
pre-subgenual frontal cort.	3.16 ± 1.49	0.471	1.42 ± 0.21	4.20 ± 1.66	0.396	1.29 ± 0.19
<i>Occipital lobe</i>						
lingual gyr.	43.8 ± 7.00	0.160	1.36 ± 0.10	43.4 ± 7.41	0.171	1.33 ± 0.10
cuneus	32.6 ± 4.99	0.153	1.43 ± 0.12	33.7 ± 6.86	0.203	1.43 ± 0.12
occipital lobe	134 ± 27.5	0.205	1.16 ± 0.08	133 ± 21.7	0.163	1.17 ± 0.06
<i>Parietal lobe</i>						
straight gyr.	11.9 ± 2.71	0.227	1.64 ± 0.15	10.7 ± 2.22	0.208	1.57 ± 0.15
postcentral gyr.	70.4 ± 8.09	0.115	1.42 ± 0.09	76.3 ± 7.17	0.094	1.31 ± 0.09
sup. parietal gyr.	123 ± 13.7	0.111	1.16 ± 0.07	121 ± 15.9	0.132	1.10 ± 0.08
supramarginal gyr.	67.4 ± 13.6	0.201	1.10 ± 0.08	74.5 ± 11.8	0.158	1.03 ± 0.07
angular gyr.	55.5 ± 11.6	0.210	1.03 ± 0.07	52.1 ± 14.9	0.285	1.06 ± 0.08
<i>Central structures</i>						
caudate nucleus	27.1 ± 3.15	0.116	0.66 ± 0.03	27.3 ± 3.28	0.120	0.56 ± 0.03
nucleus accumbens	2.08 ± 0.39	0.188	1.18 ± 0.13	2.41 ± 0.52	0.217	1.11 ± 0.09
putamen	29.8 ± 2.58	0.086	0.56 ± 0.03	31.2 ± 2.70	0.087	0.60 ± 0.03

thalamus	45.8 ± 4.35	0.095	0.42 ± 0.03	47.1 ± 4.62	0.098	0.43 ± 0.03
pallidum	8.72 ± 1.19	0.137	0.78 ± 0.07	8.77 ± 1.17	0.133	0.81 ± 0.04
corpus callosum (np)	135 ± 18.7	0.139	0.56 ± 0.05			
substantia nigra	2.44 ± 0.45	0.184	1.39 ± 0.13	2.51 ± 0.41	0.163	1.27 ± 0.11
subcallosal area	2.09 ± 0.71	0.340	1.66 ± 0.27	2.29 ± 0.80	0.348	1.60 ± 0.28
<i>Posterior fossa & ventricles</i>						
cerebellum	460 ± 41.8	0.091	0.20 ± 0.01	461 ± 38.4	0.083	0.20 ± 0.01
brainstem (np)	160 ± 9.81	0.061	0.34 ± 0.02			
lat. ventricle, main	51.1 ± 22.3	0.436	0.75 ± 0.17	56.2 ± 20.9	0.372	0.69 ± 0.14
lat. ventricle, temp. horn	4.60 ± 0.87	0.189	1.57 ± 0.19	3.86 ± 0.80	0.207	1.80 ± 0.24
third ventricle (np)	6.68 ± 1.96	0.294	1.11 ± 0.20			

Supplementary Table B2. Region properties in DKT atlas database.

Region volumes (mm³), coefficient of variation (CV) and surface-to-volume ratio (SVR) for all subjects in the DKT40 atlas database. Volumes are expressed as a fraction of ICV multiplied by 10⁴. Abbreviations as in Supp. Table B1.

Region	Right Hemisphere			Left Hemisphere		
	Volume (mean ± SD)	CV	SVR (mean ± SD)	Volume (mean ± SD)	CV	SVR (mean ± SD)
<i>Temporal lobe</i>						
entorhinal cort.	12.0 ± 2.33	0.193	0.83 ± 0.22	12.4 ± 2.35	0.190	0.84 ± 0.22
parahippocampal gyr.	14.0 ± 2.76	0.197	0.96 ± 0.27	15.1 ± 2.80	0.185	0.93 ± 0.26
sup. temp. gyr.	106 ± 15.4	0.144	0.82 ± 0.20	115 ± 12.6	0.110	0.73 ± 0.19
middle temp. gyr.	94.2 ± 12.3	0.131	0.82 ± 0.19	95.0 ± 15.3	0.161	0.82 ± 0.20
inf. temp. gyr.	79.7 ± 9.70	0.122	0.80 ± 0.21	80.3 ± 10.7	0.133	0.83 ± 0.21
fusiform gyr.	56.5 ± 10.2	0.181	0.92 ± 0.27	60.9 ± 11.8	0.194	0.89 ± 0.26
transverse temp. gyr.	7.00 ± 1.30	0.186	1.16 ± 0.29	8.52 ± 2.04	0.239	1.03 ± 0.27
<i>Insula and cingulate gyri</i>						
insula cort.	40.9 ± 4.06	0.099	0.71 ± 0.25	40.7 ± 4.29	0.105	0.75 ± 0.26
cingulate gyr., rostral ant.	20.0 ± 8.06	0.404	0.94 ± 0.27	25.2 ± 7.37	0.292	0.94 ± 0.27
cingulate gyr., caudal ant.	20.3 ± 6.75	0.333	0.83 ± 0.26	22.8 ± 7.34	0.322	0.89 ± 0.27
cingulate gyr., post.	24.6 ± 4.61	0.187	0.93 ± 0.26	26.1 ± 4.79	0.183	0.99 ± 0.27
cingulate gyr., isthmus	16.4 ± 4.14	0.252	1.03 ± 0.28	16.2 ± 3.16	0.195	1.06 ± 0.29
<i>Frontal lobe</i>						
middle frontal gyr., rostral	78.9 ± 13.0	0.164	0.96 ± 0.22	79.4 ± 12.4	0.157	0.92 ± 0.208
middle frontal gyr., caudal	42.9 ± 7.06	0.165	0.93 ± 0.22	47.6 ± 7.79	0.164	0.85 ± 0.20
sup. frontal gyr.	176 ± 23.4	0.133	0.80 ± 0.22	166 ± 22.1	0.133	0.82 ± 0.22
pars opercularis	33.0 ± 8.76	0.265	0.93 ± 0.20	31.9 ± 10.1	0.317	0.91 ± 0.20
pars triangularis	29.7 ± 7.40	0.249	0.93 ± 0.21	31.0 ± 9.71	0.313	0.96 ± 0.19
pars orbitalis	16.6 ± 5.59	0.336	0.94 ± 0.25	15.8 ± 5.27	0.333	1.00 ± 0.25
lat. orbitofrontal	57.7 ± 6.76	0.117	0.88 ± 0.23	55.7 ± 8.92	0.160	0.89 ± 0.26
med. orbitofrontal	26.6 ± 4.07	0.153	1.04 ± 0.33	28.3 ± 6.02	0.213	1.00 ± 0.33
precentral gyr.	88.4 ± 12.0	0.136	0.89 ± 0.21	90.0 ± 11.2	0.125	0.84 ± 0.19
paracentral gyr.	28.8 ± 4.28	0.148	0.91 ± 0.28	27.7 ± 5.22	0.189	0.94 ± 0.28
<i>Occipital lobe</i>						
lingual gyr.	48.4 ± 6.83	0.141	1.06 ± 0.28	45.0 ± 10.3	0.228	1.10 ± 0.31
cuneus	28.5 ± 5.27	0.185	1.16 ± 0.33	29.3 ± 4.97	0.170	1.17 ± 0.36
lat. occipital lobe	81.4 ± 9.56	0.117	0.99 ± 0.22	78.2 ± 9.71	0.124	0.99 ± 0.23
pericalcarine cort.	15.3 ± 2.69	0.175	1.33 ± 0.31	13.8 ± 2.72	0.197	1.33 ± 0.33
<i>Parietal lobe</i>						
postcentral gyr.	66.0 ± 10.9	0.165	1.13 ± 0.26	71.0 ± 9.64	0.136	1.02 ± 0.24
sup. parietal gyr.	77.4 ± 9.80	0.127	1.00 ± 0.26	72.6 ± 12.0	0.165	0.94 ± 0.26
supramarginal gyr.	71.0 ± 14.1	0.199	0.90 ± 0.19	74.1 ± 13.5	0.182	0.85 ± 0.18
inf. parietal gyr.	92.3 ± 18.4	0.200	0.86 ± 0.22	81.5 ± 16.2	0.199	0.88 ± 0.22
precuneus	68.9 ± 10.2	0.149	0.94 ± 0.25	65.3 ± 8.32	0.127	0.92 ± 0.26

Supplementary Table B3. Region properties in MGC2012 atlas database.

Region volumes (mm³), coefficient of variation (CV) and surface-to-volume ratio (SVR) for all subjects in the MGC2012 atlas database. Volumes are expressed as a fraction of ICV multiplied by 10⁴. Abbreviations as in Supp. Table B1.

Region	Right Hemisphere			Left Hemisphere		
	Volume (mean ± SD)	CV	SVR (mean ± SD)	Volume (mean ± SD)	CV	SVR (mean ± SD)
<i>Temporal lobe</i>						
hippocampus	25.1 ± 2.63	0.105	0.56 ± 0.02	23.8 ± 2.60	0.109	0.62 ± 0.02
amygdala	6.74 ± 1.08	0.161	0.70 ± 0.05	6.62 ± 0.97	0.146	0.75 ± 0.06
entorhinal area	13.0 ± 3.45	0.265	0.78 ± 0.07	12.9 ± 3.38	0.262	0.73 ± 0.08
parahippocampal gyr.	21.0 ± 3.93	0.187	0.86 ± 0.06	22.5 ± 2.76	0.123	0.88 ± 0.04
sup. temp. gyr.	56.3 ± 9.04	0.160	0.77 ± 0.06	55.2 ± 12.5	0.226	0.70 ± 0.05
middle temp. gyr.	107 ± 12.4	0.116	0.64 ± 0.04	104 ± 16.6	0.159	0.64 ± 0.05
inf. temp. gyr.	84.8 ± 11.3	0.134	0.62 ± 0.04	84.3 ± 14.3	0.170	0.70 ± 0.06
fusiform gyr.	55.1 ± 11.0	0.199	0.72 ± 0.05	55.4 ± 12.0	0.217	0.73 ± 0.07
transverse temp. gyr.	11.5 ± 3.77	0.329	1.01 ± 0.09	12.3 ± 3.82	0.309	0.90 ± 0.10
temporal pole	59.2 ± 12.0	0.202	0.60 ± 0.04	58.6 ± 11.1	0.190	0.56 ± 0.04
planum temporale	14.7 ± 4.61	0.313	1.05 ± 0.09	15.8 ± 4.20	0.265	0.87 ± 0.08
planum polare	15.0 ± 4.62	0.308	1.06 ± 0.09	16.3 ± 4.16	0.255	0.82 ± 0.05
<i>Insula and cingulate gyri</i>						
ant. insula	30.2 ± 2.34	0.077	0.64 ± 0.03	31.1 ± 4.10	0.132	0.72 ± 0.04
post. insula	16.8 ± 2.20	0.131	0.77 ± 0.06	16.4 ± 2.76	0.169	0.75 ± 0.06
cingulate gyrus, ant.	31.3 ± 8.59	0.274	0.68 ± 0.04	36.4 ± 10.7	0.295	0.67 ± 0.05
cingulate gyrus, middle	35.9 ± 4.79	0.133	0.72 ± 0.05	36.8 ± 7.69	0.209	0.73 ± 0.07
cingulate gyrus, post.	30.7 ± 7.56	0.246	0.80 ± 0.08	33.6 ± 7.26	0.216	0.82 ± 0.06
<i>Frontal lobe</i>						
middle frontal gyr.	141 ± 18.9	0.134	0.68 ± 0.06	144 ± 16.9	0.117	0.63 ± 0.05
precentral gyr.	96.4 ± 10.2	0.106	0.76 ± 0.06	97.2 ± 14.1	0.145	0.71 ± 0.06
precentral gyr., med.	19.9 ± 5.20	0.262	0.81 ± 0.08	20.5 ± 5.18	0.253	0.86 ± 0.08
sup. frontal gyr.	111 ± 21.4	0.194	0.70 ± 0.06	109 ± 15.3	0.140	0.73 ± 0.06
sup. frontal gyr., med.	59.0 ± 10.9	0.185	0.69 ± 0.05	52.9 ± 13.3	0.252	0.74 ± 0.07
med. frontal cort.	14.2 ± 4.34	0.305	1.01 ± 0.11	14.6 ± 3.62	0.247	0.89 ± 0.07
inf. frontal gyr., opercular	26.3 ± 8.20	0.311	0.84 ± 0.09	25.1 ± 7.43	0.296	0.83 ± 0.08
inf. frontal gyr., orbital	12.3 ± 4.57	0.373	0.92 ± 0.10	11.8 ± 3.92	0.332	1.05 ± 0.11
inf. frontal gyr., triangular	27.5 ± 8.35	0.303	0.80 ± 0.08	29.4 ± 8.33	0.283	0.84 ± 0.07
frontal operculum	14.8 ± 4.16	0.281	0.82 ± 0.08	14.9 ± 4.12	0.277	1.00 ± 0.09
frontal pole	27.8 ± 11.7	0.422	0.80 ± 0.14	26.0 ± 13.3	0.509	0.83 ± 0.10
central operculum	29.6 ± 7.92	0.268	0.73 ± 0.05	29.8 ± 5.94	0.199	0.79 ± 0.06
ant. orbital gyr.	14.3 ± 4.15	0.291	0.87 ± 0.08	12.0 ± 3.55	0.296	0.89 ± 0.08
post. orbital gyr.	18.0 ± 4.31	0.239	0.86 ± 0.08	19.6 ± 4.99	0.254	0.85 ± 0.08
med. orbital gyr.	31.3 ± 4.83	0.154	0.84 ± 0.08	32.1 ± 6.37	0.199	0.74 ± 0.06
lat. orbital gyr.	17.8 ± 5.04	0.283	0.88 ± 0.10	18.5 ± 5.95	0.322	0.96 ± 0.09
supplementary motor cort.	39.8 ± 8.15	0.205	0.70 ± 0.05	40.8 ± 7.37	0.181	0.76 ± 0.07
<i>Occipital lobe</i>						
lingual gyr.	61.5 ± 15.3	0.249	0.79 ± 0.08	57.1 ± 14.3	0.251	0.80 ± 0.10
cuneus	37.8 ± 7.86	0.208	0.86 ± 0.08	35.2 ± 8.75	0.249	0.85 ± 0.09
sup. occipital gyr.	33.6 ± 11.0	0.328	0.84 ± 0.09	27.5 ± 8.63	0.314	0.87 ± 0.09
middle occipital gyr.	41.6 ± 10.2	0.246	0.71 ± 0.06	47.2 ± 12.4	0.263	0.68 ± 0.07
inf. occipital gyr.	50.8 ± 12.4	0.245	0.76 ± 0.08	47.8 ± 12.4	0.260	0.73 ± 0.09
occipital pole	22.5 ± 10.2	0.454	0.85 ± 0.16	26.4 ± 12.1	0.458	0.76 ± 0.09
occipital fusiform gyr.	31.9 ± 9.06	0.284	0.84 ± 0.08	32.4 ± 10.6	0.327	0.83 ± 0.10
calcarine cort.	25.6 ± 6.02	0.235	0.74 ± 0.07	25.6 ± 4.90	0.191	0.74 ± 0.08
<i>Parietal lobe</i>						

gyrus rectus	16.7 ± 3.98	0.239	0.95 ± 0.11	18.1 ± 3.77	0.209	0.80 ± 0.09
postcentral gyr.	78.6 ± 12.0	0.153	0.88 ± 0.09	88.9 ± 17.8	0.200	0.79 ± 0.08
postcentral gyr., med.	7.90 ± 3.72	0.470	0.98 ± 0.11	8.56 ± 4.81	0.562	1.05 ± 0.15
sup. parietal lobule	78.2 ± 10.6	0.135	0.75 ± 0.07	79.2 ± 12.3	0.155	0.70 ± 0.06
supramarginal gyr.	63.5 ± 16.1	0.253	0.73 ± 0.06	69.0 ± 16.7	0.243	0.70 ± 0.06
precuneus	78.9 ± 10.5	0.133	0.69 ± 0.06	80.0 ± 10.8	0.135	0.67 ± 0.05
parietal operculum	17.1 ± 4.90	0.287	0.86 ± 0.08	18.6 ± 4.75	0.256	0.81 ± 0.10
angular gyrus	79.7 ± 25.1	0.315	0.63 ± 0.07	70.0 ± 20.1	0.288	0.66 ± 0.06
<i>Central structures</i>						
caudate	22.5 ± 2.65	0.118	0.66 ± 0.06	21.9 ± 2.98	0.137	0.54 ± 0.05
accumbens area	3.18 ± 0.90	0.284	1.08 ± 0.16	3.54 ± 0.82	0.232	1.11 ± 0.10
putamen	30.3 ± 2.90	0.095	0.50 ± 0.04	31.5 ± 3.10	0.099	0.53 ± 0.04
thalamus (proper)	52.5 ± 4.68	0.089	0.36 ± 0.02	54.9 ± 5.05	0.092	0.38 ± 0.02
pallidum	10.4 ± 1.46	0.140	0.63 ± 0.09	10.3 ± 1.10	0.106	0.70 ± 0.04
ventral diencephalon	32.0 ± 2.39	0.075	0.51 ± 0.03	33.7 ± 2.53	0.075	0.51 ± 0.03
optic chiasm (np)	0.57 ± 0.21	0.362	1.85 ± 0.38			
subcallosal area	9.00 ± 3.54	0.393	0.89 ± 0.12	8.98 ± 4.09	0.455	0.93 ± 0.14
<i>Posterior fossa, ventricles & white matter</i>						
cerebellum exterior	350 ± 28.2	0.080	0.33 ± 0.02	350 ± 28.5	0.082	0.34 ± 0.02
cerebellar vermal lobules I-V (np)	33.4 ± 7.74	0.232	0.54 ± 0.09			
cerebellar vermal lobules VI-VII (np)	16.0 ± 3.90	0.243	0.69 ± 0.07			
cerebellar vermal lobules VIII-X (np)	19.8 ± 3.34	0.169	0.59 ± 0.06			
brainstem	123 ± 11.2	0.091	0.32 ± 0.01			
lateral ventricle	61.8 ± 44.7	0.724	0.62 ± 0.19	74.4 ± 54.3	0.731	0.58 ± 0.18
inf. lateral ventricle	3.10 ± 1.43	0.462	1.45 ± 0.29	2.63 ± 1.41	0.536	1.73 ± 0.41
third ventricle (np)	5.85 ± 3.98	0.680	1.10 ± 0.30			
fourth ventricle (np)	12.3 ± 3.67	0.297	0.92 ± 0.12			
cerebrospinal fluid (np)	7.09 ± 1.86	0.262	0.92 ± 0.08			
cerebral white matter	1450 ± 121	0.084	0.44 ± 0.03	1430 ± 119	0.083	0.44 ± 0.03
cerebellar white matter	95.8 ± 13.8	0.144	0.52 ± 0.04	98.0 ± 10.9	0.112	0.54 ± 0.04

Supplementary Table C1. Jaccard overlap comparisons in HM atlas.

Leave-one-out cross-comparison results for MAPER and FreeSurfer segmentation of the Hammers_mith atlas. The mean JC (across 30 subjects) for each region is shown, with significant differences in JC between MAPER and FreeSurfer (from Welch's two-tailed paired t-test, after adjustment for 93 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	Right hemisphere		Left hemisphere	
	MAPER	FreeSurfer	MAPER	FreeSurfer
<i>Temporal lobe</i>				
hippocampus	0.728	0.664	0.712	0.643
amygdala	0.667	0.628	0.662	0.626
ant. temp. lobe, med.	0.793	0.707	0.797	0.693
ant. temp. lobe, lat.	0.682	0.520	0.677	0.452
parahippocampal gyr.	0.722	0.758	0.705	0.767
sup. temp. gyr., post.	0.838	0.802	0.845	0.803
middle & inf. temp. gyr.	0.826	0.783	0.808	0.731
fusiform gyr.	0.676	0.580	0.648	0.535
post. temp. lobe	0.762	0.709	0.778	0.715
sup. temp. gyr., ant.	0.762	0.726	0.775	0.713
<i>Insula and cingulate gyri</i>				
insula, post. long gyr.	0.755	0.709	0.748	0.695
insula, ant. short gyr.	0.730	0.669	0.753	0.669
insula, middle short gyr.	0.625	0.531	0.682	0.545
insula, post. short gyr.	0.753	0.628	0.737	0.598
insula, ant. inf. cort.	0.690	0.637	0.697	0.640
insula, ant. long gyr.	0.760	0.627	0.744	0.634
cingulate gyrus, ant.	0.778	0.780	0.721	0.721
cingulate gyrus, post.	0.750	0.771	0.787	0.799
<i>Frontal lobe</i>				
middle frontal gyr.	0.793	0.796	0.787	0.784
precentral gyr.	0.775	0.766	0.770	0.766
ant. orbital gyr.	0.722	0.702	0.675	0.645
inf. frontal gyr.	0.780	0.759	0.778	0.760
sup. frontal gyr.	0.830	0.837	0.821	0.822
med. orbital gyr.	0.633	0.604	0.628	0.563
lat. orbital gyr.	0.490	0.465	0.438	0.440
post. orbital gyr.	0.708	0.678	0.680	0.645
subgenual frontal cort.	0.666	0.573	0.688	0.559
pre-subgenual frontal cort.	0.552	0.497	0.598	0.514
<i>Occipital lobe</i>				
lingual gyr.	0.733	0.778	0.759	0.802
cuneus	0.750	0.773	0.747	0.753
occipital lobe	0.725	0.729	0.746	0.738
<i>Parietal lobe</i>				
straight gyr.	0.719	0.692	0.704	0.650
postcentral gyr.	0.765	0.748	0.776	0.781
sup. parietal gyr.	0.820	0.826	0.817	0.837
supramarginal gyr.	0.718	0.690	0.779	0.753
angular gyr.	0.595	0.558	0.645	0.595
<i>Central structures</i>				
caudate nucleus	0.813	0.743	0.809	0.740
nucleus accumbens	0.521	0.490	0.550	0.502

putamen	0.815	0.752	0.809	0.753
thalamus	0.803	0.783	0.806	0.776
pallidum	0.668	0.617	0.667	0.623
corpus callosum (np)	0.770	0.718		
substantia nigra	0.588	0.526	0.586	0.501
<i>Posterior fossa & ventricles</i>				
cerebellum	0.930	0.892	0.933	0.892
brainstem (np)	0.883	0.840		
lat. ventricle, main	0.818	0.734	0.835	0.752
lat. ventricle, temp. horn	0.529	0.434	0.493	0.396
third ventricle (np)	0.711	0.641		

Supplementary Table C2. Jaccard overlap comparisons in DKT atlas.

Leave-one-out cross-comparison results for MAPER and FreeSurfer segmentation of the Desikan-Killiany-Tourville 40 atlas. The mean JC (across 30 subjects) for each region is shown, with significant differences in JC between MAPER and FreeSurfer (from Welch's two-tailed paired t-test, after adjustment for 62 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	Right hemisphere		Left hemisphere	
	MAPER	FreeSurfer	MAPER	FreeSurfer
<i>Temporal lobe</i>				
entorhinal cort.	0.534	0.605	0.546	0.644
parahippocampal gyr.	0.631	0.750	0.651	0.749
sup. temp. gyr.	0.706	0.792	0.703	0.802
middle temp. gyr.	0.657	0.776	0.637	0.749
inf. temp. gyr.	0.598	0.736	0.592	0.713
fusiform gyr.	0.615	0.705	0.605	0.693
transverse temp. gyr.	0.635	0.722	0.612	0.704
<i>Insula and cingulate gyri</i>				
insula cort.	0.750	0.821	0.758	0.812
cingulate gyr., rostral ant.	0.567	0.610	0.604	0.621
cingulate gyr., caudal ant.	0.621	0.684	0.593	0.622
cingulate gyr., post.	0.644	0.737	0.626	0.714
cingulate gyr., isthmus	0.633	0.737	0.624	0.731
<i>Frontal lobe</i>				
middle frontal gyr., rostral	0.605	0.738	0.615	0.736
middle frontal gyr., caudal	0.569	0.787	0.590	0.799
sup. frontal gyr.	0.667	0.769	0.660	0.757
pars opercularis	0.632	0.683	0.590	0.661
pars triangularis	0.580	0.643	0.533	0.574
pars orbitalis	0.513	0.553	0.496	0.545
lat. orbitofrontal	0.671	0.758	0.655	0.752
med. orbitofrontal	0.583	0.657	0.580	0.660
precentral gyr.	0.646	0.781	0.643	0.788
paracentral gyr.	0.622	0.764	0.603	0.736
<i>Occipital lobe</i>				
lingual gyr.	0.634	0.776	0.605	0.752
cuneus	0.521	0.644	0.531	0.670
lat. occipital lobe	0.551	0.700	0.533	0.706
pericalcarine cort.	0.518	0.705	0.487	0.705
<i>Parietal lobe</i>				
postcentral gyr.	0.599	0.725	0.598	0.743
sup. parietal gyr.	0.572	0.733	0.574	0.755
supramarginal gyr.	0.605	0.679	0.623	0.733
inf. parietal gyr.	0.595	0.709	0.590	0.732
precuneus	0.669	0.771	0.670	0.782

Supplementary Table C3. Jaccard overlap comparisons in MGC2012 atlas.

Leave-one-out cross-comparison results for MAPER and FreeSurfer segmentation of the MICCAI 2012 Grand Challenge atlas. The mean JC (across 30 subjects) for each region is shown, with significant differences in JC between MAPER and FreeSurfer (from Welch's two-tailed paired t-test, after adjustment for 132 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	Right hemisphere		Left hemisphere	
	MAPER	FreeSurfer	MAPER	FreeSurfer
<i>Temporal lobe</i>				
hippocampus	0.747	0.704	0.746	0.700
amygdala	0.666	0.599	0.666	0.604
entorhinal area	0.544	0.297	0.544	0.338
parahippocampal gyr.	0.583	0.459	0.597	0.487
sup. temp. gyr.	0.680	0.544	0.618	0.503
middle temp. gyr.	0.675	0.575	0.649	0.538
inf. temp. gyr.	0.629	0.547	0.578	0.537
fusiform gyr.	0.636	0.504	0.610	0.511
transverse temp. gyr.	0.584	0.456	0.589	0.472
temporal pole	0.663	0.580	0.680	0.599
planum temporale	0.543	0.426	0.561	0.441
planum polare	0.588	0.460	0.589	0.495
<i>Insula and cingulate gyri</i>				
ant. insula	0.748	0.632	0.755	0.627
post. insula	0.707	0.577	0.694	0.550
cingulate gyrus, ant.	0.687	0.502	0.652	0.459
cingulate gyrus, middle	0.710	0.539	0.681	0.509
cingulate gyrus, post.	0.609	0.494	0.638	0.499
<i>Frontal lobe</i>				
middle frontal gyr.	0.699	0.556	0.724	0.577
precentral gyr.	0.717	0.588	0.713	0.591
precentral gyr., med.	0.548	0.445	0.584	0.470
sup. frontal gyr.	0.668	0.578	0.688	0.588
sup. frontal gyr., med.	0.656	0.520	0.636	0.516
med. frontal cort.	0.381	0.283	0.514	0.348
inf. frontal gyr., opercular	0.589	0.451	0.577	0.448
inf. frontal gyr., orbital	0.402	0.362	0.423	0.348
inf. frontal gyr., triangular	0.541	0.437	0.532	0.441
frontal operculum	0.547	0.366	0.549	0.372
frontal pole	0.527	0.401	0.489	0.376
central operculum	0.649	0.509	0.629	0.495
ant. orbital gyr.	0.454	0.362	0.431	0.299
post. orbital gyr.	0.600	0.526	0.619	0.511
med. orbital gyr.	0.637	0.523	0.620	0.439
lat. orbital gyr.	0.419	0.364	0.443	0.376
supplementary motor cort.	0.620	0.522	0.623	0.518
<i>Occipital lobe</i>				
lingual gyr.	0.601	0.510	0.610	0.494
cuneus	0.565	0.427	0.585	0.415
sup. occipital gyr.	0.509	0.397	0.482	0.382
middle occipital gyr.	0.538	0.417	0.516	0.410
inf. occipital gyr.	0.511	0.451	0.517	0.424
occipital pole	0.489	0.325	0.489	0.334

occipital fusiform gyr.	0.411	0.343	0.417	0.349
calcarine cort.	0.616	0.430	0.615	0.424
<i>Parietal lobe</i>				
gyrus rectus	0.522	0.405	0.563	0.417
postcentral gyr.	0.674	0.500	0.651	0.491
postcentral gyr., med.	0.369	0.314	0.392	0.303
sup. parietal lobule	0.618	0.508	0.637	0.522
supramarginal gyr.	0.573	0.473	0.560	0.473
precuneus	0.668	0.537	0.675	0.516
parietal operculum	0.557	0.421	0.552	0.426
angular gyrus	0.559	0.459	0.540	0.455
<i>Central structures</i>				
caudate	0.795	0.745	0.794	0.729
accumbens area	0.638	0.550	0.626	0.554
putamen	0.839	0.789	0.834	0.788
thalamus (proper)	0.845	0.799	0.851	0.796
pallidum	0.758	0.711	0.740	0.685
ventral diencephalon	0.795	0.725	0.794	0.723
optic chiasm (np)	0.289	0.317		
subcallosal area	0.510	0.420	0.475	0.313
<i>Posterior fossa, ventricles & white matter</i>				
cerebellum exterior	0.847	0.833	0.843	0.822
cerebellar vermal lobules I-V (np)	0.717	0.671		
cerebellar vermal lobules VI-VII (np)	0.642	0.569		
cerebellar vermal lobules VIII-X (np)	0.771	0.682		
brainstem	0.871	0.840		
lateral ventricle	0.855	0.783	0.860	0.800
inf. lateral ventricle	0.420	0.431	0.379	0.386
third ventricle (np)	0.736	0.630		
fourth ventricle (np)	0.764	0.688		
cerebrospinal fluid (np)	0.664	0.580		
cerebral white matter	0.887	0.869	0.882	0.867
cerebellar white matter	0.790	0.792	0.786	0.788

Supplementary Table D1. Group differences for the HM atlas database.

Negative percentage difference values indicate smaller volumes in AD than HC. Significant differences in structure volumes between HC and AD groups (from the ANCOVA, after adjustment for 93 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
hippocampus	-17.69	1.46E-08	-22.68	9.44E-11	-20.67	1.98E-08	-25.59	7.31E-12
amygdala	-16.42	1.44E-05	-15.42	7.22E-05	-20.12	6.91E-07	-25.78	3.71E-09
ant. temp. lobe, med.	-5.27	1.60E-01	-7.96	2.02E-02	-4.40	1.98E-01	-7.37	3.21E-02
ant. temp. lobe, lat.	-8.37	1.96E-02	-11.37	1.81E-02	-7.88	4.35E-02	-6.55	1.86E-01
parahippocampal gyr.	-14.05	6.53E-06	-17.31	3.39E-08	-22.52	1.04E-08	-23.12	9.95E-09
sup. temp. gyr., post.	-7.11	7.97E-03	-7.50	1.87E-02	-4.25	8.28E-02	-5.32	4.03E-02
middle & inf. temp. gyr.	-9.37	3.82E-03	-11.98	1.68E-04	-9.02	8.83E-04	-9.74	1.60E-03
fusiform gyr.	-6.25	9.65E-02	-13.16	1.20E-04	-10.47	6.38E-02	-13.00	8.23E-03
post. temp. lobe	-8.56	3.29E-04	-7.76	6.80E-04	-9.46	3.72E-04	-10.48	1.87E-04
sup. temp. gyr., ant.	-3.28	3.99E-01	-4.04	3.26E-01	-10.19	1.58E-03	-7.82	2.51E-02
<i>Insula and cingulate gyri</i>								
insula, post. long gyr.	-9.41	7.77E-03	-8.81	4.74E-03	-4.14	1.88E-01	-2.99	5.24E-01
insula, ant. short gyr.	-9.99	8.89E-03	-6.79	1.13E-01	-5.58	2.52E-01	-7.96	3.64E-02
insula, middle short gyr.	-8.11	1.14E-01	-9.78	4.72E-02	-6.22	3.62E-01	-2.04	8.01E-01
insula, post. short gyr.	-6.36	1.35E-01	-5.90	8.81E-02	-4.17	3.12E-01	0.34	8.04E-01
insula, ant. inf. cort.	-9.04	3.56E-02	-8.26	5.57E-02	-7.03	8.40E-02	-7.10	2.59E-02
insula, ant. long gyr.	-5.40	9.86E-02	-3.51	2.07E-01	-3.07	4.07E-01	2.54	4.41E-01
cingulate gyrus, ant.	-1.07	8.81E-01	0.41	7.78E-01	-2.08	6.21E-01	-1.04	8.48E-01
cingulate gyrus, post.	-3.28	2.55E-01	-5.79	3.84E-02	-3.57	1.80E-01	-7.09	9.95E-03
<i>Frontal lobe</i>								
middle frontal gyr.	-2.42	3.64E-01	-2.35	3.93E-01	-3.07	2.61E-01	-4.60	6.96E-02
precentral gyr.	-0.09	8.90E-01	-2.28	2.81E-01	-0.46	7.32E-01	-0.53	6.42E-01
ant. orbital gyr.	-2.62	3.16E-01	1.36	6.52E-01	-2.97	2.46E-01	-2.30	4.20E-01
inf. frontal gyr.	0.21	7.95E-01	-1.64	5.92E-01	1.27	6.18E-01	-3.42	2.24E-01
sup. frontal gyr.	-2.55	1.51E-01	-0.98	6.07E-01	-3.29	7.19E-02	-3.63	6.19E-02
med. orbital gyr.	-0.16	9.93E-01	0.23	9.73E-01	-2.44	2.81E-01	-1.20	5.29E-01

lat. orbital gyr.	-5.16	1.41E-01	-4.52	1.19E-01	-4.55	1.70E-01	-5.10	6.13E-02
post. orbital gyr.	-2.78	3.88E-01	-5.22	5.50E-02	0.38	8.53E-01	-3.12	3.27E-01
subgenual frontal cort.	-0.48	9.09E-01	6.48	1.12E-01	-3.91	5.20E-01	4.06	2.81E-01
pre-subgenual frontal cort.	-1.07	8.22E-01	13.46	2.70E-02	0.01	8.96E-01	10.25	6.33E-02
<i>Occipital lobe</i>								
lingual gyr.	-4.12	2.25E-01	-2.48	5.12E-01	-7.36	1.98E-02	-5.03	1.43E-01
cuneus	-7.86	4.97E-02	0.05	9.75E-01	-4.85	1.06E-01	-1.74	6.66E-01
occipital lobe	-8.17	3.66E-03	-8.89	5.93E-03	-6.18	1.52E-02	-6.72	9.24E-03
<i>Parietal lobe</i>								
straight gyr.	1.34	6.23E-01	0.12	9.17E-01	-4.15	9.33E-02	-2.69	3.01E-01
postcentral gyr.	-0.17	8.50E-01	-0.49	8.23E-01	1.53	5.86E-01	-1.30	6.00E-01
sup. parietal gyr.	-7.18	1.63E-02	-5.23	9.07E-02	-6.85	4.94E-03	-8.56	2.01E-03
supramarginal gyr.	-6.06	6.53E-02	-4.30	1.17E-01	-4.38	1.43E-01	-4.22	1.52E-01
angular gyr.	-10.75	6.54E-04	-9.49	6.09E-03	-11.62	1.45E-03	-8.50	3.49E-03
<i>Central structures</i>								
caudate nucleus	6.30	9.81E-02	4.02	2.28E-01	1.66	4.67E-01	1.43	5.23E-01
nucleus accumbens	-8.41	5.98E-02	-12.63	1.36E-02	-13.83	2.05E-02	-15.32	9.05E-03
putamen	-1.68	6.44E-01	-1.31	7.30E-01	-7.11	3.12E-02	-4.63	2.23E-01
thalamus	-8.16	2.01E-05	-5.73	7.07E-03	-6.31	1.08E-03	-6.38	1.56E-03
pallidum	-1.89	4.39E-01	-3.53	3.11E-01	-3.94	1.54E-01	-4.33	2.69E-01
corpus callosum (np)	-4.72	2.74E-02			0.99	4.41E-01		
substantia nigra	-6.70	1.17E-01	-6.62	9.13E-02	-9.90	3.56E-01	1.72	9.54E-01
<i>Posterior fossa & ventricles</i>								
cerebellum	-2.20	2.29E-01	-1.70	3.08E-01	-2.07	2.65E-01	-1.96	2.48E-01
brainstem (np)	-3.50	6.82E-02			-4.38	2.81E-02		
lat. ventricle, main	37.03	2.16E-06	32.42	1.69E-05	44.99	2.02E-06	40.56	3.37E-06
lat. ventricle, temp. horn	36.40	1.42E-04	39.47	5.17E-05	30.50	2.80E-04	35.52	5.12E-05
third ventricle (np)	14.50	1.44E-02			12.88	1.14E-02		

Supplementary Table D2. Group differences for the DKT40 atlas database.

Group differences between healthy control (HC) subjects and Alzheimer's Disease (AD) patients for the DKT40 atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in AD than HC. Significant differences in structure volumes between HC and AD groups (from the ANCOVA, after adjustment for 62 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
entorhinal cort.	-17.28	3.12E-05	-19.84	3.65E-06	-26.09	1.70E-07	-27.03	5.32E-09
parahippocampal gyr.	-13.61	1.54E-04	-18.94	1.20E-06	-15.93	4.35E-06	-13.91	1.65E-04
sup. temp. gyr.	-5.58	2.76E-02	-5.92	1.82E-02	-6.31	3.39E-03	-5.86	1.50E-02
middle temp. gyr.	-8.40	5.65E-04	-9.80	1.09E-04	-6.34	7.59E-03	-9.26	7.61E-04
inf. temp. gyr.	-9.31	2.28E-03	-9.98	5.56E-04	-10.48	1.98E-03	-12.13	1.84E-04
fusiform gyr.	-4.36	1.56E-01	-7.16	1.54E-02	-11.60	4.63E-05	-11.74	2.98E-04
transverse temp. gyr.	-4.88	1.98E-01	-2.47	5.79E-01	0.30	8.87E-01	-1.07	7.30E-01
<i>Insula and cingulate gyri</i>								
insula cort.	-6.28	5.42E-03	-5.24	1.28E-02	-4.70	5.17E-02	-3.54	9.79E-02
cingulate gyr., rostral ant.	-2.83	5.86E-01	4.65	2.07E-01	0.85	7.73E-01	0.47	7.97E-01
cingulate gyr., caudal ant.	2.24	5.02E-01	4.97	9.08E-02	-5.47	2.50E-01	-2.04	4.42E-01
cingulate gyr., post.	2.46	3.20E-01	1.77	4.69E-01	-2.98	3.40E-01	-4.78	9.81E-02
cingulate gyr., isthmus	-9.09	2.63E-02	-15.51	6.28E-05	-7.77	1.96E-02	-12.36	1.33E-04
<i>Frontal lobe</i>								
middle frontal gyr., rostral	-2.93	2.74E-01	-2.21	3.96E-01	-2.40	3.98E-01	-5.38	4.06E-02
middle frontal gyr., caudal	-1.80	5.77E-01	-5.33	1.18E-01	-3.50	4.05E-01	-2.84	3.69E-01
sup. frontal gyr.	-3.15	1.17E-01	-2.18	2.75E-01	-3.54	4.90E-02	-3.53	7.83E-02
pars opercularis	3.56	1.71E-01	4.42	1.82E-01	6.10	5.89E-02	-0.60	8.24E-01
pars triangularis	-4.49	2.51E-01	-5.09	2.24E-01	-3.76	4.86E-01	-5.00	1.53E-01
pars orbitalis	-3.07	5.13E-01	-3.97	4.66E-01	-2.12	4.97E-01	-6.67	5.52E-02
lat. orbitofrontal	0.54	7.59E-01	0.00	9.75E-01	-1.49	3.87E-01	-2.16	2.08E-01
med. orbitofrontal	0.63	6.67E-01	-3.00	2.02E-01	-4.57	6.08E-02	-2.05	4.04E-01
precentral gyr.	-0.78	6.59E-01	-2.01	3.68E-01	-1.15	5.37E-01	-0.88	5.49E-01
paracentral gyr.	0.21	9.26E-01	-3.19	2.13E-01	5.00	1.15E-01	-0.17	8.96E-01
<i>Occipital lobe</i>								

lingual gyr.	-3.32	2.98E-01	-2.33	5.38E-01	-7.82	1.19E-02	-5.70	9.28E-02
cuneus	-6.24	1.36E-01	0.19	9.26E-01	-5.63	5.49E-02	-4.24	2.17E-01
lat. occipital lobe	-9.47	3.32E-03	-11.69	5.63E-03	-3.80	2.61E-01	-4.48	1.78E-01
pericalcarine cort.	-0.85	9.18E-01	-0.23	9.64E-01	0.28	9.27E-01	4.18	2.94E-01
<i>Parietal lobe</i>								
postcentral gyr.	-0.03	9.68E-01	0.87	7.68E-01	0.39	9.18E-01	-1.27	6.45E-01
sup. parietal gyr.	-8.80	6.53E-03	-4.38	2.68E-01	-7.83	8.97E-03	-8.18	1.44E-02
supramarginal gyr.	-6.48	2.75E-02	-2.89	2.64E-01	-4.12	1.80E-01	-4.26	1.31E-01
inf. parietal gyr.	-11.22	2.44E-04	-8.59	8.66E-03	-10.43	6.91E-04	-8.19	5.06E-03
precuneus	-5.25	6.76E-02	-8.54	2.38E-03	-6.08	1.06E-02	-9.49	3.26E-04

Supplementary Table D3. Group differences for the MGC2012 atlas database.

Group differences between healthy control (HC) subjects and Alzheimer's Disease (AD) patients for the MGC2012 atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in AD than HC. Significant differences in structure volumes between HC and AD groups (from the ANCOVA, after adjustment for 132 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
hippocampus	-9.65	2.89E-04	-10.78	1.24E-04	-20.00	4.16E-10	-22.88	2.54E-11
amygdala	-17.04	9.45E-06	-18.24	3.07E-06	-34.46	9.82E-07	-37.26	4.86E-08
entorhinal area	-13.14	2.34E-04	-16.12	3.70E-05	-21.08	2.34E-03	-26.30	1.20E-06
parahippocampal gyr.	-10.07	2.99E-04	-13.42	5.99E-06	-20.79	1.42E-08	-19.88	2.68E-08
sup. temp. gyr.	-6.28	2.15E-02	-7.60	1.04E-02	-7.98	7.33E-03	-6.31	4.93E-02
middle temp. gyr.	-5.49	7.42E-03	-6.43	4.18E-03	-6.51	6.57E-03	-8.42	2.20E-03
inf. temp. gyr.	-7.12	8.60E-03	-8.18	2.05E-03	-10.56	2.47E-03	-12.63	1.87E-04
fusiform gyr.	-3.48	2.37E-01	-4.93	1.11E-01	-11.18	5.12E-04	-11.29	6.46E-04
transverse temp. gyr.	-1.19	6.59E-01	2.73	5.49E-01	-0.04	7.96E-01	-1.18	6.88E-01
temporal pole	-2.93	3.64E-01	-3.15	3.91E-01	-6.27	1.45E-02	-6.54	3.03E-02
planum temporale	-1.37	7.07E-01	-3.01	5.58E-01	-4.63	2.31E-01	-7.38	5.72E-02
planum polare	1.56	5.58E-01	-1.52	6.03E-01	-3.51	2.43E-01	-3.83	1.99E-01
<i>Insula and cingulate gyri</i>								
ant. insula	-5.15	5.43E-02	-3.63	2.05E-01	-6.28	2.51E-02	-4.92	5.90E-02
post. insula	-2.52	3.44E-01	-2.24	3.99E-01	-3.21	2.51E-01	0.39	8.58E-01
cingulate gyrus, ant.	-0.20	8.85E-01	3.02	2.01E-01	-0.69	9.36E-01	-1.67	6.69E-01
cingulate gyrus, middle	4.30	4.08E-02	8.66	4.39E-04	-3.16	3.80E-01	-2.10	5.33E-01
cingulate gyrus, post.	-6.30	2.54E-02	-9.47	1.52E-04	-7.24	1.05E-02	-10.20	2.66E-04
<i>Frontal lobe</i>								
middle frontal gyr.	-0.84	8.35E-01	-1.73	4.74E-01	-2.47	3.90E-01	-4.00	1.17E-01
precentral gyr.	0.00	9.84E-01	-1.04	6.83E-01	-1.82	4.00E-01	-1.76	3.26E-01
precentral gyr., med.	0.13	9.90E-01	-2.37	4.50E-01	5.40	1.48E-01	0.44	9.88E-01
sup. frontal gyr.	-4.09	1.30E-01	-0.06	9.86E-01	-5.12	2.86E-02	-2.81	2.24E-01
sup. frontal gyr., med.	1.51	3.87E-01	1.01	5.35E-01	-3.81	1.13E-01	-4.41	1.22E-01
med. frontal cort.	3.82	1.00E-01	1.69	6.12E-01	-5.62	1.12E-01	-2.28	5.28E-01

inf. frontal gyr., opercular	5.99	8.01E-02	4.55	1.84E-01	5.98	1.41E-01	-1.28	7.23E-01
inf. frontal gyr., orbital	1.32	7.58E-01	-2.12	8.36E-01	1.40	6.98E-01	-3.88	3.80E-01
inf. frontal gyr., triangular	-4.42	1.81E-01	-2.43	7.09E-01	-4.18	4.25E-01	-4.86	1.94E-01
frontal operculum	-0.53	8.67E-01	-2.78	5.09E-01	3.92	3.06E-01	0.41	9.76E-01
frontal pole	0.45	9.05E-01	-3.23	4.93E-01	-3.22	3.56E-01	-3.72	2.96E-01
central operculum	2.99	2.06E-01	4.29	3.96E-02	1.98	3.96E-01	2.18	4.28E-01
ant. orbital gyr.	1.69	6.11E-01	0.96	7.47E-01	-2.30	4.07E-01	-4.27	3.00E-01
post. orbital gyr.	1.67	5.43E-01	-1.17	8.65E-01	0.07	9.76E-01	-4.86	1.15E-01
med. orbital gyr.	1.31	5.72E-01	1.33	6.42E-01	-2.14	3.34E-01	0.38	9.50E-01
lat. orbital gyr.	-6.47	9.79E-02	-1.24	7.66E-01	-5.64	1.18E-01	-7.35	1.58E-02
supplementary motor cort.	2.68	2.90E-01	-3.69	1.37E-01	2.98	2.67E-01	-3.32	1.77E-01
<i>Occipital lobe</i>								
lingual gyr.	-2.30	3.99E-01	-1.84	6.28E-01	-8.36	6.53E-03	-6.48	5.56E-02
cuneus	-6.11	6.78E-02	1.26	5.76E-01	-4.78	1.18E-01	-4.87	1.83E-01
sup. occipital gyr.	-9.27	6.51E-03	-7.44	3.07E-02	-8.60	3.57E-02	-10.79	4.30E-03
middle occipital gyr.	-8.47	1.43E-02	-7.73	4.28E-02	-6.56	1.37E-01	-6.11	1.09E-01
inf. occipital gyr.	-4.41	1.10E-01	-7.36	2.96E-02	-4.94	2.11E-01	-6.63	8.38E-02
occipital pole	-2.76	6.31E-01	-7.47	1.97E-01	-2.48	5.90E-01	0.05	9.54E-01
occipital fusiform gyr.	-5.09	9.78E-02	-10.51	4.72E-03	-8.94	2.12E-02	-8.24	2.72E-02
calcarine cort.	-1.48	9.57E-01	2.19	3.98E-01	-0.57	8.97E-01	3.05	3.59E-01
<i>Parietal lobe</i>								
gyrus rectus	4.99	1.49E-01	1.40	7.40E-01	-3.76	1.48E-01	-1.40	5.90E-01
postcentral gyr.	0.78	7.18E-01	-0.31	9.66E-01	-0.21	8.97E-01	-2.31	4.48E-01
postcentral gyr., med.	-0.10	9.76E-01	-3.37	4.95E-01	2.83	5.13E-01	-2.77	5.25E-01
sup. parietal lobule	-7.19	1.10E-02	-2.73	4.47E-01	-7.17	2.00E-02	-8.01	2.87E-02
supramarginal gyr.	-5.12	1.48E-01	-3.88	1.97E-01	-5.95	7.61E-02	-5.74	4.79E-02
precuneus	-3.19	2.72E-01	-6.35	9.88E-03	-6.56	8.85E-03	-9.47	3.24E-04
parietal operculum	0.34	9.39E-01	4.75	1.53E-01	2.64	5.89E-01	2.74	4.86E-01
angular gyrus	-7.90	8.31E-03	-5.68	8.81E-02	-11.78	9.07E-04	-8.83	3.79E-03
<i>Central structures</i>								
caudate	6.66	1.35E-01	4.18	2.32E-01	-0.36	9.37E-01	-3.39	4.37E-01
accumbens area	-5.00	2.63E-01	-11.76	3.03E-02	-16.65	4.75E-02	-28.31	1.72E-02
putamen	-2.75	4.54E-01	-2.19	5.98E-01	-9.68	1.14E-02	-8.48	5.81E-02
thalamus (proper)	-7.78	1.97E-05	-6.82	1.09E-03	-6.37	1.88E-04	-5.87	1.53E-04
pallidum	-0.83	6.70E-01	-1.71	5.93E-01	-2.99	1.78E-01	-0.56	7.27E-01

ventral diencephalon	-4.49	5.83E-03	-5.99	7.60E-04	-4.96	6.08E-03	-7.05	6.65E-04
optic chiasm (np)	6.34	2.50E-02			-5.08	6.76E-01		
subcallosal area	0.99	6.06E-01	-0.82	9.45E-01	-7.02	1.37E-01	-5.44	2.09E-01
<i>Posterior fossa, ventricles & white matter</i>								
cerebellum exterior	-1.83	3.33E-01	-1.21	5.16E-01	-1.52	4.91E-01	-1.53	4.76E-01
cerebellar vermal lobules I-V (np)	-4.72	5.28E-02			-5.41	9.31E-02		
cerebellar vermal lobules VI-VII (np)	-5.40	4.54E-02			-3.07	1.74E-01		
cerebellar vermal lobules VIII-X (np)	-0.13	9.81E-01			-2.85	2.78E-01		
brainstem (np)	-4.02	4.61E-02			-4.31	3.75E-02		
lateral ventricle	46.22	1.36E-06	47.44	7.03E-06	47.30	1.16E-06	41.77	4.38E-06
inf. lateral ventricle	45.56	1.38E-04	48.09	1.24E-05	69.58	3.07E-06	73.70	4.74E-07
third ventricle (np)	19.81	4.66E-03			13.54	1.28E-02		
fourth ventricle (np)	4.35	4.08E-01			9.75	1.14E-01		
cerebrospinal fluid (np)	6.29	1.97E-01			14.52	3.78E-03		
cerebral white matter	-3.56	3.15E-02	-3.91	2.41E-02	-4.71	3.77E-04	-4.40	2.41E-03
cerebellar white matter	-3.56	2.76E-01	-4.32	1.63E-01	-1.73	4.64E-01	-1.84	3.74E-01

Supplementary Table E1. Group differences for the HM atlas database (left HS).

Group differences between healthy control (HC) subjects and left hippocampal sclerosis (LHS) patients for the HM atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in LHS than HC. Significant differences in structure volumes between HC and LHS groups (from the ANCOVA, after adjustment for 93 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
hippocampus	-4.39	1.24E-01	-32.52	7.00E-20	-4.63	2.14E-01	-34.15	8.00E-20
amygdala	-7.68	5.53E-03	-1.89	4.74E-01	-1.62	6.48E-01	-8.46	2.12E-02
ant. temp. lobe, med.	-5.18	2.54E-02	-8.95	2.78E-03	-4.17	2.08E-01	-15.64	2.54E-05
ant. temp. lobe, lat.	-2.25	3.63E-01	-4.07	2.29E-01	-3.99	2.94E-01	-12.33	6.11E-03
parahippocampal gyr.	-6.97	6.48E-03	-5.55	1.88E-02	3.45	2.11E-01	-11.25	2.13E-04
sup. temp. gyr., post.	-1.31	6.54E-01	-3.65	1.32E-01	-4.55	8.13E-02	-7.62	6.28E-03
middle & inf. temp. gyr.	-3.99	3.72E-02	-0.79	8.28E-01	-0.96	8.28E-01	-6.09	1.38E-02
fusiform gyr.	-5.87	1.73E-02	-1.77	4.90E-01	-1.58	7.37E-01	-9.14	4.11E-02
post. temp. lobe	-0.07	9.72E-01	-4.73	3.05E-03	-3.79	1.47E-01	-8.73	3.58E-04
sup. temp. gyr., ant.	-5.32	1.03E-01	-9.67	5.01E-03	-7.12	5.60E-02	-16.82	1.14E-06
<i>Insula and cingulate gyri</i>								
insula, post. long gyr.	-4.79	4.94E-02	-1.31	6.65E-01	3.78	1.89E-01	-2.01	5.62E-01
insula, ant. short gyr.	-1.61	6.39E-01	-0.25	8.50E-01	0.76	7.80E-01	-0.74	9.49E-01
insula, middle short gyr.	-1.44	6.37E-01	-0.94	6.93E-01	-7.48	7.63E-02	-3.59	3.47E-01
insula, post. short gyr.	-2.69	4.07E-01	-1.39	7.30E-01	-4.09	2.16E-01	-10.24	4.78E-03
insula, ant. inf. cort.	-3.77	1.76E-01	-0.41	9.94E-01	-7.02	1.29E-01	-13.43	1.07E-03
insula, ant. long gyr.	-4.49	7.35E-02	-1.80	4.55E-01	-5.22	1.06E-01	-9.27	9.22E-03
cingulate gyrus, ant.	-4.19	2.17E-01	-1.01	7.66E-01	1.02	6.74E-01	-2.78	3.88E-01
cingulate gyrus, post.	-0.51	8.27E-01	-1.74	5.51E-01	-2.44	3.12E-01	-1.41	7.31E-01
<i>Frontal lobe</i>								
middle frontal gyr.	-0.34	9.17E-01	-3.14	1.15E-01	-2.86	3.34E-01	-7.79	1.64E-03
precentral gyr.	-1.76	4.44E-01	-1.02	6.38E-01	-6.72	1.83E-02	-6.38	2.84E-02
ant. orbital gyr.	-2.86	1.86E-01	-1.96	2.69E-01	0.60	6.48E-01	-0.02	8.55E-01
inf. frontal gyr.	-3.39	1.22E-01	-2.23	4.11E-01	-4.90	1.12E-01	-3.57	3.11E-01
sup. frontal gyr.	-7.19	1.90E-03	-5.01	2.09E-02	-6.35	8.60E-03	-5.80	1.99E-02

med. orbital gyr.	-0.94	6.84E-01	-0.60	6.55E-01	-1.01	8.52E-01	-2.53	3.55E-01
lat. orbital gyr.	-1.96	5.57E-01	-0.75	8.92E-01	-4.83	1.62E-01	-5.87	8.51E-02
post. orbital gyr.	-1.85	3.61E-01	-3.92	7.10E-02	-2.90	3.51E-01	-2.76	3.63E-01
subgenual frontal cort.	-1.38	6.74E-01	-6.08	8.01E-02	-6.31	2.36E-01	-1.44	7.80E-01
pre-subgenual frontal cort.	-6.76	1.98E-01	-4.49	3.04E-01	-7.22	1.37E-01	0.23	8.46E-01
<i>Occipital lobe</i>								
lingual gyr.	-0.36	9.23E-01	-1.06	7.11E-01	-0.25	9.47E-01	-6.08	1.30E-01
cuneus	-3.20	3.37E-01	-6.14	1.13E-01	-7.59	9.34E-03	-7.15	2.31E-02
occipital lobe	-1.51	4.99E-01	-2.14	3.53E-01	-3.82	1.38E-01	-6.03	4.11E-02
<i>Parietal lobe</i>								
straight gyr.	-0.53	7.77E-01	-0.11	9.93E-01	-3.19	2.54E-01	-1.53	6.64E-01
postcentral gyr.	-5.41	9.56E-03	-4.20	5.01E-02	-10.59	2.70E-05	-8.49	9.88E-04
sup. parietal gyr.	-2.66	2.29E-01	-2.87	1.77E-01	-4.15	1.07E-01	-4.36	9.82E-02
supramarginal gyr.	-5.45	2.13E-02	-2.70	2.99E-01	-4.63	1.34E-01	-4.97	1.05E-01
angular gyr.	-1.12	8.02E-01	-7.80	1.57E-02	-5.48	1.54E-01	-8.39	8.20E-03
<i>Central structures</i>								
caudate nucleus	-2.53	3.18E-01	-0.23	9.75E-01	-2.96	4.66E-01	-1.22	7.14E-01
nucleus accumbens	-3.71	3.24E-01	-4.09	1.83E-01	-42.57	5.02E-02	-26.56	8.17E-02
putamen	-2.93	1.30E-01	-5.08	7.42E-03	-1.48	4.64E-01	-4.86	1.37E-02
thalamus	-5.07	5.06E-02	-8.17	7.10E-04	-5.28	3.10E-03	-9.39	1.80E-06
pallidum	-5.16	2.87E-01	-8.19	3.11E-02	-0.04	9.44E-01	0.82	8.30E-01
corpus callosum (np)	-1.49	5.23E-01			2.89	3.50E-01		
substantia nigra	-8.46	1.94E-03	-8.32	1.77E-03	-30.25	1.25E-01	-21.37	1.53E-01
<i>Posterior fossa & ventricles</i>								
cerebellum	-1.06	5.50E-01	-1.00	5.59E-01	-0.12	9.87E-01	1.53	5.15E-01
brainstem (np)	-0.52	7.64E-01			0.82	7.07E-01		
lat. ventricle, main	-16.64	2.15E-02	-20.94	1.64E-02	21.50	2.33E-02	24.83	1.53E-02
lat. ventricle, temp. horn	-6.81	3.33E-01	-7.26	7.89E-02	-4.00	5.97E-01	7.42	2.34E-01
third ventricle (np)	-21.87	4.03E-04			27.26	7.41E-04		

Supplementary Table E2. Group differences for the DKT40 atlas database (left HS).

Group differences between healthy control (HC) subjects and left hippocampal sclerosis (LHS) patients for the DKT40 atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in LHS than HC. Significant differences in structure volumes between HC and LHS groups (from the ANCOVA, after adjustment for 62 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
entorhinal cort.	6.04	6.34E-02	-8.91	5.26E-03	6.03	1.37E-01	-14.62	1.04E-03
parahippocampal gyr.	6.41	1.72E-02	-4.13	1.62E-01	5.61	4.18E-02	-7.02	5.53E-02
sup. temp. gyr.	0.65	6.05E-01	-3.4	2.89E-02	-4.92	4.70E-02	-12.22	2.64E-06
middle temp. gyr.	0.69	6.07E-01	-6.16	5.59E-03	-3.16	2.53E-01	-8.05	1.73E-03
inf. temp. gyr.	2.4	1.95E-01	-2.23	2.62E-01	-1.99	5.26E-01	-8.29	9.68E-04
fusiform gyr.	-0.56	8.62E-01	-1.01	6.83E-01	-4.5	9.00E-02	-7.05	1.97E-02
transverse temp. gyr.	0.82	7.55E-01	4.06	3.88E-01	0.03	8.19E-01	-4.64	2.95E-01
<i>Insula and cingulate gyri</i>								
insula cort.	1.6	2.50E-01	-0.39	7.08E-01	-2.61	3.14E-01	-6.73	7.95E-03
cingulate gyr., rostral ant.	-4.18	1.96E-01	-0.69	8.86E-01	-3.89	3.05E-01	-0.77	9.15E-01
cingulate gyr., caudal ant.	1.4	5.14E-01	-3.12	3.06E-01	2.84	4.21E-01	-3.95	1.48E-01
cingulate gyr., post.	-1.08	8.73E-01	-2.55	6.20E-01	-3.21	2.10E-01	-5.37	3.76E-02
cingulate gyr., isthmus	4.24	2.48E-01	-0.13	9.14E-01	2.28	3.85E-01	2.64	2.85E-01
<i>Frontal lobe</i>								
middle frontal gyr., rostral	-2.42	4.33E-01	-2.39	3.74E-01	-5.92	5.80E-02	-9.95	2.21E-04
middle frontal gyr., caudal	0.33	7.91E-01	0.23	7.83E-01	2.69	2.71E-01	-3.83	3.22E-01
sup. frontal gyr.	-2.78	1.43E-01	-1.64	4.36E-01	-6.27	6.34E-03	-5.87	1.91E-02
pars opercularis	-2.11	4.60E-01	-1.98	4.69E-01	-4.64	2.04E-01	-4.74	2.26E-01
pars triangularis	1.53	5.51E-01	4.94	7.36E-02	-4.37	3.44E-01	-1.4	8.90E-01
pars orbitalis	-3.5	2.31E-01	-2.51	4.16E-01	-6.47	3.53E-02	-5.52	4.63E-02
lat. orbitofrontal	1.48	2.92E-01	-1.38	3.83E-01	0.11	7.48E-01	-2.96	1.48E-01
med. orbitofrontal	-1.5	4.36E-01	0.75	6.37E-01	-3.43	1.94E-01	-0.66	9.69E-01
precentral gyr.	-0.31	8.85E-01	-0.58	7.37E-01	-7.4	1.02E-02	-7.33	1.08E-02
paracentral gyr.	-3.32	1.83E-01	-2.2	3.97E-01	-4.84	1.44E-01	-1.22	8.49E-01
<i>Occipital lobe</i>								

lingual gyr.	1.5	4.20E-01	-0.03	9.82E-01	-0.12	9.10E-01	-7.22	7.08E-02
cuneus	-4.81	1.04E-01	-3.98	1.90E-01	-6.62	2.52E-02	-6.68	6.47E-02
lat. occipital lobe	1.35	6.57E-01	-2.01	5.39E-01	-2.36	4.73E-01	-4.19	2.12E-01
pericalcarine cort.	-6.49	1.65E-01	-4.47	3.92E-01	-9.33	1.18E-01	-6.53	1.90E-01
<i>Parietal lobe</i>								
postcentral gyr.	-5.81	5.79E-03	-2.22	2.52E-01	-11.89	3.79E-05	-8.9	1.82E-03
sup. parietal gyr.	2.91	1.02E-01	1.47	4.83E-01	-2.71	4.49E-01	-3.54	2.28E-01
supramarginal gyr.	-4.34	4.40E-02	-1.67	5.11E-01	-4.62	1.51E-01	-5.28	9.23E-02
inf. parietal gyr.	-1.56	5.32E-01	-3.97	1.15E-01	-5.98	5.68E-02	-9.13	1.86E-03
precuneus	-2.67	1.69E-01	-3.73	6.77E-02	-5.57	2.21E-02	-5.13	7.20E-02

Supplementary Table E3. Group differences for the MGC2012 atlas database (left HS).

Group differences between healthy control (HC) subjects and left hippocampal sclerosis (LHS) patients for the MGC2012 atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in LHS than HC. Significant differences in structure volumes between HC and LHS groups (from the ANCOVA, after adjustment for 132 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
hippocampus	-4.80	3.18E-02	-23.01	1.95E-17	-5.10	1.53E-01	-29.67	4.35E-21
amygdala	-7.98	7.71E-03	-2.20	4.58E-01	-6.29	1.75E-01	-6.89	5.26E-02
entorhinal area	-6.95	2.03E-02	-7.40	1.92E-02	0.52	8.43E-01	-18.73	2.08E-04
parahippocampal gyr.	-6.94	1.63E-03	-1.32	4.88E-01	2.94	2.69E-01	-11.62	2.88E-05
sup. temp. gyr.	-1.71	4.06E-01	-1.36	5.62E-01	-5.63	3.89E-02	-10.01	1.05E-03
middle temp. gyr.	-1.67	3.50E-01	-4.49	4.07E-02	-2.99	2.81E-01	-7.69	3.07E-03
inf. temp. gyr.	-1.91	2.94E-01	-0.99	6.22E-01	-1.86	5.72E-01	-7.92	2.13E-03
fusiform gyr.	-0.98	6.19E-01	-1.51	5.11E-01	-4.90	6.83E-02	-6.80	2.67E-02
transverse temp. gyr.	-0.73	7.93E-01	-5.34	1.63E-01	0.02	8.29E-01	-4.40	3.03E-01
temporal pole	-2.50	2.28E-01	-3.36	1.27E-01	-4.71	1.44E-01	-16.85	4.07E-07
planum temporale	-3.76	2.39E-01	-0.38	8.73E-01	-4.86	2.31E-01	-5.00	2.28E-01
planum polare	-1.18	6.10E-01	-6.80	1.17E-02	-3.66	2.10E-01	-9.40	9.31E-04
<i>Insula and cingulate gyri</i>								
ant. insula	-2.23	2.79E-01	-1.81	4.19E-01	-4.59	1.11E-01	-7.62	6.42E-03
post. insula	-1.37	4.80E-01	-3.39	7.78E-02	-0.66	9.32E-01	-6.38	3.68E-02
cingulate gyrus, ant.	-1.07	7.45E-01	-0.59	8.50E-01	-2.74	4.83E-01	-0.10	9.09E-01
cingulate gyrus, middle	-5.35	4.53E-02	-0.22	9.28E-01	-0.44	9.40E-01	-6.24	3.14E-02
cingulate gyrus, post.	-2.55	2.25E-01	-3.47	1.05E-01	0.58	7.06E-01	0.43	6.97E-01
<i>Frontal lobe</i>								
middle frontal gyr.	-0.78	5.49E-01	-0.43	9.63E-01	-2.84	3.91E-01	-8.40	1.35E-03
precentral gyr.	-2.20	1.99E-01	-1.14	4.85E-01	-6.94	2.07E-02	-7.34	1.68E-02
precentral gyr., med.	-0.13	9.83E-01	-0.38	9.03E-01	-4.03	2.59E-01	-0.77	9.53E-01
sup. frontal gyr.	-2.63	2.40E-01	-0.56	7.71E-01	-7.03	9.55E-03	-4.45	1.39E-01
sup. frontal gyr., med.	-3.19	1.93E-01	-4.63	8.42E-02	-5.19	6.05E-02	-8.16	4.68E-03
med. frontal cort.	-1.19	7.31E-01	-4.07	2.15E-01	-1.83	6.08E-01	-0.08	9.08E-01

inf. frontal gyr., opercular	-2.11	5.50E-01	-1.06	7.74E-01	-5.63	2.07E-01	-4.65	3.12E-01
inf. frontal gyr., orbital	-6.11	1.19E-01	-2.06	5.47E-01	-5.38	1.33E-01	-7.43	9.55E-03
inf. frontal gyr., triangular	-1.97	5.14E-01	-7.55	1.10E-02	-5.48	2.35E-01	-2.44	6.64E-01
frontal operculum	-1.22	7.16E-01	-0.87	7.99E-01	-0.19	9.07E-01	-2.40	6.11E-01
frontal pole	-1.85	5.42E-01	-0.54	8.86E-01	-9.47	1.51E-02	-6.73	1.51E-01
central operculum	-0.58	7.45E-01	-0.18	8.81E-01	-5.89	3.09E-02	-7.64	8.55E-03
ant. orbital gyr.	-5.80	2.27E-02	-2.79	2.68E-01	0.18	8.17E-01	-2.91	4.01E-01
post. orbital gyr.	-0.18	9.32E-01	-3.41	1.35E-01	-2.10	5.57E-01	-3.81	2.00E-01
med. orbital gyr.	-0.47	7.72E-01	-1.79	3.61E-01	0.93	5.01E-01	-1.62	5.35E-01
lat. orbital gyr.	-1.86	4.71E-01	-2.59	3.68E-01	-5.34	1.40E-01	0.02	7.89E-01
supplementary motor cort.	-4.26	1.19E-01	-1.71	5.85E-01	-4.67	1.41E-01	-5.41	6.13E-02
<i>Occipital lobe</i>								
lingual gyr.	-2.75	2.61E-01	-0.95	7.71E-01	0.78	6.58E-01	-7.42	5.47E-02
cuneus	-2.80	3.67E-01	-3.49	2.61E-01	-6.04	3.73E-02	-7.04	5.10E-02
sup. occipital gyr.	-1.33	6.48E-01	-1.56	6.22E-01	-1.66	7.81E-01	-4.04	3.36E-01
middle occipital gyr.	-0.80	8.01E-01	-2.13	4.63E-01	-7.91	5.48E-02	-11.56	2.92E-03
inf. occipital gyr.	-0.72	8.38E-01	-3.80	2.42E-01	-5.02	1.85E-01	-5.08	1.75E-01
occipital pole	-2.53	4.40E-01	-3.42	3.16E-01	-3.93	2.38E-01	-0.10	9.64E-01
occipital fusiform gyr.	-6.89	1.18E-02	-2.76	2.93E-01	-0.16	9.46E-01	-6.43	2.72E-01
calcarine cort.	-1.34	7.06E-01	-1.46	7.13E-01	-7.85	1.81E-01	-3.54	4.76E-01
<i>Parietal lobe</i>								
gyrus rectus	-1.20	6.31E-01	-2.24	3.13E-01	-2.45	5.17E-01	-4.19	2.13E-01
postcentral gyr.	-4.08	3.49E-02	-1.39	4.92E-01	-13.03	3.69E-05	-8.90	3.26E-03
postcentral gyr., med.	-8.65	9.94E-02	-0.86	8.29E-01	-9.55	2.71E-02	-5.67	1.92E-01
sup. parietal lobule	-3.63	4.28E-02	-4.58	2.63E-02	-2.30	5.59E-01	-3.81	2.06E-01
supramarginal gyr.	-5.50	4.70E-02	-0.74	8.57E-01	-6.44	7.05E-02	-4.56	2.01E-01
precuneus	-1.25	5.88E-01	-2.54	2.67E-01	-5.18	4.19E-02	-5.21	7.13E-02
parietal operculum	-1.85	5.37E-01	-3.35	1.91E-01	-1.49	7.37E-01	-5.87	1.40E-01
angular gyrus	-0.63	8.14E-01	-2.97	2.39E-01	-4.94	1.83E-01	-8.19	8.88E-03
<i>Central structures</i>								
caudate	-2.03	5.30E-01	-1.00	6.03E-01	-4.05	4.03E-01	-3.10	2.94E-01
accumbens area	-1.90	6.23E-01	-2.65	4.30E-01	-2.47	5.82E-01	-6.90	1.06E-01
putamen	-0.66	8.32E-01	-2.72	2.51E-01	-1.39	5.01E-01	-5.07	1.12E-02
thalamus (proper)	-7.18	3.16E-03	-10.23	1.67E-05	-4.18	1.08E-02	-7.12	1.22E-04
pallidum	-0.28	8.73E-01	-1.05	6.48E-01	-0.42	8.18E-01	-1.37	5.89E-01

ventral diencephalon	-1.16	3.61E-01	-2.97	2.22E-02	-3.42	3.52E-02	-3.78	1.54E-02
optic chiasm (np)	-4.42	9.27E-02			-10.80	1.13E-01		
subcallosal area	-0.82	7.99E-01	-0.35	8.37E-01	-1.49	7.30E-01	-1.81	7.46E-01
<i>Posterior fossa, ventricles & white matter</i>								
cerebellum exterior	-1.24	4.72E-01	-1.26	4.59E-01	2.32	4.55E-01	4.69	1.58E-01
cerebellar vermal lobules I-V (np)	-2.32	4.16E-01			-0.15	9.90E-01		
cerebellar vermal lobules VI-VII (np)	-0.80	8.82E-01			-3.81	4.44E-01		
cerebellar vermal lobules VIII-X (np)	-0.61	8.59E-01			5.99	2.09E-01		
brainstem (np)	-0.23	9.31E-01			0.22	9.49E-01		
lateral ventricle	-18.82	2.90E-02	-22.66	1.67E-02	21.38	2.34E-02	24.41	1.36E-02
inf. lateral ventricle	-10.72	2.85E-01	-18.76	2.38E-03	6.13	5.06E-01	13.65	2.04E-02
third ventricle (np)	-26.03	1.90E-04			23.40	1.45E-03		
fourth ventricle (np)	-6.82	1.73E-01			6.44	2.55E-01		
cerebrospinal fluid (np)	-12.52	9.92E-02			20.64	3.91E-03		
cerebral white matter	-2.24	8.78E-02	-4.55	4.29E-04	3.17	1.98E-01	1.67	6.38E-01
cerebellar white matter	-5.68	9.87E-02	-4.79	1.24E-01	-3.20	6.32E-01	-0.79	8.98E-01

Supplementary Table E4. Group differences for the HM atlas database (right HS).

Group differences between healthy control (HC) subjects and right hippocampal sclerosis (RHS) patients for the HM atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in RHS than HC. Significant differences in structure volumes between HC and RHS groups (from the ANCOVA, after adjustment for 93 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
hippocampus	-36.23	1.67E-15	-3.95	9.60E-02	-38.12	6.70E-12	1.69	4.50E-01
amygdala	-2.05	8.64E-01	-7.26	1.35E-02	-12.78	9.81E-03	3.17	3.54E-01
ant. temp. lobe, med.	-2.40	2.45E-01	-7.08	6.00E-02	-11.91	7.52E-04	-2.41	3.76E-01
ant. temp. lobe, lat.	-4.23	2.41E-01	-3.87	2.93E-01	-2.60	5.62E-01	2.37	6.92E-01
parahippocampal gyr.	-3.61	2.96E-01	-6.79	1.20E-02	-10.78	4.02E-03	-3.15	3.02E-01
sup. temp. gyr., post.	-1.93	9.18E-01	-0.45	6.09E-01	-2.90	4.23E-01	-1.78	7.62E-01
middle & inf. temp. gyr.	-3.06	3.52E-01	-4.47	5.55E-02	-3.67	2.83E-01	0.40	7.79E-01
fusiform gyr.	-1.17	9.18E-01	-8.78	3.50E-03	-5.73	3.14E-01	-0.42	9.98E-01
post. temp. lobe	-4.49	4.45E-02	-0.17	6.77E-01	-5.06	2.41E-02	-3.54	8.41E-02
sup. temp. gyr., ant.	-9.69	2.78E-02	-4.00	2.03E-01	-13.89	1.10E-03	0.12	9.45E-01
<i>Insula and cingulate gyri</i>								
insula, post. long gyr.	-0.31	2.73E-01	-4.49	1.35E-02	8.82	1.06E-02	0.11	8.18E-01
insula, ant. short gyr.	-2.43	1.64E-01	-1.50	2.42E-01	2.32	5.10E-01	2.21	5.94E-01
insula, middle short gyr.	-13.57	7.86E-03	-5.72	3.82E-01	-5.09	3.10E-01	2.75	4.94E-01
insula, post. short gyr.	-3.50	9.75E-01	-3.70	9.37E-01	-0.02	9.36E-01	-4.22	3.18E-01
insula, ant. inf. cort.	-3.01	8.23E-01	-5.09	4.99E-02	-8.09	3.02E-02	-1.93	3.58E-01
insula, ant. long gyr.	-3.36	9.39E-01	-5.80	4.29E-01	-2.90	3.72E-01	-3.38	5.38E-01
cingulate gyrus, ant.	-0.08	7.90E-01	-1.02	9.09E-01	-1.19	9.71E-01	-2.53	6.52E-01
cingulate gyrus, post.	-0.53	5.97E-01	-2.93	7.25E-01	-2.95	2.20E-01	0.01	9.63E-01
<i>Frontal lobe</i>								
middle frontal gyr.	-2.89	7.61E-01	-1.41	6.89E-01	-2.74	3.44E-01	-0.57	8.70E-01
precentral gyr.	-4.90	4.35E-01	-4.56	4.69E-01	-6.43	3.02E-02	-5.74	4.40E-02
ant. orbital gyr.	-3.94	6.63E-02	-3.69	4.31E-02	1.25	5.96E-01	0.44	7.25E-01
inf. frontal gyr.	-0.52	2.90E-01	-1.66	8.95E-01	-3.27	3.01E-01	-1.34	7.63E-01
sup. frontal gyr.	-2.38	3.71E-01	-0.60	6.50E-01	-4.75	7.37E-02	-1.16	7.19E-01

med. orbital gyr.	-0.25	3.81E-01	-2.86	5.74E-02	0.04	8.09E-01	-1.92	5.84E-01
lat. orbital gyr.	-2.74	2.49E-01	-2.96	3.78E-01	-0.66	7.71E-01	-1.37	5.25E-01
post. orbital gyr.	-3.00	9.73E-02	-2.97	1.67E-01	0.07	9.17E-01	1.93	4.37E-01
subgenual frontal cort.	-6.01	1.92E-01	-10.33	2.12E-02	-0.46	9.20E-01	2.91	5.43E-01
pre-subgenual frontal cort.	-1.08	8.28E-01	-5.62	3.27E-01	-5.06	3.52E-01	0.35	7.91E-01
<i>Occipital lobe</i>								
lingual gyr.	-2.80	7.63E-01	-2.39	9.58E-01	-3.53	4.32E-01	-0.55	7.67E-01
cuneus	-8.22	2.29E-01	-5.83	5.68E-01	-2.83	3.75E-01	-0.47	9.50E-01
occipital lobe	-2.92	4.88E-01	-0.71	9.68E-01	-3.91	6.54E-02	-0.78	5.85E-01
<i>Parietal lobe</i>								
straight gyr.	-1.70	3.20E-01	-3.59	6.84E-02	0.41	7.35E-01	1.65	5.14E-01
postcentral gyr.	-6.91	6.09E-02	-4.84	3.45E-01	-9.81	5.67E-04	-5.93	3.65E-02
sup. parietal gyr.	-3.73	3.34E-01	-1.99	8.49E-01	-3.27	1.99E-01	-1.71	4.77E-01
supramarginal gyr.	-5.43	1.59E-01	-2.52	6.52E-01	0.43	9.96E-01	0.19	9.29E-01
angular gyr.	-5.38	2.45E-01	-4.30	3.81E-01	-4.90	1.08E-01	-5.05	1.12E-01
<i>Central structures</i>								
caudate nucleus	-3.42	2.04E-01	-2.01	4.87E-01	-3.03	3.10E-01	-0.65	7.26E-01
nucleus accumbens	-0.26	6.88E-01	-0.65	8.38E-01	-12.47	2.78E-01	-0.58	5.09E-01
putamen	-5.68	4.14E-02	-3.26	3.36E-01	-5.11	6.59E-02	-2.32	4.83E-01
thalamus	-6.52	4.94E-03	-2.27	2.28E-01	-9.23	1.41E-05	-1.63	5.31E-01
pallidum	-9.44	1.32E-01	-8.25	7.33E-02	-6.80	2.58E-01	-4.19	7.36E-01
corpus callosum (np)	-0.82	5.31E-01			-2.72	5.75E-01		
substantia nigra	-5.69	4.62E-02	-1.98	3.80E-01	-21.24	2.37E-01	-6.98	6.22E-01
<i>Posterior fossa & ventricles</i>								
cerebellum	-1.72	6.62E-01	-2.55	3.75E-01	-0.57	9.42E-01	-1.23	9.82E-01
brainstem (np)	-0.54	5.89E-01			2.65	1.76E-01		
lat. ventricle, main	-7.15	5.12E-01	-4.80	7.84E-01	15.26	2.48E-01	8.58	6.32E-01
lat. ventricle, temp. horn	-5.08	5.27E-01	-0.43	8.08E-01	-3.19	5.99E-01	-2.98	7.42E-01
third ventricle (np)	-13.43	1.69E-01			17.31	1.69E-01		

Supplementary Table E5. Group differences for the DKT40 atlas database (right HS).

Group differences between healthy control (HC) subjects and right hippocampal sclerosis (RHS) patients for the DKT40 atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in RHS than HC. Significant differences in structure volumes between HC and RHS groups (from the ANCOVA, after adjustment for 62 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
entorhinal cort.	4.18	6.23E-01	8.85	4.39E-02	-2.07	5.50E-01	-6.10	2.87E-02
parahippocampal gyr.	-9.99	1.62E-02	-0.79	9.11E-01	-0.75	7.02E-01	-7.01	1.22E-01
sup. temp. gyr.	-3.08	1.57E-01	-0.04	7.50E-01	0.55	9.29E-01	-5.30	4.37E-01
middle temp. gyr.	-6.01	1.88E-02	-1.34	6.96E-01	-1.14	6.92E-01	-4.60	1.14E-01
inf. temp. gyr.	-2.42	2.20E-01	3.93	1.56E-01	1.52	5.85E-01	-5.80	3.21E-02
fusiform gyr.	-2.89	2.71E-01	-0.03	7.74E-01	-3.07	5.58E-01	-6.27	2.96E-02
transverse temp. gyr.	5.26	3.40E-01	5.60	5.36E-01	-1.76	9.65E-01	1.67	4.86E-01
<i>Insula and cingulate gyri</i>								
insula cort.	-0.48	7.38E-01	1.25	1.10E-01	-1.50	9.89E-01	-2.08	4.99E-01
cingulate gyr., rostral ant.	-4.47	3.24E-01	1.46	4.76E-01	-1.80	8.75E-01	-1.93	3.40E-01
cingulate gyr., caudal ant.	3.14	2.53E-01	-0.86	7.09E-01	3.19	5.07E-01	-11.13	6.09E-04
cingulate gyr., post.	1.30	8.49E-01	1.99	9.75E-01	-0.01	8.29E-01	-4.21	2.89E-01
cingulate gyr., isthmus	0.38	6.65E-01	1.94	7.46E-01	0.96	5.86E-01	-5.24	4.73E-02
<i>Frontal lobe</i>								
middle frontal gyr., rostral	-1.57	5.23E-01	2.01	3.50E-01	-0.65	8.91E-01	1.64	3.43E-01
middle frontal gyr., caudal	6.46	1.76E-01	5.55	2.07E-01	-1.71	5.10E-01	-6.83	1.31E-02
sup. frontal gyr.	-0.93	6.06E-01	2.15	3.38E-01	-0.44	9.14E-01	-2.65	3.85E-01
pars opercularis	-1.51	9.25E-01	-2.50	6.26E-01	-0.84	7.15E-01	-3.48	1.78E-01
pars triangularis	0.84	5.35E-01	5.93	5.30E-02	-1.06	7.47E-01	2.71	2.12E-01
pars orbitalis	0.55	6.77E-01	-2.03	6.87E-01	-2.03	7.47E-01	-4.37	1.87E-01
lat. orbitofrontal	1.57	1.64E-01	1.49	1.65E-01	-1.37	6.20E-01	-6.08	5.59E-02
med. orbitofrontal	1.17	2.50E-01	2.52	1.35E-01	-1.89	6.25E-01	-4.54	7.20E-02
precentral gyr.	-1.73	4.14E-01	-2.15	2.91E-01	-0.63	8.36E-01	-2.28	3.23E-01
paracentral gyr.	-3.39	1.62E-01	-2.25	3.48E-01	-1.27	7.08E-01	-4.04	1.67E-01
<i>Occipital lobe</i>								

lingual gyr.	-0.43	9.00E-01	-0.22	8.09E-01	-1.23	6.22E-01	-4.78	6.36E-02
cuneus	-7.37	1.02E-01	-5.01	3.72E-01	-2.12	5.35E-01	-7.17	2.11E-02
lat. occipital lobe	0.81	7.89E-01	2.42	5.88E-01	-1.45	6.08E-01	-4.79	4.73E-02
pericalcarine cort.	-7.74	2.55E-01	0.65	7.62E-01	-1.07	7.53E-01	-4.11	2.63E-01
<i>Parietal lobe</i>								
postcentral gyr.	-4.55	1.01E-01	-0.60	9.63E-01	1.79	7.86E-01	-3.02	2.63E-01
sup. parietal gyr.	0.89	5.82E-01	0.24	9.08E-01	0.27	9.27E-01	-3.84	4.16E-01
supramarginal gyr.	-3.21	2.05E-01	-0.38	9.52E-01	-1.54	9.29E-01	-2.05	4.53E-01
inf. parietal gyr.	-3.24	2.20E-01	-1.84	5.38E-01	1.30	5.59E-01	-8.71	3.09E-02
precuneus	-4.32	7.29E-02	-3.72	2.15E-01	-0.21	8.50E-01	-2.00	3.28E-01

Supplementary Table E6. Group differences for the MGC2012 atlas database (right HS).

Group differences between healthy control (HC) subjects and right hippocampal sclerosis (RHS) patients for the MGC2012 atlas set with the MAPER and FreeSurfer segmentation methods. Negative percentage difference values indicate smaller volumes in RHS than HC. Significant differences in structure volumes between HC and RHS groups (from the ANCOVA, after adjustment for 132 multiple comparisons) shown in bold. Abbreviations as in Supp. Table B1.

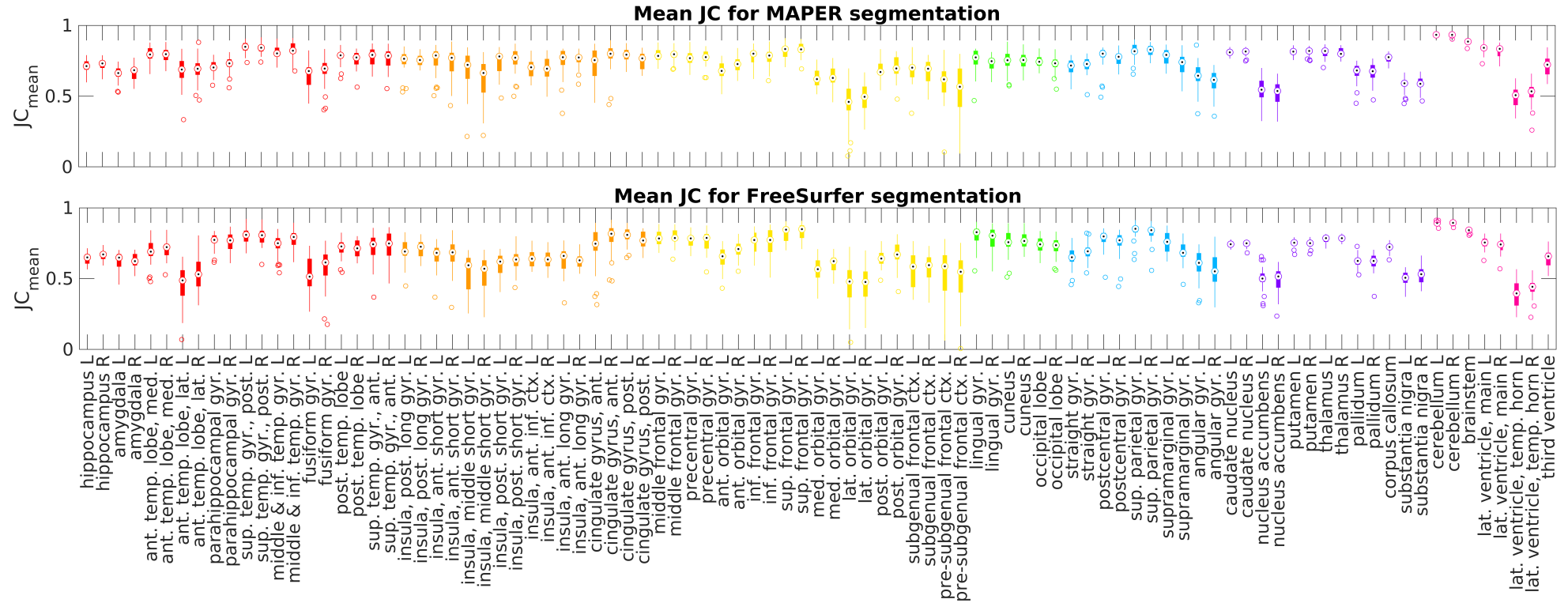
Region	MAPER				FreeSurfer			
	Right Hemisphere		Left Hemisphere		Right Hemisphere		Left Hemisphere	
	% diff	p-value	% diff	p-value	% diff	p-value	% diff	p-value
<i>Temporal lobe</i>								
hippocampus	-27.25	3.58E-15	-3.19	7.31E-02	-38.33	4.89E-13	0.74	5.60E-01
amygdala	-0.06	6.72E-01	-9.39	2.97E-03	-8.66	1.21E-01	6.00	7.48E-02
entorhinal area	-4.50	2.86E-01	-10.02	9.97E-03	-13.57	1.09E-02	-7.24	8.72E-02
parahippocampal gyr.	-2.78	4.44E-01	-6.15	6.02E-03	-9.61	8.91E-03	-2.37	4.15E-01
sup. temp. gyr.	-3.33	3.88E-01	-3.04	5.26E-01	-5.37	8.13E-02	-2.47	5.10E-01
middle temp. gyr.	-7.06	1.88E-02	-2.22	6.78E-01	-4.97	4.02E-02	-2.78	2.21E-01
inf. temp. gyr.	-4.68	5.25E-02	-1.66	4.74E-01	-5.43	4.42E-02	-1.14	6.02E-01
fusiform gyr.	-2.86	4.70E-01	-0.75	4.48E-01	-5.06	1.06E-01	-0.34	9.33E-01
transverse temp. gyr.	-3.04	1.85E-01	-6.57	1.08E-01	-1.48	9.34E-01	-1.73	9.09E-01
temporal pole	-4.73	5.85E-02	-3.38	2.11E-01	-10.49	2.01E-03	-0.49	7.29E-01
planum temporale	-3.76	1.73E-01	-0.16	7.43E-01	-1.41	8.62E-01	-3.07	5.76E-01
planum polare	-4.62	4.47E-01	-3.05	7.38E-01	-4.73	1.99E-01	1.19	6.16E-01
<i>Insula and cingulate gyri</i>								
ant. insula	-2.16	9.78E-01	-2.58	4.42E-02	-4.14	1.35E-01	-0.61	6.72E-01
post. insula	-0.72	7.60E-01	-2.69	6.72E-01	3.38	2.38E-01	-2.48	5.78E-01
cingulate gyrus, ant.	-1.54	8.71E-01	-1.23	9.01E-01	-3.00	6.47E-01	-2.22	6.02E-01
cingulate gyrus, middle	-3.12	4.63E-01	-0.81	7.49E-01	-2.84	3.95E-01	-1.26	8.27E-01
cingulate gyrus, post.	-2.16	3.38E-01	-0.11	8.69E-01	-0.82	7.43E-01	0.14	9.46E-01
<i>Frontal lobe</i>								
middle frontal gyr.	-1.57	3.20E-01	-2.34	1.02E-01	-2.80	3.42E-01	-0.94	7.74E-01
precentral gyr.	-0.39	8.50E-01	-2.69	3.62E-01	-6.74	3.89E-02	-7.07	2.24E-02
precentral gyr., med.	-4.24	1.92E-01	-2.85	5.64E-01	-3.97	2.34E-01	-2.26	5.32E-01
sup. frontal gyr.	-1.87	5.40E-01	-5.66	4.34E-02	-4.92	1.20E-01	-0.27	9.98E-01
sup. frontal gyr., med.	-5.18	1.23E-01	-1.65	8.97E-01	-3.81	1.84E-01	-2.17	4.83E-01
med. frontal cort.	-0.84	4.63E-01	-2.77	2.82E-01	1.37	5.74E-01	6.50	3.33E-02

inf. frontal gyr., opercular	-0.83	7.72E-01	-3.01	7.59E-01	-2.39	4.66E-01	-5.50	2.36E-01
inf. frontal gyr., orbital	-6.24	3.27E-01	-1.24	8.88E-01	-3.79	3.93E-01	-3.97	1.62E-01
inf. frontal gyr., triangular	-2.93	1.66E-01	-5.36	5.59E-02	-4.12	3.77E-01	0.58	7.34E-01
frontal operculum	-5.46	5.22E-01	-2.72	1.87E-01	-0.13	7.87E-01	1.47	5.88E-01
frontal pole	-2.24	3.04E-01	-4.09	1.05E-01	-8.81	5.13E-02	0.38	8.96E-01
central operculum	-0.36	4.83E-01	-1.26	6.25E-01	-3.31	2.24E-01	-3.64	2.56E-01
ant. orbital gyr.	-7.63	1.05E-02	-2.60	3.58E-01	-0.34	9.11E-01	-1.55	7.44E-01
post. orbital gyr.	-0.07	8.33E-01	-1.43	8.60E-01	1.87	5.07E-01	1.58	5.08E-01
med. orbital gyr.	-0.52	6.15E-01	-1.08	2.50E-01	0.67	6.01E-01	-0.22	6.75E-01
lat. orbital gyr.	-2.29	3.76E-01	-2.46	4.15E-01	-2.09	4.97E-01	0.74	9.90E-01
supplementary motor cort.	-3.22	3.87E-01	-0.14	9.45E-01	-3.65	2.80E-01	-1.35	6.60E-01
<i>Occipital lobe</i>								
lingual gyr.	-0.20	5.89E-01	-0.15	4.65E-01	-4.52	1.89E-01	-1.51	5.87E-01
cuneus	-3.62	7.17E-01	-3.16	8.20E-01	-0.77	8.70E-01	1.10	6.98E-01
sup. occipital gyr.	-0.04	6.07E-01	-0.88	4.95E-01	2.34	6.77E-01	-1.11	6.45E-01
middle occipital gyr.	-3.05	5.14E-01	-2.13	4.72E-01	-9.46	1.19E-02	-7.64	2.68E-02
inf. occipital gyr.	-1.97	7.36E-01	-0.33	9.89E-01	-8.62	1.51E-02	2.02	7.92E-01
occipital pole	-0.79	8.80E-01	-1.55	6.04E-01	3.58	4.16E-01	9.63	2.45E-02
occipital fusiform gyr.	-1.82	9.28E-01	-2.49	6.93E-01	2.13	6.88E-01	0.05	9.01E-01
calcarine cort.	-5.39	5.84E-01	-1.24	8.68E-01	-3.98	5.64E-01	-0.94	8.43E-01
<i>Parietal lobe</i>								
gyrus rectus	-2.29	7.82E-01	-0.98	4.61E-01	0.13	7.80E-01	-1.02	7.02E-01
postcentral gyr.	-4.16	1.91E-01	-0.30	7.28E-01	-12.66	4.39E-04	-6.17	6.43E-02
postcentral gyr., med.	-8.98	2.83E-01	-1.81	4.59E-01	-10.69	4.09E-02	-8.38	1.12E-01
sup. parietal lobule	-1.24	3.07E-01	-4.14	4.07E-02	-1.10	7.51E-01	-1.17	6.41E-01
supramarginal gyr.	-4.79	2.01E-01	-1.18	8.31E-01	-3.76	1.88E-01	0.54	8.99E-01
precuneus	-3.47	4.04E-01	-3.30	4.97E-01	-4.52	7.94E-02	-2.54	3.31E-01
parietal operculum	-5.46	4.23E-02	-1.72	4.93E-01	11.87	2.29E-03	-1.16	9.53E-01
angular gyrus	-5.53	8.19E-02	-3.04	5.12E-01	-3.80	1.83E-01	-4.88	1.13E-01
<i>Central structures</i>								
caudate	-5.19	1.85E-01	-3.22	4.63E-01	-1.74	5.20E-01	-1.40	5.57E-01
accumbens area	-2.93	5.37E-01	-1.25	5.82E-01	-2.33	9.85E-01	-1.06	6.25E-01
putamen	-7.86	2.09E-02	-5.15	2.85E-01	-5.44	4.38E-02	-2.18	5.53E-01
thalamus (proper)	-9.21	2.34E-04	-3.51	1.34E-01	-8.18	2.21E-05	-1.25	6.83E-01
pallidum	-3.17	4.07E-01	-4.32	1.94E-01	-6.13	1.92E-01	-5.14	3.61E-01

ventral diencephalon	-2.83	1.40E-01	-1.03	9.05E-01	-2.21	2.60E-01	0.00	9.70E-01
optic chiasm (np)	-0.21	8.75E-01			-8.90	1.62E-01		
subcallosal area	-3.55	1.73E-01	-5.02	7.02E-02	-0.32	8.43E-01	0.89	8.59E-01
<i>Posterior fossa, ventricles & white matter</i>								
cerebellum exterior	-0.87	4.54E-01	-0.12	7.17E-01	1.09	8.03E-01	6.87	4.45E-02
cerebellar vermal lobules I-V (np)	-0.33	6.06E-01			6.48	2.34E-01		
cerebellar vermal lobules VI-VII (np)	-0.45	3.64E-01			-9.64	1.80E-01		
cerebellar vermal lobules VIII-X (np)	-1.69	7.53E-01			4.05	2.68E-01		
brainstem (np)	-0.86	5.22E-01			3.67	8.22E-02		
lateral ventricle	-12.46	2.95E-01	-6.53	6.93E-01	15.53	2.35E-01	8.69	6.08E-01
inf. lateral ventricle	-13.39	2.26E-01	-2.51	7.84E-01	19.75	4.21E-02	-3.32	3.57E-01
third ventricle (np)	-15.88	1.39E-01			14.48	2.44E-01		
fourth ventricle (np)	-0.04	7.27E-01			-1.26	8.29E-01		
cerebrospinal fluid (np)	-4.84	7.57E-01			6.75	4.50E-01		
cerebral white matter	-3.84	6.44E-03	-1.42	2.81E-01	-0.28	7.88E-01	2.49	1.94E-01
cerebellar white matter	-7.76	8.85E-02	-7.09	1.19E-01	-2.48	9.96E-01	-9.29	1.62E-01

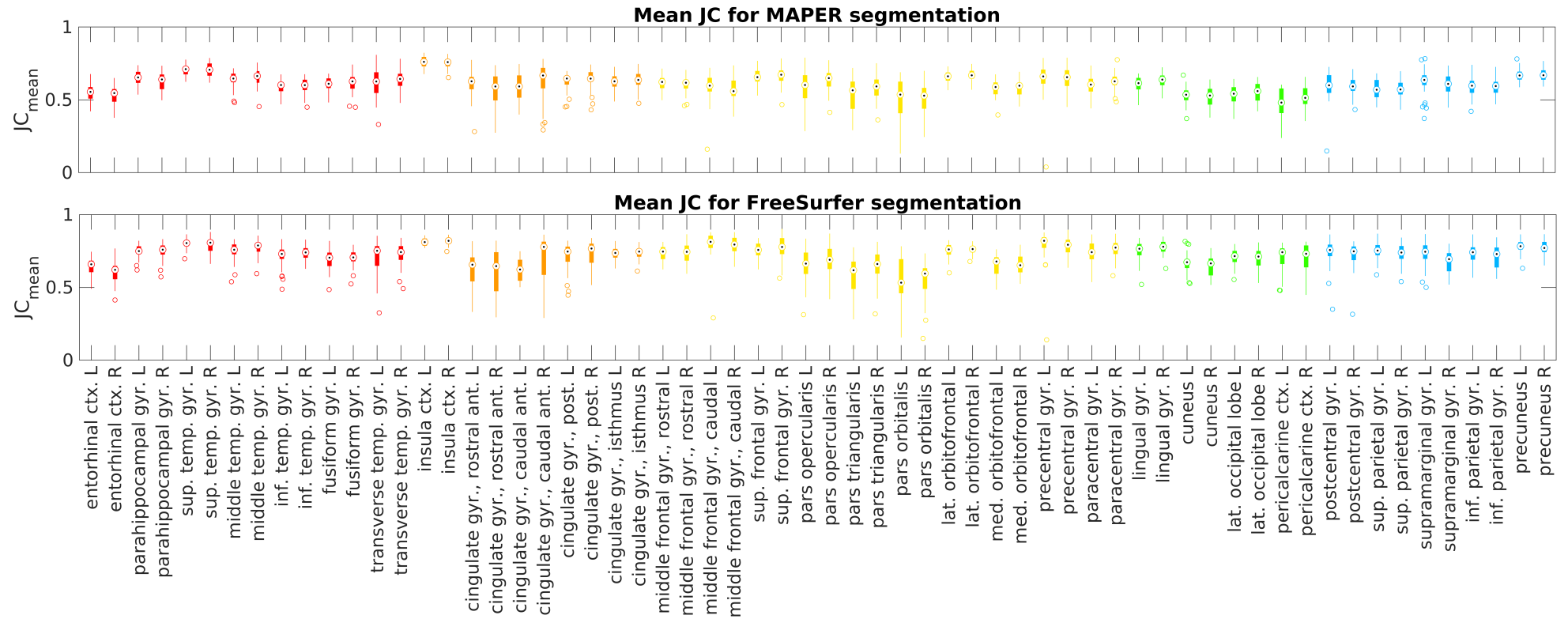
Supplementary Figure S1. Boxplots of Jaccard overlaps for the HM atlas database.

Boxplots of JC (across 30 subjects) for each region are shown for MAPER (top) and FreeSurfer (bottom). Regions are colour coded by lobe: red – temporal lobe, orange – insula & cingulate, yellow – frontal lobe, green – occipital lobe, blue – parietal lobe, purple – central structures, pink – posterior fossa & ventricles. The top and bottom edges of the boxes are the 25th and 75th percentiles, the target inside each box is the median and outliers are indicated by unfilled circles on either end of the box whiskers. Abbreviations: L = left, R = right, gyr. = gyrus, cort. = cortex, ant. = anterior, post. = posterior, sup. = superior, inf. = inferior, med. = medial, lat. = lateral, temp. = temporal.



Supplementary Figure S2. Boxplots of Jaccard overlaps for the DKT40 atlas database.

Boxplots of JC (across 30 subjects) for each region are shown for MAPER (top) and FreeSurfer (bottom). Plot colours and abbreviations as in Supplementary Figure 1.



Supplementary Figure S3. Boxplots of Jaccard overlap for the MGC2012 atlas database.

Boxplots of JC (across 30 subjects) for each region are shown for MAPER (top) and FreeSurfer (bottom). Plot colours and abbreviations as in Supplementary Figure 1.

