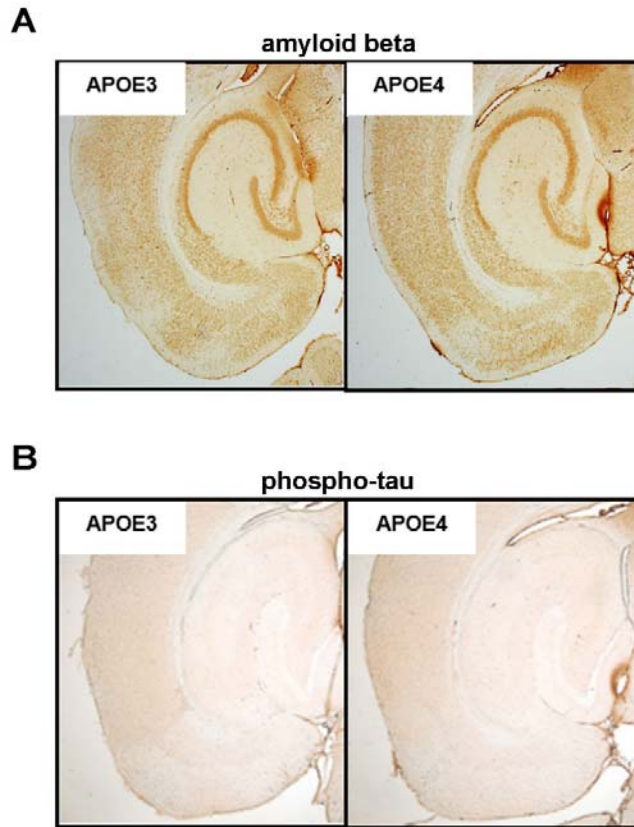
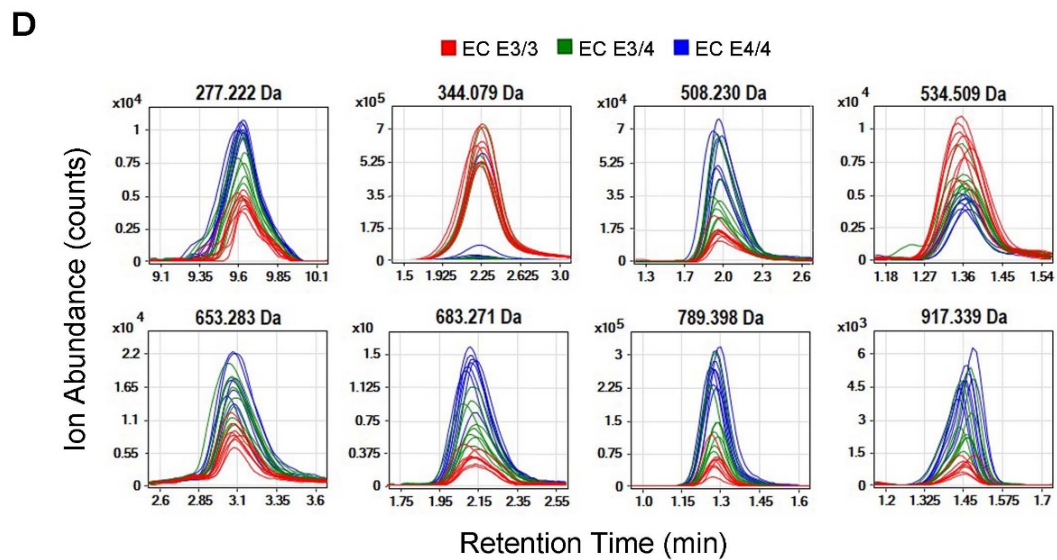
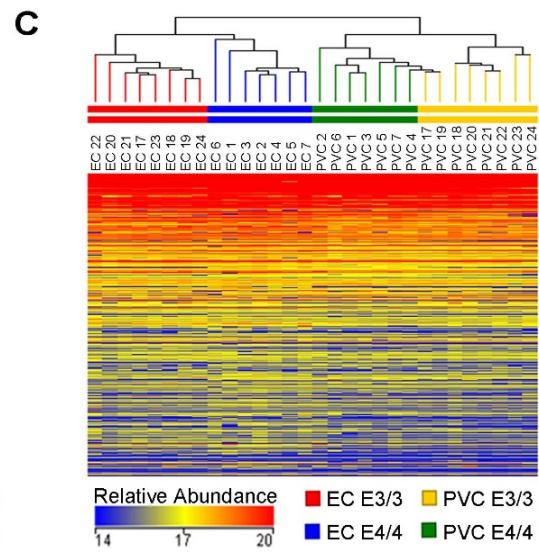
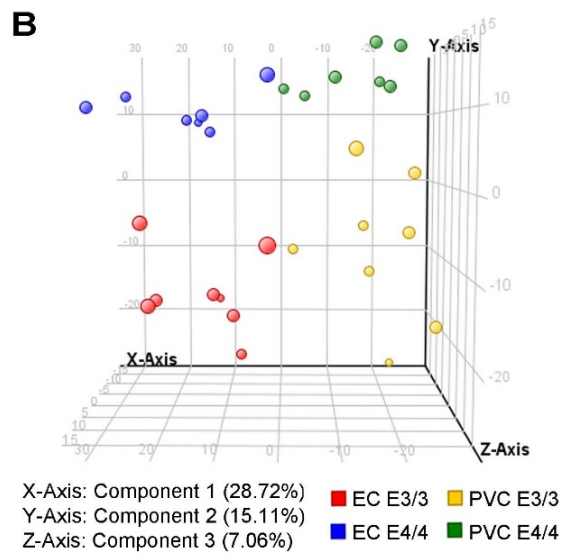
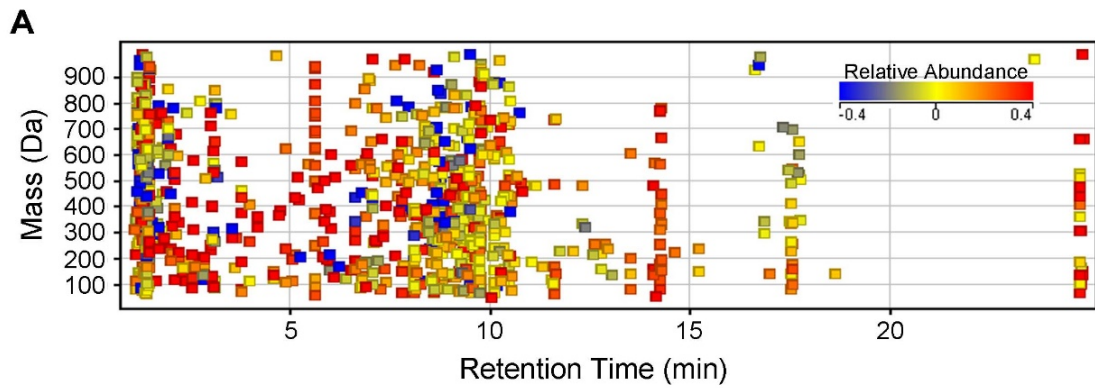


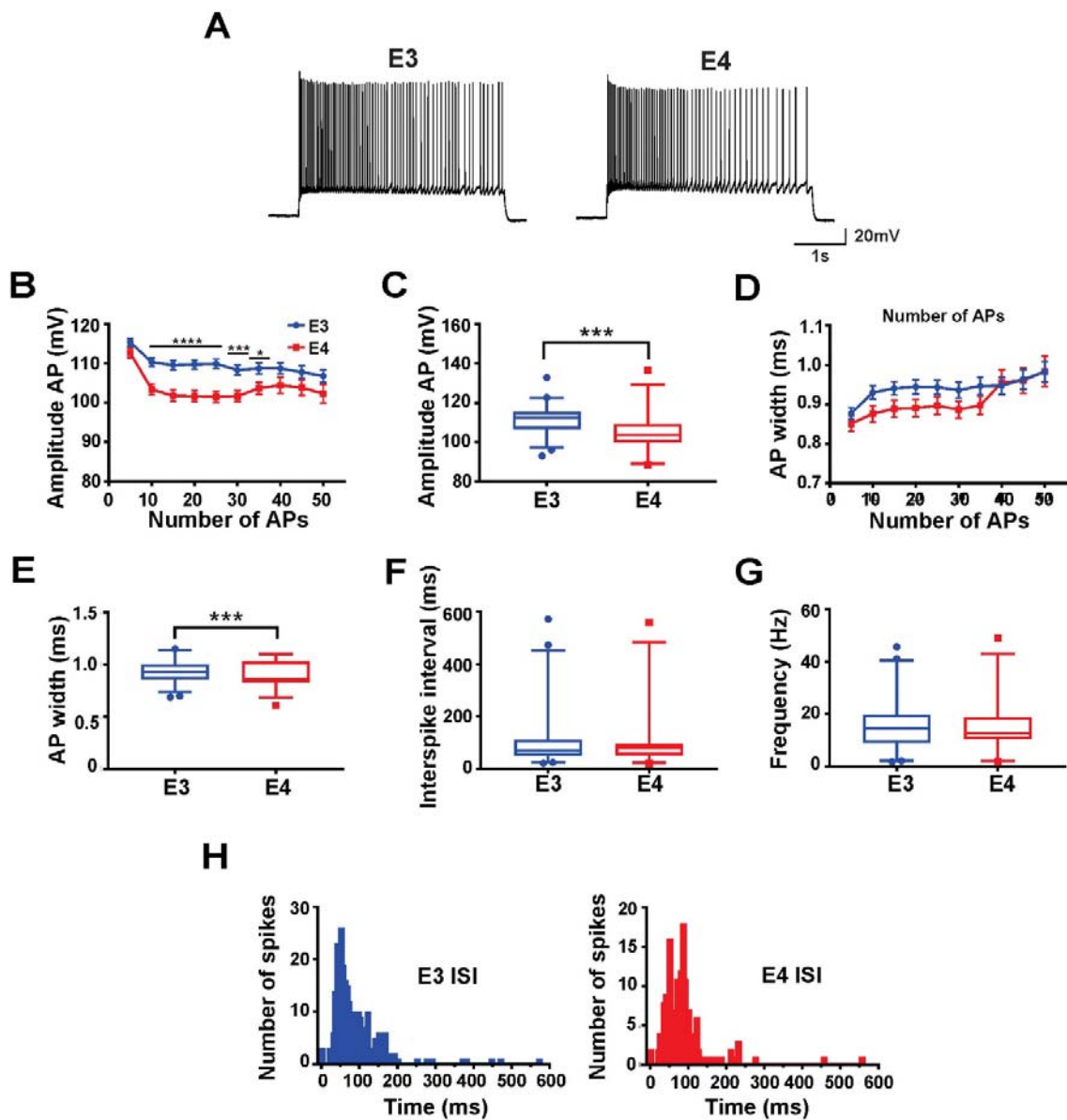
SUPPLEMENTAL INFORMATION



Supplementary Fig. 1. *APOE* mice show no AD pathology. Immunohistochemistry performed on brain sections from the *APOE* mice used during the fMRI study show no evidence of A β or tau pathology. (A) A postmortem hippocampal section of a 20 month old *APOE3* mouse or 20 month old *APOE4* mouse labeled with an antibody recognizing mouse A β (antibody 4G8) shows no histological evidence of amyloid pathology. (B) A postmortem hippocampal section of the same mice as A, labeled with an antibody recognizing phospho-tau (CP13), shows no histological evidence of tau pathology.

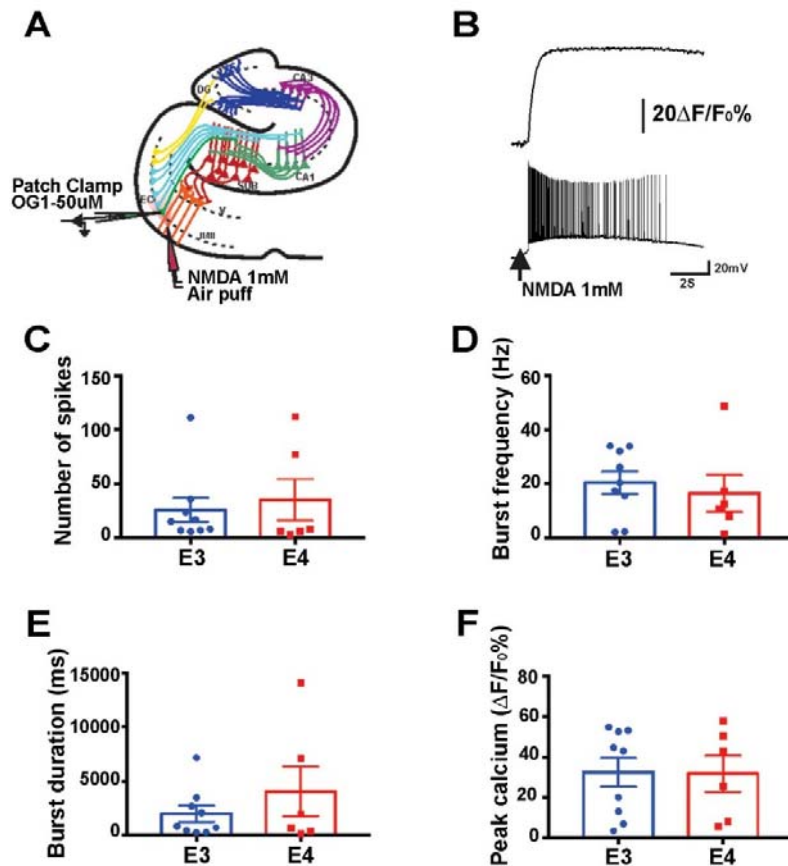


Supplementary Fig. 2. Small-molecule expression reveals genotypic and regional differences in aged APOE mice. Untargeted metabolite profiling was performed on small-molecule metabolites extracted from the EC and PVC of aged *APOE* mice (14-15 months old; 8 *APOE3/3*, 9 *APOE3/4* and 7 *APOE4/4* males). (A) A Mass vs. Retention Time plot depicting all ions discovered in positive ion detection mode using untargeted analysis. (B) Principle component analysis on untargeted metabolites discovered in positive ion detection mode. Each sphere represents a single sample. (C) Hierarchical clustering analysis on untargeted metabolites discovered in positive ion detection mode. Samples names are listed on top, with each line in the heat map representing the relative abundance of a single metabolite. (D) Chromatograms of eight metabolites detected in positive ion detection mode in the EC.



Supplementary Fig. 3. *APOE4* expression is associated with decreased amplitude and width of action potentials in layer II EC pyramidal cells. In vitro electrophysiology was performed using the patch-clamp whole-cell modality on pyramidal cells (n=6 cells per group) in the layer II EC of aged *APOE3* and *APOE4* mice (mean age = 20 months). (A) Representative traces of pyramidal neurons of *APOE3* and *APOE4* mice. Neurons were kept in current-clamp, and current was injected (0.3 nA, 4 s) in order to induce a train of action potentials (APs). (B) The amplitude of the AP was plotted after induction

of an AP train in *APOE3* and *APOE4* mice (**** $p < 0.001$; *** $p = 0.001$; * $p = 0.015$). (C) Box plot bars showing (CI 1-99%) grouped AP amplitudes from B (ANOVA; $F_{(1, 471)} = 88.784$, $p < 0.001$). (D) AP width after induction of AP train. (E) Box-plot bars of AP width from *APOE3* and *APOE4* mice (ANOVA; $F_{(1, 471)} = 19.777$, $p < 0.001$). (F) Histograms of the interspike-interval (ISI) from *APOE3* (top) and *APOE4* (bottom). (G) Box-plot bars of frequencies of APs from layer II EC neurons from *APOE3* and *APOE4* mice (ANOVA; $F_{(1, 460)} = 0.142$, $p = 0.706$). (H) Box-plot bars of ISI of APs from layer II EC neurons from *APOE3* and *APOE4* mice (ANOVA; $F_{(1, 460)} = 0.061$, $p = 0.806$).



Supplementary Fig. 4. *APOE4* expression is not associated with increased NMDA-receptor firing in EC layer II pyramidal cells. NMDA-induced bursts were recorded using the patch-clamp whole-cell modality on pyramidal cells ($n=6$ cells per group) in the layer II EC of aged *APOE3* and *APOE4* mice (mean age = 20 months). (A) Representation of the experiment design: a hippocampal horizontal slice is depicted with the principal neurons and projections in the different subregions. Layer II EC neurons were recorded with simultaneous calcium imaging (pipette solution contains, Oregon Green 1 BAPTA, 50 μM). A second glass pipette with NMDA (1mM) was placed close to the recording neuron, and an air-pressure system produced a quick release of NMDA (1 puff, 200 ms, 7 psi). (B) A representative trace of simultaneous current-clamp and calcium imaging recordings performed in layer II EC pyramidal neurons. **Top.** Changes in calcium fluorescence ($\Delta F/F_0\%$) normalized to the baseline pre-stimulus. **Bottom.** Current-clamp trace after a stimulation with the NMDA pipette (arrow). (C) Number of spikes induced

after the stimulus with the NMDA pipette (ANOVA; $F_{(1, 13)}=0.218$, $p=0.649$). (D) Burst frequency of induced APs (ANOVA; $F_{(1, 13)}=0.270$, $p=0.612$). (E) Burst duration of induced APs (Welch ANOVA; $F_{(1, 6.113)}=0.735$, $p=0.424$). (F) Peak calcium (ANOVA; $F_{(1, 13)}=0.003$, $p=0.96$).

Supplementary Table 1. Differentially expressed untargeted metabolites from the EC of APOE3 vs. E4 mice

Mass (Da) @ Retention Time (min)	Regulation in E4/4	Fold Change	p-value	FDR	Detection Mode
386.186@1.277	up	3.25	0.001	0.012	positive
191.151@9.700	up	1.48	0.001	0.012	positive
295.251@1.347	down	1.31	0.001	0.012	positive
403.209@1.277	up	2.72	0.001	0.012	positive
772.707@1.277	up	3.55	0.001	0.012	positive
279.254@1.379	down	1.38	0.001	0.012	positive
789.398@1.275	up	6.27	0.001	0.012	positive
173.140@9.690	up	1.66	0.001	0.012	positive
281.270@1.379	down	1.55	0.001	0.012	positive
681.437@1.328	up	2.26	0.001	0.012	positive
330.121@1.276	up	2.78	0.001	0.012	positive
667.456@1.355	up	2.25	0.001	0.012	positive
665.441@1.363	up	2.43	0.001	0.012	positive
297.264@1.344	down	1.33	0.001	0.012	positive
556.448@1.344	down	1.28	0.001	0.012	positive
387.356@1.276	up	3.75	0.001	0.012	positive
683.449@1.329	up	2.05	0.001	0.012	positive
97.088@9.700	up	1.47	0.001	0.012	positive
472.270@1.247	up	6.65	0.001	0.012	positive
472.280@1.211	down	13.97	0.001	0.012	positive
136.073@2.354	up	4.07	0.001	0.012	positive
508.230@2.083	up	3.37	0.001	0.012	positive
386.779@1.279	up	3.85	0.001	0.012	positive
467.184@1.436	up	2.49	0.001	0.012	positive
701.462@1.432	up	4.04	0.001	0.012	positive
200.046@5.028	up	1.98	0.001	0.012	positive
742.247@1.458	up	1.87	0.001	0.012	positive
536.526@1.393	down	1.78	0.001	0.012	positive
251.224@1.397	down	1.24	0.001	0.012	positive
900.685@1.443	up	2.73	0.001	0.012	positive
155.130@9.692	up	1.63	0.001	0.012	positive
640.135@10.140	up	1.74	0.001	0.012	positive
697.432@1.323	up	2.25	0.001	0.012	positive
180.019@1.418	up	1.84	0.001	0.012	positive
699.446@1.385	up	2.89	0.001	0.012	positive

574.210@9.700	up	1.68	0.001	0.012	positive
269.238@1.355	down	1.41	0.001	0.012	positive
580.217@1.283	up	2.48	0.001	0.012	positive
667.457@1.355	up	2.25	0.001	0.012	positive
574.318@9.703	up	1.66	0.001	0.012	positive
900.690@1.443	up	2.40	0.001	0.012	positive
772.944@1.276	up	12.77	0.001	0.012	positive
506.475@1.386	down	1.54	0.001	0.012	positive
118.063@2.355	up	3.65	0.001	0.012	positive
403.206@1.539	up	4.48	0.001	0.012	positive
653.402@1.344	up	3.62	0.001	0.012	positive
262.227@1.379	down	1.35	0.001	0.012	positive
403.381@1.274	up	3.49	0.001	0.012	positive
80.062@1.379	down	1.29	0.001	0.012	positive
789.631@1.270	up	9.38	0.001	0.012	positive
261.192@9.629	up	1.35	0.001	0.012	positive
794.355@1.275	up	5.83	0.001	0.012	positive
246.221@9.299	up	1.87	0.001	0.012	positive
683.271@2.120	up	5.47	0.001	0.012	positive
560.518@1.380	down	1.97	0.001	0.012	positive
695.423@1.342	up	2.59	0.001	0.012	positive
710.620@1.386	down	1.70	0.001	0.012	positive
776.853@1.271	up	4.02	0.001	0.012	positive
655.428@1.334	up	2.08	0.001	0.012	positive
990.823@1.282	up	2.22	0.001	0.012	positive
990.829@1.282	up	2.56	0.001	0.012	positive
576.823@9.699	up	1.58	0.001	0.012	positive
277.222@9.631	up	2.85	0.001	0.012	positive
889.205@1.346	down	1.43	0.001	0.012	positive
566.508@1.426	down	1.43	0.001	0.012	positive
886.688@1.341	down	1.45	0.001	0.012	positive
854.355@1.441	up	8.56	0.001	0.012	positive
858.465@1.285	up	10.13	0.001	0.012	positive
265.227@1.385	down	1.60	0.001	0.012	positive
519.763@9.689	up	1.79	0.001	0.012	positive
120.089@1.368	down	1.22	0.001	0.012	positive
544.316@1.208	up	2.43	0.001	0.012	positive
333.213@1.354	down	3.14	0.001	0.012	positive
266.206@9.705	up	3.73	0.001	0.012	positive
307.198@9.729	up	1.72	0.001	0.012	positive
637.414@1.375	up	3.77	0.001	0.012	positive

636.165@1.273	up	2.33	0.001	0.012	positive
774.084@1.278	up	6.45	0.001	0.012	positive
508.493@1.369	down	2.16	0.001	0.012	positive
534.509@1.370	down	2.18	0.001	0.012	positive
241.213@1.375	down	1.64	0.001	0.012	positive
655.422@1.333	up	2.05	0.001	0.012	positive
323.273@1.334	down	1.74	0.001	0.012	positive
533.252@1.445	up	8.86	0.001	0.012	positive
917.339@1.443	up	6.10	0.001	0.012	positive
789.735@1.279	up	17.67	0.001	0.012	positive
629.372@1.971	up	9.18	0.001	0.012	positive
576.958@9.702	up	1.63	0.001	0.012	positive
274.063@1.281	up	2.84	0.001	0.012	positive
667.675@1.356	up	2.72	0.001	0.012	positive
731.430@1.422	up	2.26	0.001	0.012	positive
677.407@1.334	up	2.66	0.001	0.012	positive
713.422@1.350	up	2.26	0.001	0.012	positive
729.425@1.402	up	2.67	0.001	0.012	positive
316.093@2.535	up	3.74	0.001	0.012	positive
562.939@1.379	down	1.78	0.001	0.012	positive
660.673@1.274	up	8.95	0.001	0.012	positive
442.254@1.200	up	5.47	0.001	0.012	positive
807.153@1.274	up	2.96	0.001	0.012	positive
183.155@1.382	down	1.90	0.001	0.012	positive
934.369@1.435	up	2.23	0.001	0.012	positive
681.748@1.321	up	2.71	0.001	0.012	positive
657.447@1.374	up	3.02	0.001	0.012	positive
797.387@1.282	up	14.72	0.001	0.012	positive
731.437@1.422	up	2.14	0.001	0.012	positive
403.447@1.275	up	4.17	0.001	0.012	positive
627.413@1.356	up	5.36	0.001	0.012	positive
429.395@7.778	up	2.58	0.001	0.012	positive
684.237@1.451	up	2.08	0.001	0.012	positive
627.415@1.363	up	4.08	0.001	0.012	positive
485.278@9.312	up	1.86	0.001	0.012	positive
807.152@1.274	up	3.31	0.001	0.012	positive
700.137@1.418	up	1.80	0.001	0.012	positive
229.233@8.620	up	1.24	0.001	0.012	positive
178.166@1.379	down	1.70	0.001	0.012	positive
385.281@1.410	down	1.56	0.001	0.012	positive
422.163@1.266	up	3.10	0.001	0.012	negative

424.161@1.266	up	3.19	0.001	0.012	negative
446.206@1.268	up	4.25	0.001	0.012	negative
200.044@5.046	up	1.62	0.001	0.012	negative
450.158@1.415	up	2.17	0.001	0.012	negative
492.135@5.046	up	1.66	0.001	0.012	negative
742.247@1.458	up	1.86	0.001	0.012	negative
424.336@1.266	up	4.37	0.001	0.012	negative
449.181@1.261	up	3.08	0.001	0.012	negative
404.196@1.422	up	4.10	0.001	0.012	negative
264.014@7.119	up	1.81	0.001	0.012	negative
446.206@1.262	up	4.48	0.001	0.012	negative
191.916@5.047	up	1.59	0.001	0.012	negative
422.783@1.268	up	5.40	0.001	0.012	negative
334.046@10.373	up	4.27	0.001	0.012	negative
200.168@5.048	up	1.66	0.001	0.012	negative
514.093@1.270	up	2.60	0.001	0.012	negative
450.338@1.416	up	2.55	0.001	0.012	negative
286.119@4.311	up	4.87	0.001	0.012	negative
416.028@10.351	up	4.10	0.001	0.012	negative
333.238@1.351	down	1.44	0.001	0.012	negative
200.044@7.119	up	1.56	0.001	0.012	negative
374.073@10.325	up	4.61	0.001	0.012	negative
356.174@1.269	up	2.62	0.001	0.012	negative
424.780@1.260	up	5.60	0.001	0.012	negative
331.228@1.331	down	1.42	0.001	0.012	negative
434.038@10.351	up	4.78	0.001	0.012	negative
374.010@5.049	up	1.50	0.001	0.012	negative
850.822@1.268	up	5.98	0.001	0.012	negative
696.289@1.450	up	4.71	0.001	0.012	negative
556.106@7.113	up	1.81	0.001	0.012	negative
341.995@7.123	up	1.61	0.001	0.012	negative
235.997@2.353	up	5.60	0.001	0.012	negative
426.167@1.265	up	3.36	0.001	0.012	negative
349.234@1.379	down	1.25	0.001	0.012	negative
468.169@4.330	up	2.16	0.001	0.012	negative
196.090@2.343	up	4.98	0.001	0.012	negative
450.410@1.416	up	3.20	0.001	0.012	negative
191.917@7.124	up	1.74	0.001	0.012	negative
318.104@6.006	up	2.97	0.001	0.012	negative
386.186@1.269	up	3.57	0.001	0.012	negative
304.018@5.064	up	1.36	0.001	0.012	negative

432.198@1.265	up	10.65	0.001	0.012	negative
512.185@1.267	up	1.62	0.001	0.012	negative
254.132@1.229	up	1.94	0.001	0.012	negative
614.181@1.414	up	2.04	0.001	0.012	negative
610.197@6.008	up	7.45	0.001	0.012	negative
578.207@4.303	up	7.30	0.001	0.012	negative
742.476@1.460	up	2.04	0.001	0.012	negative
500.121@5.060	up	1.46	0.001	0.012	negative
594.088@4.925	up	1.96	0.001	0.012	negative
596.221@1.432	up	4.26	0.001	0.012	negative
490.203@1.294	up	5.00	0.001	0.012	negative
596.108@5.056	up	1.61	0.001	0.012	negative
586.201@1.249	up	2.04	0.001	0.012	negative
898.728@1.261	up	3.62	0.001	0.012	negative
218.013@2.383	up	1.89	0.001	0.012	negative
492.135@5.042	up	1.68	0.001	0.012	negative
336.074@4.992	up	2.22	0.001	0.012	negative
666.219@7.821	up	2.22	0.001	0.012	negative
614.182@1.414	up	2.03	0.001	0.012	negative
388.099@5.039	up	1.49	0.001	0.012	negative
382.075@7.279	up	2.29	0.001	0.012	negative
376.008@5.046	up	1.50	0.001	0.012	negative
386.041@4.301	up	3.56	0.001	0.012	negative
492.396@5.042	up	3.35	0.001	0.012	negative
431.105@5.042	up	1.53	0.001	0.012	negative
420.336@2.339	up	17.11	0.001	0.012	negative
510.233@1.225	up	4.37	0.001	0.012	negative
530.198@1.419	up	6.40	0.001	0.012	negative
451.990@5.046	up	1.83	0.001	0.012	negative
504.167@7.031	up	2.00	0.001	0.012	negative
642.203@6.955	up	1.67	0.001	0.012	negative
476.215@2.809	up	4.94	0.001	0.012	negative
192.119@5.045	up	1.72	0.001	0.012	negative
419.973@7.156	up	1.51	0.001	0.012	negative
764.188@7.811	up	2.57	0.001	0.012	negative
617.177@1.422	up	2.56	0.001	0.012	negative
184.050@4.293	up	1.97	0.001	0.012	negative
141.948@10.350	up	16.89	0.001	0.012	negative
780.203@1.449	up	2.53	0.001	0.012	negative
633.186@7.035	up	2.44	0.001	0.012	negative
596.179@2.361	up	4.24	0.001	0.012	negative

150.021@7.323	down	4.38	0.001	0.012	negative
795.160@1.430	up	3.81	0.001	0.012	negative
258.131@1.961	up	2.37	0.001	0.012	negative
828.275@8.413	up	3.07	0.001	0.012	negative
267.221@1.367	down	1.26	0.002	0.016	positive
255.254@1.404	down	1.33	0.002	0.016	positive
653.283@3.085	up	2.11	0.002	0.016	positive
574.706@9.701	up	1.73	0.002	0.016	positive
562.834@1.379	down	1.55	0.002	0.016	positive
886.824@1.347	down	1.56	0.002	0.016	positive
550.538@1.403	down	1.72	0.002	0.016	positive
371.174@8.148	up	2.87	0.002	0.016	positive
70.076@1.359	down	1.37	0.002	0.016	positive
800.543@1.198	up	1.65	0.002	0.016	positive
679.424@1.321	up	1.27	0.002	0.016	positive
551.281@1.285	up	1.97	0.002	0.016	positive
972.323@7.826	up	3.06	0.002	0.016	positive
802.076@1.364	down	1.36	0.002	0.016	positive
727.444@1.300	up	1.50	0.002	0.016	positive
459.226@7.870	up	1.71	0.002	0.016	positive
242.022@6.421	up	1.96	0.002	0.018	negative
534.110@6.421	up	2.12	0.002	0.018	negative
246.009@7.121	up	2.37	0.002	0.018	negative
524.092@1.410	up	1.74	0.002	0.018	negative
478.069@5.049	up	3.98	0.002	0.018	negative
250.219@1.350	down	1.33	0.003	0.021	positive
461.292@1.408	up	1.38	0.003	0.021	positive
717.565@1.398	down	1.34	0.003	0.021	positive
232.216@1.356	down	1.23	0.003	0.021	positive
260.210@1.362	down	1.23	0.003	0.021	positive
153.108@1.392	down	1.38	0.003	0.021	positive
465.170@1.438	up	1.71	0.003	0.021	positive
406.290@1.218	down	1.53	0.003	0.021	positive
521.198@7.040	up	1.98	0.003	0.021	positive
283.173@1.832	up	7.14	0.003	0.021	positive
665.662@1.360	up	3.05	0.003	0.021	positive
557.309@8.349	up	1.93	0.003	0.021	positive
835.103@1.346	down	1.31	0.003	0.021	positive
972.327@7.043	up	2.69	0.003	0.021	positive
622.794@1.402	down	1.28	0.003	0.021	positive
154.006@3.792	up	1.31	0.003	0.024	negative

335.239@1.357	down	1.27	0.003	0.024	negative
611.172@6.833	up	1.82	0.003	0.024	negative
104.044@2.228	up	1.31	0.003	0.024	negative
58.042@7.453	up	1.22	0.003	0.024	negative
321.212@1.368	up	2.89	0.003	0.024	negative
478.073@5.044	up	4.19	0.003	0.024	negative
482.181@1.290	up	2.02	0.003	0.024	negative
438.147@1.302	down	1.65	0.003	0.024	negative
749.941@1.160	up	1.25	0.004	0.028	positive
344.079@2.194	down	17.74	0.004	0.028	positive
327.199@2.027	up	14.61	0.004	0.028	positive
152.115@1.352	down	1.36	0.004	0.028	positive
574.604@9.700	up	1.66	0.004	0.028	positive
213.161@1.398	down	1.69	0.004	0.028	positive
118.064@5.030	up	1.61	0.004	0.028	positive
359.192@8.408	up	1.86	0.004	0.028	positive
463.073@10.792	up	1.48	0.004	0.028	positive
274.187@1.393	down	1.27	0.004	0.028	positive
448.144@1.438	up	1.66	0.004	0.028	positive
603.844@17.681	down	1.17	0.004	0.028	positive
118.026@1.376	down	1.42	0.004	0.032	negative
236.051@1.376	down	1.37	0.004	0.032	negative
464.101@10.288	down	1.63	0.004	0.032	negative
434.118@6.584	up	1.33	0.004	0.032	negative
612.175@1.435	up	1.95	0.004	0.032	negative
278.035@5.046	up	1.81	0.004	0.032	negative
617.173@1.417	up	2.04	0.004	0.032	negative
390.031@7.359	down	4.37	0.005	0.043	negative
194.115@2.535	up	1.82	0.005	0.036	positive
156.159@24.812	up	1.62	0.005	0.036	positive
150.088@2.295	up	1.75	0.005	0.036	positive
250.975@1.161	up	1.22	0.005	0.036	positive
386.970@1.279	up	2.56	0.005	0.036	positive
774.844@1.278	up	1.80	0.005	0.036	positive
422.287@2.533	up	1.72	0.005	0.036	positive
141.147@9.405	up	1.49	0.005	0.036	positive
241.219@1.382	down	1.36	0.005	0.036	positive
582.704@2.535	up	1.76	0.005	0.036	positive
612.477@1.440	down	1.41	0.005	0.036	positive
116.061@1.626	up	2.42	0.005	0.036	positive
618.595@1.554	down	2.74	0.005	0.036	positive

78.047@1.374	down	1.51	0.005	0.036	positive
150.135@1.369	down	1.34	0.005	0.036	positive
515.301@5.145	up	5.91	0.005	0.036	positive
90.030@7.680	up	1.15	0.005	0.043	negative
419.152@5.090	up	1.37	0.005	0.043	negative
500.174@1.273	up	3.96	0.005	0.043	negative
512.858@1.421	down	1.41	0.005	0.043	negative
523.049@6.882	up	1.15	0.005	0.043	negative
773.224@7.256	up	2.02	0.005	0.043	negative
511.103@9.165	up	1.34	0.005	0.043	negative
619.090@7.472	up	2.33	0.005	0.043	negative
238.142@2.995	up	1.87	0.008	0.048	positive
293.219@1.416	down	1.21	0.008	0.048	positive
277.234@1.439	down	1.18	0.008	0.048	positive
88.053@2.530	up	1.98	0.008	0.048	positive
311.245@1.415	down	1.19	0.008	0.048	positive
817.417@1.268	up	1.94	0.008	0.048	positive
82.044@1.285	up	1.59	0.008	0.048	positive
269.158@7.136	up	2.87	0.008	0.048	positive
714.828@2.990	up	2.05	0.008	0.048	positive
626.818@1.407	down	1.21	0.008	0.048	positive
443.326@1.386	down	1.79	0.008	0.048	positive
765.915@2.993	up	2.77	0.008	0.048	positive

Supplementary Table 2. Differentially expressed untargeted metabolites from the PVC of APOE3 vs. E4 mice

Mass (Da) @ Retention Time (min)	Regulation in E4/4	Fold Change	p-value	FDR	Detection Mode
386.186@1.277	up	3.11	0.001	0.014	positive
191.151@9.700	up	1.51	0.001	0.014	positive
403.209@1.277	up	2.64	0.001	0.014	positive
772.707@1.277	up	3.55	0.001	0.014	positive
279.254@1.379	down	1.37	0.001	0.014	positive
789.398@1.275	up	6.08	0.001	0.014	positive
173.140@9.690	up	1.64	0.001	0.014	positive
281.270@1.379	down	1.43	0.001	0.014	positive
681.437@1.328	up	2.29	0.001	0.014	positive
330.121@1.276	up	2.60	0.001	0.014	positive
667.456@1.355	up	2.10	0.001	0.014	positive
665.441@1.363	up	2.15	0.001	0.014	positive
297.264@1.344	down	1.30	0.001	0.014	positive
387.356@1.276	up	3.69	0.001	0.014	positive
683.449@1.329	up	2.02	0.001	0.014	positive
97.088@9.700	up	1.51	0.001	0.014	positive
472.270@1.247	up	20.46	0.001	0.014	positive
810.327@1.275	up	5.15	0.001	0.014	positive
472.280@1.211	down	12.38	0.001	0.014	positive
255.254@1.404	down	1.27	0.001	0.014	positive
136.073@2.354	up	2.90	0.001	0.014	positive
508.230@2.083	up	3.89	0.001	0.014	positive
386.779@1.279	up	4.48	0.001	0.014	positive
467.184@1.436	up	2.81	0.001	0.014	positive
424.141@1.280	up	2.13	0.001	0.014	positive
701.462@1.432	up	3.64	0.001	0.014	positive
174.008@1.273	up	1.94	0.001	0.014	positive
536.526@1.393	down	1.59	0.001	0.014	positive
251.224@1.397	down	1.28	0.001	0.014	positive
900.685@1.443	up	8.45	0.001	0.014	positive
155.130@9.692	up	1.60	0.001	0.014	positive
697.432@1.323	up	2.17	0.001	0.014	positive
180.019@1.418	up	1.64	0.001	0.014	positive
699.446@1.385	up	2.57	0.001	0.014	positive
574.210@9.700	up	1.74	0.001	0.014	positive

269.238@1.355	down	1.36	0.001	0.014	positive
580.217@1.283	up	2.50	0.001	0.014	positive
250.975@1.161	up	1.14	0.001	0.014	positive
667.457@1.355	up	2.10	0.001	0.014	positive
574.318@9.703	up	1.68	0.001	0.014	positive
900.690@1.443	up	5.28	0.001	0.014	positive
772.944@1.276	up	10.49	0.001	0.014	positive
506.475@1.386	down	1.51	0.001	0.014	positive
118.063@2.355	up	2.75	0.001	0.014	positive
262.227@1.379	down	1.29	0.001	0.014	positive
403.381@1.274	up	3.62	0.001	0.014	positive
789.631@1.270	up	5.61	0.001	0.014	positive
246.221@9.299	up	1.76	0.001	0.014	positive
683.271@2.120	up	4.25	0.001	0.014	positive
560.518@1.380	down	1.96	0.001	0.014	positive
695.423@1.342	up	1.72	0.001	0.014	positive
710.620@1.386	down	2.26	0.001	0.014	positive
776.853@1.271	up	4.51	0.001	0.014	positive
655.428@1.334	up	1.81	0.001	0.014	positive
990.823@1.282	up	2.14	0.001	0.014	positive
574.706@9.701	up	1.70	0.001	0.014	positive
990.829@1.282	up	2.29	0.001	0.014	positive
576.823@9.699	up	1.61	0.001	0.014	positive
277.222@9.631	up	2.74	0.001	0.014	positive
566.508@1.426	down	1.53	0.001	0.014	positive
886.688@1.341	down	1.40	0.001	0.014	positive
854.355@1.441	up	6.49	0.001	0.014	positive
858.465@1.285	up	10.18	0.001	0.014	positive
562.834@1.379	down	1.54	0.001	0.014	positive
544.316@1.208	up	2.70	0.001	0.014	positive
266.206@9.705	up	2.65	0.001	0.014	positive
636.165@1.273	up	2.09	0.001	0.014	positive
241.219@1.382	down	1.27	0.001	0.014	positive
774.084@1.278	up	7.49	0.001	0.014	positive
508.493@1.369	down	2.10	0.001	0.014	positive
534.509@1.370	down	2.07	0.001	0.014	positive
655.422@1.333	up	1.80	0.001	0.014	positive
917.339@1.443	up	8.14	0.001	0.014	positive
789.735@1.279	up	14.76	0.001	0.014	positive
723.519@1.621	up	3.58	0.001	0.014	positive
576.958@9.702	up	1.68	0.001	0.014	positive

274.063@1.281	up	3.15	0.001	0.014	positive
800.543@1.198	up	1.72	0.001	0.014	positive
713.422@1.350	up	2.12	0.001	0.014	positive
729.425@1.402	up	2.37	0.001	0.014	positive
316.093@2.535	up	2.96	0.001	0.014	positive
679.424@1.321	up	1.38	0.001	0.014	positive
562.939@1.379	down	1.69	0.001	0.014	positive
660.673@1.274	up	11.80	0.001	0.014	positive
442.254@1.200	up	3.63	0.001	0.014	positive
807.153@1.274	up	4.24	0.001	0.014	positive
934.369@1.435	up	3.52	0.001	0.014	positive
938.270@1.439	up	5.64	0.001	0.014	positive
681.748@1.321	up	3.15	0.001	0.014	positive
146.105@1.305	up	1.42	0.001	0.014	positive
797.387@1.282	up	13.54	0.001	0.014	positive
731.437@1.422	up	2.44	0.001	0.014	positive
403.447@1.275	up	3.55	0.001	0.014	positive
627.413@1.356	up	4.23	0.001	0.014	positive
429.395@7.778	up	3.77	0.001	0.014	positive
485.278@9.312	up	1.88	0.001	0.014	positive
745.417@1.429	up	2.29	0.001	0.014	positive
807.152@1.274	up	4.64	0.001	0.014	positive
203.114@13.469	up	1.40	0.002	0.018	positive
742.247@1.458	up	2.34	0.002	0.018	positive
84.021@13.470	up	1.36	0.002	0.018	positive
261.192@9.629	up	1.49	0.002	0.018	positive
241.270@8.482	down	9.41	0.002	0.018	positive
886.824@1.347	down	1.31	0.002	0.018	positive
369.296@1.310	down	1.97	0.002	0.018	positive
203.238@13.469	up	1.48	0.002	0.018	positive
241.213@1.375	down	1.33	0.002	0.018	positive
550.538@1.403	down	1.39	0.002	0.018	positive
371.174@8.148	up	2.81	0.002	0.018	positive
592.920@1.348	down	1.44	0.002	0.018	positive
118.064@5.030	up	2.10	0.002	0.018	positive
677.407@1.334	up	1.94	0.002	0.018	positive
835.103@1.346	down	1.26	0.002	0.018	positive
684.237@1.451	up	2.80	0.002	0.018	positive
609.848@13.474	up	1.53	0.002	0.018	positive
295.251@1.347	down	1.22	0.003	0.023	positive
311.245@1.402	down	1.15	0.003	0.023	positive

200.046@5.028	up	2.27	0.003	0.023	positive
250.219@1.350	down	1.18	0.003	0.023	positive
243.186@9.691	up	1.16	0.003	0.023	positive
312.274@8.872	down	1.26	0.003	0.023	positive
575.489@1.357	up	1.22	0.003	0.023	positive
889.205@1.346	down	1.27	0.003	0.023	positive
637.414@1.375	up	3.05	0.003	0.023	positive
82.044@1.285	up	2.03	0.003	0.023	positive
144.043@13.472	up	1.39	0.003	0.023	positive
335.222@1.371	down	1.55	0.003	0.023	positive
731.430@1.422	up	1.87	0.003	0.023	positive
665.662@1.360	up	2.73	0.003	0.023	positive
557.309@8.349	up	2.01	0.003	0.023	positive
627.415@1.363	up	3.49	0.003	0.023	positive
422.163@1.266	up	3.31	0.001	0.026	negative
424.161@1.266	up	3.50	0.001	0.026	negative
446.206@1.268	up	4.12	0.001	0.026	negative
450.158@1.415	up	2.73	0.001	0.026	negative
424.336@1.266	up	4.79	0.001	0.026	negative
449.181@1.261	up	3.06	0.001	0.026	negative
446.206@1.262	up	4.46	0.001	0.026	negative
422.783@1.268	up	7.22	0.001	0.026	negative
422.730@1.268	up	5.75	0.001	0.026	negative
642.183@1.464	up	4.91	0.001	0.026	negative
450.338@1.416	up	3.42	0.001	0.026	negative
286.119@4.311	up	4.02	0.001	0.026	negative
416.028@10.351	up	3.24	0.001	0.026	negative
374.073@10.325	up	3.76	0.001	0.026	negative
356.174@1.269	up	4.59	0.001	0.026	negative
424.780@1.260	up	6.11	0.001	0.026	negative
434.038@10.351	up	3.60	0.001	0.026	negative
850.822@1.268	up	7.68	0.001	0.026	negative
235.997@2.353	up	4.04	0.001	0.026	negative
426.167@1.265	up	3.61	0.001	0.026	negative
468.169@4.330	up	1.90	0.001	0.026	negative
450.410@1.416	up	4.53	0.001	0.026	negative
386.186@1.269	up	4.89	0.001	0.026	negative
432.198@1.265	up	11.42	0.001	0.026	negative
500.174@1.273	up	4.45	0.001	0.026	negative
246.009@7.121	up	2.28	0.001	0.026	negative
479.888@10.357	up	3.39	0.001	0.026	negative

898.728@1.261	up	4.25	0.001	0.026	negative
460.091@4.301	up	14.40	0.001	0.026	negative
386.041@4.301	up	3.49	0.001	0.026	negative
478.073@5.044	up	6.00	0.001	0.026	negative
510.233@1.225	up	4.11	0.001	0.026	negative
210.004@3.861	down	3.46	0.001	0.026	negative
476.215@2.809	up	5.05	0.001	0.026	negative
305.992@3.872	down	2.58	0.001	0.026	negative
780.203@1.449	up	3.19	0.001	0.026	negative
466.138@7.514	up	4.02	0.001	0.026	negative
498.171@1.246	up	3.58	0.001	0.026	negative
478.069@5.049	up	4.88	0.001	0.026	negative
530.090@5.032	up	2.26	0.001	0.026	negative
795.160@1.430	up	3.44	0.001	0.026	negative
374.010@5.049	up	1.72	0.002	0.027	negative
110.998@2.919	down	1.53	0.002	0.027	negative
556.106@7.113	up	2.03	0.002	0.027	negative
403.089@2.912	down	1.56	0.002	0.027	negative
191.917@7.124	up	1.93	0.002	0.027	negative
318.104@6.006	up	2.95	0.002	0.027	negative
445.102@1.444	down	5.15	0.002	0.027	negative
614.181@1.414	up	2.28	0.002	0.027	negative
610.197@6.008	up	7.49	0.002	0.027	negative
58.042@7.453	up	1.31	0.002	0.027	negative
596.221@1.432	up	3.11	0.002	0.027	negative
492.135@5.042	up	1.93	0.002	0.027	negative
614.182@1.414	up	2.29	0.002	0.027	negative
388.099@5.039	up	1.78	0.002	0.027	negative
382.075@7.279	up	2.50	0.002	0.027	negative
514.127@4.986	up	2.70	0.002	0.027	negative
451.990@5.046	up	1.96	0.002	0.027	negative
524.092@1.410	up	1.92	0.002	0.027	negative
184.050@4.293	up	2.75	0.002	0.027	negative
258.131@1.961	up	1.95	0.002	0.027	negative
200.044@5.046	up	1.99	0.003	0.030	negative
492.135@5.046	up	1.95	0.003	0.030	negative
742.247@1.458	up	1.88	0.003	0.030	negative
88.015@2.780	up	2.43	0.003	0.030	negative
191.916@5.047	up	1.96	0.003	0.030	negative
413.833@17.826	up	1.05	0.003	0.030	negative
334.046@10.373	up	3.07	0.003	0.030	negative

112.015@1.554	up	2.45	0.003	0.030	negative
200.168@5.048	up	1.99	0.003	0.030	negative
106.026@3.856	down	2.55	0.003	0.030	negative
386.068@2.750	up	19.03	0.003	0.030	negative
304.018@5.064	up	1.79	0.003	0.030	negative
594.088@4.925	up	1.69	0.003	0.030	negative
218.013@2.383	up	2.12	0.003	0.030	negative
431.105@5.042	up	1.77	0.003	0.030	negative
419.973@7.156	up	1.77	0.003	0.030	negative
629.473@1.341	down	1.39	0.003	0.030	negative
278.035@5.046	up	2.70	0.003	0.030	negative
315.277@1.439	down	1.10	0.004	0.031	positive
431.232@1.255	down	1.72	0.004	0.031	positive
414.204@1.258	down	1.78	0.004	0.031	positive
556.448@1.344	down	1.18	0.004	0.031	positive
574.604@9.700	up	1.73	0.004	0.031	positive
774.844@1.278	up	2.39	0.004	0.031	positive
265.227@1.385	down	1.45	0.004	0.031	positive
134.075@1.259	down	1.42	0.004	0.031	positive
307.198@9.729	up	1.50	0.004	0.031	positive
465.170@1.438	up	1.31	0.004	0.031	positive
216.110@10.420	down	1.39	0.004	0.031	positive
183.155@1.382	down	1.59	0.004	0.031	positive
462.476@1.131	down	1.16	0.004	0.031	positive
264.014@7.119	up	1.95	0.004	0.039	negative
514.093@1.270	up	2.38	0.004	0.039	negative
509.820@17.860	up	1.05	0.004	0.039	negative
333.238@1.351	down	1.21	0.004	0.039	negative
200.044@7.119	up	1.87	0.004	0.039	negative
341.995@7.123	up	1.81	0.004	0.039	negative
272.001@1.128	down	1.07	0.004	0.039	negative
500.121@5.060	up	1.64	0.004	0.039	negative
596.108@5.056	up	1.95	0.004	0.039	negative
376.008@5.046	up	1.68	0.004	0.039	negative
398.996@8.771	down	1.17	0.004	0.039	negative
582.407@1.339	down	1.36	0.005	0.041	positive
280.137@1.253	down	1.77	0.005	0.041	positive
488.113@1.435	up	1.80	0.005	0.041	positive
532.242@9.096	up	1.07	0.005	0.041	positive
375.256@9.354	up	1.18	0.005	0.041	positive
231.143@11.714	up	1.26	0.005	0.041	positive

117.040@8.488	down	1.29	0.005	0.041	positive
90.047@1.263	down	2.69	0.005	0.041	positive
150.135@1.369	down	1.33	0.005	0.041	positive
700.137@1.418	up	1.67	0.005	0.041	positive
176.031@2.785	up	39.98	0.005	0.046	negative
684.009@1.538	up	62.14	0.005	0.046	negative
404.196@1.422	up	2.57	0.005	0.046	negative
100.015@1.534	up	1.80	0.005	0.046	negative
210.037@1.998	up	2.09	0.005	0.046	negative
275.956@2.798	up	21.38	0.005	0.046	negative
419.152@5.090	up	1.90	0.005	0.046	negative
726.066@1.393	up	6.12	0.005	0.046	negative
257.946@2.783	up	16.93	0.005	0.046	negative
271.986@2.887	down	1.59	0.005	0.046	negative
364.982@2.818	up	12.87	0.005	0.046	negative
586.201@1.249	up	2.15	0.005	0.046	negative
726.063@1.393	up	6.03	0.005	0.046	negative
337.993@4.729	down	1.50	0.005	0.046	negative
530.198@1.419	up	4.61	0.005	0.046	negative
642.203@6.955	up	1.91	0.005	0.046	negative
482.181@1.290	up	2.47	0.005	0.046	negative
630.182@1.478	up	3.10	0.005	0.046	negative
618.325@4.233	up	4.49	0.005	0.046	negative