

SUPPLEMENTARY TABLE S1: Cortical thickness change per Gy (whole-brain linear mixed-effects model)

Region	Thickness change ($\mu\text{m}/\text{Gy}$)	Standard error	<i>p</i>-value ^a
Banks of Superior Temporal Sulcus	-2.1	0.7	0.00217
Caudal Anterior Cingulate	-1.6	0.6	0.00972
Caudal Middle Frontal	-0.9	0.7	0.16630
Cuneus	-0.6	0.8	0.42719
Entorhinal	-4.8	1.1	0.00001
Frontal Pole	-0.3	1.0	0.76862
Fusiform	-2.6	1.0	0.00715
Inferior Parietal	-2.3	0.7	0.00201
Inferior Temporal	-3.9	1.0	0.00011
Insula	-1.7	0.7	0.01067
Isthmus Cingulate	-1.8	0.5	0.00093
Lateral Occipital	-1.6	1.0	0.12375
Lateral Orbitofrontal	-0.8	0.8	0.30196
Lingual	-1.7	0.8	0.02638
Medial Orbitofrontal	0.0	0.8	0.96223
Middle Temporal	-3.0	0.9	0.00072
Paracentral	-0.5	0.6	0.38834
Parahippocampal	-3.4	0.9	0.00018
Pars Opercularis	-0.7	0.7	0.28281
Pars Orbitalis	-2.1	0.8	0.00553
Pars Triangularis	-1.4	0.7	0.04584
Pericalcarine	-0.5	0.8	0.52777
Postcentral	-1.1	0.7	0.11940
Posterior Cingulate	-0.2	0.5	0.76357
Precentral	-1.7	0.7	0.01498
Precuneus	-0.9	0.6	0.15110
Rostral Anterior Cingulate	-1.1	0.6	0.08437
Rostral Middle Frontal	-1.9	0.8	0.01242
Superior Frontal	-2.5	0.7	0.00040
Superior Parietal	-1.0	0.8	0.17756
Superior Temporal	-4.4	0.7	0.00000
Supramarginal	-2.1	0.7	0.00366
Temporal Pole	-6.5	1.0	0.00000
Transverse Temporal	-1.5	0.7	0.02579

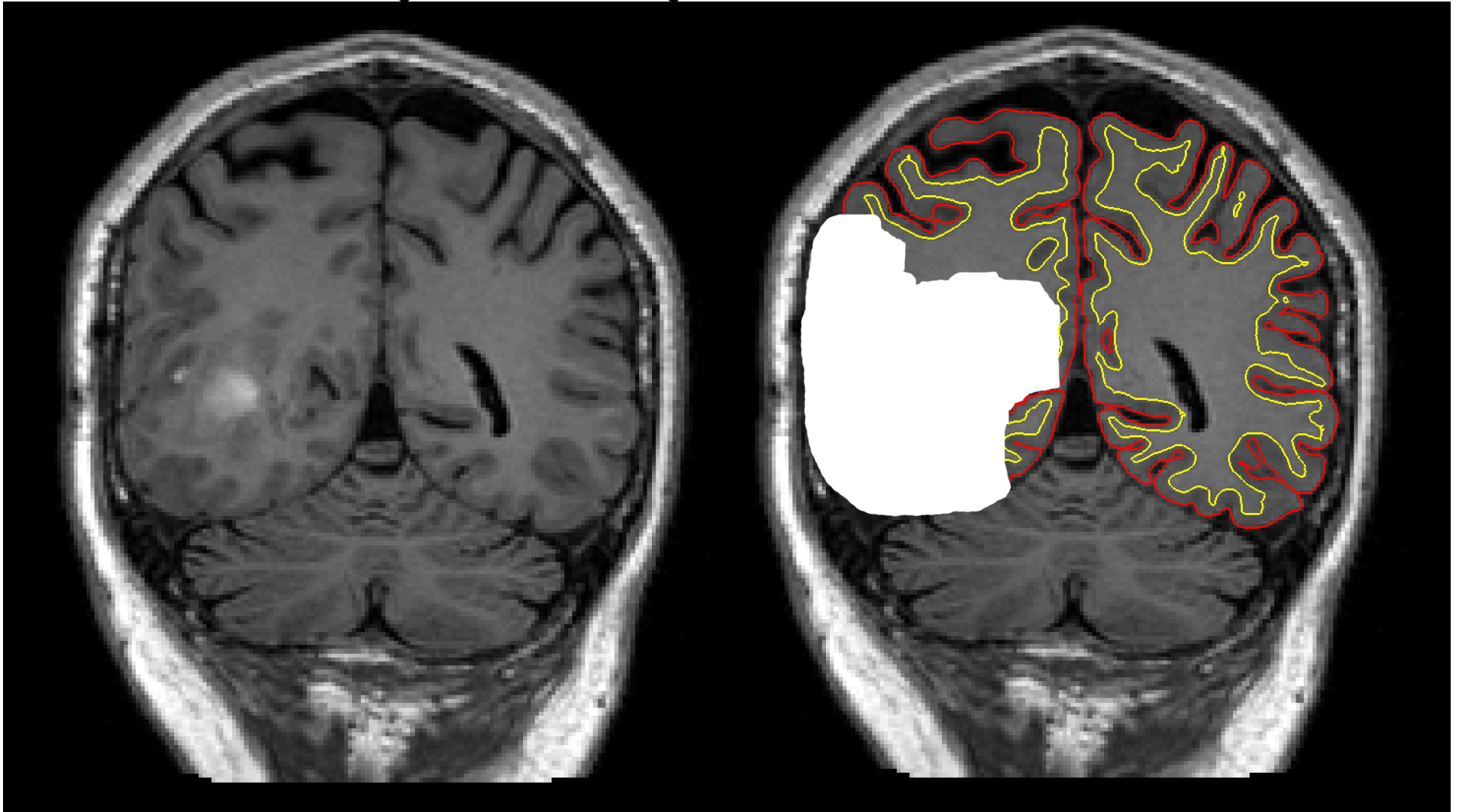
^aUnivariate, two-sided, *p*-value from linear mixed-effects model without correction for multiple comparisons.

SUPPLEMENTARY TABLE S2: Distribution of thickness change and dose by region

region	patients	observations	Mean cortical thickness change (mm)					Mean dose (Gy)				
			min	low_quart	median	up_quart	max	min	low_quart	median	up_quart	max
bankssts	54	97	-0.76	-0.10	-0.04	0.02	0.29	0.0	5.4	16.6	31.3	63.4
caudalanteriorcingulate	51	97	-0.87	-0.15	-0.06	0.10	0.33	0.2	9.9	21.1	36.5	60.1
caudalmiddlefrontal	54	103	-0.76	-0.07	0.00	0.08	0.37	0.2	4.9	16.6	27.4	62.2
cuneus	54	105	-0.42	-0.08	0.00	0.08	0.39	0.0	5.0	15.8	27.5	60.2
entorhinal	54	92	-1.16	-0.19	0.00	0.23	1.25	0.2	1.6	7.7	16.4	58.9
frontalpole	53	103	-0.84	-0.19	0.03	0.22	0.87	0.2	3.1	7.6	19.9	53.9
fusiform	54	102	-0.50	-0.13	-0.06	0.04	0.46	0.0	1.9	10.0	19.0	54.9
inferiorparietal	54	105	-0.37	-0.12	-0.02	0.05	0.28	0.0	6.3	14.9	26.8	61.0
inferiortemporal	54	100	-0.91	-0.13	-0.04	0.06	0.49	0.1	2.0	8.7	15.7	58.6
insula	54	98	-1.24	-0.09	0.00	0.08	0.52	0.3	8.6	19.7	36.1	61.3
isthmuscingulate	54	107	-0.55	-0.14	-0.01	0.06	0.42	0.0	11.9	28.0	44.0	61.9
lateraloccipital	54	105	-0.45	-0.08	-0.01	0.06	0.37	0.0	2.0	7.6	17.2	58.5
lateralorbitofrontal	54	104	-0.49	-0.10	0.01	0.11	0.39	0.6	4.7	12.6	26.8	60.5
lingual	54	103	-0.58	-0.10	-0.01	0.06	0.31	0.0	3.1	13.0	29.5	57.5
medialorbitofrontal	53	104	-0.33	-0.09	-0.01	0.09	0.41	0.6	5.5	11.9	25.3	61.3
middletemporal	54	100	-0.83	-0.13	-0.04	0.09	0.40	0.0	3.6	13.2	20.0	55.2
paracentral	54	106	-0.76	-0.08	0.01	0.09	0.47	0.0	5.5	18.8	35.8	59.6
parahippocampal	54	92	-0.55	-0.16	-0.05	0.06	0.45	0.0	2.6	14.0	24.1	61.6
parsopercularis	54	101	-0.27	-0.09	0.00	0.10	0.30	0.3	8.3	18.2	32.7	65.6
parsorbitalis	54	107	-1.14	-0.20	-0.02	0.15	0.60	0.4	4.6	12.3	27.8	61.7
parstriangularis	54	103	-0.46	-0.10	-0.02	0.06	0.37	0.3	6.8	16.6	28.6	65.4
pericalcarine	54	104	-0.33	-0.08	-0.01	0.08	0.60	0.0	3.7	10.8	25.0	60.8
postcentral	54	105	-0.99	-0.07	-0.01	0.06	0.44	0.0	8.7	17.0	28.9	61.8
posteriorcingulate	53	102	-0.47	-0.08	0.00	0.08	0.32	0.3	12.6	27.4	43.0	61.8
precentral	54	105	-0.61	-0.10	-0.02	0.04	0.48	0.0	7.6	16.2	32.6	61.0
precuneus	54	105	-0.37	-0.07	-0.01	0.06	0.26	0.0	8.3	18.3	34.9	59.5
rostralanteriorcingulate	52	102	-0.73	-0.15	-0.05	0.09	0.57	0.4	9.1	16.1	33.1	60.3
rostralmiddlefrontal	54	108	-0.46	-0.14	-0.02	0.04	0.34	0.2	6.3	14.0	25.7	59.3
superiorfrontal	54	107	-0.59	-0.13	-0.03	0.06	0.33	0.2	5.8	15.6	31.6	58.5
superiorparietal	54	106	-0.36	-0.06	0.01	0.06	0.25	0.0	5.8	13.9	26.1	59.4
superiortemporal	54	97	-1.06	-0.13	-0.04	0.06	0.40	0.1	5.7	15.8	28.7	61.8
supramarginal	54	99	-0.62	-0.09	-0.03	0.03	0.41	0.0	7.6	16.2	31.1	62.2
temporalpole	54	92	-1.11	-0.30	-0.04	0.28	1.64	0.3	1.6	6.7	20.1	60.8
transversetemporal	54	90	-0.60	-0.13	0.01	0.09	0.37	0.0	7.3	19.2	33.6	65.0

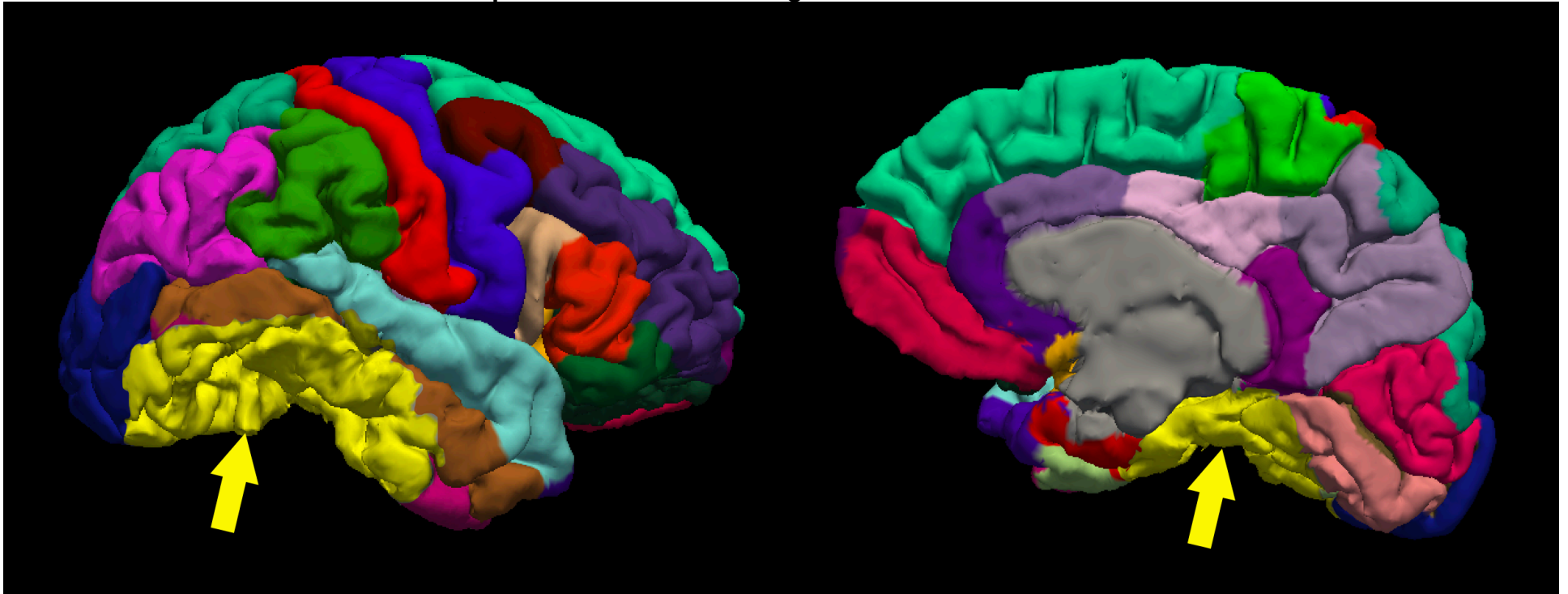
min = minimum; low_quart = lower quartile (i.e., 25th %ile); up_quart = upper quartile.

SUPPLEMENTARY FIGURE S1: Segmentation and masking



Example images demonstrating segmentation of cortex without (left panel) and with annotations (right panel). This patient is a 62-year-old man with right occipital GBM, and the MRI study shown occurred approximately 4 weeks after sub-total resection and 4 days before start of RT. Both panels show the same coronal slice from T₁-weighted MRI volume without contrast. The gray matter-CSF junction is denoted in red, and the gray matter-white matter junction is denoted in yellow. The portion of the slice excluded from analysis is shown in white.

SUPPLEMENTARY FIGURE S2: Cortex parcellation and masking



Example demonstrating parcellation of cortex into regions on the lateral (left panel) and medial (right panel) brain surfaces. This patient is a 60-year-old woman with right temporal GBM, and the MRI study shown occurred approximately 5 weeks after gross-total resection and 5 days before start of RT. The regions here use the same color code as in Figure 1A, except regions near tumor cavity that were excluded from analysis are overlaid in yellow (see yellow arrows).