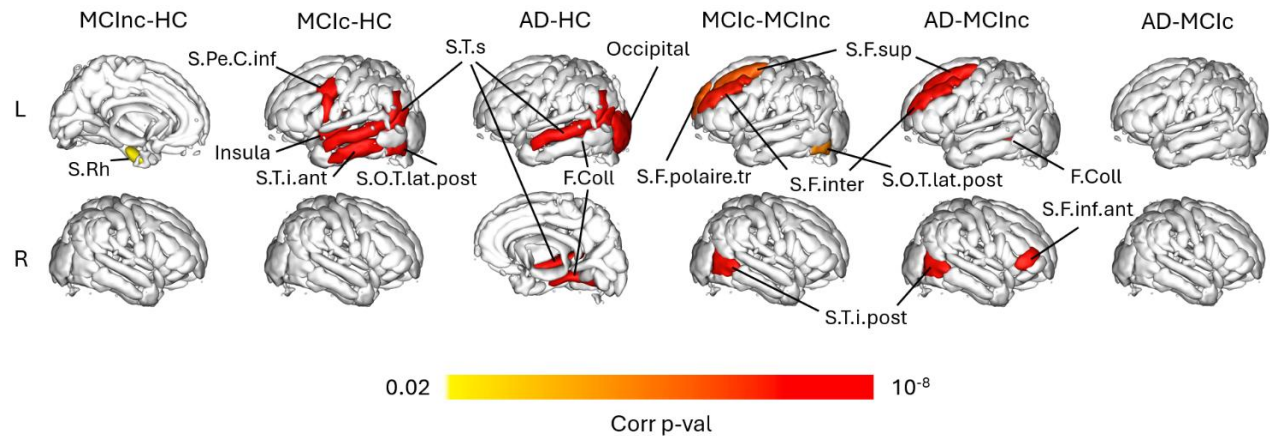


Supplementary Material

Sulcal Morphometry Predicts Mild Cognitive Impairment Conversion to Alzheimer's Disease



Supplementary Figure 1. Representation of the top 5 sulci (if existing) whose width exhibited a statistically different value between each group. The color intensity describes the significance of the result. Sulcal meshes are seen from the lateral or internal point of view, depending on the optimal position for their visualization. AD versus MCInc did not exhibit significant differences bilaterally, as well as MCInc versus HC and MCInc versus HC in the right hemisphere. S.Rh, rhinal sulcus; S.Pe.C.inf, inferior precentral sulcus; S.T.i.ant, anterior inferior temporal sulcus; S.O.T.lat.post, posterior occipito-temporal lateral sulcus; S.T.s, superior temporal sulcus; F.Coll, collateral sulcus; S.F.polaire.tr, polar frontal sulcus; S.F.sup, superior frontal sulcus; S.F.inter, intermediate frontal sulcus; S.T.i.post, posterior inferior temporal sulcus; S.F.inf.ant, anterior inferior frontal sulcus.

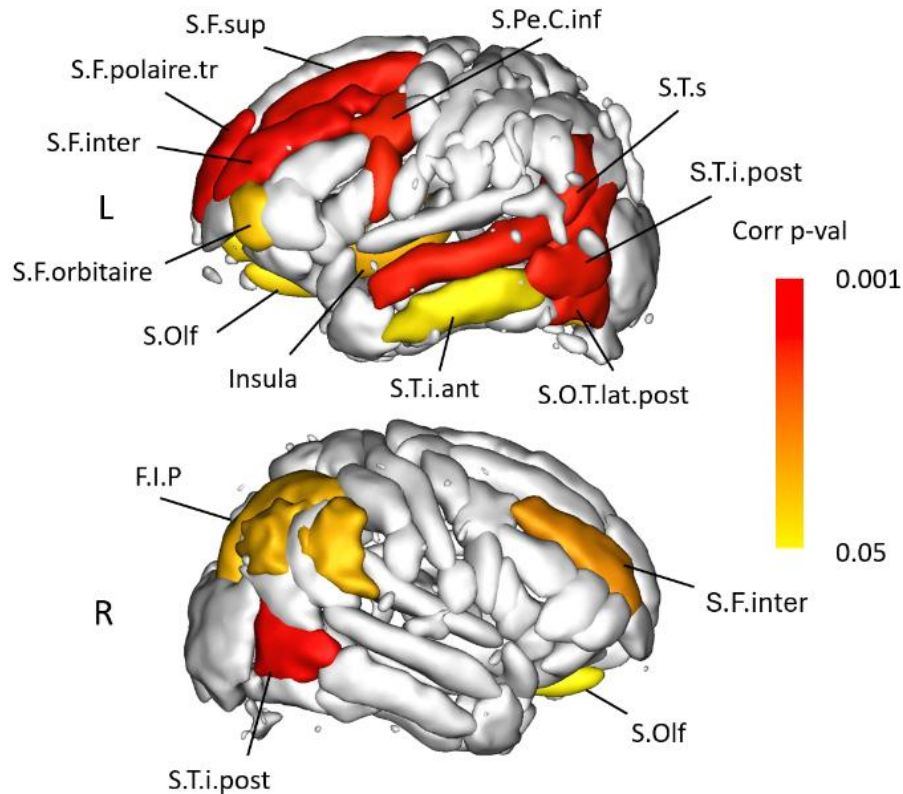
1. Correcting sulcal width data for age

In the case of major interest, i.e., comparing sulcal width in the case of converter and non-converter MCI, the same statistical analysis described in the “Statistical analysis” section was repeated, while correcting the data for age (other than total intracranial volume). The results are summarized in Supplementary Table 1 and Supplementary Figure 2. The list of discriminative sulci, including the most significant ones, is consistent with the one reported in Table 4. Nonetheless, it is interesting to note that the highest AUC is obtained with the sulcal width of the superior temporal sulcus.

Supplementary Table 1. Sulci whose width is significantly higher in MCIc with respect to MCIc, after correcting the data for age, in addition to the total intracranial volume. The results are consistent with the ones reported in Table 2 in the manuscript.

Sulcus	Width MCIc (mm)	Width MCIc (mm)	Corr p	AUC
Right S.T.i.post.	1.6±0.2	2.1±0.5	0.001	0.873
Left S.F.inter.	2.2±0.4	2.9±0.6	0.002	0.85
Left S.F.polaire.tr.	2.9±1.2	3.8±1.0	0.002	0.847
Left S.F.sup.	2.6±0.4	3.3±0.6	0.004	0.83
Left S.O.T.lat.post.	1.7±0.3	2.3±0.6	0.005	0.867
Left S.T.i.post.	1.7±0.2	2.1±0.4	0.005	0.883
Left S.T.s.	2.1±0.2	2.5±0.4	0.005	0.896
Left S.Pe.C.inf.	2.5±0.5	3.3±0.8	0.007	0.803
Right F.P.O.	1.9±0.4	2.4±0.5	0.02	0.81
Right S.F.inter.	2.2±0.5	2.6±0.4	0.03	0.787
Left F.Cal.ant.-Sc.Cal.	1.5±0.3	2.0±0.6	0.034	0.797
Left S.O.T.lat.int.	1.7±0.4	2.5±0.9	0.035	0.795
Left S.F.int.	2.4±0.6	3.0±0.9	0.036	0.773
Left Insula	2.3±0.4	2.9±0.6	0.036	0.793
Right F.I.P.	2.1±0.4	2.5±0.4	0.037	0.773
Left S.F.orbitaire.	1.8±0.4	2.5±0.7	0.04	0.76
Left S.Olf.	2.0±0.3	2.6±0.9	0.043	0.78
Left S.R.inf.	1.6±0.6	2.4±0.8	0.043	0.769
Left S.T.i.ant.	1.8±0.3	2.4±0.9	0.047	0.795
Right S.Olf.	1.9±0.4	2.8±1.1	0.049	0.76

S.T.i.post., posterior inferior temporal sulcus; S.F.inter., intermediate frontal sulcus; S.F.polaire.tr., polar frontal sulcus; S.F.sup., superior frontal sulcus; S.O.T.lat.post., posterior occipito-temporal lateral sulcus; S.T.s., superior temporal sulcus; S.Pe.C.inf., inferior precentral sulcus; F.P.O., parieto-occipital fissure; F.Cal.ant.-Sc.Cal., calcarine fissure; S.O.T.lat.int., internal occipito-temporal lateral sulcus; S.F.int., internal frontal sulcus; F.I.P., intraparietal fissure; S.Olf., olfactory sulcus; S.R.inf., inferior rostral sulcus; S.T.i.ant., anterior inferior temporal sulcus.



Supplementary Figure 2. Representation of the sulci whose width exhibited a statistically different value between MCIc and MCInc, after correcting for sex and age, in addition to total intracranial volume. The color intensity describes the significance of the result (MCIc > MCInc). S.T.i.post, posterior inferior temporal sulcus; S.F.inter, intermediate frontal sulcus; S.F.polaire.tr, polar frontal sulcus; S.F.sup, superior frontal sulcus; S.O.T.lat.post, posterior occipito-temporal lateral sulcus; S.T.s, superior temporal sulcus; S.Pe.C.inf, inferior precentral sulcus; F.P.O, parieto-occipital fissure; F.Cal.ant.-Sc.Cal, calcarine fissure; S.O.T.lat.int, internal occipito-temporal lateral sulcus; S.F.int, internal frontal sulcus; F.I.P, intraparietal fissure; S.Olf, olfactory sulcus; S.R.inf, inferior rostral sulcus; S.T.i.ant, anterior inferior temporal sulcus.

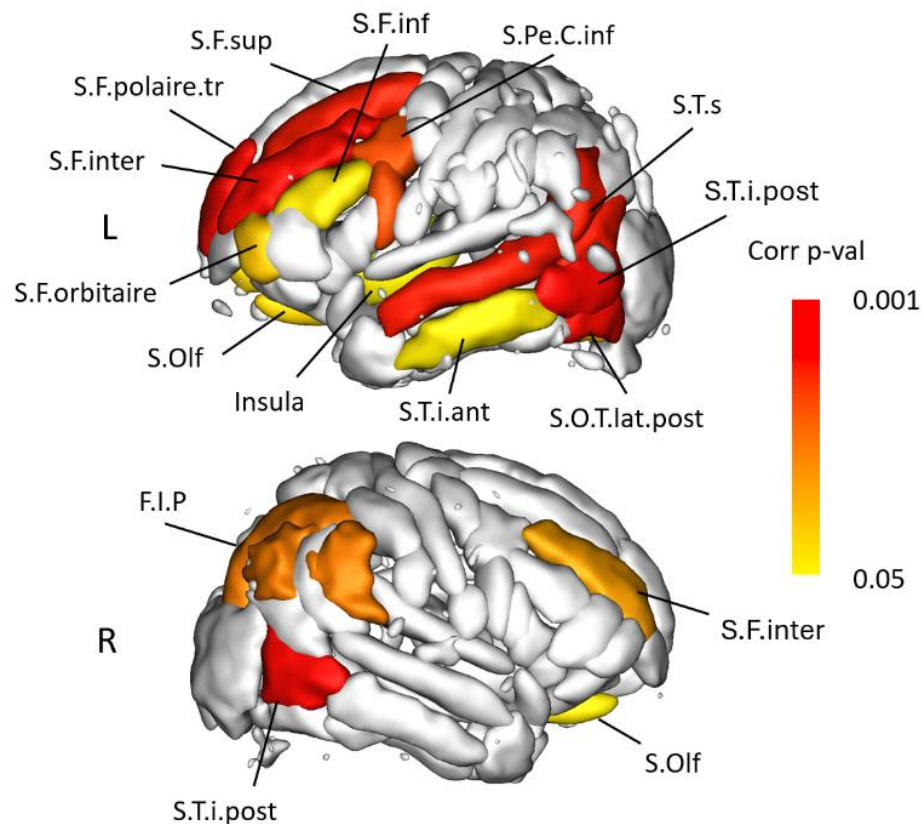
2. Correcting sulcal data for age and sex

Analogously to the approach described in above, the analysis was repeated correcting also for patients' sex, in addition to TIV and age. The statistically significant results are reported in Supplementary Table 2 and Supplementary Figure 3. The results, in terms of most significant sulci, are consistent with the ones reported in Supplementary Table 1 and Table 4 in the manuscript; however, it is particularly relevant to note that the width of left posterior inferior temporal sulcus achieves in this case the highest AUC of the ROC curve, equal to 0.920.

Supplementary Table 2. Sulci whose width is significantly higher in MCInc with respect to MCInc, after correcting the data for sex and age, in addition to the total intracranial volume. The results are consistent with the ones reported in Table 2 in the manuscript.

Sulcus	Width MCInc (mm)	Width MCInc (mm)	Corr p	AUC
Right S.T.i.post.	1.6±0.2	2.1±0.5	0.001	0.870
Left S.T.i.post.	1.7±0.2	2.1±0.4	0.001	0.920
Left S.F.polaire.tr.	2.9±1.2	3.8±1.0	0.002	0.847
Left S.O.T.lat.post.	1.7±0.3	2.3±0.6	0.002	0.897
Left S.F.inter.	2.2±0.4	2.9±0.6	0.003	0.847
Left S.T.s.	2.1±0.2	2.5±0.4	0.004	0.889
Left S.F.sup.	2.6±0.4	3.3±0.6	0.006	0.827
Right F.P.O.	1.9±0.4	2.4±0.5	0.009	0.820
Left S.Pe.C.inf.	2.5±0.5	3.3±0.8	0.016	0.787
Right F.I.P.	2.1±0.4	2.5±0.4	0.026	0.787
Right S.F.inter	2.2±0.5	2.6±0.4	0.033	0.757
Left S.F.orbitaire.	1.8±0.4	2.5±0.7	0.039	0.763
Left S.Olf.	2.0±0.3	2.6±0.9	0.040	0.787
Left S.F.inf.	2.1±0.4	2.6±0.6	0.046	0.757
Left S.T.i.ant.	1.8±0.3	2.4±0.9	0.047	0.795
Right S.Olf.	1.9±0.4	2.8±1.1	0.047	0.760
Left Insula	2.3±0.4	2.9±0.6	0.048	0.760

S.T.i.post., posterior inferior temporal sulcus; S.F.polaire.tr., polar frontal sulcus; S.O.T.lat.post., posterior occipito-temporal lateral sulcus; S.F.inter intermediate frontal sulcus; S.T.s., superior temporal sulcus; S.F.sup., superior frontal sulcus; F.P.O., parieto-occipital fissure; S.Pe.C.inf., inferior precentral sulcus; F.I.P., intraparietal fissure; S.F.obitaire., orbital frontal sulcus; S.Olf., olfactory sulcus; S.F.inf., inferior frontal sulcus; S.T.i.ant., anterior inferior temporal sulcus.



Supplementary Figure 3. Representation of the sulci whose width exhibited a statistically different value between MCIc and MCInc, after correcting for sex and age, in addition to total intracranial volume. The color intensity describes the significance of the result (MCIc > MCInc). S.T.i.post, posterior inferior temporal sulcus; S.F.polaire.tr, polar frontal sulcus; S.O.T.lat.post, posterior occipito-temporal lateral sulcus; S.F.inter, intermediate frontal sulcus; S.T.s, superior temporal sulcus; S.F.sup, superior frontal sulcus; F.P.O, parieto-occipital fissure; S.Pe.C.inf, inferior precentral sulcus; F.I.P, intraparietal fissure; S.F.obritaire, orbital frontal sulcus; S.Olf, olfactory sulcus; S.F.inf, inferior frontal sulcus; S.T.i.ant, anterior inferior temporal sulcus.