

SUPPLEMENTARY DATA

## **Coronary Artery Disease Is Linked with Demyelination and Iron Deposition in White Matter Watershed Areas**

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**Supplementary Table 1 - Group comparison of qMRI metrics in watershed regions. (Significance level: \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ )**

Group comparison				
	CAD (n=46)	HC (n=40)	$P_{FDR}$	$p.\eta^2$
<b>X (ppm)</b>				
Total ws *	-0.0025 ± 0.001	-0.0032 ± 0.001	0.016	0.14
ACA_MCA *	-0.0017 ± 0.001	-0.0023 ± 0.001	0.016	0.11
MCA_PCA *	-0.0034 ± 0.001	-0.0042 ± 0.001	0.019	0.09
PCA_VB	-0.0038 ± 0.003	0.0054 ± 0.004	0.06	0.05
<b><math>R_2^*</math> (Hz)</b>				
Total ws	19.43 ± 1.046	19.61 ± 0.911	0.442	0.01
ACA_MCA	18.85 ± 1.18	19.02 ± 0.99	0.452	0.01
MCA_PCA	20.11 ± 1.09	20.28 ± 0.95	0.451	0.01
PCA_VB	19.73 ± 1.22	20 ± 1.07	0.338	0.01
<b><math>R_1</math> (Hz)</b>				
Total ws *	0.747 ± 0.046	0.767 ± 0.033	0.032	0.08
ACA_MCA *	0.761 ± 0.046	0.783 ± 0.036	0.019	0.09
MCA_PCA *	0.729 ± 0.043	0.751 ± 0.031	0.016	0.11
PCA_VB	0.687 ± 0.079	0.713 ± 0.058	0.138	0.04
<b>MTsat (p.u.)</b>				
Total ws *	3.29 ± 0.28	3.41 ± 0.22	0.034	0.07
ACA_MCA	3.41 ± 0.28	3.48 ± 0.24	0.167	0.03
MCA_PCA *	3.24 ± 0.26	3.36 ± 0.21	0.019	0.09
PCA_VB	2.64 ± 0.42	2.74 ± 0.41	0.297	0.02

$P_{FDR}$ : FDR-corrected p-value.

$p.\eta^2$ : partial  $\eta^2$

**Supplementary Table 2 - Group comparison of qMRI metrics in non-watershed regions. (Significance level: \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ )**

Group comparison				
	CAD (n=46)	HC (n=40)	$P_{FDR}$	$p.\eta^2$
<b>X (ppm)</b>				
Total non-ws	-0.0035 ± 0.0042	-0.0036 ± 0.0028	0.12	0.05
non-ws ACA	-0.0032 ± 0.0015	-0.0041 ± 0.0016	0.086	0.08
non-ws MCA	-0.0012 ± 0.0011	-0.0016 ± 0.0014	0.20	0.02
non-ws PCA	-0.0044 ± 0.002	-0.0054 ± 0.002	0.09	0.07
Non-ws VB	-0.005 ± 0.012	-0.0033 ± 0.016	0.6	0.0001
<b><math>R_2^*</math> (Hz)</b>				
Total non-ws	18.48 ± 2.4	18.3 ± 1.98	0.10	0.06
non-ws ACA	18.55 ± 1.3	18.79 ± 1.19	0.39	0.01
non-ws MCA	19.44 ± 1.16	19.75 ± 1.01	0.21	0.02
non-ws PCA	19.75 ± 1.03	20.14 ± 0.99	0.13	0.04
Non-ws VB	16.16 ± 4.67	14.53 ± 4.74	0.17	0.03
<b><math>R_1</math> (Hz)</b>				
Total non-ws	0.14 ± 0.02	0.15 ± 0.017	0.17	0.03
non-ws ACA *	0.71 ± 0.05	0.74 ± 0.04	0.04	0.12
non-ws MCA	0.7 ± 0.06	0.73 ± 0.04	0.065	0.08

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non-ws PCA	0.69 ± 0.064	0.71 ± 0.051	0.09	0.05
Non-ws VB	0.42 ± 0.38	0.39 ± 0.5	0.75	0.0002
<b>MTsat (p.u.)</b>				
Total non-ws	3.35 ± 0.49	3.5 ± 0.41	0.17	0.04
non-ws ACA	3.22 ± 0.35	3.28 ± 0.26	0.37	0.01
non-ws MCA	3.13 ± 0.33	3.25 ± 0.26	0.1	0.06
non-ws PCA	3.1 ± 0.36	3.2 ± 0.31	0.17	0.03
non-ws VB	3.94 ± 0.91	4.28 ± 0.82	0.17	0.04

$P_{FDR}$ : FDR-corrected p-value.

$p.\eta^2$ : partial  $\eta^2$ .

**Supplementary Table 3 - Association of cognition and qMRI metrics in watershed regions. (Significance level in the interaction term: \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ )**

<b>Relationship with cognitive domains</b>					
	<b>pFDR<sub>interaction</sub></b>	<b>p<sub>CAD</sub></b>	<b>Adj. R<sup>2</sup><sub>CAD</sub></b>	<b>p<sub>HC</sub></b>	<b>Adj. R<sup>2</sup><sub>HC</sub></b>
<b>Verbal episodic memory</b>					
<b>X (ppm)</b>					
Total ws	0.921	0.032	0.304	0.038	0.358
ACA MCA	0.921	0.132	0.245	0.089	0.327
MCA PCA	0.695	0.109	0.302	0.047	0.366
PCA VB	0.979	0.836	0.181	0.818	0.323
<b>R<sub>2</sub>* (Hz)</b>					
Total ws	0.921	0.481	0.196	0.021	0.377
ACA MCA	0.921	0.625	0.191	0.019	0.382
MCA PCA	0.921	0.921	0.546	0.196	0.443
PCA VB	0.921	0.921	0.208	0.203	0.454
<b>R<sub>1</sub> (Hz)</b>					
Total ws	0.921	0.09	0.267	0.135	0.355
ACA MCA	0.921	0.03	0.297	0.077	0.375
MCA PCA	0.647	0.542	0.27	0.168	0.354
PCA VB	0.921	0.478	0.278	0.758	0.361
<b>MTsat (p.u.)</b>					
Total ws	0.912	0.087	0.274	0.064	0.395
ACA MCA	0.921	0.064	0.275	0.087	0.351
MCA PCA	0.912	0.175	0.224	0.082	0.391
PCA VB	0.489	0.038	0.319	0.927	0.293
<b>Executive function</b>					
<b>X (ppm)</b>					
Total ws	0.77	0.191	0.596	0.55	0.489
ACA MCA	0.692	0.562	0.433	0.945	0.353
MCA PCA	0.565	0.149	0.545	0.757	0.412
PCA VB	0.921	< 0.001	0.612	0.474	0.314
<b>R<sub>2</sub>* (Hz)</b>					
Total ws	0.489	0.562	0.433	0.079	0.518
ACA MCA	0.489	0.149	0.545	0.161	0.491
MCA PCA	0.565	< 0.001	0.612	0.036	0.546
PCA VB	0.135	0.262	0.572	0.029	0.554

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<b>R<sub>1</sub> (Hz)</b>					
Total ws	0.565	< 0.001	0.612	0.028	0.476
ACA MCA	0.565	0.01	0.602	0.23	0.447
MCA PCA	0.645	< 0.001	0.62	0.006	0.517
PCA VB	0.912	0.1	0.497	0.177	0.464
<b>MTsat (p.u.)</b>					
Total ws	0.599	0.149	0.545	0.91	0.432
ACA MCA	0.565	0.122	0.557	0.965	0.432
MCA PCA	0.912	0.037	0.484	0.189	0.353
PCA VB	0.599	0.502	0.462	0.446	0.335
<b>MoCA</b>					
<b>X (ppm)</b>					
Total ws	0.119	0.008	0.35	0.761	-0.011
ACA MCA *	0.044	0.031	0.255	0.085	0.061
MCA PCA	0.565	0.004	0.364	0.471	0.005
PCA VB	0.692	0.106	0.159	0.68	0.008
<b>R<sub>2</sub>* (Hz)</b>					
Total ws	0.599	0.039	0.22	0.652	-0.009
ACA MCA	0.565	0.042	0.217	0.788	-0.01
MCA PCA	0.912	0.275	0.176	0.683	-0.011
PCA VB	0.135	< 0.001	0.35	0.768	-0.014
<b>R<sub>1</sub> (Hz)</b>					
Total ws *	0.044	0.002	0.301	0.465	-0.025
ACA MCA *	0.038	0.009	0.268	0.174	0.025
MCA PCA	0.224	0.001	0.328	0.884	-0.033
PCA VB	0.489	0.057	0.266	0.702	-0.021
<b>MTsat (p.u.)</b>					
Total ws	0.018	< 0.001	0.436	0.341	0.064
ACA MCA *	0.044	0.001	0.38	0.739	0.002
MCA PCA *	0.019	< 0.001	0.39	0.506	0.048
PCA VB *	0.044	0.038	0.221	0.065	0.064

*pFDR<sub>interaction</sub>*: FDR-corrected *p*-value of the interaction between Group and qMRI metrics.

*p<sub>CAD</sub>* & *Adj. R<sup>2</sup><sub>CAD</sub>*: *p*-value and adjusted *R*<sup>2</sup> of the cognition-qMRI linear relationship for the CAD group.

*p<sub>HC</sub>* & *Adj. R<sup>2</sup><sub>HC</sub>*: *p*-value and adjusted *R*<sup>2</sup> of the cognition-qMRI linear relationship for the HC group.

### Supplementary Table 4 - Association between cognition and qMRI metrics in non-watershed regions.

(Significance level in the interaction term: \*: *p* < 0.05, \*\*: *p* < 0.01, \*\*\*: *p* < 0.001)

Relationship with cognitive domains					
	<i>pFDR<sub>interaction</sub></i>	<i>p<sub>CAD</sub></i>	<i>Adj. R<sup>2</sup><sub>CAD</sub></i>	<i>p<sub>HC</sub></i>	<i>Adj. R<sup>2</sup><sub>HC</sub></i>
<b>Verbal episodic memory</b>					
<b>X (ppm)</b>					
Total non-ws	0.798	0.592	0.25	0.239	0.327
non-ws ACA	0.904	0.306	0.197	0.942	0.315
non-ws MCA	0.109	0.202	0.239	0.096	0.353
non-ws PCA	0.25	0.199	0.25	0.296	0.326
Non-ws VB	0.735	0.481	0.158	0.046	0.368
<b>R<sub>2</sub>* (Hz)</b>					
Total non-ws	0.904	0.306	0.197	0.942	0.315
non-ws ACA	0.109	0.202	0.239	0.096	0.353

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non-ws MCA	0.25	0.199	0.25	0.296	0.326
non-ws PCA	0.735	0.481	0.158	0.046	0.368
Non-ws VB	0.965	0.435	0.2	0.019	0.38
<b>R<sub>1</sub> (Hz)</b>					
Total non-ws	0.25	0.199	0.25	0.296	0.326
non-ws ACA	0.735	0.481	0.158	0.046	0.368
non-ws MCA	0.965	0.435	0.2	0.019	0.38
non-ws PCA	0.965	0.158	0.259	0.2	0.314
Non-ws VB	0.965	0.039	0.296	0.071	0.388
<b>MTsat (p.u.)</b>					
Total non-ws	0.109	0.202	0.239	0.096	0.353
non-ws ACA	0.25	0.199	0.25	0.296	0.326
non-ws MCA	0.735	0.481	0.158	0.046	0.368
non-ws PCA	0.965	0.435	0.2	0.019	0.38
Non-ws VB	0.965	0.158	0.259	0.2	0.314
<b>Executive function</b>					
<b>X (ppm)</b>					
Total non-ws	0.478	0.228	0.502	0.564	0.434
non-ws ACA	0.965	0.733	0.416	0.439	0.34
non-ws MCA	0.735	0.127	0.599	0.396	0.439
non-ws PCA	0.586	0.022	0.526	0.262	0.326
Non-ws VB	0.374	0.057	0.626	0.99	0.353
<b>R<sub>2</sub>* (Hz)</b>					
Total non-ws	0.965	0.733	0.416	0.439	0.34
non-ws ACA	0.735	0.127	0.599	0.396	0.439
non-ws MCA	0.586	0.022	0.526	0.262	0.326
non-ws PCA	0.374	0.057	0.626	0.99	0.353
Non-ws VB	0.068	0.073	0.474	0.076	0.512
<b>R<sub>1</sub> (Hz)</b>					
Total non-ws	0.586	0.022	0.526	0.262	0.326
non-ws ACA	0.374	0.057	0.626	0.99	0.353
non-ws MCA	0.068	0.073	0.474	0.076	0.512
non-ws PCA	0.252	0.098	0.565	0.536	0.438
Non-ws VB	0.739	0.009	0.528	0.147	0.45
<b>MTsat (p.u.)</b>					
Total non-ws	0.735	0.127	0.599	0.396	0.439
non-ws ACA	0.586	0.022	0.526	0.262	0.326
non-ws MCA	0.374	0.057	0.626	0.99	0.353
non-ws PCA	0.068	0.073	0.474	0.076	0.512
Non-ws VB	0.252	0.098	0.565	0.536	0.438
<b>MoCA</b>					
<b>X (ppm)</b>					
Total non-ws	0.904	0.398	0.241	0.288	-0.009
non-ws ACA	0.367	0.208	0.188	0.387	-0.001
non-ws MCA *	0.027	0.07	0.244	0.05	0.041
non-ws PCA	0.25	0.485	0.215	0.095	0.035
Non-ws VB	0.965	0.649	0.131	0.773	-0.006
<b>R<sub>2</sub>* (Hz)</b>					
Total non-ws	0.367	0.208	0.188	0.387	-0.001

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non-ws ACA *	0.027	0.07	0.244	0.05	0.041
non-ws MCA	0.25	0.485	0.215	0.095	0.035
non-ws PCA	0.965	0.649	0.131	0.773	-0.006
Non-ws VB **	0.001	< 0.001	0.474	0.197	0.009
<b>R<sub>1</sub> (Hz)</b>					
Total non-ws	0.25	0.485	0.215	0.095	0.035
non-ws ACA	0.965	0.649	0.131	0.773	-0.006
non-ws MCA **	0.001	< 0.001	0.474	0.197	0.009
non-ws PCA *	0.027	0.008	0.293	0.189	0.04
Non-ws VB *	0.027	0.006	0.284	0.15	0.017
<b>MTsat (p.u.)</b>					
Total non-ws *	0.027	0.07	0.244	0.05	0.041
non-ws ACA	0.25	0.485	0.215	0.095	0.035
non-ws MCA	0.965	0.649	0.131	0.773	-0.006
non-ws PCA **	0.001	< 0.001	0.474	0.197	0.009
Non-ws VB *	0.027	0.008	0.293	0.189	0.04

*pFDR<sub>interaction</sub>*: FDR-corrected *p*-value of the interaction between Group and qMRI metrics.

*p<sub>CAD</sub>* & *Adj. R<sup>2</sup><sub>CAD</sub>*: *p*-value and adjusted *R*<sup>2</sup> of the cognition-qMRI linear relationship for the CAD group.

*p<sub>HC</sub>* & *Adj. R<sup>2</sup><sub>HC</sub>*: *p*-value and adjusted *R*<sup>2</sup> of the cognition-qMRI linear relationship for the HC group.