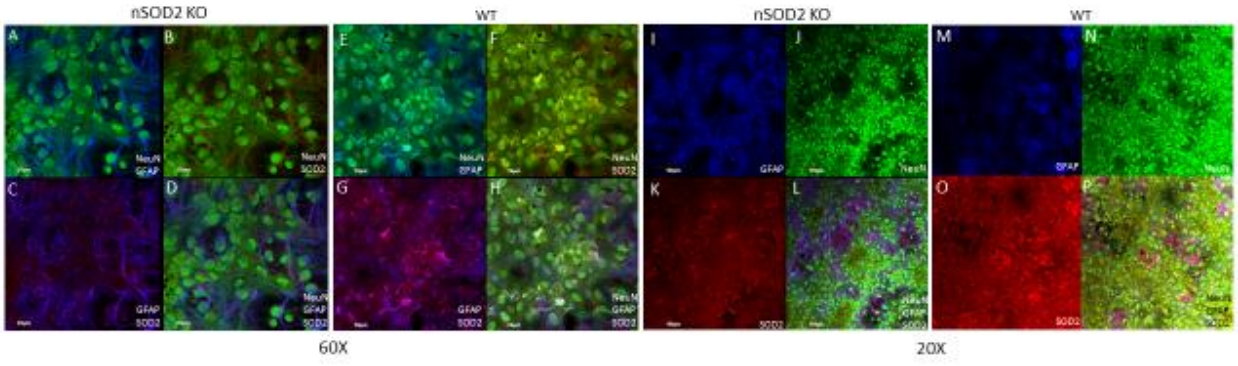
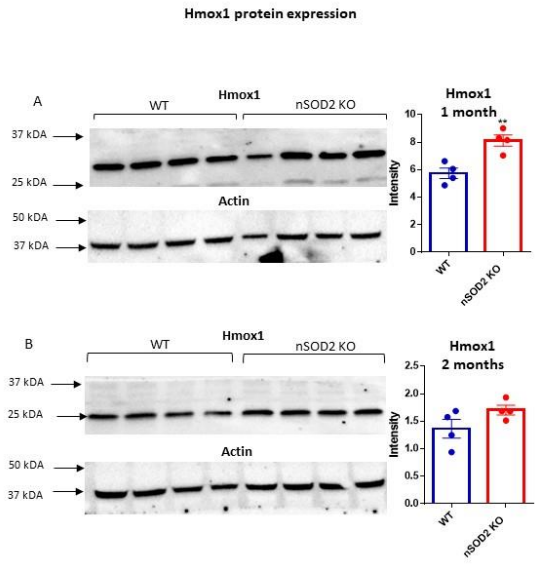


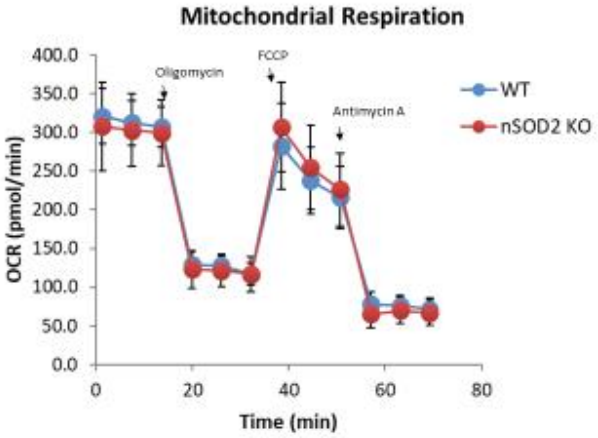
Supplemental Figure 1. IHC was performed on mixed cortical cultures derived from nSOD2 KO mice (a-d, i-l) and WT siblings (e-h,m-p)(pnd 3-5) and imaged at both 60 (a-h) and 20X (i-p). Cells were co-stained with NeuN (green), GFAP (blue) and SOD2 (red). Co-staining reveals overlap between NeuN and SOD2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

UniGene	GenBank	Symbol	Description
Mm.16773	NM_009654	Alb	Albumin
Mm.272078	NM_028717	Als2	Amyotrophic lateral sclerosis 2 (juvenile) homolog (human)
Mm.26787	NM_009676	Aox1	Aldehyde oxidase 1
Mm.384171	NM_007462	Apc	Adenomatosis polyposis coli
Mm.305152	NM_009696	Apoe	Apolipoprotein E
Mm.212460	NM_019864	Atr	Ataxia telangiectasia and rad3 related
Mm.4215	NM_009804	Cat	Catalase
Mm.284248	NM_013653	Ccl5	Chemokine (C-C motif) ligand 5
Mm.424811	NM_016892	Ccs	Copper chaperone for superoxide dismutase
Mm.236553	NM_007798	Ctsb	Cathepsin B
Mm.271671	NM_007806	Cyba	Cytochrome b-245, alpha polypeptide
Mm.34996	NM_030206	Cygb	Cytoglobin
Mm.433357	NM_001039520	Dnm2	Dynamin 2
Mm.108580	NM_001099297	Duox1	Dual oxidase 1
Mm.438817	NM_153068	Ehd2	EH-domain containing 2
Mm.1215	NM_007946	Epx	Eosinophil peroxidase
Mm.35916	NM_007949	Ercc2	Excision repair cross-complementing rodent repair deficiency, complementation group 2
Mm.318818	NM_001081221	Ercc6	Excision repair cross-complementing rodent repair deficiency, complementation group 6
Mm.126106	NM_007985	Fancc	Fanconi anemia, complementation group C
Mm.10939	NM_018881	Fmo2	Flavin containing monooxygenase 2
Mm.1776	NM_010239	Fth1	Ferritin heavy chain 1
Mm.485289	NM_010295	Gclc	Glutamate-cysteine ligase, catalytic subunit
Mm.292676	NM_008129	Gclm	Glutamate-cysteine ligase, modifier subunit
Mm.1090	NM_008160	Gpx1	Glutathione peroxidase 1
Mm.441856	NM_030677	Gpx2	Glutathione peroxidase 2
Mm.200916	NM_008161	Gpx3	Glutathione peroxidase 3
Mm.319573	NM_008162	Gpx4	Glutathione peroxidase 4
Mm.1332	NM_010343	Gpx5	Glutathione peroxidase 5
Mm.46195	NM_145451	Gpx6	Glutathione peroxidase 6
Mm.30144	NM_024198	Gpx7	Glutathione peroxidase 7
Mm.282573	NM_010344	Gsr	Glutathione reductase
Mm.252316	NM_008180	Gss	Glutathione synthetase
Mm.267014	NM_029555	Gstk1	Glutathione S-transferase kappa 1
Mm.299292	NM_013541	Gstp1	Glutathione S-transferase, pi 1
Mm.276389	NM_010442	Hmox1	Heme oxygenase (decycling) 1
Mm.6388	NM_010479	Hspa1a	Heat shock protein 1A
Mm.9925	NM_010497	Idh1	Isocitrate dehydrogenase 1 (NADP+), soluble
Mm.293023	NM_026298	Ift172	Intraflagellar transport 172 homolog (Chlamydomonas)
Mm.131480	NM_001009940	Il19	Interleukin 19
Mm.103585	NM_016971	Il22	Interleukin 22
Mm.183137	NM_008473	Krt1	Keratin 1
Mm.41236	NM_080420	Lpo	Lactoperoxidase
Mm.406074	NM_013593	Mb	Myoglobin
Mm.4668	NM_010824	Mpo	Myeloperoxidase
Mm.429296	NM_010876	Ncf1	Neutrophil cytosolic factor 1
Mm.276307	NM_010877	Ncf2	Neutrophil cytosolic factor 2
Mm.41095	NM_022414	Ngb	Neuroglobin
Mm.2893	NM_010927	Nos2	Nitric oxide synthase 2, inducible
Mm.233865	NM_172203	Nox1	NADPH oxidase 1
Mm.31748	NM_015760	Nox4	NADPH oxidase 4
Mm.218774	NM_172204	Noxa1	NADPH oxidase activator 1
Mm.390911	NM_027988	Noxo1	NADPH oxidase organizer 1
Mm.252	NM_008706	Nqo1	NAD(P)H dehydrogenase, quinone 1
Mm.277349	NM_020569	Park7	Parkinson disease (autosomal recessive, early onset) 7
Mm.30929	NM_011034	Prdx1	Peroxiredoxin 1
Mm.367009	NM_011563	Prdx2	Peroxiredoxin 2
Mm.29821	NM_007452	Prdx3	Peroxiredoxin 3
Mm.247542	NM_016764	Prdx4	Peroxiredoxin 4
Mm.279782	NM_012021	Prdx5	Peroxiredoxin 5
Mm.186185	NM_007453	Prdx6	Peroxiredoxin 6
Mm.4488	NM_011170	Prnp	Prion protein
Mm.8911	NM_011186	Psmb5	Proteasome (prosome, macropain) subunit, beta type 5
Mm.275434	NM_008969	Ptgs1	Prostaglandin-endoperoxide synthase 1
Mm.292547	NM_011198	Ptgs2	Prostaglandin-endoperoxide synthase 2
Mm.4988	NM_009020	Rag2	Recombination activating gene 2
Mm.18373	NM_058214	Recql4	RecQ protein-like 4
Mm.267277	NM_009127	Scd1	Stearoyl-Coenzyme A desaturase 1
Mm.314490	NM_173052	Serpinb1b	Serine (or cysteine) peptidase inhibitor, clade B, member 1b
Mm.159568	NM_134086	Slc38a1	Solute carrier family 38, member 1
Mm.276325	NM_011434	Sod1	Superoxide dismutase 1, soluble
Mm.290876	NM_013671	Sod2	Superoxide dismutase 2, mitochondrial
Mm.2407	NM_011435	Sod3	Superoxide dismutase 3, extracellular
Mm.40828	NM_011018	Sqstm1	Sequestosome 1
Mm.218629	NM_029688	Srxn1	Sulfiredoxin 1 homolog (S. cerevisiae)
Mm.4991	NM_009417	Tpo	Thyroid peroxidase
Mm.289618	NM_011660	Txn1	Thioredoxin 1
Mm.403189	NM_023719	Txnip	Thioredoxin interacting protein
Mm.210155	NM_015762	Txnrd1	Thioredoxin reductase 1
Mm.390906	NM_013711	Txnrd2	Thioredoxin reductase 2
Mm.229232	NM_153162	Txnrd3	Thioredoxin reductase 3
Mm.171378	NM_011671	Ucp2	Uncoupling protein 2 (mitochondrial, proton carrier)
Mm.4354	NM_009464	Ucp3	Uncoupling protein 3 (mitochondrial, proton carrier)
Mm.268000	NM_011701	Vim	Vimentin
Mm.247666	NM_011728	Xpa	Xeroderma pigmentosum, complementation group A
Mm.328431	NM_007393	Actb	Actin, beta
Mm.163	NM_009735	B2m	Beta-2 microglobulin
Mm.343110	NM_008084	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
Mm.3317	NM_010368	Gusb	Glucuronidase, beta
Mm.2180	NM_008302	Hsp90ab1	Heat shock protein 90 alpha (cytosolic), class B member 1
N/A	SA_00106	MGDC	Mouse Genomic DNA Contamination
N/A	SA_00104	RTC	Reverse Transcription Control
N/A	SA_00104	RTC	Reverse Transcription Control
N/A	SA_00104	RTC	Reverse Transcription Control
N/A	SA_00103	PPC	Positive PCR Control
N/A	SA_00103	PPC	Positive PCR Control
N/A	SA_00103	PPC	Positive PCR Control

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.