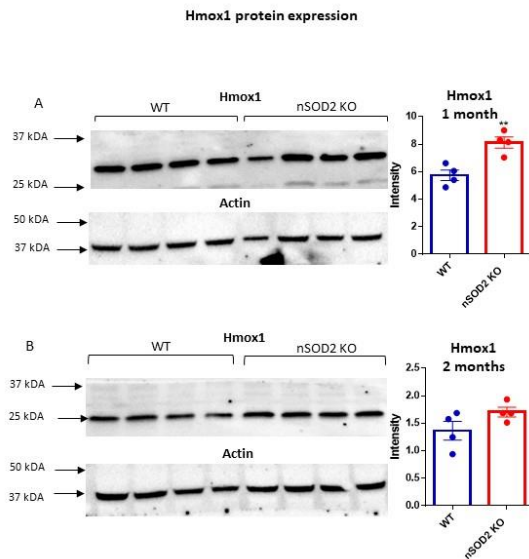


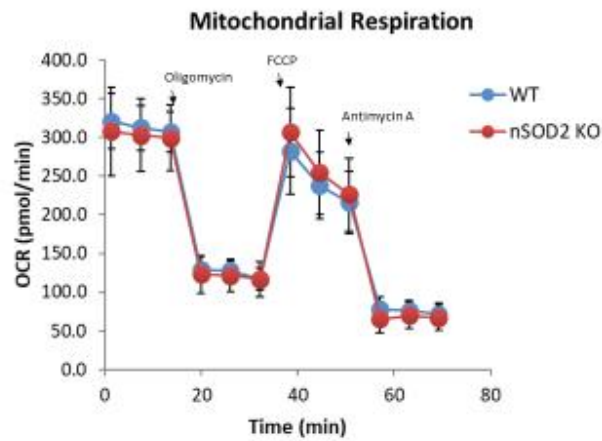
Supplemental Figure 1. IHC was performed on mixed cortical cultures derived from nSOD2 KO mice (a-d, i-l) and WT siblings (e-h,m-p)(pnd 3-5) and imaged at both 60 (a-h) and 20X (i-p). Cells were co-stained with NeuN (green), GFAP (blue) and SOD2 (red). Co-staining reveals overlap between NeuN and SOD2 in WT cultures (f,h,p) but is absent in nSOD2 KO cultures (b,d,l).

UniGene	GeneBank	Symbol	Description	UniGene	GeneBank	Symbol	Description
Min_10713	NM_009424	Abi	Abiura	Min_3688	NM_023823	Men	Menyoneinone
Min_17208	NM_020717	Abi3	Allylthiohydroxyethyl sulfonamide 2 (sponacid) homolog (Sponacid)	Min_42629	NM_023816	Menf	Menyoneinone-related factor 1
Min_37500	NM_009416	Abi1	Allylthiohydroxyethyl sulfonamide 1	Min_17022	NM_023817	Menp	Menyoneinone-related factor 2
Min_36171	NM_007402	Abc	Adenosine phosphoribosyl transferase	Min_4118	NM_008414	Meg	Megakaryin
Min_30130	NM_009494	Ame	Adenosine phosphoribosyl transferase	Min_29911	NM_023901	Menp2	Menyoneinone-related factor 2, isoform 1
Min_21240	NM_021984	Ala	Ala	Min_21682	NM_021993	Menr	Menyoneinone-related factor 1
Min_4215	NM_009506	Ala	Ala	Min_31748	NM_023940	Menr2	Menyoneinone-related factor 2
Min_28348	NM_023853	Ala5	Ala5	Min_31814	NM_023941	Menr3	Menyoneinone-related factor 3
Min_43417	NM_023852	Ala6	Ala6	Min_39211	NM_023986	Menr4	Menyoneinone-related factor 4
Min_29255	NM_007918	Alp	Aluminum phosphonate	Min_42121	NM_023987	Menr5	Menyoneinone-related factor 5
Min_31121	NM_007805	Cyto	Cytosine	Min_30249	NM_021024	Menr6	Menyoneinone-related factor 6
Min_34908	NM_000004	Cytb	Cytochrome b	Min_30250	NM_021025	Menr7	Menyoneinone-related factor 7
Min_41150	NM_021005	Dnm2	Dynamin 2	Min_30251	NM_021026	Menr8	Menyoneinone-related factor 8
Min_12830	NM_001092	Dnm1	Dynamin 1	Min_30252	NM_021027	Menr9	Menyoneinone-related factor 9
Min_43817	NM_023848	Edi2	Endonuclease domain 2	Min_481	NM_021150	Menr	Menyoneinone-related factor
Min_1215	NM_007946	Em	Endonuclease	Min_30253	NM_021028	Menr10	Menyoneinone-related factor 10
Min_34576	NM_007949	Fuv3	Endonuclease domain 3	Min_27434	NM_008020	Menr11	Menyoneinone-related factor 11
Min_181818	NM_001081201	Emc6	Endonuclease domain 6	Min_32744	NM_021151	Menr12	Menyoneinone-related factor 12
Min_15158	NM_007965	Fmsc	Fmsc	Min_498	NM_009025	Menr13	Menyoneinone-related factor 13
Min_40929	NM_008883	Fmsc2	Fmsc2	Min_18313	NM_008713	Menr14	Menyoneinone-related factor 14
Min_1776	NM_020239	H6.1	H6.1	Min_42122	NM_023988	Menr15	Menyoneinone-related factor 15
Min_48389	NM_021075	Glcn	Glucosyltransferase	Min_14420	NM_023989	Menr16	Menyoneinone-related factor 16
Min_29276	NM_008139	Gln3	Glutamine synthetase 3	Min_13356	NM_023990	Menr17	Menyoneinone-related factor 17
Min_1290	NM_008140	Gln1	Glutamine synthetase 1	Min_17125	NM_021114	Menr18	Menyoneinone-related factor 18
Min_44168	NM_020617	Gln2	Glutamine synthetase 2	Min_30616	NM_023991	Menr19	Menyoneinone-related factor 19
Min_30016	NM_008141	Gln4	Glutamine synthetase 4	Min_42627	NM_023992	Menr20	Menyoneinone-related factor 20
Min_30123	NM_008142	Gln5	Glutamine synthetase 5	Min_40889	NM_021115	Menr21	Menyoneinone-related factor 21
Min_30124	NM_008143	Gln6	Glutamine synthetase 6	Min_21810	NM_021030	Menr22	Menyoneinone-related factor 22
Min_30125	NM_008144	Gln7	Glutamine synthetase 7	Min_30050	NM_021031	Menr23	Menyoneinone-related factor 23
Min_30126	NM_008145	Gln8	Glutamine synthetase 8	Min_22923	NM_021116	Menr24	Menyoneinone-related factor 24
Min_30127	NM_008146	Gln9	Glutamine synthetase 9	Min_17118	NM_021031	Menr25	Menyoneinone-related factor 25
Min_30128	NM_008147	Gln10	Glutamine synthetase 10	Min_40890	NM_021117	Menr26	Menyoneinone-related factor 26
Min_30129	NM_008148	Gln11	Glutamine synthetase 11	Min_30051	NM_021032	Menr27	Menyoneinone-related factor 27
Min_30130	NM_008149	Gln12	Glutamine synthetase 12	Min_40891	NM_021118	Menr28	Menyoneinone-related factor 28
Min_30131	NM_008150	Gln13	Glutamine synthetase 13	Min_30052	NM_021033	Menr29	Menyoneinone-related factor 29
Min_30132	NM_008151	Gln14	Glutamine synthetase 14	Min_40892	NM_021119	Menr30	Menyoneinone-related factor 30
Min_30133	NM_008152	Gln15	Glutamine synthetase 15	Min_30053	NM_021034	Menr31	Menyoneinone-related factor 31
Min_30134	NM_008153	Gln16	Glutamine synthetase 16	Min_40893	NM_021120	Menr32	Menyoneinone-related factor 32
Min_30135	NM_008154	Gln17	Glutamine synthetase 17	Min_30054	NM_021035	Menr33	Menyoneinone-related factor 33
Min_30136	NM_008155	Gln18	Glutamine synthetase 18	Min_40894	NM_021121	Menr34	Menyoneinone-related factor 34
Min_30137	NM_008156	Gln19	Glutamine synthetase 19	Min_30055	NM_021036	Menr35	Menyoneinone-related factor 35
Min_30138	NM_008157	Gln20	Glutamine synthetase 20	Min_40895	NM_021122	Menr36	Menyoneinone-related factor 36
Min_30139	NM_008158	Gln21	Glutamine synthetase 21	Min_30056	NM_021037	Menr37	Menyoneinone-related factor 37
Min_30140	NM_008159	Gln22	Glutamine synthetase 22	Min_40896	NM_021123	Menr38	Menyoneinone-related factor 38
Min_30141	NM_008160	Gln23	Glutamine synthetase 23	Min_30057	NM_021038	Menr39	Menyoneinone-related factor 39
Min_30142	NM_008161	Gln24	Glutamine synthetase 24	Min_40897	NM_021124	Menr40	Menyoneinone-related factor 40
Min_30143	NM_008162	Gln25	Glutamine synthetase 25	Min_30058	NM_021039	Menr41	Menyoneinone-related factor 41
Min_30144	NM_008163	Gln26	Glutamine synthetase 26	Min_40898	NM_021125	Menr42	Menyoneinone-related factor 42
Min_30145	NM_008164	Gln27	Glutamine synthetase 27	Min_30059	NM_021040	Menr43	Menyoneinone-related factor 43
Min_30146	NM_008165	Gln28	Glutamine synthetase 28	Min_40899	NM_021126	Menr44	Menyoneinone-related factor 44
Min_30147	NM_008166	Gln29	Glutamine synthetase 29	Min_30060	NM_021041	Menr45	Menyoneinone-related factor 45
Min_30148	NM_008167	Gln30	Glutamine synthetase 30	Min_40900	NM_021127	Menr46	Menyoneinone-related factor 46
Min_30149	NM_008168	Gln31	Glutamine synthetase 31	Min_30061	NM_021042	Menr47	Menyoneinone-related factor 47
Min_30150	NM_008169	Gln32	Glutamine synthetase 32	Min_40901	NM_021128	Menr48	Menyoneinone-related factor 48
Min_30151	NM_008170	Gln33	Glutamine synthetase 33	Min_30062	NM_021043	Menr49	Menyoneinone-related factor 49
Min_30152	NM_008171	Gln34	Glutamine synthetase 34	Min_40902	NM_021129	Menr50	Menyoneinone-related factor 50
Min_30153	NM_008172	Gln35	Glutamine synthetase 35	Min_30063	NM_021044	Menr51	Menyoneinone-related factor 51
Min_30154	NM_008173	Gln36	Glutamine synthetase 36	Min_40903	NM_021130	Menr52	Menyoneinone-related factor 52
Min_30155	NM_008174	Gln37	Glutamine synthetase 37	Min_30064	NM_021045	Menr53	Menyoneinone-related factor 53
Min_30156	NM_008175	Gln38	Glutamine synthetase 38	Min_40904	NM_021131	Menr54	Menyoneinone-related factor 54
Min_30157	NM_008176	Gln39	Glutamine synthetase 39	Min_30065	NM_021046	Menr55	Menyoneinone-related factor 55
Min_30158	NM_008177	Gln40	Glutamine synthetase 40	Min_40905	NM_021132	Menr56	Menyoneinone-related factor 56
Min_30159	NM_008178	Gln41	Glutamine synthetase 41	Min_30066	NM_021047	Menr57	Menyoneinone-related factor 57
Min_30160	NM_008179	Gln42	Glutamine synthetase 42	Min_40906	NM_021133	Menr58	Menyoneinone-related factor 58
Min_30161	NM_008180	Gln43	Glutamine synthetase 43	Min_30067	NM_021048	Menr59	Menyoneinone-related factor 59
Min_30162	NM_008181	Gln44	Glutamine synthetase 44	Min_40907	NM_021134	Menr60	Menyoneinone-related factor 60
Min_30163	NM_008182	Gln45	Glutamine synthetase 45	Min_30068	NM_021049	Menr61	Menyoneinone-related factor 61
Min_30164	NM_008183	Gln46	Glutamine synthetase 46	Min_40908	NM_021135	Menr62	Menyoneinone-related factor 62
Min_30165	NM_008184	Gln47	Glutamine synthetase 47	Min_30069	NM_021050	Menr63	Menyoneinone-related factor 63
Min_30166	NM_008185	Gln48	Glutamine synthetase 48	Min_40909	NM_021136	Menr64	Menyoneinone-related factor 64
Min_30167	NM_008186	Gln49	Glutamine synthetase 49	Min_30070	NM_021051	Menr65	Menyoneinone-related factor 65
Min_30168	NM_008187	Gln50	Glutamine synthetase 50	Min_40910	NM_021137	Menr66	Menyoneinone-related factor 66
Min_30169	NM_008188	Gln51	Glutamine synthetase 51	Min_30071	NM_021052	Menr67	Menyoneinone-related factor 67
Min_30170	NM_008189	Gln52	Glutamine synthetase 52	Min_40911	NM_021138	Menr68	Menyoneinone-related factor 68
Min_30171	NM_008190	Gln53	Glutamine synthetase 53	Min_30072	NM_021053	Menr69	Menyoneinone-related factor 69
Min_30172	NM_008191	Gln54	Glutamine synthetase 54	Min_40912	NM_021139	Menr70	Menyoneinone-related factor 70
Min_30173	NM_008192	Gln55	Glutamine synthetase 55	Min_30073	NM_021054	Menr71	Menyoneinone-related factor 71
Min_30174	NM_008193	Gln56	Glutamine synthetase 56	Min_40913	NM_021140	Menr72	Menyoneinone-related factor 72
Min_30175	NM_008194	Gln57	Glutamine synthetase 57	Min_30074	NM_021055	Menr73	Menyoneinone-related factor 73
Min_30176	NM_008195	Gln58	Glutamine synthetase 58	Min_40914	NM_021141	Menr74	Menyoneinone-related factor 74
Min_30177	NM_008196	Gln59	Glutamine synthetase 59	Min_30075	NM_021056	Menr75	Menyoneinone-related factor 75
Min_30178	NM_008197	Gln60	Glutamine synthetase 60	Min_40915	NM_021142	Menr76	Menyoneinone-related factor 76
Min_30179	NM_008198	Gln61	Glutamine synthetase 61	Min_30076	NM_021057	Menr77	Menyoneinone-related factor 77
Min_30180	NM_008199	Gln62	Glutamine synthetase 62	Min_40916	NM_021143	Menr78	Menyoneinone-related factor 78
Min_30181	NM_008200	Gln63	Glutamine synthetase 63	Min_30077	NM_021058	Menr79	Menyoneinone-related factor 79
Min_30182	NM_008201	Gln64	Glutamine synthetase 64	Min_40917	NM_021144	Menr80	Menyoneinone-related factor 80
Min_30183	NM_008202	Gln65	Glutamine synthetase 65	Min_30078	NM_021059	Menr81	Menyoneinone-related factor 81
Min_30184	NM_008203	Gln66	Glutamine synthetase 66	Min_40918	NM_021145	Menr82	Menyoneinone-related factor 82
Min_30185	NM_008204	Gln67	Glutamine synthetase 67	Min_30079	NM_021060	Menr83	Menyoneinone-related factor 83
Min_30186	NM_008205	Gln68	Glutamine synthetase 68	Min_40919	NM_021146	Menr84	Menyoneinone-related factor 84
Min_30187	NM_008206	Gln69	Glutamine synthetase 69	Min_30080	NM_021061	Menr85	Menyoneinone-related factor 85
Min_30188	NM_008207	Gln70	Glutamine synthetase 70	Min_40920	NM_021147	Menr86	Menyoneinone-related factor 86
Min_30189	NM_008208	Gln71	Glutamine synthetase 71	Min_30081	NM_021062	Menr87	Menyoneinone-related factor 87
Min_30190	NM_008209	Gln72	Glutamine synthetase 72	Min_40921	NM_021148	Menr88	Menyoneinone-related factor 88
Min_30191	NM_008210	Gln73	Glutamine synthetase 73	Min_30082	NM_021063	Menr89	Menyoneinone-related factor 89
Min_30192	NM_008211	Gln74	Glutamine synthetase 74	Min_40922	NM_021149	Menr90	Menyoneinone-related factor 90
Min_30193	NM_008212	Gln75	Glutamine synthetase 75	Min_30083	NM_021064	Menr91	Menyoneinone-related factor 91
Min_30194	NM_008213	Gln76	Glutamine synthetase 76	Min_40923	NM_021150	Menr92	Menyoneinone-related factor 92
Min_30195	NM_008214	Gln77	Glutamine synthetase 77	Min_30084	NM_021065	Menr93	Menyoneinone-related factor 93
Min_30196	NM_008215	Gln78	Glutamine synthetase 78	Min_40924	NM_021151	Menr94	Menyoneinone-related factor 94
Min_30197	NM_008216	Gln79	Glutamine synthetase 79	Min_30085	NM_021066	Menr95	Menyoneinone-related factor 95
Min_30198	NM_008217	Gln80	Glutamine synthetase 80	Min_40925	NM_021152	Menr96	Menyoneinone-related factor 96
Min_30199	NM_008218	Gln81	Glutamine synthetase 81	Min_30086	NM_021067	Menr97	Menyoneinone-related factor 97
Min_30200	NM_008219	Gln82	Glutamine synthetase 82	Min_40926	NM_021153	Menr98	Menyoneinone-related factor 98
Min_30201	NM_008220	Gln83	Glutamine synthetase 83	Min_30087	NM_021068	Menr99	Menyoneinone-related factor 99
Min_30202	NM_008221	Gln84	Glutamine synthetase 84	Min_40927	NM_021154	Menr100	Menyoneinone-related factor 100

Supplemental Table 1. Complete list of oxidative stress and antioxidant defense genes included in the RT2 Profiler PCR Array (Qiagen) .



Supplemental Figure 2. (A) Western blot of the Nrf2 target Hmox1 and actin in cortex of one month old mice shows a significant increase in protein expression (unpaired t test, $p=0.0052$, $n=4$). (B) Hmox1 protein in two month old mice and actin reveals a non-significant trend in protein expression (unpaired t test, $p=0.1236$, $n=4$).



Supplemental Figure 3. Neuronal SOD2 deficiency does not alter mitochondrial function as measured by XF Cell Mito stress test in primary cortical cells cultured from P3-5 nSOD2 KO and WT mice.

Gene Symbol	p-value(KO vs. WT)	Fold-Change(KO vs. WT)
Gfap	5.30E-17	4.4327
Lamp5	1.63E-14	-2.1896
Serpina3n	4.11E-14	5.01746
Vim	6.36E-14	3.32499
Rgs7bp	1.07E-13	-1.30012
Ccl3	1.39E-13	6.28238
Cd44	1.62E-13	3.60626
Gm3435	2.84E-13	3.0426
Pdp1	2.91E-13	-1.64141
Nol4	6.00E-13	-1.54064
Cast	8.03E-13	1.89546
Tnfrsf1a	8.51E-13	2.54838
Camkk2	1.04E-12	-1.89174
H2-L	1.86E-12	2.32009
Ifitm3	2.24E-12	3.14884
Fkbp7	2.25E-12	2.21788
Ucp2	3.63E-12	2.57857
Dcn	4.46E-12	3.18553
Arpp19	5.45E-12	-1.90534

Supplemental Table 2: Gene expression analysis in cortical tissue of 2 month old nSOD2 mice.

The top 20 of 3,807 differentially expressed genes in nSOD2 mice.