Supplementary Material

Table S1. Detailed clinical information of the participants

Patient	Age	Gender	Handness	Etiology	Days post ictus	GCS	CRS-R	GOS
COMA1	46	Male	Right	TBI	19	5	2	2
COMA2	24	Male	Right	TBI	15	8	7	5
COMA3	50	Male	Right	TBI	42	7	4	2
COMA4	37	Male	Right	TBI	21	7	3	3
COMA5	46	Male	Right	TBI	25	6	2	4
COMA6	47	Male	Right	TBI	13	7	5	3
COMA7	39	Female	Right	TBI	27	8	6	2
COMA8	49	Female	Right	TBI	17	7	5	3
VS1	49	Male	Right	TBI	140	6	5	2
VS2	36	Female	Right	non-TBI	182	9	5	2
VS3	59	Male	Right	TBI	44	8	4	2
VS4	67	Female	Right	TBI	10	6	4	2
VS5	38	Female	Right	TBI	31	9	6	3
VS6	23	Female	Right	TBI	168	8	4	3
VS7	52	Female	Right	non-TBI	52	7	5	2
VS8	47	Male	Right	TBI	163	8	5	3
MCS1	30	Female	Right	TBI	26	9	10	
MCS2	24	Male	Right	TBI	16	9	12	
MCS3	18	Male	Right	TBI	31	9	6	
MCS4	49	Male	Right	TBI	98	10	16	
MCS5	55	Male	Right	TBI	18	9	7	
MCS6	46	Male	Right	TBI	15	9	7	
MCS7	63	Female	Right	TBI	28	9	13	
MCS8	60	Male	Right	TBI	20	9	10	
MCS9	18	Male	Right	TBI	15	9	14	
MCS10	31	Female	Right	TBI	73	10	9	
MCS11	67	Male	Right	non-TBI	18	9	8	
MCS12	37	Male	Right	TBI	82	8	13	
MCS13	48	Male	Right	TBI	19	9	10	
MCS14	57	Male	Right	TBI	21	10	11	
PC1	42	Male	Right	TBI	111	11	18	
PC2	16	Female	Right	TBI	16	15	23	
PC3	47	Male	Right	TBI	98	15	23	
PC4	17	Male	Right	TBI	28	15	23	
PC5	70	Female	Right	TBI	4	15	23	
PC6	50	Male	Right	TBI	20	15	23	
PC7	58	Male	Right	TBI	10	11	20	

PC8	52	Female	Right	TBI	127	15	23	
PC9	32	Male	Right	TBI	68	14	23	
PC10	41	Male	Right	non-TBI	63	15	23	
PC11	52	Male	Right	TBI	6	15	23	
PC12	29	Female	Right	TBI	118	14	23	
PC13	30	Male	Right	TBI	19	15	23	
PC14	28	Female	Right	TBI	13	15	23	
PC15	22	Male	Right	TBI	66	15	23	
PC16	64	Male	Right	TBI	7	15	23	
PC17	28	Female	Right	TBI	4	15	23	
PC18	42	Male	Right	non-TBI	5	11	17	
PC19	49	Male	Right	TBI	167	13	23	
PC20	29	Female	Right	TBI	5	15	23	
PC21	22	Male	Right	non-TBI	166	15	23	
PC22	46	Male	Right	TBI	58	15	23	
PC23	25	Male	Right	TBI	143	15	23	
PC24	32	Male	Right	TBI	86	12	21	
PC25	33	Male	Right	TBI	119	11	17	

Supplementary Figures and Figure Legends
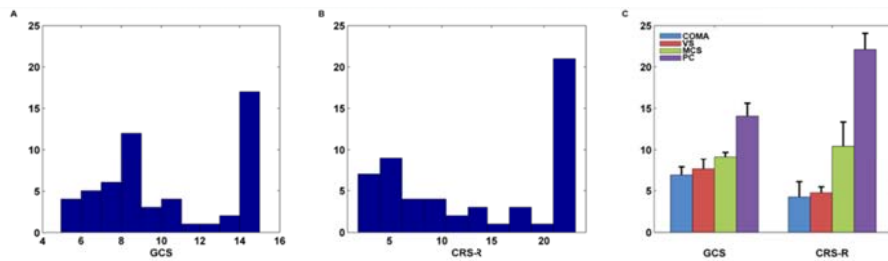
Fig. S1 Clinical scores of consciousness levels in the DOC patient population. A

Distribution of GCS. B Distribution of CRS-R. C Means and standard deviations of

GCS and CRS-R for each DOC subgroup (blue, COMA; red, VS; green, MCS; purple,
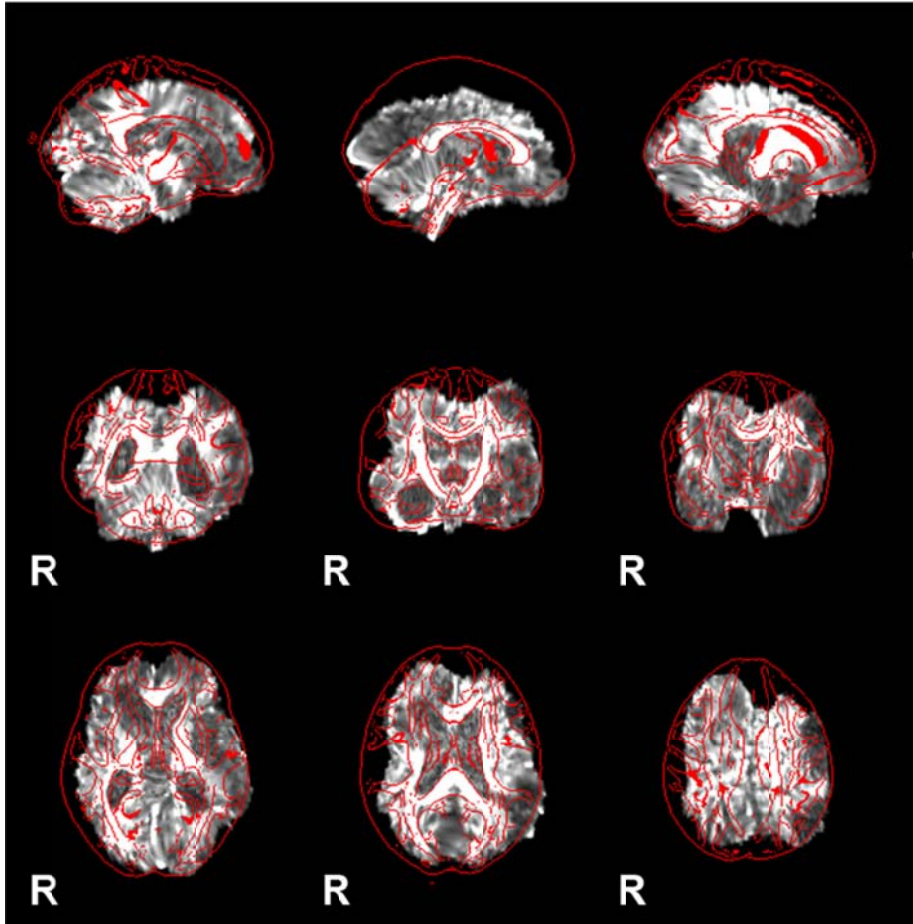
PC).

Fig. S2 Example of excluded standardized FA maps. The red line represents the skeleton of the FMRIB58_FA template in standard space. Here, we excluded patients for two reasons. One was that the structure of the brain was greatly distorted; the other was that a large brain structure was missing.
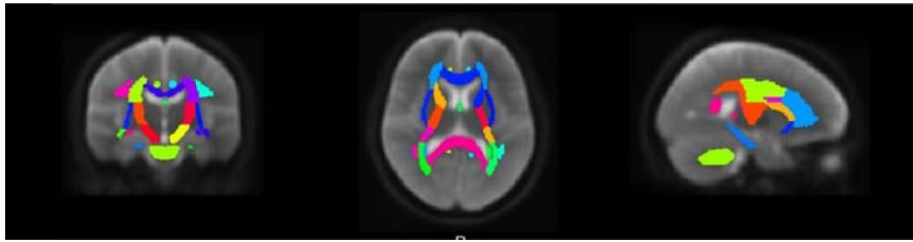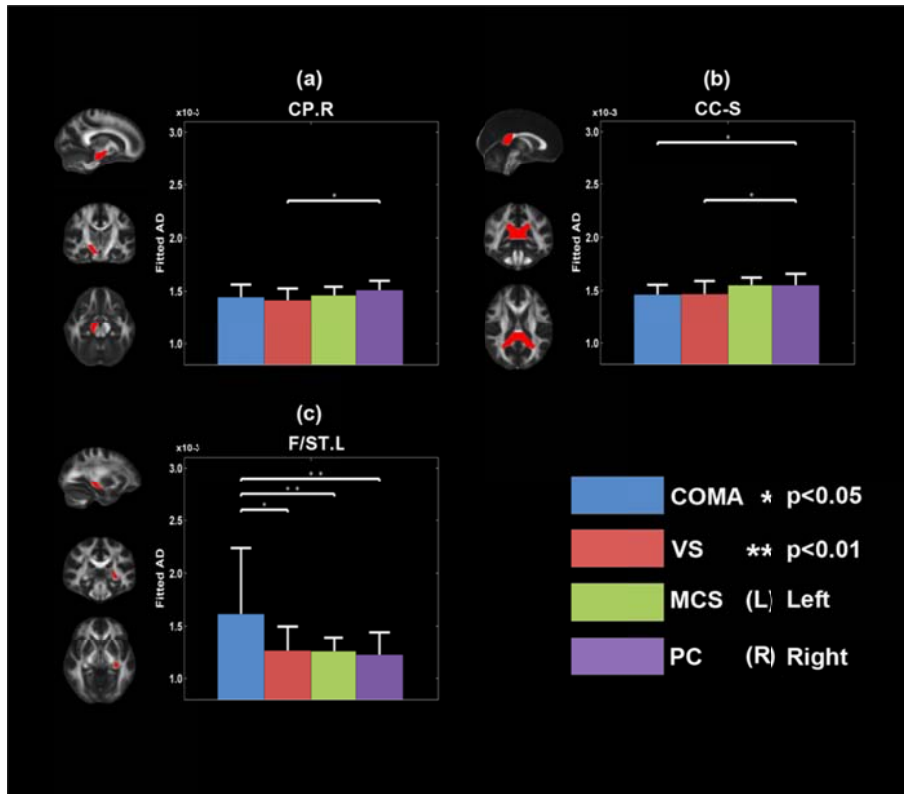

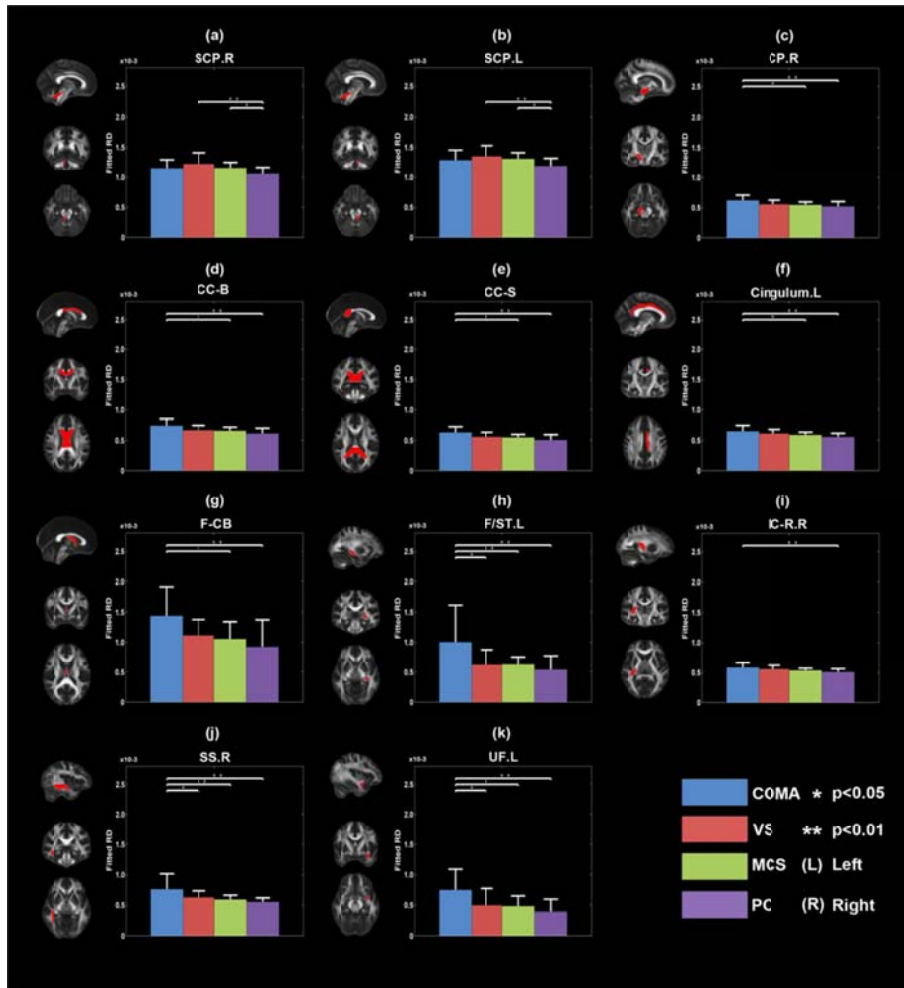**Fig. S3** View of all 48 WM ROIs deep inside the brain.

Fig. S4 Three of 14 consciousness-related WM ROIs detected with further AD ANCOVAs. These ROIs were significantly different in mean AD across levels of consciousness by group comparisons ($P < 0.05$, uncorrected). In each subfigure, the left column shows a WM ROI in the standard space indicated by brain areas in red, and the right part shows the fitted mean and standard deviation of AD in the corresponding WM ROI for four DOC subgroups (blue, COMA; red, VS; green, MCS; purple, PC; *$P < 0.05$, **$P < 0.01$).

Fig. S5 Eleven of 14 consciousness-related WM ROIs detected with RD ANCOVAs. These ROIs were significantly different in mean RD across levels of consciousness by group comparisons ($P < 0.05$, uncorrected). In each subfigure, the left column shows a WM ROI in the standard space indicated by brain areas in red, and the right part shows the fitted mean and standard deviation of RD in the corresponding WM ROI for four DOC subgroups (blue, COMA; red, VS; green, MCS; purple, PC; *$P < 0.05$, **$P < 0.01$).
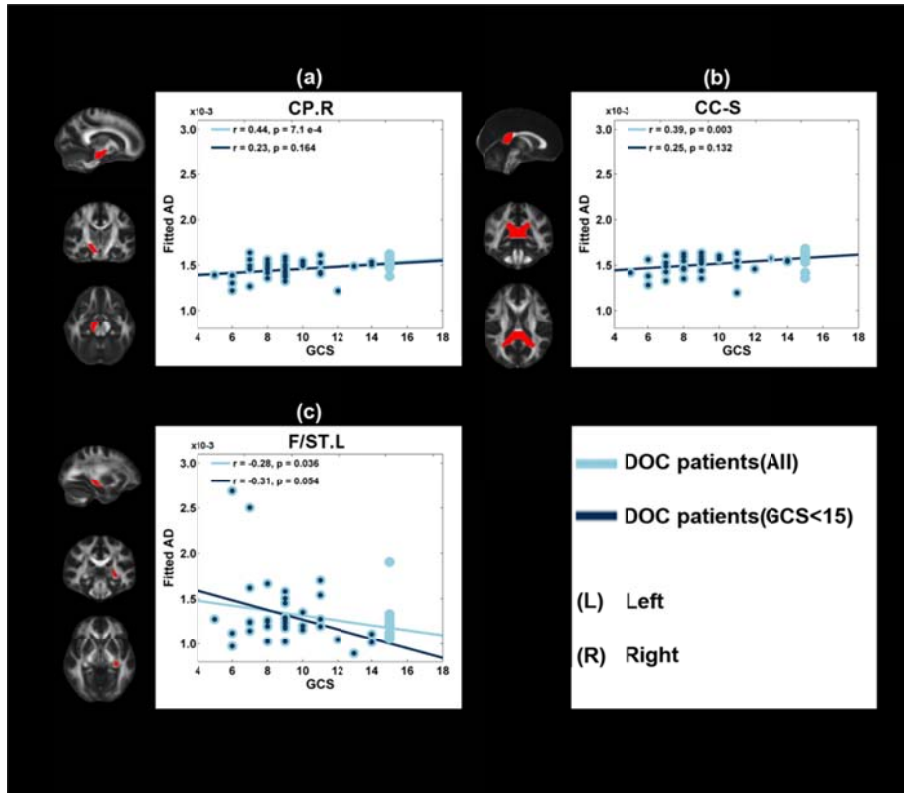
Fig. S6 Correlations between fitted mean AD and a clinical measure of consciousness level (GCS) for each of the three WM ROIs. Light blue, fitted mean AD of all DOC patients; dark blue, fitted mean AD of DOC patients after the exclusion of those with a GCS score of 15.
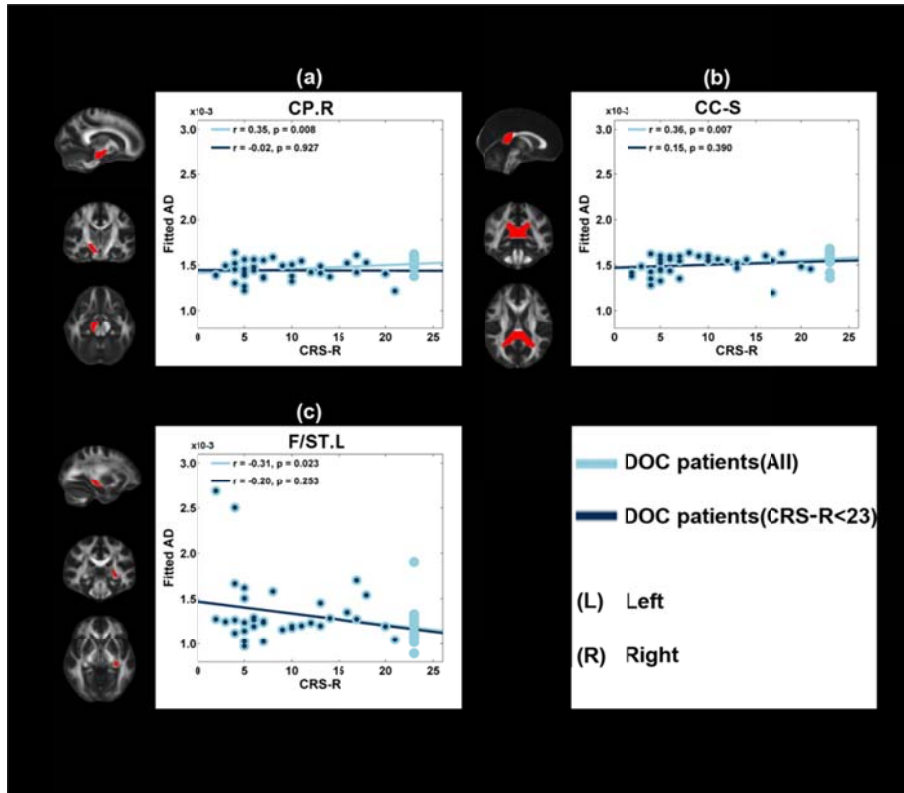
Fig. S7 Correlations between fitted mean AD and a clinical measure of consciousness level (CRS-R) for each of the three WM ROIs. Light blue, fitted mean AD of all DOC patients; dark blue, fitted mean AD of DOC patients after exclusion of those with a CRS-R score of 23.
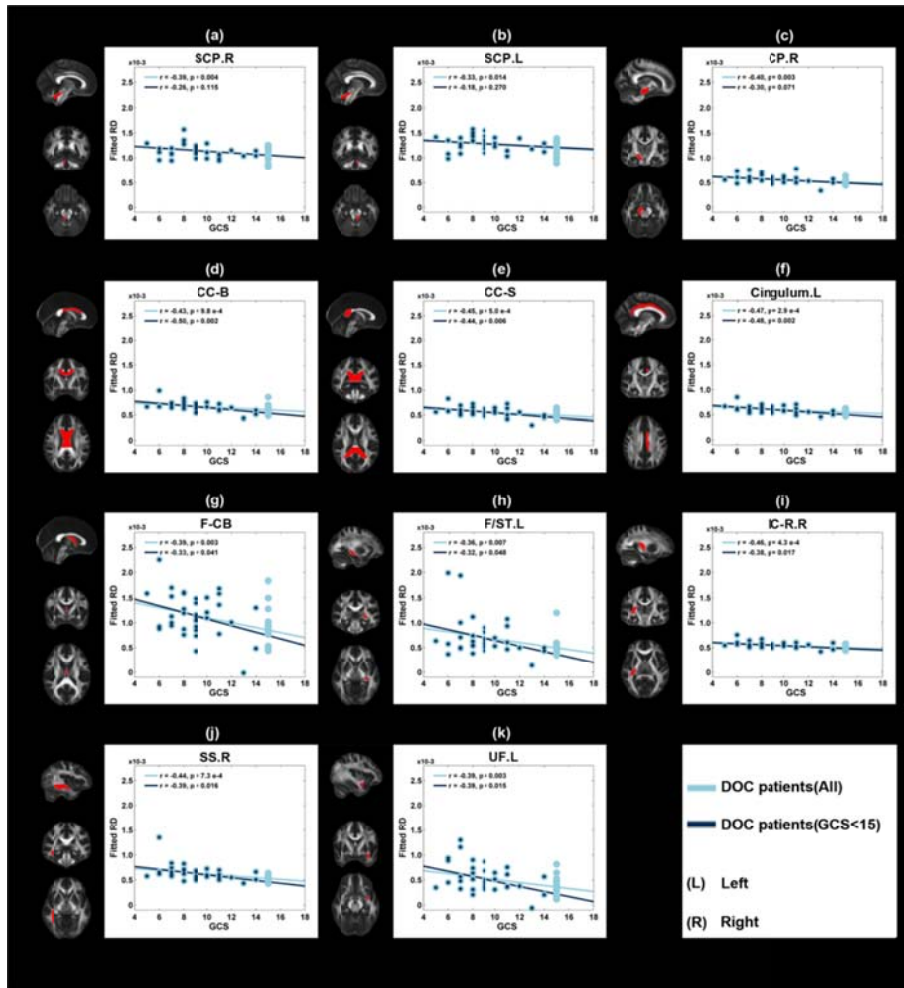
Fig. S8 Correlations between fitted mean RD and a clinical measure of the consciousness level (GCS) for each of the 11 WM ROIs. Light blue, fitted mean RD of all DOC patients; dark blue, fitted mean RD of DOC patients after exclusion of those with a GCS score of 15.
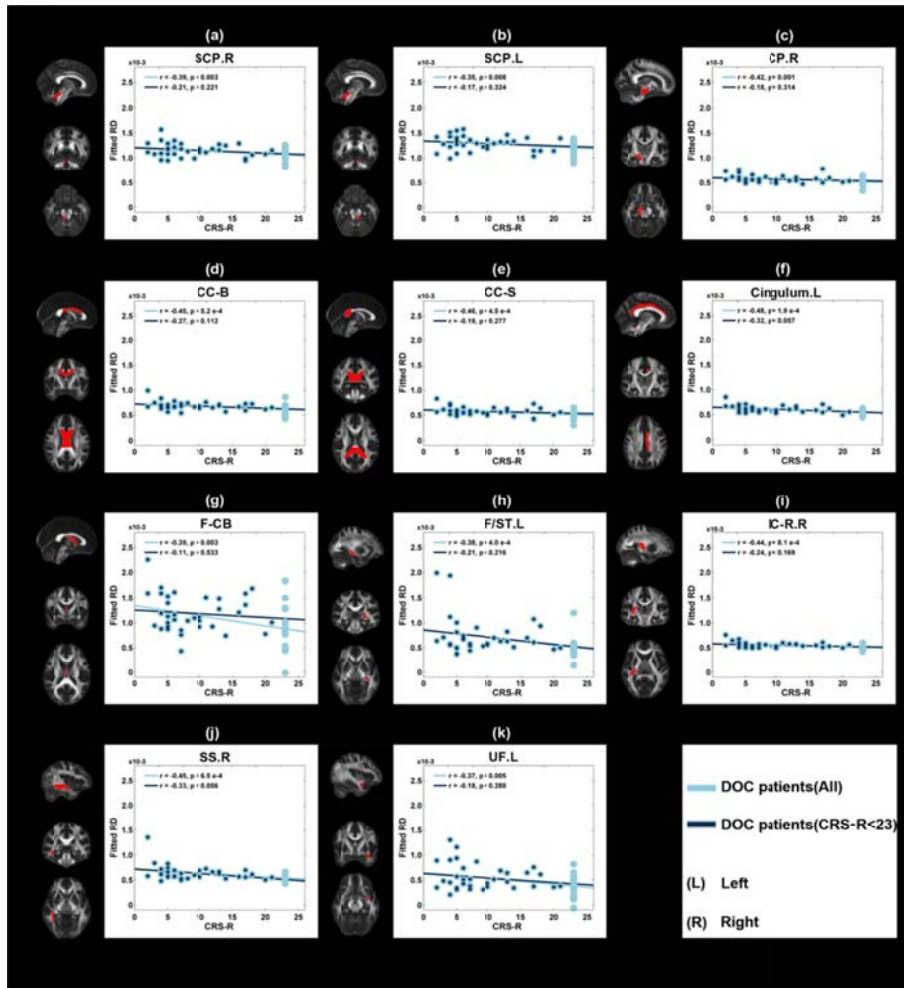
Fig. S9 Correlations between fitted mean RD and a clinical measure of consciousness level (CRS-R) for each of the 11 WM ROIs. Light blue, fitted mean RD of all DOC patients; dark blue, fitted mean RD of DOC patients after exclusion of those with a CRS-R score of 23.