

Supplementary information for:

A reproducible low-dimensional architecture of human white-matter connectivity

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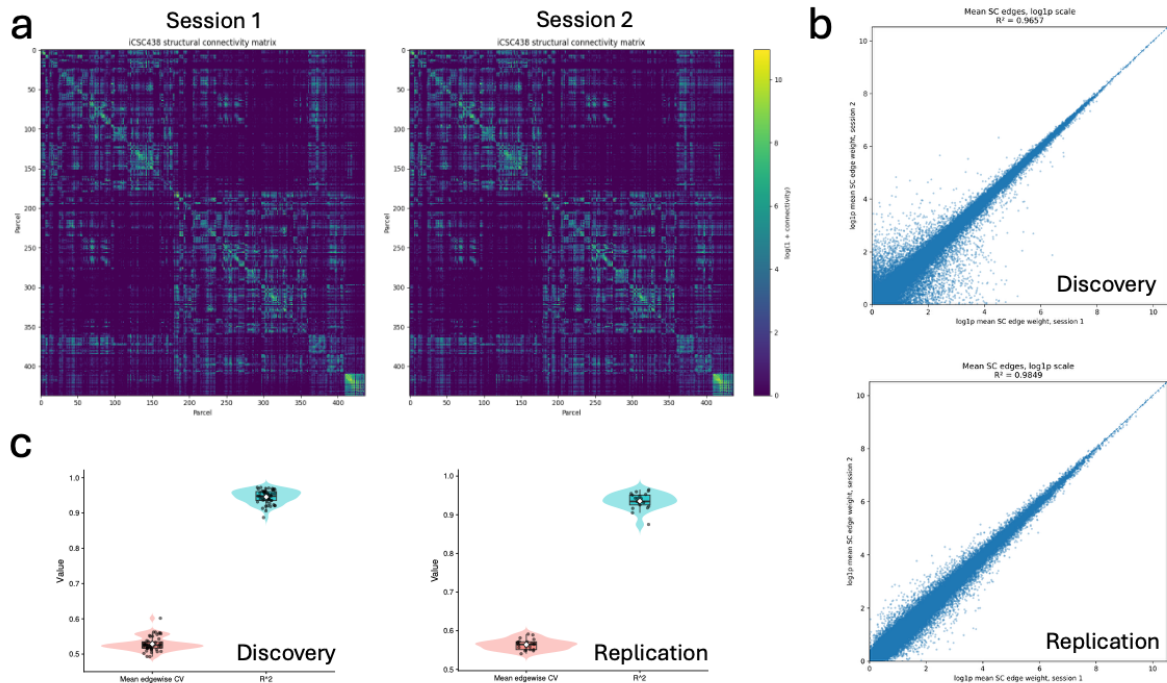


Figure S1. Test–retest reproducibility of structural connectivity. **a**, Group-mean structural connectivity matrices for session 1 and session 2 across the Discovery cohort. Matrix entries represent mean edge weights between iCSC-438 parcels across participants. Similar block structure across sessions indicates preservation of large-scale connectivity organization. **b**, Edgewise correspondence between the group-mean structural connectivity matrices from session 1 and session 2, shown separately for the Discovery ($n=61$) and Replication ($n=28$) cohorts. Each point represents one unique inter-parcel edge from the upper triangle of the matrix. The diagonal reference line indicates perfect agreement between sessions. Strong clustering along the identity line indicates high test-retest reproducibility of mean edge weights. **c**, Summary distributions of test-retest metrics across participants for the Discovery and Replication cohorts. Violin plots show subject-level reproducibility estimates, including edgewise coefficient of variation (CV) and squared Pearson correlation (R^2) between session 1 and session 2 connectivity profiles. Dots represent individual participants. Lower coefficient of variation and higher R^2 indicate greater reproducibility.

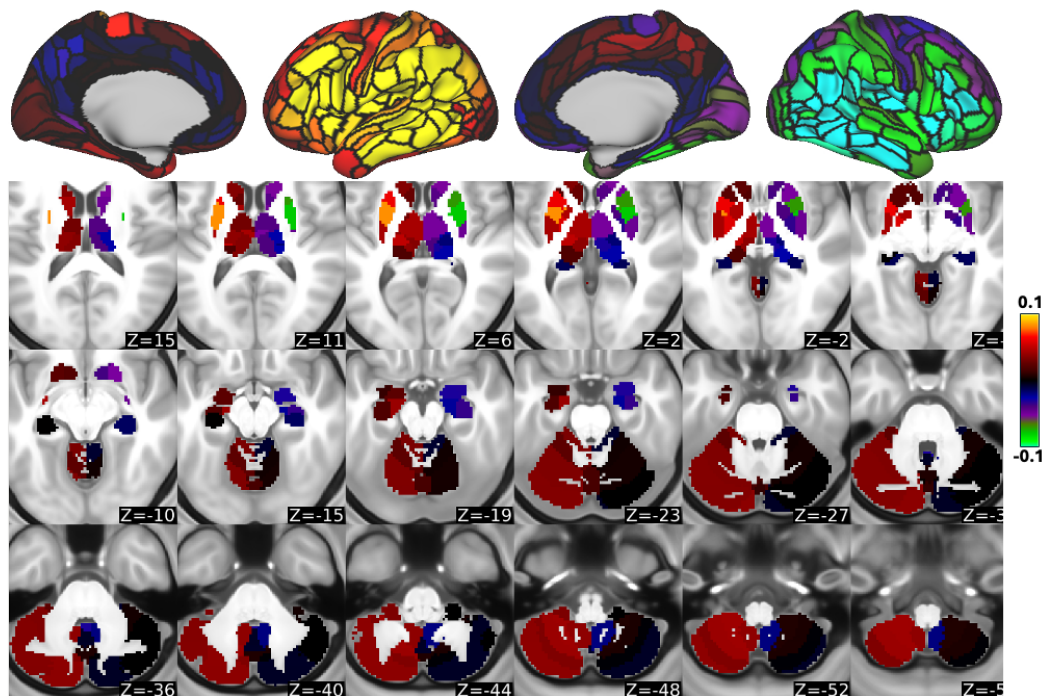


Figure S2. Principal structural connectivity gradient with hemispheric laterality. Spatial distribution of the first structural connectivity gradient (G1) mapped onto cortical surface renderings and axial brain slices. G1 shows a clear left–right laterality pattern, with positive gradient values predominating in one hemisphere and negative values predominating in the contralateral hemisphere across both cortical and subcortical regions. The cortical renderings highlight this hemispheric asymmetry across medial and lateral surfaces, while the axial slices demonstrate that the lateralized organization extends into deep gray matter and subcortical structures. Discovery cohort (n=61).

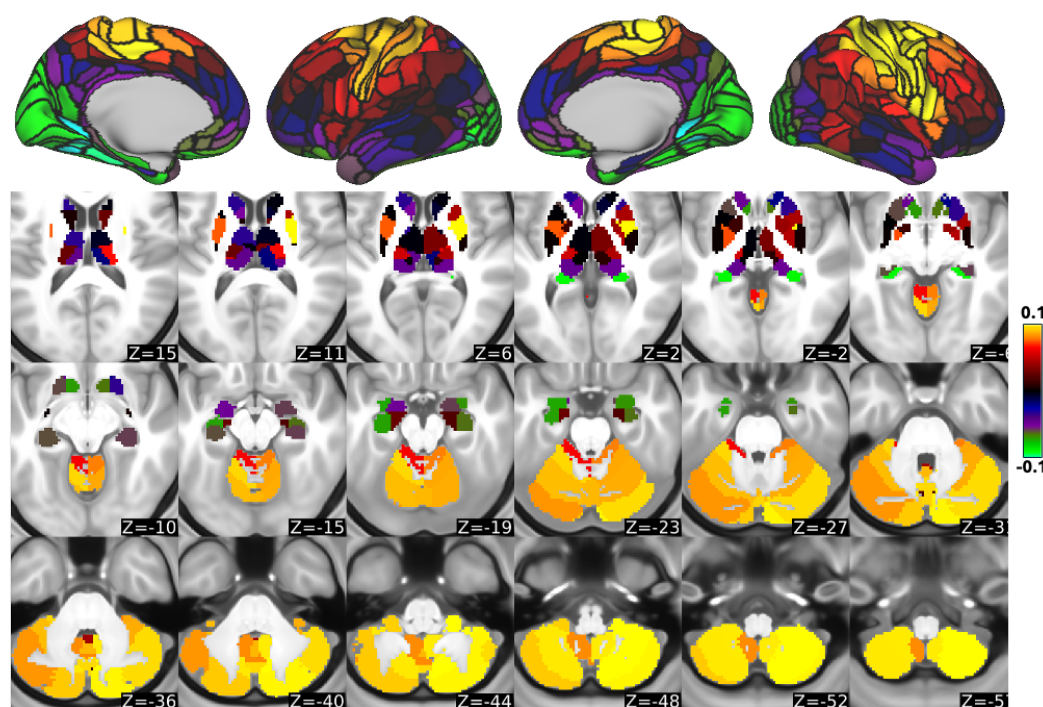


Figure S3. Second structural connectivity gradient showing a dorsal-ventral axis. Spatial distribution of the second structural connectivity gradient (G2) mapped onto cortical surface renderings and axial brain slices. G2 demonstrates a prominent dorsal-ventral organization, with higher positive values preferentially expressed in ventral/inferior regions and lower or negative values distributed across more dorsal/superior cortical territories. Discovery cohort (n=61).

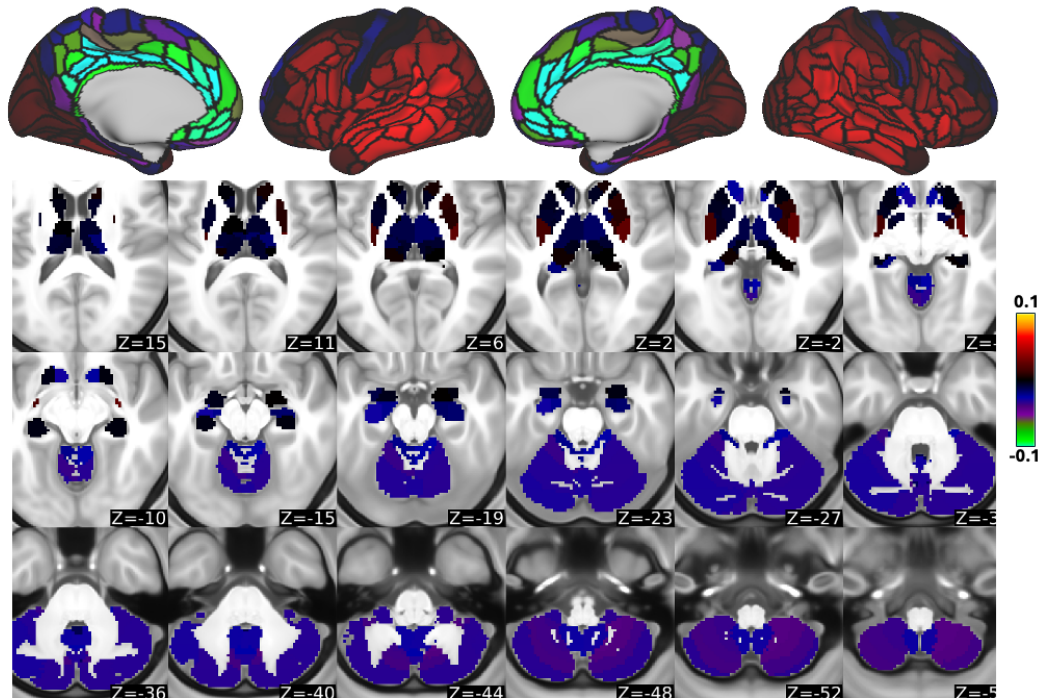


Figure S4. Second structural connectivity gradient showing a cingulate-temporal axis. Spatial distribution of the third structural connectivity gradient (G3) mapped onto cortical surface renderings and axial brain slices. G3 demonstrates a prominent cingulate-temporal organization. Discovery cohort (n=61).

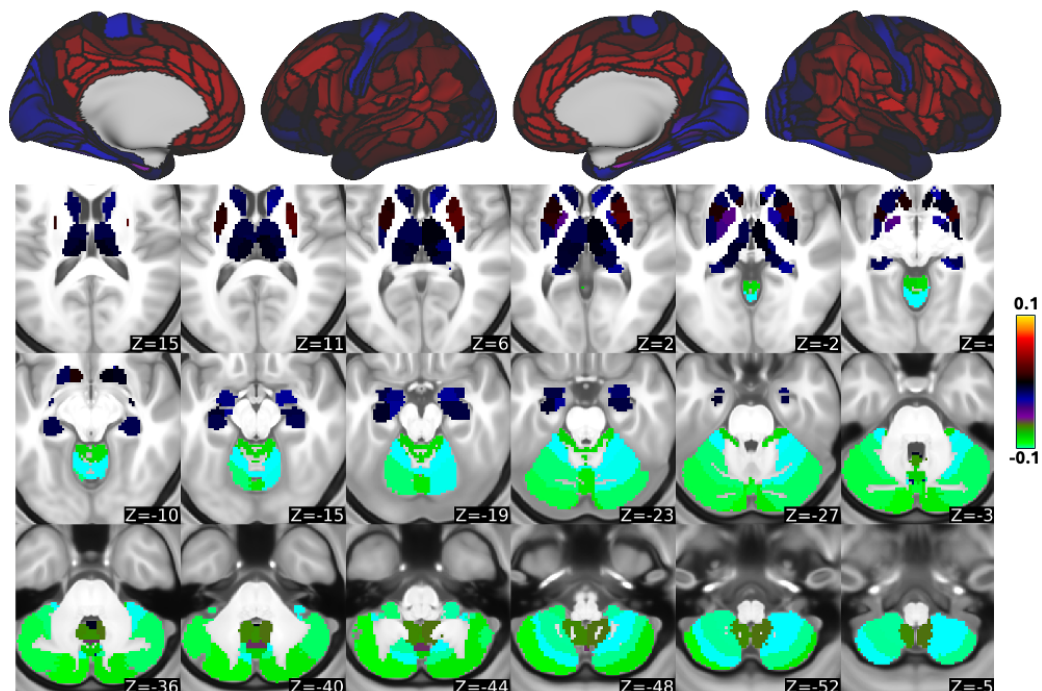


Figure S5. Second structural connectivity gradient showing a cerebellar-multimodal axis. Spatial distribution of the fourth structural connectivity gradient (G4) mapped onto cortical surface renderings and axial brain slices. Discovery cohort (n=61).

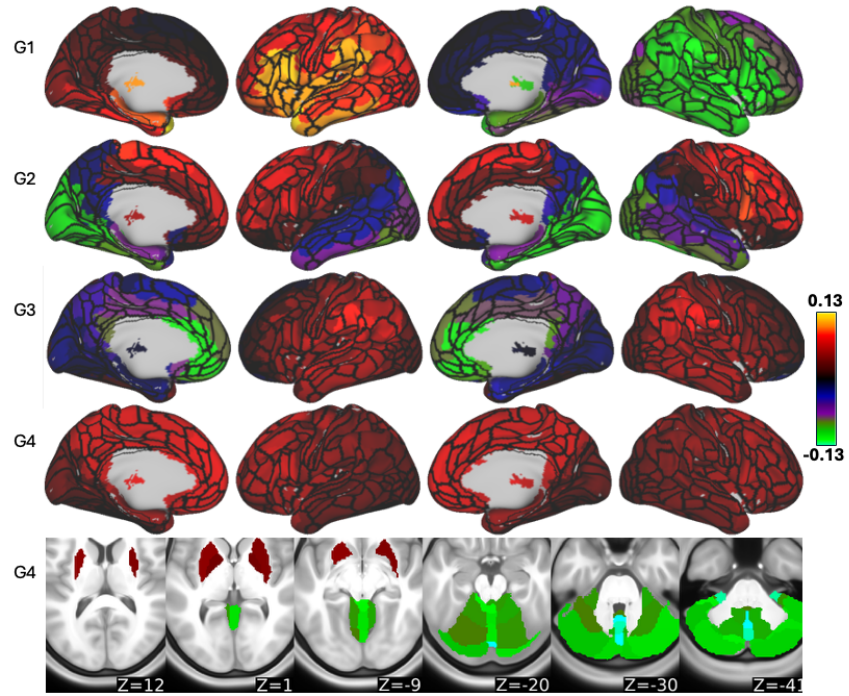


Figure S6. Structural connectivity gradients derived from the AAL116 atlas. Spatial distribution of the first four structural connectivity gradients (G1–G4) computed using the AAL116 parcellation and mapped onto cortical surface renderings and six axial slices showing G4 in subcortical regions. Discovery cohort (n=61).

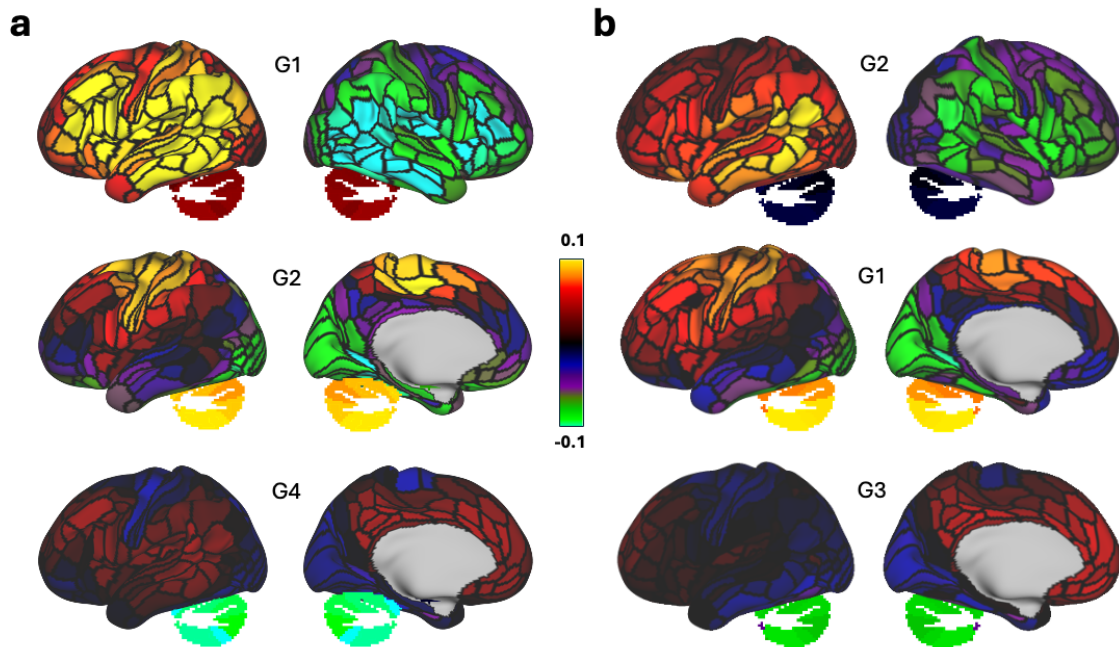


Figure S7. Matching structural gradient components across FOD amplitude thresholds. Cortical and cerebellar structural gradient components derived from MRtrix3 tractography are shown for two fiber orientation distribution amplitude thresholds: **FOD = 0.10 (a)** and **FOD = 0.03 (b)**. Matched components are labeled by gradient index (**G1–G4**) and displayed on lateral and medial cortical surfaces with corresponding cerebellar maps. Colors indicate parcel-wise gradient scores, scaled from negative to positive values. The preservation of spatially similar gradient patterns across FOD thresholds indicates that the dominant structural gradient organization is robust to the choice of FOD amplitude cutoff.

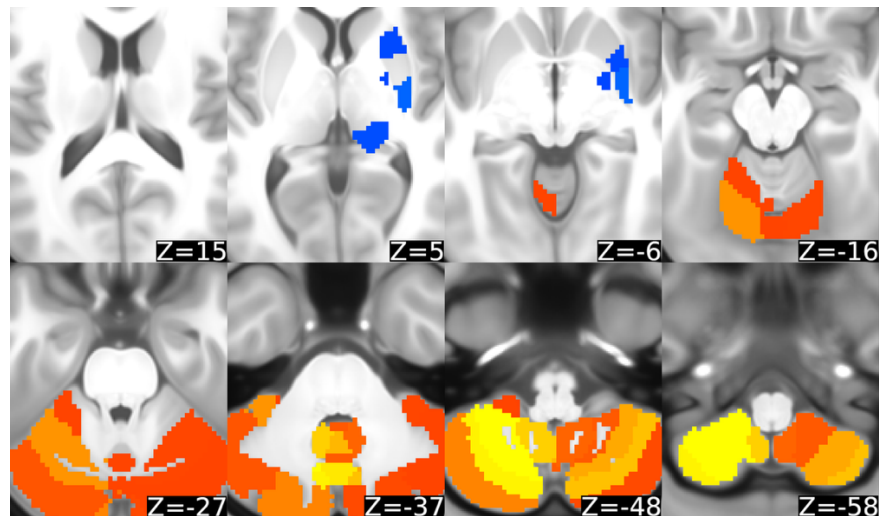


Figure S8. Age-related variation in the structural cerebellar-transmodal gradient: sensitivity to FOD threshold. Parcel-wise age associations with the structural cerebellar-transmodal gradient are shown for tractography performed with an FOD amplitude threshold of 0.03. Age effects were estimated using linear mixed-effects models adjusted for sex and intracranial volume, with participant-specific random intercepts. Maps show FDR-thresholded fixed-effect statistics for age across subcortical and cerebellar parcels. Warm colors indicate positive age associations,

and cool colors indicate negative age associations ($3 < |t| < 5$). Results are from the discovery cohort ($n=61$; age= 43.3 ± 13.7 years; 34 females).

Table S1: Definitions and anatomical characteristics of structural connectivity gradient endpoints. Endpoint parcels are listed for structural connectivity gradients G2–G4. For each endpoint, the table reports the endpoint designation, iCSC-438 atlas label, and anatomical area. Endpoint labels identify the opposing poles used to characterize each gradient: dorsal and ventral for G2, cingulate and temporal for G3, and transmodal for G4. All cerebellar parcels were included in the negative pole of G4.

Grad	Endpoint	Label	Area
G2	dorsal	R_FEF	Frontal eye field
G2	dorsal	R_55b	Area 55b
G2	dorsal	R_IPS1	Intraparietal sulcus area 1
G2	dorsal	R_7AL	Lateral area 7A
G2	dorsal	R_7PL	Lateral area 7P
G2	dorsal	R_7PC	Postcentral area 7
G2	dorsal	R_LIPv	Ventral lateral intraparietal area
G2	dorsal	R_6d	Dorsal premotor area 6
G2	dorsal	R_6v	Ventral area 6
G2	dorsal	R_8Av	Ventral area 8A
G2	dorsal	R_8Ad	Dorsal area 8A
G2	dorsal	R_8C	Area 8C
G2	dorsal	R_6r	Rostral area 6
G2	dorsal	R_LIPd	Dorsal lateral intraparietal area
G2	dorsal	R_6a	Area 6 anterior
G2	dorsal	R_PFCm	Centromedian area PF
G2	dorsal	R_TA2	TA2
G2	dorsal	R_PFt	Area PFt
G2	dorsal	R_AIP	Anterior intraparietal area
G2	dorsal	R_STGa	Anterior superior temporal gyrus
G2	dorsal	R_A5	Auditory area 5
G2	dorsal	R_STSda	Dorsal anterior superior temporal sulcus
G2	dorsal	R_STSdp	Dorsal posterior superior temporal sulcus
G2	dorsal	R_STSvp	Ventral posterior superior temporal sulcus
G2	dorsal	R_TPOJ1	Temporo-parieto-occipital junction 1
G2	dorsal	R_TPOJ2	Temporo-parieto-occipital junction 2
G2	dorsal	R_TPOJ3	Temporo-parieto-occipital junction 3
G2	dorsal	R_IP2	Intraparietal area 2
G2	dorsal	R_IP1	Intraparietal area 1
G2	dorsal	R_IP0	Intraparietal area 0

G2	dorsal	R_PFop	Opercular area PF
G2	dorsal	R_PF	Area PF
G2	dorsal	R_PFm	Area PFm
G2	dorsal	R_STSva	Ventral anterior superior temporal sulcus
G2	dorsal	L_FEF	Frontal eye field
G2	dorsal	L_55b	Area 55b
G2	dorsal	L_IPS1	Intraparietal sulcus area 1
G2	dorsal	L_7AL	Lateral area 7A
G2	dorsal	L_7PL	Lateral area 7P
G2	dorsal	L_7PC	Postcentral area 7
G2	dorsal	L_LIPv	Ventral lateral intraparietal area
G2	dorsal	L_6d	Dorsal premotor area 6
G2	dorsal	L_6v	Ventral area 6
G2	dorsal	L_8Av	Ventral area 8A
G2	dorsal	L_8Ad	Dorsal area 8A
G2	dorsal	L_8C	Area 8C
G2	dorsal	L_6r	Rostral area 6
G2	dorsal	L_LIPd	Dorsal lateral intraparietal area
G2	dorsal	L_6a	Area 6 anterior
G2	dorsal	L_PFcm	Centromedian area PF
G2	dorsal	L_TA2	TA2
G2	dorsal	L_PFt	Area PFt
G2	dorsal	L_AIP	Anterior intraparietal area
G2	dorsal	L_STGa	Anterior superior temporal gyrus
G2	dorsal	L_A5	Auditory area 5
G2	dorsal	L_STSda	Dorsal anterior superior temporal sulcus
G2	dorsal	L_STSdp	Dorsal posterior superior temporal sulcus
G2	dorsal	L_STSvp	Ventral posterior superior temporal sulcus
G2	dorsal	L_TPOJ1	Temporo-parieto-occipital junction 1
G2	dorsal	L_TPOJ2	Temporo-parieto-occipital junction 2
G2	dorsal	L_TPOJ3	Temporo-parieto-occipital junction 3
G2	dorsal	L_IP2	Intraparietal area 2
G2	dorsal	L_IP1	Intraparietal area 1
G2	dorsal	L_IP0	Intraparietal area 0
G2	dorsal	L_PFop	Opercular area PF
G2	dorsal	L_PF	Area PF
G2	dorsal	L_PFm	Area PFm
G2	dorsal	L_STSva	Ventral anterior superior temporal sulcus
G2	ventral	R_V1	Primary visual cortex
G2	ventral	R_V2	Second visual area

G2	ventral	R_V3	Third visual area
G2	ventral	R_V4	Fourth visual area
G2	ventral	R_V8	Eighth visual area
G2	ventral	R_FFC	Fusiform face complex
G2	ventral	R_PIT	Posterior inferotemporal complex
G2	ventral	R_10r	Rostral area 10
G2	ventral	R_10d	Dorsal area 10
G2	ventral	R_47l	Lateral area 47
G2	ventral	R_a47r	Anterior rostral area 47
G2	ventral	R_10v	Ventral area 10
G2	ventral	R_a10p	Anterior polar area 10
G2	ventral	R_10pp	Polar prefrontal area 10pp
G2	ventral	R_11l	Lateral area 11
G2	ventral	R_13l	Lateral area 13
G2	ventral	R_OFC	Orbitofrontal cortex
G2	ventral	R_47s	Area 47s
G2	ventral	R_PHA1	Parahippocampal area 1
G2	ventral	R_PHA3	Parahippocampal area 3
G2	ventral	R_TGd	Dorsal temporal pole
G2	ventral	R_TE1a	Anterior TE1
G2	ventral	R_TE1p	Posterior TE1
G2	ventral	R_TE2a	Anterior TE2
G2	ventral	R_TE2p	Posterior TE2
G2	ventral	R_PHA2	Parahippocampal area 2
G2	ventral	R_VVC	Ventral visual complex
G2	ventral	R_pOFC	Posterior orbitofrontal cortex
G2	ventral	R_p10p	Posterior polar area 10
G2	ventral	R_TGv	Ventral temporal pole
G2	ventral	R_TE1m	Middle TE1
G2	ventral	L_V1	Primary visual cortex
G2	ventral	L_V2	Second visual area
G2	ventral	L_V3	Third visual area
G2	ventral	L_V4	Fourth visual area
G2	ventral	L_V8	Eighth visual area
G2	ventral	L_FFC	Fusiform face complex
G2	ventral	L_PIT	Posterior inferotemporal complex
G2	ventral	L_10r	Rostral area 10
G2	ventral	L_10d	Dorsal area 10
G2	ventral	L_47l	Lateral area 47
G2	ventral	L_a47r	Anterior rostral area 47

G2	ventral	L_10v	Ventral area 10
G2	ventral	L_a10p	Anterior polar area 10
G2	ventral	L_10pp	Polar prefrontal area 10pp
G2	ventral	L_11l	Lateral area 11
G2	ventral	L_13l	Lateral area 13
G2	ventral	L_OFC	Orbitofrontal cortex
G2	ventral	L_47s	Area 47s
G2	ventral	L_PHA1	Parahippocampal area 1
G2	ventral	L_PHA3	Parahippocampal area 3
G2	ventral	L_TGd	Dorsal temporal pole
G2	ventral	L_TE1a	Anterior TE1
G2	ventral	L_TE1p	Posterior TE1
G2	ventral	L_TE2a	Anterior TE2
G2	ventral	L_TE2p	Posterior TE2
G2	ventral	L_PHA2	Parahippocampal area 2
G2	ventral	L_VVC	Ventral visual complex
G2	ventral	L_pOFC	Posterior orbitofrontal cortex
G2	ventral	L_p10p	Posterior polar area 10
G2	ventral	L_TGv	Ventral temporal pole
G2	ventral	L_TE1m	Middle TE1
G3	cingulate	R_RSC	Retrosplenial cortex
G3	cingulate	R_POS2	Parieto-occipital sulcus area 2
G3	cingulate	R_PCV	Precuneus visual area
G3	cingulate	R_7m	Medial area 7
G3	cingulate	R_POS1	Parieto-occipital sulcus area 1
G3	cingulate	R_23d	Dorsal area 23
G3	cingulate	R_v23ab	Ventral area 23a/b
G3	cingulate	R_d23ab	Dorsal area 23a/b
G3	cingulate	R_31pv	Posterior ventral area 31
G3	cingulate	R_23c	Cingulate area 23c
G3	cingulate	R_24dd	Dorsal area 24dd
G3	cingulate	R_24dv	Ventral area 24dv
G3	cingulate	R_SCEF	Supplementary and cingulate eye field
G3	cingulate	R_a24	Anterior area 24
G3	cingulate	R_d32	Dorsal area 32
G3	cingulate	R_8BM	Medial area 8B
G3	cingulate	R_p32	Posterior area 32
G3	cingulate	R_9m	Medial area 9
G3	cingulate	R_31pd	Posterior dorsal area 31
G3	cingulate	R_31a	Area 31a

G3	cingulate	R_s32	Subgenual area 32
G3	cingulate	R_p24	Posterior area 24
G3	cingulate	L_RSC	Retrosplenial cortex
G3	cingulate	L_POS2	Parieto-occipital sulcus area 2
G3	cingulate	L_PCV	Precuneus visual area
G3	cingulate	L_7m	Medial area 7
G3	cingulate	L_POS1	Parieto-occipital sulcus area 1
G3	cingulate	L_23d	Dorsal area 23
G3	cingulate	L_v23ab	Ventral area 23a/b
G3	cingulate	L_d23ab	Dorsal area 23a/b
G3	cingulate	L_31pv	Posterior ventral area 31
G3	cingulate	L_23c	Cingulate area 23c
G3	cingulate	L_24dd	Dorsal area 24dd
G3	cingulate	L_24dv	Ventral area 24dv
G3	cingulate	L_SCEF	Supplementary and cingulate eye field
G3	cingulate	L_a24	Anterior area 24
G3	cingulate	L_d32	Dorsal area 32
G3	cingulate	L_8BM	Medial area 8B
G3	cingulate	L_p32	Posterior area 32
G3	cingulate	L_9m	Medial area 9
G3	cingulate	L_31pd	Posterior dorsal area 31
G3	cingulate	L_31a	Area 31a
G3	cingulate	L_s32	Subgenual area 32
G3	cingulate	L_p24	Posterior area 24
G3	temporal	R_FFC	Fusiform face complex
G3	temporal	R_PIT	Posterior inferotemporal complex
G3	temporal	R_STGa	Anterior superior temporal gyrus
G3	temporal	R_PHA1	Parahippocampal area 1
G3	temporal	R_PHA3	Parahippocampal area 3
G3	temporal	R_STSda	Dorsal anterior superior temporal sulcus
G3	temporal	R_STSdp	Dorsal posterior superior temporal sulcus
G3	temporal	R_STSvp	Ventral posterior superior temporal sulcus
G3	temporal	R_TGd	Dorsal temporal pole
G3	temporal	R_TE1a	Anterior TE1
G3	temporal	R_TE1p	Posterior TE1
G3	temporal	R_TE2a	Anterior TE2
G3	temporal	R_TE2p	Posterior TE2
G3	temporal	R_PHT	Posterior homologue of temporal area 2
G3	temporal	R_PH	Parahippocampal area
G3	temporal	R_TPOJ1	Temporo-parieto-occipital junction 1

G3	temporal	R_TPOJ2	Temporo-parieto-occipital junction 2
G3	temporal	R_TPOJ3	Temporo-parieto-occipital junction 3
G3	temporal	R_PHA2	Parahippocampal area 2
G3	temporal	R_VVC	Ventral visual complex
G3	temporal	R_TGv	Ventral temporal pole
G3	temporal	R_STSva	Ventral anterior superior temporal sulcus
G3	temporal	R_TE1m	Middle TE1
G3	temporal	L_FFC	Fusiform face complex
G3	temporal	L_PIT	Posterior inferotemporal complex
G3	temporal	L_STGa	Anterior superior temporal gyrus
G3	temporal	L_PHA1	Parahippocampal area 1
G3	temporal	L_PHA3	Parahippocampal area 3
G3	temporal	L_STSda	Dorsal anterior superior temporal sulcus
G3	temporal	L_STSdp	Dorsal posterior superior temporal sulcus
G3	temporal	L_STSvp	Ventral posterior superior temporal sulcus
G3	temporal	L_TGd	Dorsal temporal pole
G3	temporal	L_TE1a	Anterior TE1
G3	temporal	L_TE1p	Posterior TE1
G3	temporal	L_TE2a	Anterior TE2
G3	temporal	L_TE2p	Posterior TE2
G3	temporal	L_PHT	Posterior homologue of temporal area 2
G3	temporal	L_PH	Parahippocampal area
G3	temporal	L_TPOJ1	Temporo-parieto-occipital junction 1
G3	temporal	L_TPOJ2	Temporo-parieto-occipital junction 2
G3	temporal	L_TPOJ3	Temporo-parieto-occipital junction 3
G3	temporal	L_PHA2	Parahippocampal area 2
G3	temporal	L_VVC	Ventral visual complex
G3	temporal	L_TGv	Ventral temporal pole
G3	temporal	L_STSva	Ventral anterior superior temporal sulcus
G3	temporal	L_TE1m	Middle TE1
G4	transmodal	R_RSC	Retrosplenial cortex
G4	transmodal	R_POS2	Parieto-occipital sulcus area 2
G4	transmodal	R_IPS1	Intraparietal sulcus area 1
G4	transmodal	R_PCV	Precuneus visual area
G4	transmodal	R_7m	Medial area 7
G4	transmodal	R_POS1	Parieto-occipital sulcus area 1
G4	transmodal	R_23d	Dorsal area 23
G4	transmodal	R_v23ab	Ventral area 23a/b
G4	transmodal	R_d23ab	Dorsal area 23a/b
G4	transmodal	R_31pv	Posterior ventral area 31

G4	transmodal	R_23c	Cingulate area 23c
G4	transmodal	R_24dd	Dorsal area 24dd
G4	transmodal	R_24dv	Ventral area 24dv
G4	transmodal	R_7AL	Lateral area 7A
G4	transmodal	R_7PL	Lateral area 7P
G4	transmodal	R_7PC	Postcentral area 7
G4	transmodal	R_LIPv	Ventral lateral intraparietal area
G4	transmodal	R_a24	Anterior area 24
G4	transmodal	R_d32	Dorsal area 32
G4	transmodal	R_8BM	Medial area 8B
G4	transmodal	R_p32	Posterior area 32
G4	transmodal	R_10r	Rostral area 10
G4	transmodal	R_8Av	Ventral area 8A
G4	transmodal	R_8Ad	Dorsal area 8A
G4	transmodal	R_9m	Medial area 9
G4	transmodal	R_9p	Posterior area 9
G4	transmodal	R_10d	Dorsal area 10
G4	transmodal	R_8C	Area 8C
G4	transmodal	R_44	Area 44
G4	transmodal	R_45	Area 45
G4	transmodal	R_47l	Lateral area 47
G4	transmodal	R_a47r	Anterior rostral area 47
G4	transmodal	R_IFJa	Anterior inferior frontal junction
G4	transmodal	R_IFJp	Posterior inferior frontal junction
G4	transmodal	R_IFSp	Posterior inferior frontal sulcus
G4	transmodal	R_IFSa	Anterior inferior frontal sulcus
G4	transmodal	R_46	Area 46
G4	transmodal	R_9a	Anterior area 9
G4	transmodal	R_10v	Ventral area 10
G4	transmodal	R_a10p	Anterior polar area 10
G4	transmodal	R_10pp	Polar prefrontal area 10pp
G4	transmodal	R_11l	Lateral area 11
G4	transmodal	R_13l	Lateral area 13
G4	transmodal	R_OFC	Orbitofrontal cortex
G4	transmodal	R_47s	Area 47s
G4	transmodal	R_LIPd	Dorsal lateral intraparietal area
G4	transmodal	R_PFcm	Centromedian area PF
G4	transmodal	R_PFt	Area PFt
G4	transmodal	R_AIP	Anterior intraparietal area
G4	transmodal	R_STGa	Anterior superior temporal gyrus

G4	transmodal	R_PHA1	Parahippocampal area 1
G4	transmodal	R_PHA3	Parahippocampal area 3
G4	transmodal	R_STSda	Dorsal anterior superior temporal sulcus
G4	transmodal	R_STSdp	Dorsal posterior superior temporal sulcus
G4	transmodal	R_STSvp	Ventral posterior superior temporal sulcus
G4	transmodal	R_TGd	Dorsal temporal pole
G4	transmodal	R_TE1a	Anterior TE1
G4	transmodal	R_TE1p	Posterior TE1
G4	transmodal	R_TE2a	Anterior TE2
G4	transmodal	R_TE2p	Posterior TE2
G4	transmodal	R_TPOJ1	Temporo-parieto-occipital junction 1
G4	transmodal	R_TPOJ2	Temporo-parieto-occipital junction 2
G4	transmodal	R_TPOJ3	Temporo-parieto-occipital junction 3
G4	transmodal	R_IP2	Intraparietal area 2
G4	transmodal	R_IP1	Intraparietal area 1
G4	transmodal	R_IP0	Intraparietal area 0
G4	transmodal	R_PFop	Opercular area PF
G4	transmodal	R_PF	Area PF
G4	transmodal	R_PFm	Area PFm
G4	transmodal	R_PHA2	Parahippocampal area 2
G4	transmodal	R_31pd	Posterior dorsal area 31
G4	transmodal	R_31a	Area 31a
G4	transmodal	R_s32	Subgenual area 32
G4	transmodal	R_pOFC	Posterior orbitofrontal cortex
G4	transmodal	R_p10p	Posterior polar area 10
G4	transmodal	R_TGv	Ventral temporal pole
G4	transmodal	R_STSva	Ventral anterior superior temporal sulcus
G4	transmodal	R_TE1m	Middle TE1
G4	transmodal	R_p24	Posterior area 24
G4	transmodal	L_RSC	Retrosplenial cortex
G4	transmodal	L_POS2	Parieto-occipital sulcus area 2
G4	transmodal	L_IPS1	Intraparietal sulcus area 1
G4	transmodal	L_PCV	Precuneus visual area
G4	transmodal	L_7m	Medial area 7
G4	transmodal	L_POS1	Parieto-occipital sulcus area 1
G4	transmodal	L_23d	Dorsal area 23
G4	transmodal	L_v23ab	Ventral area 23a/b
G4	transmodal	L_d23ab	Dorsal area 23a/b
G4	transmodal	L_31pv	Posterior ventral area 31
G4	transmodal	L_23c	Cingulate area 23c

G4	transmodal	L_24dd	Dorsal area 24dd
G4	transmodal	L_24dv	Ventral area 24dv
G4	transmodal	L_7AL	Lateral area 7A
G4	transmodal	L_7PL	Lateral area 7P
G4	transmodal	L_7PC	Postcentral area 7
G4	transmodal	L_LIPv	Ventral lateral intraparietal area
G4	transmodal	L_a24	Anterior area 24
G4	transmodal	L_d32	Dorsal area 32
G4	transmodal	L_8BM	Medial area 8B
G4	transmodal	L_p32	Posterior area 32
G4	transmodal	L_10r	Rostral area 10
G4	transmodal	L_8Av	Ventral area 8A
G4	transmodal	L_8Ad	Dorsal area 8A
G4	transmodal	L_9m	Medial area 9
G4	transmodal	L_9p	Posterior area 9
G4	transmodal	L_10d	Dorsal area 10
G4	transmodal	L_8C	Area 8C
G4	transmodal	L_44	Area 44
G4	transmodal	L_45	Area 45
G4	transmodal	L_47l	Lateral area 47
G4	transmodal	L_a47r	Anterior rostral area 47
G4	transmodal	L_IFJa	Anterior inferior frontal junction
G4	transmodal	L_IFJp	Posterior inferior frontal junction
G4	transmodal	L_IFSp	Posterior inferior frontal sulcus
G4	transmodal	L_IFSa	Anterior inferior frontal sulcus
G4	transmodal	L_46	Area 46
G4	transmodal	L_9a	Anterior area 9
G4	transmodal	L_10v	Ventral area 10
G4	transmodal	L_a10p	Anterior polar area 10
G4	transmodal	L_10pp	Polar prefrontal area 10pp
G4	transmodal	L_11l	Lateral area 11
G4	transmodal	L_13l	Lateral area 13
G4	transmodal	L_OFC	Orbitofrontal cortex
G4	transmodal	L_47s	Area 47s
G4	transmodal	L_LIPd	Dorsal lateral intraparietal area
G4	transmodal	L_PFcm	Centromedian area PF
G4	transmodal	L_PFt	Area PFt
G4	transmodal	L_AIP	Anterior intraparietal area
G4	transmodal	L_STGa	Anterior superior temporal gyrus
G4	transmodal	L_PHA1	Parahippocampal area 1

G4	transmodal	L_PHA3	Parahippocampal area 3
G4	transmodal	L_STSda	Dorsal anterior superior temporal sulcus
G4	transmodal	L_STSdp	Dorsal posterior superior temporal sulcus
G4	transmodal	L_STSvp	Ventral posterior superior temporal sulcus
G4	transmodal	L_TGd	Dorsal temporal pole
G4	transmodal	L_TE1a	Anterior TE1
G4	transmodal	L_TE1p	Posterior TE1
G4	transmodal	L_TE2a	Anterior TE2
G4	transmodal	L_TE2p	Posterior TE2
G4	transmodal	L_TPOJ1	Temporo-parieto-occipital junction 1
G4	transmodal	L_TPOJ2	Temporo-parieto-occipital junction 2
G4	transmodal	L_TPOJ3	Temporo-parieto-occipital junction 3
G4	transmodal	L_IP2	Intraparietal area 2
G4	transmodal	L_IP1	Intraparietal area 1
G4	transmodal	L_IP0	Intraparietal area 0
G4	transmodal	L_PFop	Opercular area PF
G4	transmodal	L_PF	Area PF
G4	transmodal	L_PFm	Area PFm
G4	transmodal	L_PHA2	Parahippocampal area 2
G4	transmodal	L_31pd	Posterior dorsal area 31
G4	transmodal	L_31a	Area 31a
G4	transmodal	L_s32	Subgenual area 32
G4	transmodal	L_pOFC	Posterior orbitofrontal cortex
G4	transmodal	L_p10p	Posterior polar area 10
G4	transmodal	L_TGv	Ventral temporal pole
G4	transmodal	L_STSva	Ventral anterior superior temporal sulcus
G4	transmodal	L_TE1m	Middle TE1
G4	transmodal	L_p24	Posterior area 24

Table S2. Parcel-wise age effects on structural connectivity gradient G4 in the Discovery cohort. iCSC-438 parcel labels and the corresponding t statistics for the effect of age on G4 values, estimated using parcel-wise linear mixed-effects models in the Discovery cohort (n=61).

Parcel	Effect of Age T-score
Left_VIIIa	6.68
Right_VIIb	6.18
Right_VIIIa	5.91
Left_VIIb	5.82
Right_VIIIb	5.79

R_IFJp	5.71
R_LIPd	5.64
R_IP2	5.54
Vermis_IX	5.51
Vermis_VIIIa	5.39
Left_VIIIb	5.04
Left_V	4.62
Vermis_CrusII	4.54
Left_VI	4.45
R_IFJa	4.34
R_AIP	4.25
L_33pr	3.93
L_IP2	3.87
L_PFt	3.85
Left_X	3.79
Left_CrusI	3.76
R_d23ab	3.74
R_s32	3.73
L_s32	3.68
R_PFt	3.62
Right_VI	3.61
Left_CrusII	3.61
Vermis_VIIIb	3.59
R_33pr	3.54
R_25	3.52
Right_X	3.51
L_LIPd	3.5
R_31pv	3.47
Right_CrusII	3.46
R_p24	3.45
Right_V	3.41
L_AIP	3.41
Left_IX	3.36
L_d23ab	3.34
L_31pv	3.34
R_a24pr	3.32
L_25	3.27
L_IFJp	3.25
R_10r	3.24
R_a24	3.15

L_p24	3.12
R_p32	3.12
L_VMV1	3.03
R_PEF	3.01
L_10v	2.97
R_PFm	2.97
Right_IX	2.93
L_PHA1	2.92
L_23d	2.88
Vermis_VI	2.87
L_a24	2.75
R_PeEc	2.69
R_23d	2.66
L_p24pr	2.64
L_a24pr	2.59
R_PGi	2.59
R_8C	2.56
L_VVC	2.56
L_PHA2	2.5
R_10v	2.41
L_PIT	2.41
L_10r	2.4
L_p32	2.38
L_11l	-2.34
R_STSva	-2.35
L_STGa	-2.38
R_11l	-2.4
THA-DAm-lh	-2.4
R_V6	-2.4
L_6d	-2.41
THA-VAi-lh	-2.42
R_AAIC	-2.45
R_STGa	-2.46
L_V6A	-2.47
THA-VAi-rh	-2.49
L_2	-2.5
L_5mv	-2.5
R_STSda	-2.51
R_7Pm	-2.51
R_A4	-2.52

R_LBelt	-2.53
L_8BM	-2.54
R_A5	-2.61
L_47l	-2.61
L_PoI2	-2.62
PUT-DP-lh	-2.63
L_3b	-2.65
R_PBelt	-2.66
L_7Pm	-2.66
R_6d	-2.68
R_V3A	-2.7
PUT-VA-rh	-2.7
R_AVI	-2.73
L_9p	-2.75
R_PoI2	-2.76
R_IFSa	-2.76
L_24dd	-2.77
L_4	-2.79
R_3b	-2.81
R_PoI1	-2.81
R_45	-2.81
HIP-body-rh	-2.84
R_TA2	-2.85
L_TA2	-2.86
L_8BL	-2.86
R_PI	-2.91
L_5m	-2.91
R_POS2	-2.92
R_47s	-2.96
THA-DAm-rh	-3.03
R_8BL	-3.03
R_5mv	-3.03
L_a47r	-3.07
mAMY-rh	-3.09
L_5L	-3.11
L_7AL	-3.14
L_PoI1	-3.14
R_VIP	-3.14
R_5m	-3.15
CAU-tail-rh	-3.16

L_p47r	-3.17
R_24dd	-3.18
L_7PL	-3.24
R_7PL	-3.26
aGP-rh	-3.28
R_a47r	-3.36
PUT-DP-rh	-3.37
lAMY-rh	-3.37
CAU-tail-lh	-3.42
L_SFL	-3.42
THA-VAs-lh	-3.47
R_7Am	-3.48
THA-VPm-lh	-3.49
R_3a	-3.49
R_SCEF	-3.5
L_POS2	-3.5
L_7Am	-3.51
R_SFL	-3.54
L_6ma	-3.55
R_6ma	-3.55
R_V7	-3.55
R_FOP5	-3.59
CAU-body-lh	-3.61
R_7AL	-3.61
R_V6A	-3.63
R_47l	-3.65
THA-VAs-rh	-3.68
L_SCEF	-3.68
L_6mp	-3.71
THA-DAI-lh	-3.75
PUT-DA-rh	-3.76
R_5L	-3.77
THA-DAI-rh	-3.84
THA-VPl-lh	-3.93
R_6mp	-3.97
R_4	-4.02
CAU-DA-rh	-4.09
THA-VPl-rh	-4.1
CAU-body-rh	-4.13
R_TGd	-4.2

R_p47r	-4.24
CAU-DA-lh	-4.24
THA-DP-rh	-4.29
THA-VPm-rh	-4.33
THA-DP-lh	-4.74
PUT-VP-lh	-4.86
PUT-VP-rh	-5.13
pGP-rh	-5.19