Supplementary table 1:

DIAN	Whole sample (n=313)	Non-selected sample (n=184)	Selected sample (n=129)	Selected vs. non-selected p-value
Age	38.73 (10.46)	39.5 (10.64)	37.64 (10.13)	0.119
Gender (m/f)	190/123	70/114	53/76	0.588
Years of education	14.32 (3.07)	13.91 (3.16)	14.91 (2.84)	0.064
Estimated years from symptom onset	-8.80 (11.09)	-7.87 (10.85)	-9.73 (11.29)	0.176

Supplementary table 2:

DELCODE	Whole sample (n=366)	Non-selected sample (n=250)	Selected Sample (n=116)	Selected vs. non-selected p-value
Age	70.44 (5.91)	70.52 (6.06)	70.27 (5.59)	0.696
Gender (m/f)	175/191	123/127	52/64	0.436
Years of education	14.45 (3.04)	14.34 (2.98)	14.71 (3.15)	0.288

Supplementary table 3: Summary of linear mixed effects models for global RFC-connectivity

ADAD-MC	β (SE)	T-value	p-value	Overall R²
MMSE[a]				
EYO x gRFC-connectivity	0.169 (0.070)	2.425	0.0181	0.475
EYO	-0.349 (0.071)	-4.954	<0.001[c]	
gRFC-connectivity	0.103 (0.063)	1.644	0.105	
LM delayed recall[a]				
EYO x gRFC-connectivity	0.189 (0.112)	1.695	0.095	0.457
EYO	-0.409 (0.111)	-3.676	<0.001[c]	
gRFC-connectivity	0.111 (0.097)	1.139	0.259	
Sporadic AD-Aβ+	**β (SE)**	**T-value**	**p-value**	**Overall R²**
MMSE[b]				
CSF-Tau x gRFC-connectivity	-0.080 (0.109)	-0.733	0.466	0.247
CSF-Tau	-0.471 (0.105)	-4.501	<0.001[c]	
gRFC-connectivity	-0.027 (0.113)	-0.242	0.810	
LM delayed recall[b]				
CSF-Tau x gRFC-connectivity	0.215 (0.121)	1.787	0.078	0.256
CSF-Tau	-0.259 (0.113)	-2.296	0.025	
gRFC-connectivity	0.217 (0.121)	1.788	0.078	

a=model controlled for gender, family ID (fixed effects) & site (random effect); b= model controlled for age, gender (fixed effects) & site (random effect); c=p<0.05, bonferroni corrected

Supplementary table 4: Summary of linear mixed effects models for global occipital pole-connectivity

ADAD-MC	β (SE)	T-value	p-value	Overall R^2
MMSE[a]				
EYO x gOP-connectivity	0.061 (0.116)	0.523	0.602	0.436
EYO	-0.655 (0.107)	-6.150	<0.001[c]	
gOP-connectivity	0.138 (0.095)	1.449	0.152	
LM delayed recall[a]				
EYO x gOP-connectivity	0.030 (0.115)	0.264	0.792	0.446
EYO	-0.472 (0.115)	-4.104	<0.001[c]	
gOP-connectivity	0.026 (0.099)	0.261	0.795	
Sporadic AD-Aβ+	**β (SE)**	**T-value**	**p-value**	**Overall R^2**
MMSE[b]				
CSF-Tau x gOP-connectivity	-0.109 (0.115)	-0.951	0.345	0.249
CSF-Tau	-0.276 (0.117)	-2.367	0.021	
gOP-connectivity	0.188 (0.116)	1.624	0.109	
LM delayed recall[b]				
CSF-Tau x gOP-connectivity	-0.043 (0.108)	-0.399	0.691	0.240
CSF-Tau	-0.247 (0.117)	-2.120	0.038	
gOP-connectivity	0.203 (0.117)	1.240	0.234	

OP=occipital pole; a=model controlled for gender, family ID (fixed effects) & site (random effect); b= model controlled for age, gender (fixed effects) & site (random effect); c=p<0.05, bonferroni corrected

Supplementary table 5: Summary of linear mixed effects models for global M1-connectivity

ADAD-MC	β (SE)	T-value	p-value	Overall R^2
MMSE[a]				
EYO x gM1-connectivity	0.078 (0.099)	0.791	0.432	0.473
EYO	-0.514 (0.110)	-4.664	<0.001[c]	
gM1-connectivity	0.056 (0.101)	0.551	0.583	
LM delayed recall[a]				
EYO x g M1-connectivity	0.069 (0.102)	0.683	0.497	0.444
EYO	-0.463 (0.113)	-4.091	<0.001[c]	
gM1-connectivity	-0.010 (0.104)	-0.094	0.925	
Sporadic AD-Aβ+	**β (SE)**	**T-value**	**p-value**	**Overall R^2**
MMSE[b]				
CSF-Tau x gM1-connectivity	-0.044 (0.112)	-0.395	0.693	0.213
CSF-Tau	-0.292 (0.119)	-2.465	0.016	
gM1-connectivity	0.118 (0.122)	0.967	0.337	
LM delayed recall[b]				
CSF-Tau x gM1-connectivity	-0.031 (0.118)	-0.265	0.792	0.215
CSF-Tau	-0.283 (0.114)	-2.478	0.016	
gM1-connectivity	0.116 (0.122	0.946	0.348	

a=model controlled for gender, family ID (fixed effects) & site (random effect); b= model controlled for age, gender (fixed effects) & site (random effect); c=p<0.05, bonferroni corrected