

Supplemental Figure legends.

Supplementary Figure 1

EGFP immunostaining (presented as % area) of each cohort was quantified by averaging the positive pixel count output (Aperio) from three slides spaced 25 mm apart, each containing two consecutive sections. The dotted line represents the background staining levels stained at the same time. 1-way Anova with Dunnett's test for multiple comparison. N=3 mice/cohort; ****p<0.0001; ***p<0.001; *p<0.05

Supplemental Figure 2. Cellular tropism in the spinal cord following ICM delivery of rAAVs in neonatal mice. Representative tricolor merged fluorescent photomicrograph from 3-week-old mice spinal cord sections were generated following co-labeling with anti EGFP antibody (488nm - green), DAPI (350nm - blue) and cell type specific marker antibodies (568nm - red) for neurons (NeuN), motor neurons (ChAT) and astrocytes (GFAP). Magnification, 400x.

Supplemental Figure 3. Cellular tropism in the spinal cord following IM delivery of rAAVs in neonatal mice. Representative tricolor merged fluorescent photomicrograph from 3-week-old mice spinal cord sections were generated following co-labeling with anti EGFP antibody (488nm - green), DAPI (350nm - blue) and cell type specific marker antibodies (568nm - red) for neurons (NeuN), motor neurons (ChAT) and astrocytes (GFAP). Magnification, 400x.

Supplemental Figure 4. EGFP expression in mice brains injected IS with rAAV-EGFP on neonatal day P0. Representative sections from 3 week old mice show EGFP staining in different areas of the brain. Olf, olfactory bulb, hip, hippocampus, thal, thalamus, cereb, cerebellum, brainst, brain stem. For cortical distribution, please see Figure 4. Scale bar, top panel, 2mm; others, 500µm. n=3-4/group.

Supplemental Figure 5. EGFP expression in mice brains injected ICM with rAAV-EGFP on neonatal day P0. Representative sections from 3 week old mice show EGFP staining in different areas of the brain. Olf, olfactory bulb, hip, hippocampus, thal, thalamus, cereb, cerebellum, brainst, brain stem. For cortical distribution, please see Figure 4. Scale bar, top panel, 2mm; others, 500 μ m. n=3-4/group.

Supplemental Figure 6. EGFP expression in in mice brains injected with rAAV-EGFP in gastrocnemius muscle on neonatal day P0. Representative sections from 3 week old mice show EGFP staining in different areas of the brain. No expression was observed in any brain structure following IM injection of rAAV2/1 or 2/5 (data not shown), whereas 2/8 and 2/9 widespread but weak EGFP immunostaining. Olf, olfactory bulb, hip, hippocampus, thal, thalamus, cereb, cerebellum, brainst, brain stem. For cortical distribution, please see Figure 4. Scale bar, top panel, 2mm; others, 500 μ m. n=3-4/group.

Supplemental Figure 7. EGFP expression in the DRG of mice injected with different rAAV serotypes via IM, ICM or IS routes on neonatal day P0. Representative DRGs from the lumbar spinal cord (IS and IM) or cervical spinal cord (ICM) are depicted following EGFP immunostaining. Scale bar, 120 μ m. n=3-4/group.

Supplemental Table 1. Overall tissue biodistribution properties of different rAAV serotypes delivered via IS, ICM or IM routes. The semiquantitative assessment was performed by two independent blinded observers. +/-, rare, ND, not done.

	rAAV1			rAAV5			rAAV8			rAAV9		
	IS	ICM	IM	IS	ICM	IM	IS	ICM	IM	IS	ICM	IM
Brain	+	++	-	++	+	-	++	+++	+	++	+++	+
Spinal Cord	+++	+	+/-	+	+	+/-	++	++	+	+++	++	+
Muscle	ND	ND	+++	ND	ND	+++	ND	ND	+++	ND	ND	+++

Supplemental Table 2. Quantitative nCounter expression profiling of inflammatory mediators from spinal cords of SOD1G93A and nontransgenic mice. A. Analysis of normalized data from Nanostring Inflammation GX array is presented from SOD1G93A mice injected with IL-10 (Tg+IL10), control SOD1G93A injected with EGFP or left uninjected (Tg+EGFP; Naïve Tg) and naïve nontransgenic mice (naïve NTg). B. Further analysis depicts genes that are increased or decreased following IL-10 expression, with p values generated from 2-tailed t test. C. The fold change data obtained in B was further analyzed using a false discovery rate of 0.1%, with a p value of <0.05.

Supplemental Table 2B

Genes that IL-10 treatment decreases in SOD1G93A mice

Description	Fold change IL0 TG vs Control TG	p value	Fold change Control TG vs Control NTG	p value
Ccl3	0.421126891	0.00596471	24.31828442	0.10301457
Cxcl10	1.160729455	0.91599879	13.08696432	0.0181666
C3ar1	1.274536578	0.00058935	12.55446257	0.15606918
Ccl4	0.581682489	0.11508226	12.55145249	0.18290165
Ccl11	0.21407287	0.52163025	12.17312448	0.61306914
Ccl2	1.715844833	0.19991044	11.00290135	0.17083969
Itgb2	0.947859434	0.74393547	10.59543247	0.14690729
Hspb1	0.823863478	0.17551381	9.545562092	0.22540143
C1qa	1.511316343	0.00727702	9.215329038	0.06234962
Maff	0.846127485	0.41972122	9.092521572	0.13136971
Tlr1	0.930900045	0.59492979	8.892851246	0.11165838
C1qb	1.269523177	0.06591179	8.249667529	0.0766675
C1r	1.526296688	0.03318592	6.613754957	0.04749811
Cfb	1.213633313	0.0384967	5.764882871	0.0898619
Tlr7	1.155851016	0.41470923	5.578082879	0.09198212
Tlr2	0.740954832	0.15222581	5.514430836	0.03689271
Il1b	0.719393879	0.98478855	5.011528822	0.25139401
Il1a	0.793043894	0.72669839	4.759231158	0.21475602
Gusb	0.887737082	0.41640576	4.638010255	0.06053595
C3	0.935802728	0.6041558	4.573895114	0.1190215
C1s	1.68734834	0.00869714	3.979353117	0.01954575
Ccr1	1.498988342	0.26894353	3.848350019	0.06047705
Tlr6	1.047041505	0.48779054	3.608932769	0.11161329
Tgfb1	0.845170627	0.22275996	3.59686583	0.05515361
C4a	1.643681181	0.01049309	3.442837394	0.10517196
Tlr4	1.225996136	0.00443972	3.318329107	0.02645733
Myc	0.975724425	0.96537266	3.282266157	0.03632734
Cxcr4	1.456248034	0.10316781	3.101468019	0.02317108
Il8rb	0.660234229	0.46440186	3.097279472	0.41931926
Ccl7	1.206685001	0.4249862	3.095612312	0.31639558
Cxcl1	1.106826292	0.34576055	2.957780048	0.0544806
Il1r1	0.882485181	0.94934957	2.883635425	0.05053341
Cebpb	1.259709414	0.11207092	2.808266682	0.01262807
Fos	1.162153209	0.72370784	2.760775074	0.27796064
Tgfb1	0.709774119	0.33730007	2.32838412	0.01759894
Cfl1	0.704897791	0.15807657	2.242769231	0.0565902
Il6ra	0.842685149	0.2834392	2.165718336	0.13630357
Mafk	1.059895923	0.86147395	2.116947545	0.14684997
Il1rn	0.703883495	0.25488226	1.880982368	0.00214349
Myl2	0.339570946	0.28902359	1.833867864	0.5065991

Genes that IL-10 treatment increases in SOD1G93A mice

Description	Fold change IL0 TG vs Control TG	p value	Fold change Control TG vs Control NTG	p value
Ccl8	19.40885209	0.02972633	5.864612512	0.75921918
Stat1	2.304784707	0.05713076	1.061142805	0.11673392
Cd40	2.476083539	0.0696555	0.791644444	0.83508739
Prkcb1	1.321595128	0.06836651	0.637298981	0.10979231
Rps6ka5	1.210672617	0.26169641	0.572258714	0.06060502
Elk1	1.12930946	0.11671736	0.540813495	0.1412591
Atf2	1.212553721	0.3308764	0.536494371	0.09178314
Mapk8	1.116309475	0.09336257	0.536215853	0.0219184
Creb1	1.408791556	0.10548281	0.531057612	0.18968553
Rapgef2	1.192078797	0.45578017	0.52187514	0.14531727
Map2k6	1.16698067	0.57766876	0.520311336	0.00286109
Hprt1	1.102180382	0.43403755	0.503276323	0.03942366
Limk1	1.134869445	0.14840331	0.433174686	0.06856671

Supplemental Table 2A

Gene	Treatment Groups											
	Tg+IL-10	Tg+IL-10	Tg+IL-10	Tg+IL-10	Tg+EGFP	Tg+EGFP	Tg+EGFP	Tg+EGFP	Naive Tg	Naive Tg	Naive NTg	Naive NTg
Atf2	1513.99	1501.75	1476.38	1624.68	1447.66	1287.55	1552.13	501.91	1248.51	1529.08	2350.07	2351.34
Bcl6	86.12	102.21	95.89	82.31	91.8	73.86	94.71	73.65	81.86	94.95	83.01	72.2
C1qa	8404.57	7055.68	8160.62	9020.49	6269.97	5621.9	5698.92	4650.86	5449.83	4705.47	516.78	655.07
C1qb	13075.19	8670.46	9813.91	11439.19	9460.13	8583.1	8952.76	7531.39	8757.64	7519.98	784.53	1268.28
C1r	204.13	119.9	164.5	156.31	95.33	193.05	81.18	90.02	80.99	93.16	15.2	16.74
C1s	179.68	145.46	153.76	91.3	89.15	157.8	66.14	49.1	78.41	66.29	25.72	16.74
C2	97.81	37.35	55.39	55.33	15.01	82.26	20.29	19.09	11.2	19.71	5.85	31.39
C3	2680.32	6221.27	5072.28	3574.44	3529.12	2271.26	5815.42	10308.26	3276.79	2927.37	806.74	1243.17
C3ar1	1113.17	786.26	935.76	873.55	832.41	861.16	626.11	632.84	867.66	544.63	57.29	58.6
C4a	9694.23	11036.11	10546.31	11432.97	6393.55	5895.53	6493.4	9320.81	5289.57	5583.33	1148.14	2625.51
C6	17.01	27.52	14.05	27.67	1.77	15.11	2.25	10.91	3.45	4.48	2.34	1.05
C7	6.38	5.9	5.79	6.92	7.94	15.11	9.02	2.73	6.89	2.69	4.68	7.33
C8a	7.44	4.91	5.79	3.46	0.88	3.36	6.01	8.18	4.31	1.79	5.85	3.14
C8b	7.44	7.86	9.92	11.07	12.36	15.11	6.76	16.37	12.06	5.37	12.86	13.6
C9	1.06	1.97	3.31	6.22	1.77	1.68	2.25	2.73	5.17	5.37	5.85	3.14
Ccl11	18.07	25.55	9.92	9.68	13.24	329.02	50.36	21.82	25.85	2.69	5.85	6.28
Ccl17	61.67	22.6	54.56	20.75	52.08	52.04	39.09	57.28	37.05	42.1	78.34	82.67
Ccl19	58.48	69.78	19.84	45.65	21.19	40.29	39.84	35.46	24.13	24.19	25.72	20.93
Ccl2	527.35	180.84	319.91	143.17	208.32	342.45	105.23	180.03	73.24	114.66	16.37	14.65
Ccl21b	82.93	90.42	30.59	87.15	52.96	124.22	93.95	160.94	41.36	146.91	65.47	80.58
Ccl22	24.45	11.79	19.84	6.22	18.54	25.18	19.54	5.46	16.37	13.44	23.38	29.3
Ccl24	11.7	6.88	4.13	4.84	12.36	4.89	6.01	13.64	8.62	15.23	17.54	12.56
Ccl3	136.09	112.04	106.64	98.91	277.17	288.73	211.96	286.42	319.67	232	11.69	10.46
Ccl4	79.74	46.19	37.2	34.58	82.09	60.43	61.63	133.66	112.01	60.02	9.35	4.19
Ccl5	335.97	168.06	259.57	258.68	50.32	73.86	46.6	87.29	36.19	53.75	12.86	15.7
Ccl7	37.21	25.55	34.72	16.6	22.07	35.25	15.03	32.73	22.4	14.33	5.85	9.42
Ccl8	944.12	599.52	670.41	224.09	7.06	109.11	24.05	30.01	15.51	2.69	2.34	8.37
Ccr1	24.45	14.74	52.08	12.45	22.95	31.89	8.27	10.91	17.23	12.54	5.85	3.14
Ccr2	19.14	15.73	23.15	12.45	7.06	31.89	9.02	2.73	12.92	8.96	3.51	5.23
Ccr3	4.25	4.91	4.96	5.53	2.65	1.68	4.51	2.73	6.89	1.79	3.51	4.19
Ccr4	6.38	12.78	9.09	8.99	4.41	6.71	6.76	13.64	4.31	10.75	9.35	7.33
Ccr7	1.06	7.86	2.48	1.38	2.65	3.36	5.26	2.73	1.72	4.48	4.68	4.19
Cd4	14.88	21.62	19.01	19.37	6.18	23.5	6.76	19.09	4.31	5.37	5.85	5.23
Cd40	58.48	36.36	83.49	42.19	21.19	30.22	17.29	16.37	18.96	29.56	37.41	18.84
Cd40lg	4.25	5.9	9.09	5.53	4.41	3.36	6.01	2.73	6.89	8.06	4.68	2.09
Cd55	77.61	102.21	73.57	66.4	74.15	97.36	90.95	90.02	72.38	51.95	149.66	128.71
Cdc42	8925.54	7899.93	8361.5	8023.83	8219.9	8188.61	8020.72	7337.71	7363.52	8249.13	8680.07	8544.16
Cebpb	476.31	663.41	521.61	780.18	442.24	491.85	432.94	556.47	492.85	490.88	167.19	177.89
Cfb	110.57	107.13	100.85	115.51	93.57	77.22	84.94	106.38	98.23	76.14	16.37	14.65
Cfd	4.25	11.79	7.44	4.15	5.3	92.33	4.51	2.73	22.4	4.48	5.85	3.14
Cfl1	18.07	11.79	35.55	37.35	27.36	33.57	31.57	60.01	25.85	40.31	10.52	21.98
Cltc	9593.22	10563.38	10555.41	10420.39	9614.6	9625.56	10495.12	7984.2	8692.16	10319.25	16139.5	16261.63
Creb1	51.03	46.19	57.04	53.95	37.07	28.54	53.37	24.55	39.64	38.52	79.5	59.65
Crp	7.44	1.97	1.65	6.22	2.65	6.71	6.01	2.73	4.31	0.9	4.68	11.51
Csf1	1069.58	1079.14	1246.58	1057.53	1239.34	1039.1	1122.19	1257.5	967.61	1151.96	660.59	633.09
Csf2	7.44	5.9	4.13	5.53	7.94	13.43	6.01	5.46	5.17	2.69	4.68	4.19
Csf3	5.32	8.85	1.65	9.68	4.41	1.68	5.26	2.73	8.62	3.58	15.2	2.09
Cxcl1	25.52	12.78	18.19	7.61	23.83	18.47	18.79	8.18	7.75	9.85	3.51	6.28
Cxcl10	564.56	178.87	225.67	160.46	255.99	176.26	95.46	750.14	89.61	92.26	15.2	21.98
Cxcl2	4.25	2.95	1.65	2.07	7.94	3.36	2.25	2.73	4.31	4.48	8.18	4.19
Cxcl3	3.19	5.9	2.48	4.15	1.77	1.68	6.76	2.73	4.31	1.79	3.51	2.09
Cxcl5	5.32	6.88	18.19	6.92	3.53	36.93	8.27	10.91	6.03	8.06	18.71	4.19
Cxcl9	132.9	36.36	76.05	53.95	7.94	6.71	5.26	79.11	8.62	5.37	2.34	10.46
Cxcr4	383.81	234.89	424.07	284.27	232.16	310.56	165.36	240.04	214.55	204.24	73.66	73.25

Daxx	49.97	54.06	54.56	51.18	45.9	48.68	37.58	81.83	46.53	43.89	53.78	47.09
Ddit3	917.54	769.55	984.53	773.96	860.65	893.06	788.47	954.72	928.84	766.78	480.54	529.5
Elk1	36.15	34.4	38.85	37.35	35.31	36.93	30.82	35.46	23.26	33.14	47.94	72.2
Fasl	6.38	9.83	3.31	6.22	6.18	8.39	9.02	2.73	2.58	3.58	8.18	2.09
Fos	888.83	327.28	390.18	381.79	328.37	517.03	473.53	649.21	351.55	246.34	140.3	169.52
Fxyd2	25.52	25.55	27.28	14.52	43.25	55.4	34.58	32.73	24.13	34.04	45.6	19.88
Gapdh	11553.76	10666.57	10669.48	10751	10375.51	11111.19	10611.62	17337.74	11608.79	10537.82	15705.73	15767.71
Gnaq	887.77	983.81	1053.14	957.93	986	941.74	987.65	327.33	793.56	995.2	1279.09	1250.49
Gnas	5235.18	6040.43	5805.51	6837.65	6002.51	5870.35	6374.64	6303.89	6407.97	5910.28	9712.46	9094.58
Gnb1	3803.05	3995.17	3889.36	3963.84	3567.96	3931.47	3936.33	3248.78	3439.64	3915.4	5997.94	5642.39
Gngt1	1.06	0.98	2.48	3.46	0.88	1.68	1.5	2.73	2.58	2.69	8.18	1.05
Grb2	950.5	1118.45	1015.94	1145.37	980.7	1022.32	1036.51	597.38	954.69	1021.18	1443.95	1450.36
Gusb	873.95	913.04	1020.9	901.91	1230.51	1071	917.75	1001.09	1099.44	948.62	224.48	226.03
H2-Ea	3.19	2.95	4.96	5.53	3.53	5.04	5.26	2.73	0.86	2.69	1.17	1.05
H2-Eb1	398.7	148.41	226.5	207.49	44.14	87.29	31.57	245.5	52.56	41.21	19.88	26.16
Hc	10.63	8.85	9.09	9.68	10.59	10.07	12.78	8.18	11.2	2.69	14.03	11.51
Hdac4	162.67	193.62	163.68	217.87	144.77	162.83	178.14	319.15	189.56	165.72	246.7	201.96
Hmgn1	964.32	1008.38	945.68	997.36	936.57	1065.96	964.35	430.99	929.7	837.54	812.59	869.59
Hprt1	686.83	646.7	578.65	658.45	541.99	580.82	650.92	480.09	599.7	644.95	1169.19	1147.94
Hras1	11.7	9.83	10.75	11.76	11.48	11.75	13.53	27.28	10.34	15.23	21.05	19.88
Hspb1	4482.44	5961.8	4678.8	9074.44	6340.59	5830.06	6315.26	9058.94	5528.24	10983.02	809.08	729.37
Hspb2	30.83	33.42	60.34	31.82	21.19	92.33	53.37	8.18	37.05	23.29	38.58	23.02
Ifna1	6.38	12.78	7.44	6.22	5.3	11.75	9.02	21.82	6.03	12.54	9.35	10.46
Ifnb1	7.44	13.76	9.09	11.07	4.41	8.39	7.52	13.64	4.31	8.06	14.03	7.33
Ifng	3.19	4.91	3.31	8.99	0.88	1.68	4.51	13.64	7.75	4.48	7.02	5.23
Il10	1.06	1.97	0.83	2.07	1.77	5.04	4.51	5.46	3.45	0.9	2.34	4.19
Il10rb	507.14	482.57	567.08	451.65	481.08	444.85	405.13	240.04	417.03	382.49	211.62	166.38
Il11	7.44	3.93	5.79	6.22	7.06	10.07	6.01	2.73	6.89	0.9	8.18	8.37
Il12a	20.2	14.74	19.01	12.45	10.59	15.11	12.03	27.28	6.03	16.12	14.03	11.51
Il12b	7.44	3.93	0.83	2.77	6.18	3.36	7.52	8.18	3.45	1.79	5.85	4.19
Il13	18.07	19.66	11.57	17.29	10.59	13.43	8.27	19.09	16.37	14.33	23.38	18.84
Il15	7.44	13.76	14.05	15.22	13.24	18.47	15.03	24.55	15.51	23.29	24.55	18.84
Il18	475.25	444.24	453	544.33	454.6	397.85	484.05	422.81	393.77	447.88	512.11	624.72
Il18rap	9.57	9.83	8.27	13.83	7.94	16.79	9.02	13.64	6.89	6.27	8.18	11.51
Il1a	22.33	25.55	32.24	19.37	40.61	33.57	13.53	43.64	35.33	21.5	5.85	7.33
Il1b	19.14	5.9	13.23	9.68	23.83	28.54	12.78	13.64	7.75	13.44	3.51	3.14
Il1r1	208.39	250.62	178.55	151.47	271	270.27	216.47	248.23	154.23	180.95	71.32	83.71
Il1rap	951.56	1046.71	1014.29	803	963.93	956.85	847.85	327.33	836.65	875.17	857.02	1011.9
Il1rn	12.76	9.83	9.09	10.37	13.24	20.14	18.04	16.37	14.65	7.17	11.69	4.19
Il2	11.7	7.86	7.44	6.22	7.94	8.39	8.27	16.37	5.17	8.06	10.52	10.46
Il22	4.25	14.74	6.61	11.07	6.18	8.39	9.02	8.18	9.48	8.96	9.35	7.33
Il22ra2	2.13	3.93	2.48	2.77	1.77	3.36	0.75	2.73	2.58	2.69	4.68	4.19
Il23a	4.25	4.91	4.13	7.61	7.06	6.71	5.26	2.73	7.75	7.17	5.85	10.46
Il23r	12.76	7.86	12.4	7.61	6.18	10.07	12.03	16.37	12.92	4.48	16.37	13.6
Il3	2.13	5.9	0.83	1.38	1.77	5.04	3.01	2.73	4.31	1.79	3.51	2.09
Il4	2.13	2.95	9.09	4.84	2.65	1.68	4.51	2.73	4.31	8.06	8.18	3.14
Il5	7.44	0.98	5.79	4.15	3.53	5.04	7.52	8.18	1.72	0.9	7.02	4.19
Il6	4.25	5.9	16.53	15.22	11.48	15.11	9.77	5.46	8.62	9.85	12.86	8.37
Il6ra	141.41	169.05	149.62	174.99	200.38	203.12	213.47	152.76	165.43	195.28	92.37	81.62
Il7	22.33	26.54	19.84	29.05	16.77	38.61	27.81	8.18	21.54	24.19	31.57	30.35
Il8ra	3.19	8.85	7.44	11.76	9.71	16.79	7.52	19.09	6.89	8.06	5.85	7.33
Il8rb	12.76	15.73	10.75	10.37	7.06	43.65	15.03	19.09	19.82	8.06	5.85	6.28
Il9	5.32	5.9	4.13	6.22	6.18	5.04	3.01	8.18	10.34	8.06	3.51	12.56
Itgb2	291.32	306.64	303.38	353.43	406.05	417.99	331.47	158.21	403.24	268.73	26.89	35.58
Jun	691.08	738.1	739.85	690.27	731.78	825.91	616.34	316.42	591.08	628.83	411.55	452.06
Keap1	294.51	326.3	303.38	366.57	310.72	335.74	306.67	245.5	297.26	357.41	460.66	415.44
Kng1	3.19	3.93	6.61	4.84	3.53	1.68	6.01	16.37	3.45	1.79	4.68	5.23

Limk1	726.16	842.28	795.23	844.5	686.76	820.87	715.56	545.55	703.95	767.67	1696.49	1566.52
Lta	10.63	8.85	14.88	16.6	10.59	8.39	15.03	8.18	11.2	15.23	15.2	9.42
Ltb	27.64	31.45	21.49	16.6	7.06	11.75	10.52	30.01	8.62	12.54	4.68	6.28
Ly96	108.45	100.25	125.65	134.87	106.81	151.08	132.29	90.02	127.52	122.72	76	86.85
Maff	82.93	55.04	70.26	112.74	81.21	88.97	48.86	171.85	71.52	106.6	9.35	11.51
Mafg	120.14	159.22	138.88	139.02	173.9	119.19	142.81	196.4	150.79	137.05	204.61	192.54
Mafk	127.58	164.13	142.18	181.21	116.52	134.29	147.32	169.12	123.21	180.05	59.63	77.44
Map2k1	2584.63	2683.11	2595.66	2597.14	2621.68	2467.66	2616.45	1347.52	2321.24	2791.22	3270.22	3475.22
Map2k4	1182.27	1495.86	1339.16	1469.06	1040.73	1198.58	1377	791.05	1253.68	1276.47	2802.55	2623.42
Map2k6	90.37	106.14	84.32	132.11	84.74	68.83	99.97	81.83	87.02	108.39	159.01	181.03
Map3k1	182.87	232.93	232.29	224.79	180.08	169.55	174.38	272.78	168.88	174.67	159.01	170.57
Map3k5	221.14	242.76	200.05	270.43	233.92	209.84	224.74	259.14	203.35	233.8	295.81	338
Map3k7	1000.47	1042.77	958.08	1010.5	1058.38	966.92	1055.3	575.56	803.9	1123.29	1280.26	1285.02
Map3k9	10.63	20.64	13.23	22.82	16.77	20.14	19.54	38.19	14.65	25.98	23.38	24.07
Mapk1	453.98	437.36	439.77	489	439.6	369.31	460.75	259.14	354.13	446.09	496.91	481.36
Mapk14	418.9	458.98	461.27	421.21	402.52	409.6	456.24	283.69	442.88	463.11	460.66	515.89
Mapk3	2043.46	1981.37	1937.65	2012.01	2172.38	2286.36	2044.45	1606.66	2190.27	1781.68	2521.94	2468.54
Mapk8	617.72	642.77	619.16	587.9	532.28	567.39	623.86	466.45	549.72	575.98	1033.56	1027.6
Mapkapk2	599.64	529.74	591.05	545.02	541.99	542.21	438.96	351.88	494.58	497.15	360.11	365.21
Mapkapk5	532.66	668.32	596.84	640.47	548.17	611.04	547.94	600.11	554.89	628.83	743.6	786.92
Masp1	141.41	138.58	171.94	145.25	187.14	161.15	142.81	114.57	151.65	158.55	132.12	150.69
Masp2	1.06	27.52	20.67	35.27	22.07	11.75	29.31	46.37	16.37	14.33	37.41	30.35
Max	150.97	168.06	156.24	163.92	128.88	176.26	161.6	324.61	138.72	146.91	180.06	161.15
Mbl2	9.57	9.83	11.57	10.37	5.3	8.39	9.77	2.73	7.75	5.37	17.54	6.28
Mef2a	243.47	210.32	191.78	189.51	219.8	154.44	235.26	60.01	114.6	227.53	192.92	209.29
Mef2b	6.38	5.9	10.75	8.3	4.41	5.04	5.26	10.91	5.17	6.27	14.03	8.37
Mef2c	242.41	189.68	229.81	212.34	326.61	263.55	241.28	193.67	249.87	230.21	166.02	168.48
Mef2d	91.43	97.3	89.28	134.87	92.69	90.65	108.99	155.48	99.09	94.95	164.86	138.13
Mknk1	191.38	216.22	233.94	244.15	228.62	238.37	248.04	264.59	203.35	226.63	288.79	306.61
Myc	190.31	195.58	221.54	179.83	222.45	206.48	155.59	264.59	176.63	184.53	64.31	58.6
Myd88	130.77	135.63	141.36	137.64	99.75	115.83	105.98	92.74	124.08	105.7	74.83	68.02
Myl2	12.76	21.62	14.88	8.99	22.07	33.57	17.29	35.46	130.11	18.81	26.89	19.88
Nfatc3	158.42	155.29	159.54	163.23	144.77	122.54	154.84	130.93	145.62	157.66	201.1	220.8
Nfe2l2	1075.96	884.54	970.48	845.2	1157.25	990.42	1047.03	851.07	922.81	979.97	522.63	526.36
Nfkb1	320.02	335.14	333.96	367.96	361.03	340.77	381.08	400.98	306.74	357.41	308.67	298.23
Nos2	18.07	19.66	19.84	19.37	15.89	21.82	19.54	35.46	24.13	12.54	32.74	29.3
Nox1	3.19	0.98	3.31	1.38	4.41	3.36	3.76	2.73	2.58	1.79	4.68	4.19
Nr3c1	745.3	744	866.32	696.49	775.91	770.51	771.93	564.65	653.12	634.2	894.43	995.16
Pdgfra	741.05	826.55	782.83	835.51	878.31	862.84	809.51	935.63	694.48	872.48	889.75	757.62
Pgk1	2278.43	1706.18	1790.51	1978.81	1916.39	1962.38	1972.3	3074.2	2230.77	1861.41	2766.3	2654.81
Pik3c2g	2.13	3.93	6.61	7.61	4.41	1.68	6.01	5.46	6.03	7.17	10.52	7.33
Pla2g4a	112.7	70.76	101.68	67.78	69.74	80.58	80.43	95.47	55.14	71.66	90.03	88.95
Plcb1	755.93	751.86	648.09	951.71	737.96	631.18	837.32	651.94	566.09	653.02	1085.01	1212.82
Ppp1r12b	141.41	158.23	152.93	185.36	167.72	125.9	175.13	180.03	132.69	150.49	267.74	259.52
Prkca	730.42	858.99	772.08	880.47	813.87	642.93	889.19	327.33	522.15	844.71	858.19	949.12
Prkcb1	838.86	927.78	876.24	916.44	827.99	700.01	803.5	395.53	598.84	713.93	1068.64	1044.34
Ptk2	390.19	478.63	423.24	414.3	364.56	423.03	415.66	330.06	369.64	386.97	523.8	456.25
Rac1	4251.72	4614.35	4591.18	4400.27	4581.32	4515.65	4630.09	1470.27	4147.04	4521.84	5305.78	5126.49
Raf1	671.94	760.7	758.03	799.55	729.13	639.58	728.34	681.94	657.43	780.21	1082.67	1029.69
Rapgef2	670.88	870.78	839.04	952.4	692.05	688.26	847.1	368.25	669.49	928.91	1335.21	1343.63
Rhoa	2667.56	2497.35	2534.49	2526.6	2618.15	2603.63	2498.44	1524.83	2570.25	2420.37	2408.53	2403.67
Ripk1	102.07	98.28	103.33	105.13	109.46	100.72	87.94	62.74	79.27	87.79	71.32	76.39
Ripk2	69.11	75.68	73.57	62.94	76.8	58.75	61.63	81.83	50.84	81.51	79.5	75.34
Rock2	190.31	228.01	172.77	208.88	210.97	204.8	238.27	111.84	174.05	192.59	282.94	305.56
Rps6ka5	303.01	305.66	323.22	348.59	285.12	211.51	327.71	201.86	260.21	300.08	459.49	464.62
Shc1	158.42	178.87	173.6	169.45	193.32	250.12	143.56	286.42	135.28	152.28	144.98	165.34
Stat1	1268.39	666.35	998.58	830.67	395.46	496.89	366.8	654.67	243.84	292.02	382.33	387.18

Tgfb1	339.16	298.78	351.32	309.17	448.42	464.99	366.05	297.33	399.8	327.85	120.43	93.13
Tgfb2	296.63	363.64	319.08	294.64	362.8	307.2	318.69	343.7	322.25	386.08	223.32	211.38
Tgfb3	237.09	247.67	254.61	235.85	225.98	240.05	194.67	215.49	230.06	248.13	307.5	341.14
Tgfb1	718.72	562.17	573.69	614.18	1140.48	950.13	927.52	370.98	882.31	945.93	356.6	390.32
Tlr1	90.37	66.83	97.54	79.54	129.76	102.4	77.42	60.01	74.1	94.95	12.86	7.33
Tlr2	167.99	130.72	143.01	132.11	215.38	157.8	185.65	264.59	167.16	171.09	40.92	29.3
Tlr3	388.07	286	348.02	340.98	385.75	342.45	317.19	250.96	305.88	346.66	295.81	297.19
Tlr4	106.32	92.39	107.46	78.85	94.45	102.4	75.92	46.37	76.69	75.24	22.21	25.11
Tlr5	4.25	6.88	8.27	11.76	10.59	10.07	6.76	16.37	12.92	8.06	12.86	11.51
Tlr6	73.36	45.21	84.32	65.02	82.09	73.86	59.38	38.19	57.73	72.56	18.71	16.74
Tlr7	161.61	160.2	135.57	228.24	175.66	157.8	165.36	100.93	163.71	126.3	28.06	25.11
Tnf	24.45	23.59	21.49	21.44	15.01	11.75	9.77	5.46	22.4	10.75	4.68	3.14
Tnfsf14	8.51	5.9	10.75	12.45	0.88	8.39	3.76	2.73	1.72	1.79	4.68	1.05
Tollip	1118.48	1369.07	1243.27	1366.01	1189.91	1134.79	1283.05	1257.5	1031.38	1338.28	1592.44	1684.76
Tradd	47.84	49.14	47.95	52.57	49.43	48.68	38.33	43.64	56.01	46.58	76	53.37
Traf2	102.07	113.02	85.97	92.68	89.15	100.72	97.71	73.65	77.55	83.31	113.41	74.3
Tubb5	328.53	231.95	228.98	242.77	327.49	407.92	317.94	289.14	335.18	259.77	266.58	196.73

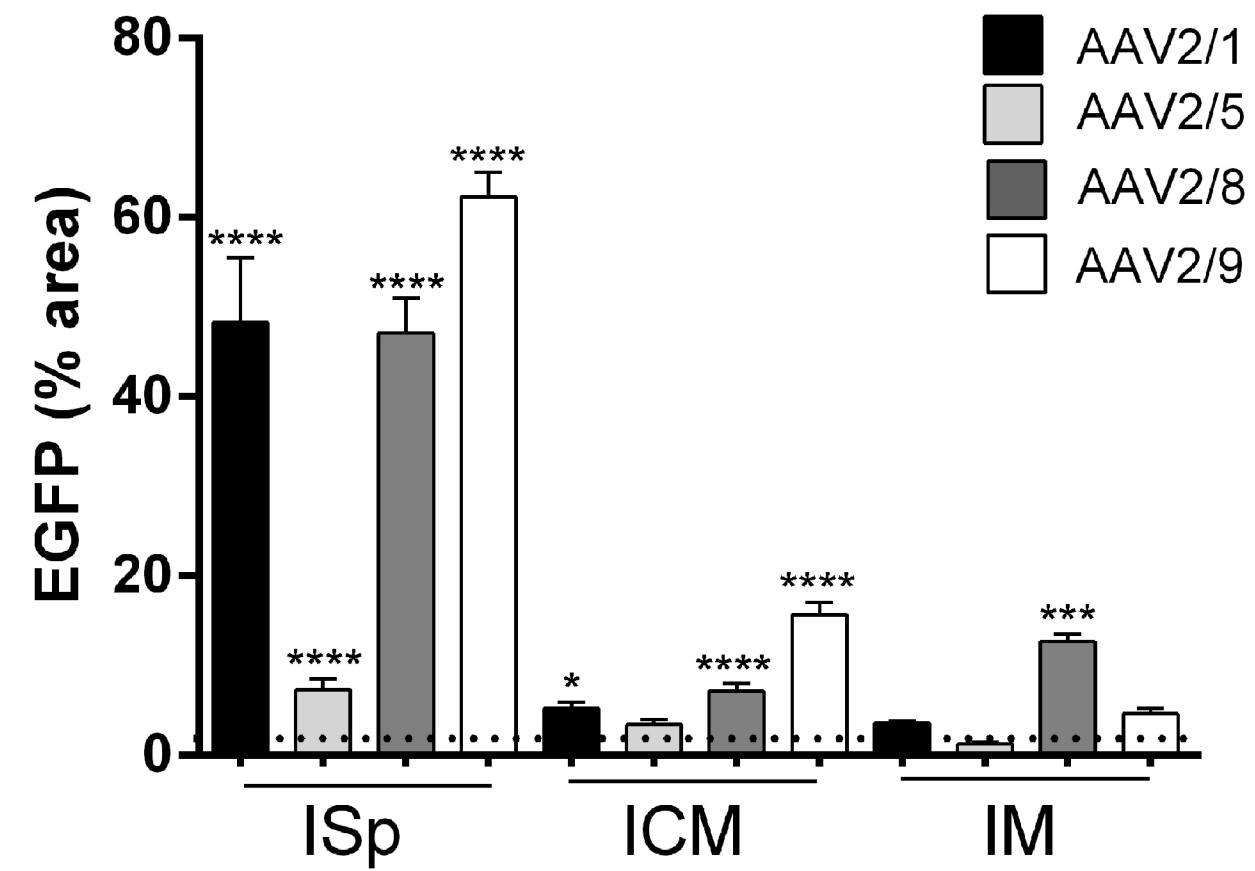
Supplemental Table 2B

Genes that IL-10 treatment decreases in SOD1G93A mice

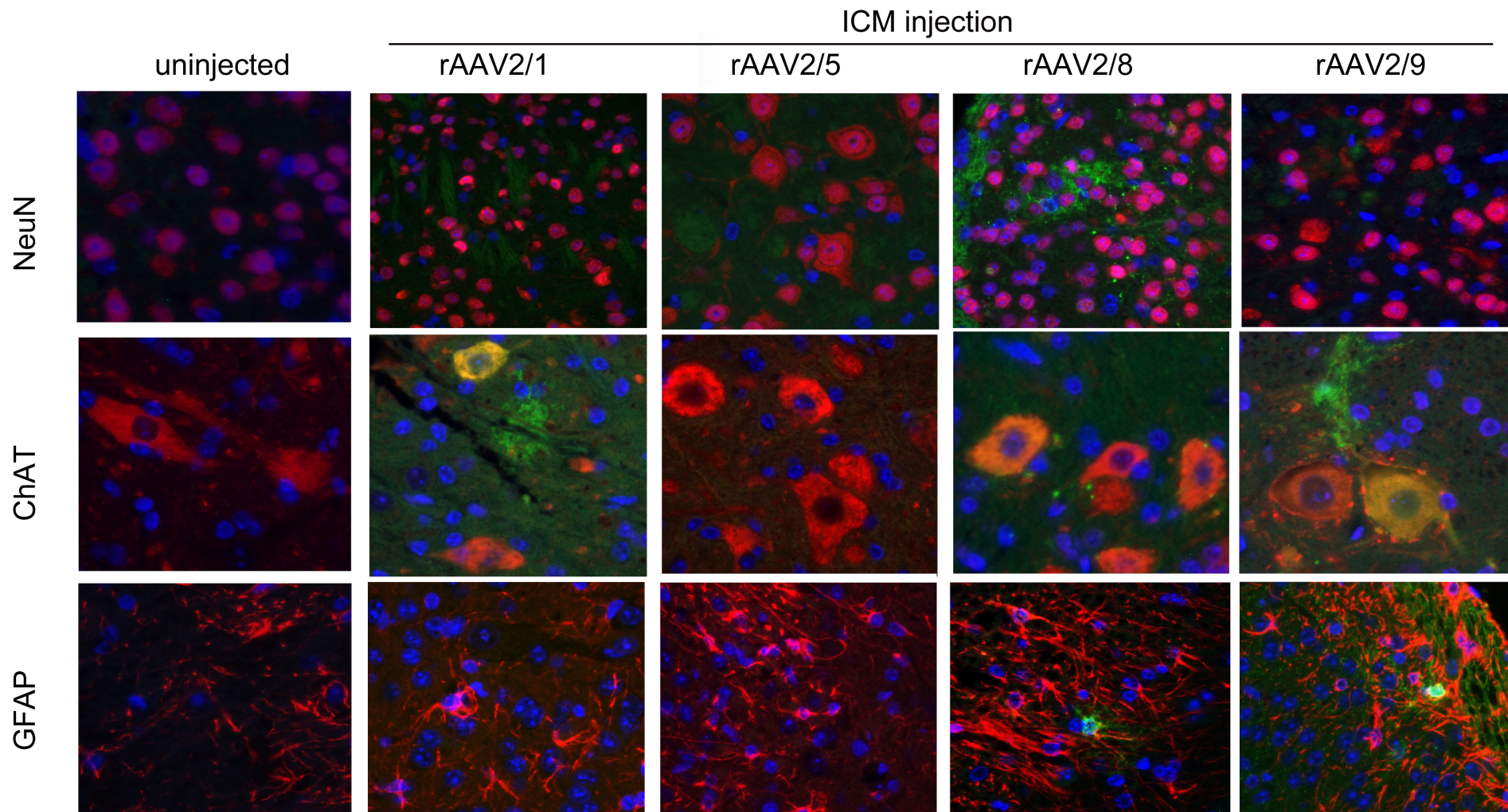
Description	Fold change IL0 TG vs Control TG	p value	Fold change Control TG vs Control NTG	p value
Ccl3	0.421126891	0.00596471	24.31828442	0.10301457
Cxcl10	1.160729455	0.91599879	13.08696432	0.0181666
C3ar1	1.274536578	0.00058935	12.55446257	0.15606918
Ccl4	0.581682489	0.11508226	12.55145249	0.18290165
Ccl11	0.21407287	0.52163025	12.17312448	0.61306914
Ccl2	1.715844833	0.19991044	11.00290135	0.17083969
Itgb2	0.947859434	0.74393547	10.59543247	0.14690729
Hspb1	0.823863478	0.17551381	9.545562092	0.22540143
C1qa	1.511316343	0.00727702	9.215329038	0.06234962
Maff	0.846127485	0.41972122	9.092521572	0.13136971
Tlr1	0.930900045	0.59492979	8.892851246	0.11165838
C1qb	1.269523177	0.06591179	8.249667529	0.0766675
C1r	1.526296688	0.03318592	6.613754957	0.04749811
Cfb	1.213633313	0.0384967	5.764882871	0.0898619
Tlr7	1.155851016	0.41470923	5.578082879	0.09198212
Tlr2	0.740954832	0.15222581	5.514430836	0.03689271
Il1b	0.719393879	0.98478855	5.011528822	0.25139401
Il1a	0.793043894	0.72669839	4.759231158	0.21475602
Gusb	0.887737082	0.41640576	4.638010255	0.06053595
C3	0.935802728	0.6041558	4.573895114	0.1190215
C1s	1.68734834	0.00869714	3.979353117	0.01954575
Ccr1	1.498988342	0.26894353	3.848350019	0.06047705
Tlr6	1.047041505	0.48779054	3.608932769	0.11161329
Tgfb1	0.845170627	0.22275996	3.59686583	0.05515361
C4a	1.643681181	0.01049309	3.442837394	0.10517196
Tlr4	1.225996136	0.00443972	3.318329107	0.02645733
Myc	0.975724425	0.96537266	3.282266157	0.03632734
Cxcr4	1.456248034	0.10316781	3.101468019	0.02317108
Il8rb	0.660234229	0.46440186	3.097279472	0.41931926
Ccl7	1.206685001	0.4249862	3.095612312	0.31639558
Cxcl1	1.106826292	0.34576055	2.957780048	0.0544806
Il1r1	0.882485181	0.94934957	2.883635425	0.05053341
Cebpb	1.259709414	0.11207092	2.808266682	0.01262807
Fos	1.162153209	0.72370784	2.760775074	0.27796064
Tgfb1	0.709774119	0.33730007	2.32838412	0.01759894
Cfl1	0.704897791	0.15807657	2.242769231	0.0565902
Il6ra	0.842685149	0.2834392	2.165718336	0.13630357
Mafk	1.059895923	0.86147395	2.116947545	0.14684997
Il1rn	0.703883495	0.25488226	1.880982368	0.00214349
Myl2	0.339570946	0.28902359	1.833867864	0.5065991

Genes that IL-10 treatment increases in SOD1G93A mice

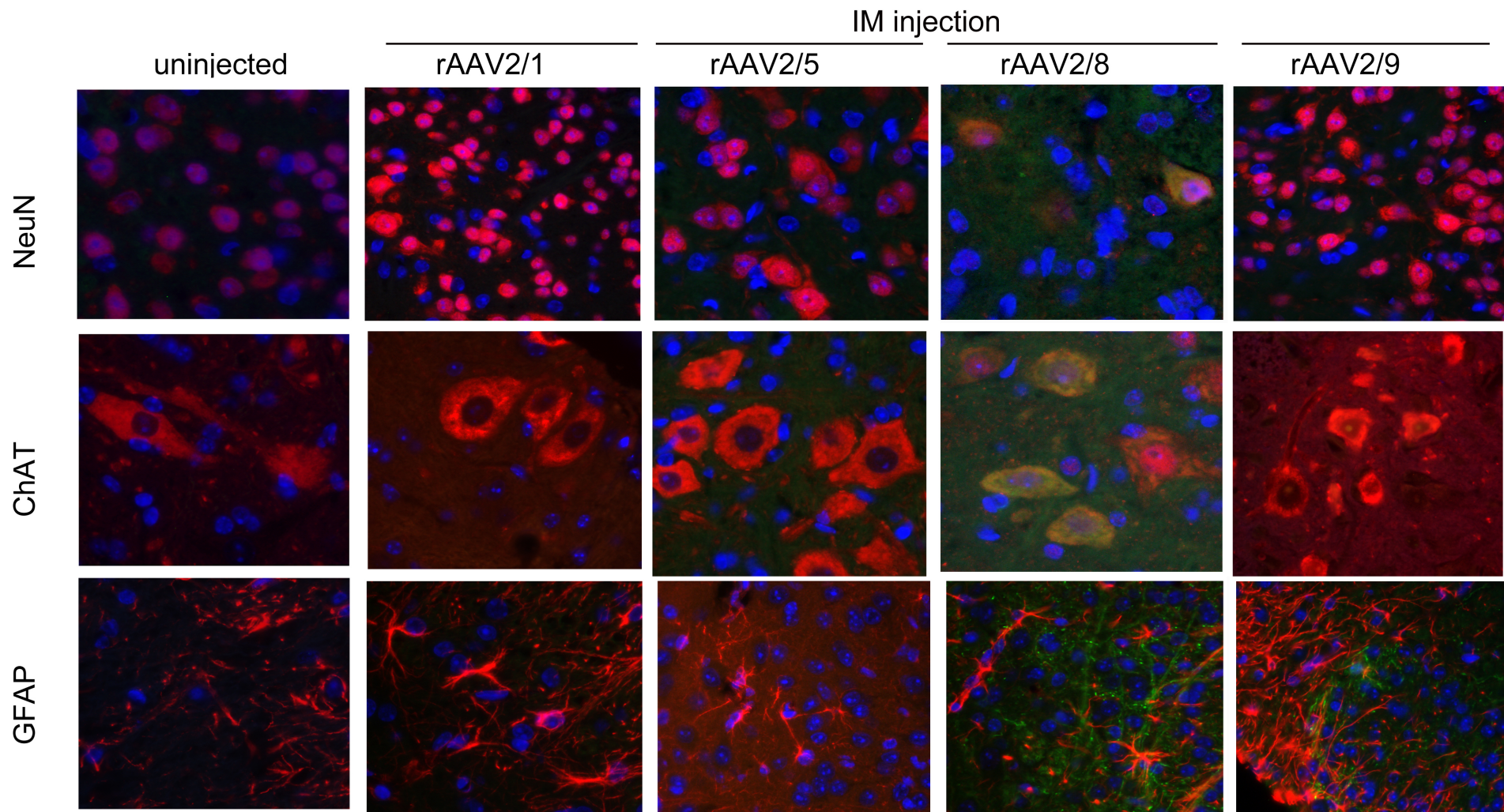
Description	Fold change IL0 TG vs Control TG	p value	Fold change Control TG vs Control NTG	p value
Ccl8	19.40885209	0.02972633	5.864612512	0.75921918
Stat1	2.304784707	0.05713076	1.061142805	0.11673392
Cd40	2.476083539	0.0696555	0.791644444	0.83508739
Prkcb1	1.321595128	0.06836651	0.637298981	0.10979231
Rps6ka5	1.210672617	0.26169641	0.572258714	0.06060502
Elk1	1.12930946	0.11671736	0.540813495	0.1412591
Atf2	1.212553721	0.3308764	0.536494371	0.09178314
Mapk8	1.116309475	0.09336257	0.536215853	0.0219184
Creb1	1.408791556	0.10548281	0.531057612	0.18968553
Rapgef2	1.192078797	0.45578017	0.52187514	0.14531727
Map2k6	1.16698067	0.57766876	0.520311336	0.00286109
Hprt1	1.102180382	0.43403755	0.503276323	0.03942366
Limk1	1.134869445	0.14840331	0.433174686	0.06856671



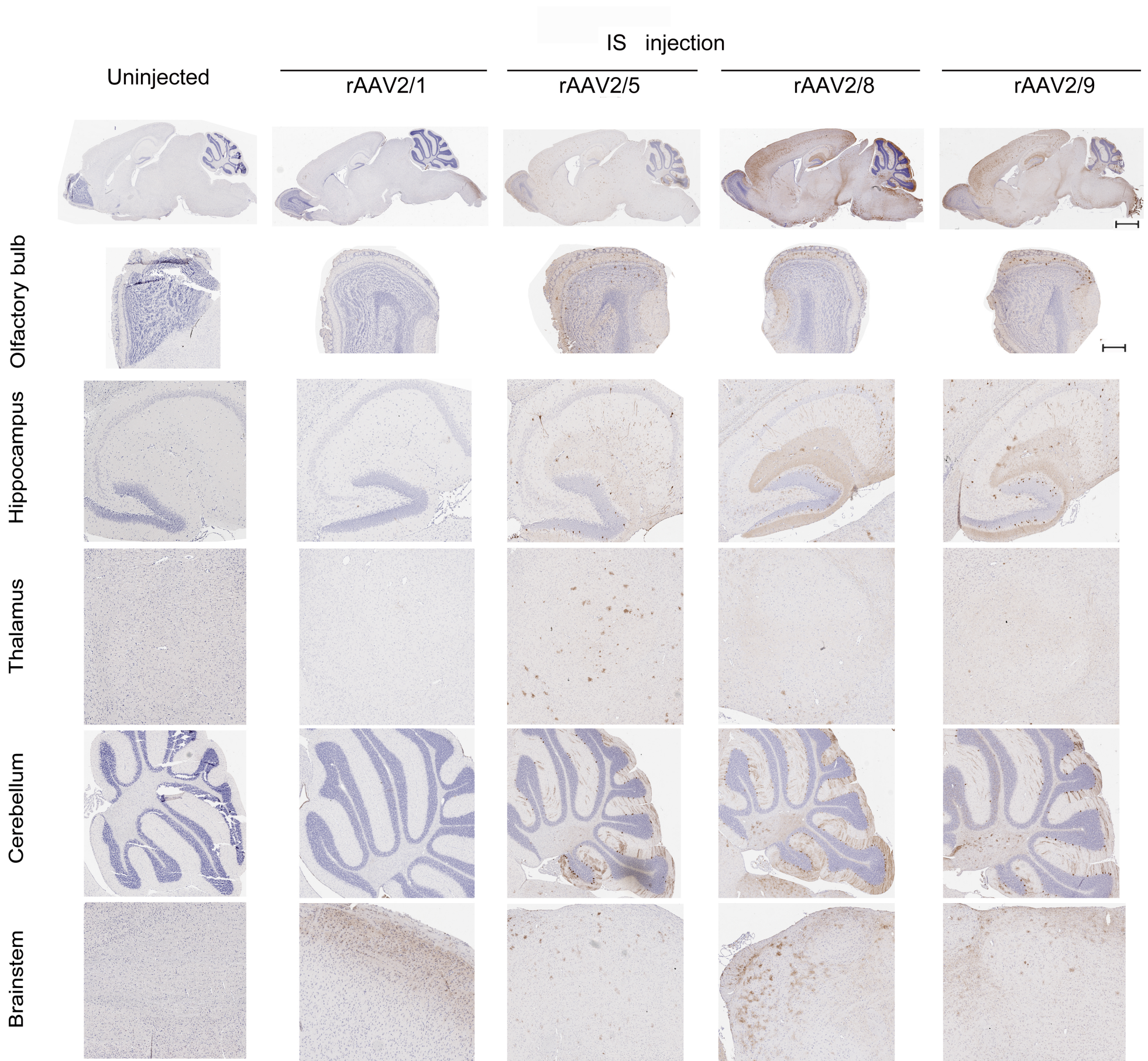
Supplemental Fig. 1 EGFP immunostaining (presented as % area) of each cohort was quantified by averaging the positive pixel count output (Aperio) from three slides spaced 25 mm apart, each containing two consecutive sections. The dotted line represents the background staining levels stained at the same time. 1-way Anova with Dunnett's test for multiple comparison. N=3 mice/cohort; ****p<0.0001; ***p<0.001; *p<0.05



Supplemental Figure 2. Cellular tropism in the spinal cord following ICM delivery of rAAVs in neonatal mice. Representative tricolor merged fluorescent photomicrograph from 3-week-old mice spinal cord sections were generated following co-labeling with anti EGFP antibody (488nm - green), DAPI (350nm - blue) and cell type specific marker antibodies (568nm - red) for neurons (NeuN), motor neurons (ChAT) and astrocytes (GFAP). Magnification, 400x.

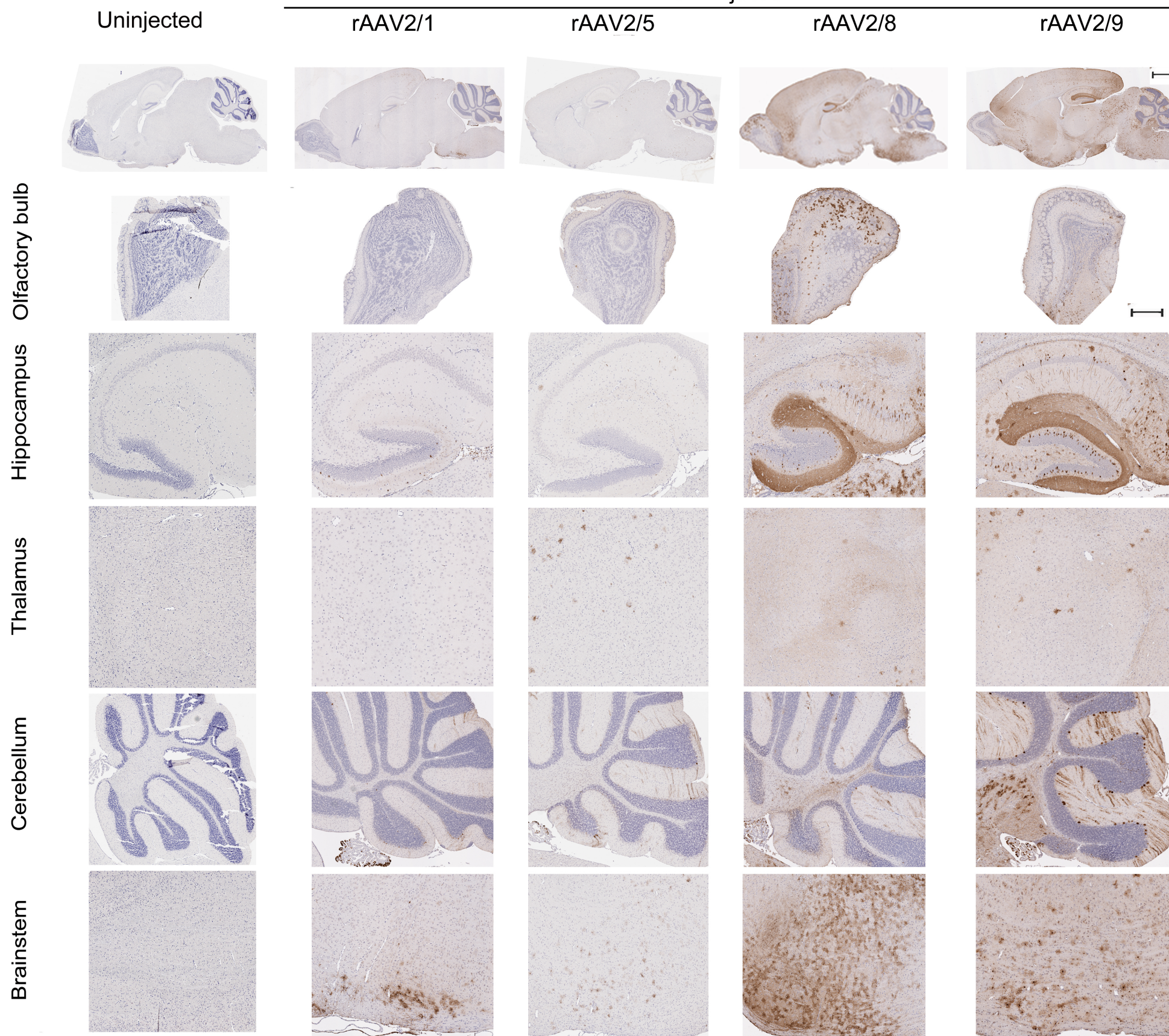


Supplemental Figure 3. Cellular tropism in the spinal cord following IM delivery of rAAVs in neonatal mice. Representative tricolor merged fluorescent photomicrograph from 3-week-old mice spinal cord sections were generated following co-labeling with anti EGFP antibody (488nm - green), DAPI (350nm - blue) and cell type specific marker antibodies (568nm - red) for neurons (NeuN), motor neurons (ChAT) and astrocytes (GFAP). Magnification, 400x.

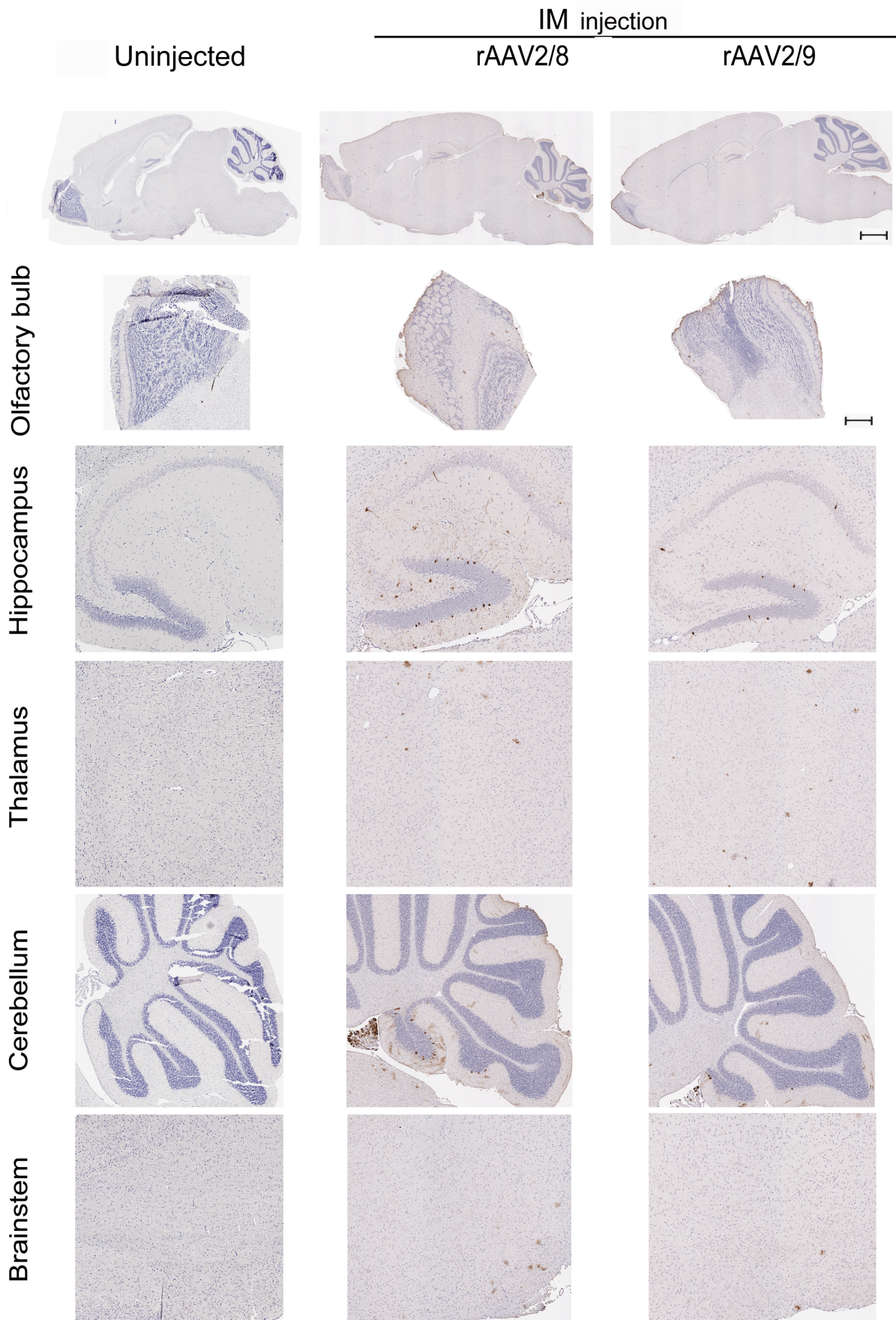


Supplemental Figure 4. EGFP expression in mice brains injected IS with rAAV-EGFP on neonatal day P0. Representative sections from 3 week old mice show EGFP staining in different areas of the brain. Olf, olfactory bulb, hip, hippocampus, thal, thalamus, cereb, cerebellum, brainst, brain stem. For cortical distribution, please see Figure 4. Scale bar, top panel, 2mm; others, 500µm. n=3-4/group.

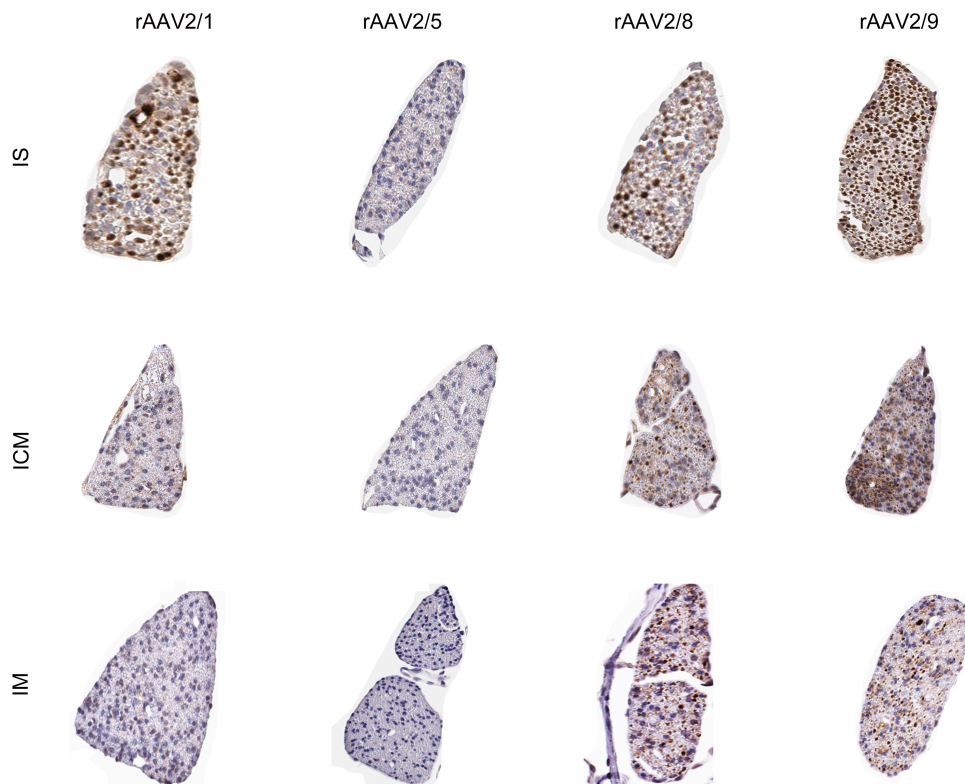
ICM injection



Supplemental Figure 5. EGFP expression in mice brains injected ICM with rAAV-EGFP on neonatal day P0. Representative sections from 3 week old mice show EGFP staining in different areas of the brain. Olf, olfactory bulb, hip, hippocampus, thal, thalamus, cereb, cerebellum, brainst, brain stem. For cortical distribution, please see Figure 4. Scale bar, top panel, 2mm; others, 500 μ m. n=3-4/group.



Supplemental Figure 6. EGFP expression in in mice brains injected with rAAV-EGFP in gastrocnemius muscle on neonatal day P0. Representative sections from 3 week old mice show EGFP staining in different areas of the brain. No expression was observed in any brain structure following IM injection of rAAV2/1 or 2/5 (data not shown), whereas 2/8 and 2/9 widespread but weak EGFP immunostaining. Olf, olfactory bulb, hip, hippocampus, thal, thalamus, cereb, cerebellum, brainst, brain



Supplemental Figure 7. EGFP expression in the DRG of mice injected with different rAAV serotypes via IM, ICM or IS routes on neonatal day P0. Representative DRGs from the lumbar spinal cord (IS and IM) or cervical spinal cord (ICM) are depicted following EGFP immunostaining. Scale bar, 120 μ m. n=3-4/group.