

## Supplementary material

**Table S1:** The locations of the selected voxels voxels by elastic-net RLR with the highest accuracy in discriminating AD and NC subjects within the brain. Left (13) and right (4) Hippocampus, left (6) and right (12) Temporal Superior gyrus, right Cingulum Posterior (1), left (4) Cuneus, right lyngual gyrus (4), left Fusiform (4), left (4) Postcentral gyrus, 9 Left Parietal Superior, left (2) and right (2) Temporal Superior Pole, left (11) and right (8) Temporal Mid. Lobe, Precentral right(1), left (5) and right (6) Frontal Superior Lobes, left (6) and right (8) Frontal Middle lobe, left (10) and right (2) Inferior Temporal\_Lobe, left (1) and right (2) Temporal Pose Mid. (4) and right (5) Frontal Inferior oper, left (4) and right (4) frontal Inferior Tri., left Frontal Superior Medial Lobe (2), left olfactory lobe (2), left insula (4), left (2) and right (8) Cingulum Mid Lobe, left (4) and right (5) ParaHippocampal Lobe, left (4) and right (12) Amygdala, left (1) and right (4) Calcarine, left and right Parietal Inferior lobe, left (16) and right (8) cerebellum, left (4) and right (1) vermis.

<b>Ranking</b>	<b>label</b>	<b>Region definition</b>	<b>N. voxels</b>
1	37	<i>Hippocampus Left</i>	(13 voxels)
2	42 82	<i>Amygdala Right</i> <i>Temporal Superior Right</i>	(12 voxels)
3	85	<i>Temporal Middle Left</i>	(11 voxels)
4	89	<i>Temporal Inferior Left</i>	(10 voxels)
5	8 34 86 98	<i>Frontal_MiddleRight</i> <i>Cingulum_Middle Right</i> <i>Temporal_Middle Right</i> <i>Cerebelum_4_5_Right</i>	(8 voxels)
6	4 7 81 97	<i>Frontal Superior Right</i> <i>Frontal Middle Left</i> <i>Temporal Superior Left</i> <i>Cerebelum 4_5 Left</i>	(6 voxels)
7	3 12 40	<i>Frontal Superior Left</i> <i>Frontal Inferior Oper. Right</i> <i>ParaHippocampal Right</i>	(5 voxels)
8	11 13 14 29 38 39 41	<i>Frontal Inferior Oper. Left</i> <i>Frontal Inferior Tri. Left</i> <i>Frontal Inferior Tri. Right</i> <i>Insula Left</i> <i>Hippocampus Right</i> <i>ParaHippocampal Left</i> <i>Amygdala Left</i>	(4 voxels)

44 45 48 55 57 64 68 111	<i>Calcarine Right</i> <i>Cuneus Left</i> <i>Lingual Right</i> <i>Fusiform Left</i> <i>Postcentral Left</i> <i>SupraMarginal Right</i> <i>Precuneus Right</i> <i>Vermis 4_5</i>
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## Lists of subjects

Table S2: RID progressive MCI subjects, 164 subjects

30	41	42	45	50	54	57
77	98	101	108	111	126	128
141	155	161	179	182	187	195
204	214	217	222	227	231	240
241	243	249	256	258	269	289
293	294	314	325	326	331	332
336	344	362	388	390	394	406
423	434	442	450	461	476	507
511	513	518	539	549	563	567
568	572	604	611	625	631	638
649	658	667	675	695	697	702
708	723	725	727	729	750	752
769	834	835	839	855	856	860
861	865	869	873	874	878	887
892	904	906	909	913	915	922
930	941	947	952	954	973	976
978	982	987	997	1004	1007	1010
1015	1033	1043	1054	1057	1066	1070
1073	1077	1117	1121	1130	1135	1138
1148	1213	1217	1224	1240	1243	1244
1247	1265	1271	1282	1292	1295	1299
1311	1315	1326	1331	1350	1351	1363
1387	1389	1393	1394	1398	1407	1412
1423	1425	1427				

Table S3: RID stable MCI subjects, 100 subjects

4	6	33	102	107	116	142
150	158	169	176	178	200	225
273	285	290	291	296	307	324

351	377	448	449	464	481	501
505	546	557	607	608	621	626
634	644	656	673	679	698	709
715	718	746	770	771	782	792
800	802	851	867	908	912	914
919	921	925	950	961	989	1031
1032	1034	1040	1045	1046	1052	1072
1074	1088	1114	1118	1122	1131	1140
1155	1182	1183	1186	1187	1211	1218
1227	1246	1260	1268	1269	1284	1300
1314	1378	1380	1384	1414	1417	1418
1419	1421					

Table S4: RID unlabeled MCI subjects, 130 subjects

38	44	51	60	78	80	87
103	112	135	138	160	168	188
190	205	276	282	284	292	339
354	361	376	378	384	389	393
397	407	408	409	410	414	417
422	424	429	443	445	446	458
469	485	514	531	544	551	552
566	579	588	590	598	613	629
641	668	669	671	721	722	748
783	821	825	830	832	871	880
890	917	924	928	932	945	957
958	994	1028	1030	1038	1051	1075
1078	1080	1092	1097	1103	1104	1106
1116	1119	1120	1149	1154	1165	1168
1175	1188	1199	1204	1210	1215	1231
1245	1255	1275	1277	1279	1293	1294
1309	1318	1321	1322	1330	1338	1340
1343	1346	1352	1357	1366	1400	1406
1408	1411	1420	1426			

Table S5: RID AD subjects used in feature selection task, 200 subjects.

619	816	938	955	1018	1059	1257
221	814	929	1341	547	653	316
1248	1304	1339	1334	1354	786	829
3	10	53	183	689	712	720
803	592	699	996	1161	1205	328
356	357	1095	991	1263	277	286
335	633	682	213	343	642	753
1109	7	129	219	543	83	84

93	139	916	1262	1289	1171	1307
404	850	1081	1082	1254	1385	836
999	1056	1184	321	554	773	1209
147	400	1037	1101	724	733	739
888	889	1087	1281	1283	1285	1308
341	577	759	760	1001	627	1368
1391	1435	1296	1044	474	1371	1373
1379	535	690	730	793	20	29
76	110	812	828	1185	1253	109
565	1207	1079	1377	1027	1090	1102
1164	1397	1402	149	884	372	470
492	1144	743	747	893	1062	1113
777	1157	1192	228	374	979	370
392	487	1083	953	88	91	94
162	606	784	891	1221	431	754
844	1382	167	216	266	310	517
528	701	740	805	1409	1430	956
1201	1290	1337	457	497	691	1055
1170	194	299	300	426	366	438
796	841	1041	340	696	790	852
853	1024	1137	1152			

Table S6: RID normal control (NC) subject used in feature selection task, 231 subjects.

295	413	559	685	1261	1280	907
931	981	1021	223	553	602	610
484	498	681	731	68	70	1206
1222	751	842	862	67	419	420
472	2	5	8	16	21	22
23	637	1009	1133	1212	502	575
1035	1276	519	520	548	558	359
538	43	55	369	425	97	883
899	1288	159	337	647	984	14
66	96	130	31	58	61	81
926	963	1190	1306	985	1063	74
118	120	403	824	843	845	866
618	95	479	677	1169	516	734
741	920	923	1016	1086	1098	48
156	555	576	672	813	1023	303
327	454	467	125	262	898	1002
1123	951	1250	1251	643	779	818
934	578	768	1099	19	24	56
59	177	257	127	210	1191	315
89	311	312	386	304	363	640
761	1256	489	526	692	711	1241

1267	171	172	896	40	90	352
533	534	15	35	47	69	1286
840	876	967	1013	1014	166	173
416	601	360	382	648	657	1232
1249	72	106	113	298	405	506
605	680	259	260	622	684	229
230	245	272	500	504	522	545
863	1242	778	232	886	969	1200
123	319	436	441	1301	433	488
493	525	86	184	186	196	283
301	459	686	972	717	726	767
810	1094	1194	1195	1197	1202	1203

Table S7: The differences in labeling between our data set and the data set used in Cuingnet et al. (2011) for test subjects. The difference in the labeling is due to the fact that Cuingnet et al labeled every MCI subject followed at least 18-months and who had not converted to AD during that time as MCI stable while our labeling of stable MCI (explained in Section 2.1) is more stringent.

Cuingnet's labeling	Our labeling		
	sMCI	pMCI	uMCI
sMCI	33	13	21
pMCI	0	37	0
uMCI	0	0	0

Table S8: The differences in labeling between our data set and the data set used in Cuingnet et al. (2011) for train subjects.

Cuingnet's labeling	Our labeling		
	sMCI	pMCI	uMCI
sMCI	26	21	20
pMCI	0	37	0
uMCI	0	0	0