

**Supplementary Table 2.** Association of CMBs concerning overall survival in the TCGA-BRCA cohort, where the optimal cutpoint per CMB was provided by survminer package.

CMB	Cut Point	P Value
CMB_1	0.000992	0.09338801
CMB_2	1.757488	0.179786066
CMB_3	2.00E-05	0.001659549
CMB_4	1.489294	0.018120796
CMB_5	0.198263	0.173429098
CMB_6	3.987893	0.004014171
CMB_7	1.472299	0.045129684
CMB_8	0.000208	0.004567992
CMB_9	0.068683	0.142871096
CMB_10	3.90E-05	0.185343439
CMB_11	0.000628	0.026731614
CMB_12	2.703916	0.046132902
CMB_13	0.011475	0.000570584
CMB_14	2.198311	0.086659956
CMB_15	0.000152	0.247409672
CMB_16	0.01634	0.076279796
CMB_17	1.623841	0.013160203
CMB_18	0.24715	0.036831943
CMB_19	1.80E-05	0.101431505
CMB_20	0.305426	0.022172896
CMB_21	1.367866	0.058517347
CMB_22	0.000886	0.147997131
CMB_23	6.80E-05	0.00684035
CMB_24	0.007274	0.008533028
CMB_25	0.014009	0.234822084
CMB_26	9.20E-05	0.001714738
CMB_27	2.40E-05	0.007488763
CMB_28	0.021094	0.053054628
CMB_29	0.000503	0.026101467
CMB_30	0	0.17972505
CMB_31	5.00E-06	0.243237586
CMB_32	5.00E-06	0.054750934
CMB_33	6.20E-05	0.006977528
CMB_34	2.579592	0.00444665
CMB_35	0.000416	0.003840268
CMB_36	0.013667	0.088627622
CMB_37	0.151031	0.001444652
CMB_38	0.07782	0.164872926
CMB_39	0.002877	0.042305253
CMB_40	2.60E-05	0.362024226
CMB_41	0.005706	0.001857397
CMB_42	2.80E-05	0.00282328

CMB_43	0.000199	0.000931484
CMB_44	5.90E-05	0.205446216
CMB_45	4.80E-05	0.233257462
CMB_46	2.683418	0.200703205
CMB_47	0.000109	0.313037413
CMB_48	0.062959	0.162427427
CMB_49	2.101859	0.075156368
CMB_50	1.262925	0.219188898
CMB_51	0.000394	0.010274843
CMB_52	7.20E-05	0.003376035
CMB_53	0.071937	0.003184521
CMB_54	0.000416	0.025233033
CMB_55	1.40E-05	0.002816745
CMB_56	0.131527	0.098605497
CMB_57	0.000169	0.002635138
CMB_58	8.70E-05	0.026415552
CMB_59	8.00E-06	0.009366094
CMB_60	0.000124	0.005709223
CMB_61	3.30E-05	0.023965912
CMB_62	0.291333	0.013579703
CMB_63	0.364208	0.144678216
CMB_64	7.00E-06	0.047808401
CMB_65	0.000253	0.096601173
CMB_66	0.020184	0.3532345
CMB_67	0.003897	0.018923769
CMB_68	0.000888	0.005155609
CMB_69	5.964485	0.003700778
CMB_70	0	0.010364397
CMB_71	0.012228	0.098377448
CMB_72	0.034283	0.000800837
CMB_73	0.015226	0.023560615
CMB_74	0.000152	0.268171627
CMB_75	0.000675	0.031822908
CMB_76	0.000285	0.004192631
CMB_77	6.00E-06	0.031671372
CMB_78	2.30E-05	0.030646326
CMB_79	0.012359	0.241881146
CMB_80	1.749399	0.05173144
CMB_81	0.11072	0.00350035
CMB_82	2.799518	0.128833747
CMB_83	0.015871	0.143418556
CMB_84	0	0.317311092
CMB_85	2.555553	0.024739724
CMB_86	2.132571	0.254588724
CMB_87	0.000423	0.029922151
CMB_88	3.60E-05	0.000450183
CMB_89	0.00022	0.00068218

CMB_90	8.00E-05	0.016143468
CMB_91	0.000467	0.054050887
CMB_92	2.50E-05	0.118172342
CMB_93	0.047837	0.020615354
CMB_94	1.60E-05	0.005266078
CMB_95	0.008874	0.000548095
CMB_96	0.000243	0.028221858
CMB_97	3.00E-06	0.115169678
CMB_98	0.028712	0.058316079
CMB_99	0.000115	0.111839093
CMB_100	0.001849	0.00437397
CMB_101	3.10E-05	0.045349011
CMB_102	1.799484	0.066311043
CMB_103	1.80E-05	0.037268858
CMB_104	0.000949	0.118302696
CMB_105	0.027666	0.142953272
CMB_106	0.004619	0.176830877
CMB_107	0.026758	0.108908921
CMB_108	1.40E-05	0.304842606
CMB_109	0.717627	0.034033445
CMB_110	0.00714	0.063059288
CMB_111	6.00E-06	0.000898573
CMB_112	0.005982	0.04464942
CMB_113	2.394516	0.009684574
CMB_114	6.00E-06	0.040119471
CMB_115	0.100989	0.025378908
CMB_116	0.000113	0.069420024
CMB_117	0.062878	0.092579058
CMB_118	0.002772	0.001532561
CMB_119	0.000221	0.01530263
CMB_120	0.000239	0.107355154
CMB_121	0.04223	0.11575292
CMB_122	8.70E-05	0.007458955
CMB_123	5.50E-05	0.005700401
CMB_124	0.000408	0.297648195
CMB_125	0.038578	0.20147215
CMB_126	1.20E-05	0.049580785
CMB_127	7.60E-05	0.036122724
CMB_128	3.226372	0.008367472
CMB_129	4.00E-06	0.055703381
CMB_130	6.00E-06	0.030731971
CMB_131	3.170396	0.001512399
CMB_132	7.20E-05	0.003567745
CMB_133	0.000932	0.056715564
CMB_134	9.00E-06	0.080244519
CMB_135	1.761132	0.002920285
CMB_136	0.15283	0.007011553

CMB_137	0.000182	0.141478696
CMB_138	0.008922	0.153538788
CMB_139	0.000126	0.010972169
CMB_140	0.004434	0.158036619
CMB_141	0.966077	0.006358511
CMB_142	0.03747	0.012289635
CMB_143	0.001336	0.088416087
CMB_144	0.395988	0.01096633
CMB_145	7.00E-06	0.038384622
CMB_146	0.076567	0.097099193
CMB_147	0.265715	0.039946853
CMB_148	7.10E-05	0.009684851
CMB_149	0.025545	0.011831083
CMB_150	0.014911	0.003422192
CMB_151	9.40E-05	0.059830598
CMB_152	2.90E-05	0.004687529
CMB_153	4.197831	0.0377184
CMB_154	8.10E-05	0.038007135
CMB_155	0.648293	0.002355334
CMB_156	3.626891	0.00830803
CMB_157	1.00E-06	0.036480582
CMB_158	0.001958	0.031825468
CMB_159	0.000451	0.022880938
CMB_160	0.010511	0.020313154
CMB_161	0.042807	0.0074796
CMB_162	0.000208	0.005360408
CMB_163	0.022003	0.078407265
CMB_164	0.064444	0.028921439
CMB_165	0.005284	0.173792483
CMB_166	0.005662	0.032345092
CMB_167	0.013371	0.036460613
CMB_168	0.581245	0.039324238
CMB_169	0.000604	0.070886955
CMB_170	5.40E-05	0.042688199
CMB_171	0.000198	0.001610726
CMB_172	0.131284	0.062430016
CMB_173	1.00E-05	0.252214353
CMB_174	0.236861	0.015858409
CMB_175	0.009643	0.014080155
CMB_176	3.00E-06	0.310973932
CMB_177	0.009796	0.035556328
CMB_178	1.60E-05	0.040200226
CMB_179	0.008125	0.001785994
CMB_180	0.149633	0.022257727
CMB_181	0.775266	0.15004271
CMB_182	5.00E-06	0.378108694
CMB_183	0.762883	0.092932685

CMB_184	0.009953	0.069803368
CMB_185	2.00E-06	0.119217587
CMB_186	0.018415	0.077973774
CMB_187	0.000674	0.00023833
CMB_188	0.000178	0.005315555
CMB_189	0.034196	0.010499162
CMB_190	4.50E-05	0.019464592
CMB_191	0.016876	0.121568008
CMB_192	3.20E-05	0.364467309
CMB_193	0.020353	0.00483519
CMB_194	0.225743	0.108446231
CMB_195	0.032712	0.285115601
CMB_196	1.118507	0.141240724
CMB_197	0.000199	0.122214191
CMB_198	NA	NA
CMB_199	0.00022	0.017624358
CMB_200	3.964418	0.041286835
CMB_201	0.000295	0.044936436
CMB_202	8.40E-05	0.000802822
CMB_203	NA	NA
CMB_204	0.089403	0.096732672
CMB_205	4.80E-05	0.15262484
CMB_206	0.000582	0.009965431
CMB_207	4.70E-05	0.107746818
CMB_208	0.01514	0.016242353
CMB_209	0.299041	0.260381743
CMB_210	1.50E-05	0.234716078
CMB_211	2.70E-05	0.003913244
CMB_212	3.40E-05	0.232193846
CMB_213	0.020216	0.032483802
CMB_214	0.005708	0.072169401
CMB_215	3.208786	0.114628819
CMB_216	0.003029	0.014267619
CMB_217	3.983504	0.003312925
CMB_218	0.00057	0.005011108
CMB_219	1.20E-05	0.028968389
CMB_220	0.086829	0.214047813
CMB_221	0.000178	0.013483902
CMB_222	5.60E-05	0.02383066
CMB_223	1.30E-05	0.004806265
CMB_224	0.013631	0.020843781
CMB_225	0.000225	0.020216714
CMB_226	3.620381	0.004506875
CMB_227	0.090374	0.128718449
CMB_228	0.000188	0.016020508
CMB_229	0.000464	0.104477251
CMB_230	0.18468	0.060207873

CMB_231	0.002992	0.078859556
CMB_232	0.003037	0.012674413
CMB_233	3.299299	0.00115271
CMB_234	4.241647	0.00245181
CMB_235	0.021564	0.200827171
CMB_236	0.000125	0.002306825
CMB_237	1.50E-05	0.000507848
CMB_238	0.005233	0.008362557
CMB_239	0.012927	0.160522854
CMB_240	1.186022	0.006746202
CMB_241	0.000116	0.019393631
CMB_242	0.027053	0.050421632
CMB_243	3.378503	0.040999204
CMB_244	6.80E-05	0.016132603
CMB_245	0.254116	0.036636899
CMB_246	0.000802	0.001100153
CMB_247	0.100143	0.305022961
CMB_248	2.00E-06	0.640889027
CMB_249	0.16589	0.114109231
CMB_250	1.10E-05	0.01557096
CMB_251	0.026512	0.267098855
CMB_252	0.000412	0.020713499
CMB_253	0.027734	0.057228244
CMB_254	7.00E-06	0.286730199
CMB_255	0.03952	0.1465672
CMB_256	0.017877	0.040969839

Abbreviation: CMB, cellular morphometric biomaker.