

## Supplementary Methods

### ***Neuron and glial cell isolation and culture***

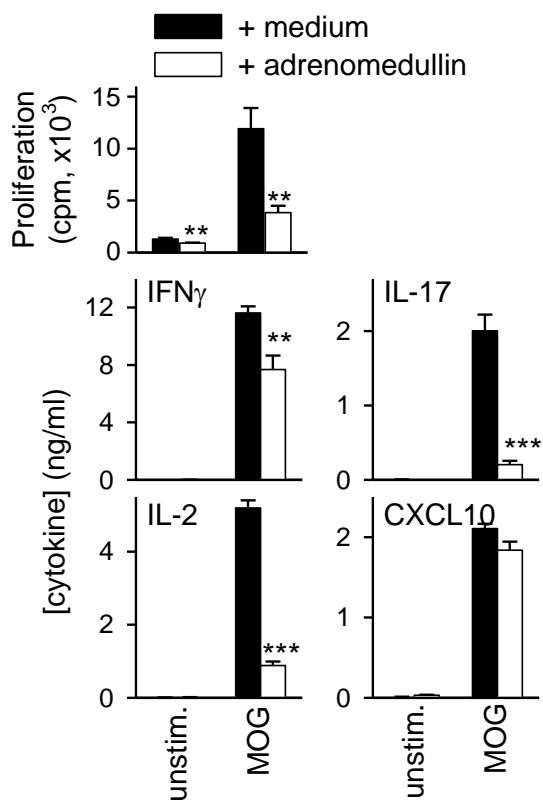
Purity of the different populations was determined before culture by immunofluorescence: microglia cultures were >95% Iba1<sup>+</sup>, astrocyte cultures were >99% GFAP<sup>+</sup> and cultures of oligodendrocyte precursors were >85% Olig-2<sup>+</sup>. Our neuron-glia co-cultures consisted of 27±2% neurons, 44±2% astrocytes, and 9%±2% microglia (mean±SEM).

Microglia and astrocytes were cultured in DMEM/2% FBS or activated with LPS (0.1 µg/ml) or LPS (0.1 µg/ml) plus IFNγ (500 U/ml) in the absence or presence of 100 nM adrenomedullin. Oligodendrocyte precursors were incubated in serum-free DMEM/Nutrient Mixture F-12 (Gibco) supplemented with Apo-transferrin (25 µg/ml), biotin (10 nM), sodium selenite (30 nM), putrescine (1 µg/ml), insulin (5 µg/ml), hydrocortisone (20 nM), progesterone (20 nM), penicillin (100 U/ml), streptomycin (100 mg/l), basic fibroblast growth factor (5 ng/ml), platelet-derived growth factor (5 ng/ml) and BSA (0.1%). Mature oligodendrocytes were generated by incubation of oligodendrocyte precursors with T3 hormone (30 nM) for 3-5 days. Oligodendrocyte cell death was caused by oxidative stress after incubation with 200 µM H<sub>2</sub>O<sub>2</sub> in the absence or presence of 100 nM adrenomedullin and cell survival was assayed by the reduction of MTT after 24 h of culture.

Neuron-glia co-cultures (5 x 10<sup>5</sup> cells/ml) were incubated in DMEM/10% FBS or stimulated with LPS (0.1 µg/ml) in the absence or presence of 100 nM adrenomedullin and expression of neurotrophic factors was determined by real time PCR as described below in RNA samples isolated after 6 h of culture.

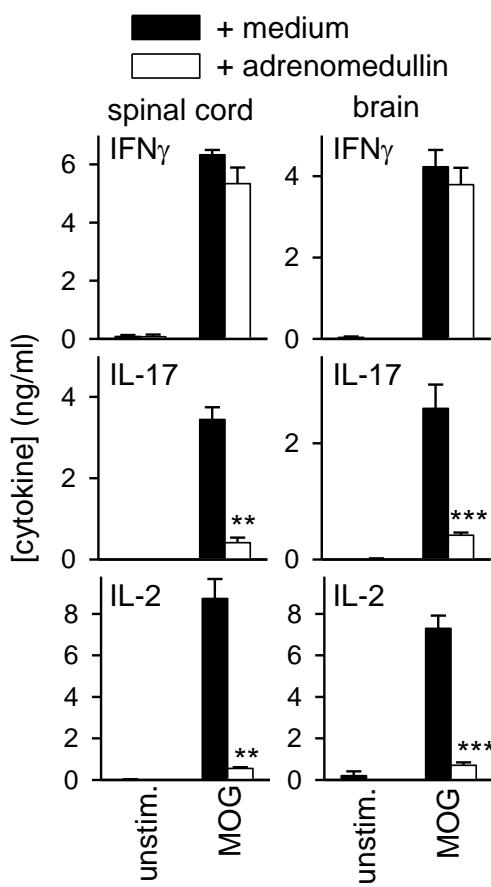
**Supplementary Table 1. Primers and temperatures of annealing used in the real time RT-PCR assays.**

Genes	Accession n°	Primer sequence		T <sub>m</sub>
		sense	anti sense	
BDNF	NM_001048141.1	5'- CCC TCC CCC TTT TAA CTG AA - 3'	5'- GCC TTC ATG CAA CCG AAG TA - 3'	58°C
ADNP	NM_009628.2	5'- AGA AAA GCC CGG AAA ACT GT - 3'	5'- AAG CAC TGC AGC AAA AAG GT - 3'	50°C
<i>Housekeeping</i>				
Actin	NM_007393.3	5'- TGT TAC CAA CTG GGA CGA CA - 3'	5'- GGG GTG TTG AAG GTC TCA AA - 3'	58°C



**Supplementary Figure 1.** Adrenomedullin deactivates encephalitogenic T-cell responses *in vitro*. Cytokine production by spleen/DLN cells isolated from EAE mice (peak of disease) and restimulated ex vivo with MOG in the absence (medium) or presence of adrenomedullin (100 nM). n=5-6 mice/group, two independent experiments.

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001 vs control with Mann-Whitney test.



**Supplementary Figure 2.** Cytokine production by spinal cord and brain mononuclear cells isolated from EAE mice at peak of the disease and restimulated with MOG<sub>35-55</sub> in the absence (medium) or presence of adrenomedullin (100 nM). n=8 mice/group, two independent experiments. \*\*p<0.01; \*\*\*p<0.001 vs control with Mann-Whitney test.

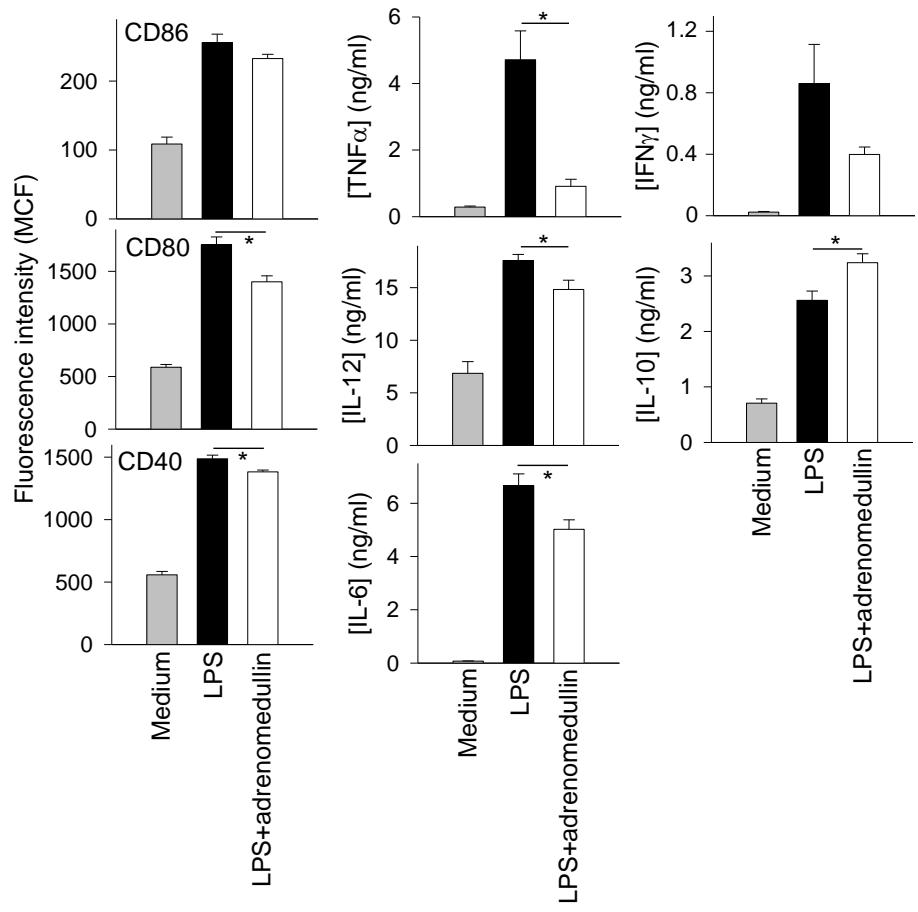


FIGURE 1A

Days for comparison (control vs adrenomedullin)	P-values		
	unpaired T Test	Mann-Whitney Test	Two way ANOVA
20	0.0033 (**)	0.0104 (*)	< 0.05 (*)
21	0.0018 (**)	0.0050 (**)	<0.01 (**)
22	0.0016 (**)	0.0040 (**)	<0.01 (**)
23	0.0025 (**)	0.0055 (**)	<0.01 (**)
24	0.0002 (***)	0.001 (***)	<0.001 (***)
25	0.0037 (**)	0.0052 (**)	< 0.05 (*)
26	0.0041 (**)	0.0043 (**)	< 0.05 (*)
28	<0.0001 (***)	0.0003 (***)	<0.001 (***)
30	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
34	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
37	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
42	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
48	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
52	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
56	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
59	<0.0001 (***)	<0.0001 (***)	<0.001 (***)

FIGURE 1B

Days for comparison (control vs adrenomedullin)	P-values		
	unpaired T Test	Mann-Whitney Test	Two way ANOVA
15	0.2977 (ns)	0.2156 (ns)	> 0.05 (ns)
16	0.011 (*)	0.011 (*)	> 0.05 (ns)
18	0.0002 (***)	0.0003 (***)	< 0.05 (*)
19	0.0004 (***)	0.0007 (***)	< 0.05 (*)
20	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
21	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
22	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
23	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
24	<0.0004 (***)	<0.0002 (***)	<0.001 (***)
27	<0.0004 (***)	<0.0006 (***)	<0.001 (***)
30	<0.0001 (***)	<0.0002 (***)	<0.001 (***)
34	<0.0002 (***)	<0.0007 (***)	<0.001 (***)
38	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
43	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
48	<0.0001 (***)	<0.0001 (***)	<0.001 (***)
52	<0.0001 (***)	<0.0001 (***)	<0.001 (***)

FIGURE 1C

Days for comparison	unpaired T Test	Mann-Whitney Test	Two way ANOVA

(control vs adrenomedullin)

11	0.3765 (ns)	0.3937 (ns)	> 0.05 (ns)
12	0.0875 (ns)	0.0706 (ns)	> 0.05 (ns)
13	0.2924 (ns)	0.2077 (ns)	> 0.05 (ns)
14	0.1001 (ns)	0.0589 (ns)	> 0.05 (ns)
15	0.0691 (ns)	0.0718 (ns)	> 0.05 (ns)
16	0.0454 (*)	0.0462 (*)	> 0.05 (ns)
17	0.2323 (ns)	0.2417 (ns)	> 0.05 (ns)
18	0.0893 (ns)	0.105 (ns)	> 0.05 (ns)
20	0.0470 (*)	0.0784 (ns)	> 0.05 (ns)
21	0.0120 (*)	0.0152 (*)	> 0.05 (ns)
23	0.0158 (*)	0.0175 (*)	<0.0001 (***)
26	<0.0001 (***)	<0.0002 (***)	<0.0001 (***)
27	<0.0027 (**)	<0.0032 (**)	<0.0001 (***)
31	<0.0001 (***)	<0.0001 (***)	<0.0001 (***)
36	<0.0001 (***)	<0.0001 (***)	<0.0001 (***)
44	<0.0001 (***)	<0.0001 (***)	<0.0001 (***)

FIGURE 1D

	One way ANOVA	Kruskal Wallis Test
c vs adrenom EAE score of 0.5	<0.0001 (***)	<0.0001 (***)
c vs adrenom EAE score of 1.5	<0.0001 (***)	<0.0001 (***)
c vs adrenom EAE score of >2	<0.0001 (***)	< 0.01 (**)

FIGURE 3

Tissue cytokine comparison  
(control vs adrenomedullin)

P-value unpaired T Test P value Mann-Whitney Test

IFNy	0.0017 (**)	0.0357 (**)
IL-2	0.2505 (ns)	0.7857 (ns)
IL-17	0.2278 (ns)	0.1337 (ns)
GM-CSF	0.02 (*)	0.0357 (*)
OPN	0.0122 (*)	0.0357 (*)
IL-6	0.0150 (*)	0.0333 (*)
CXCL10	0.0004 (***)	0.0357 (*)
CCL5	0.0001 (***)	0.0357 (*)
CCL2	0.003 (**)	0.0364 (*)

FIGURE 4A

Cytokine/proliferation (control vs adrenomedullin)	P value T-test	P value Mann-Whitney Test
IL-17 (stimuli: MOG)	<0.001 (***)	0.001 (***)
IFNy (stimuli: MOG)	<0.0062 (**)	0.0249 (*)
IL-2 (stimuli: MOG)	0.0001 (***)	0.001 (***)
GM-CSF (stimuli: MOG)	0.0012 (**)	0.05 (*)
OPN (stimuli: MOG)	0.0372 (*)	0.05 (*)
proliferation (stimuli: MOG)	<0.001 (***)	0.0022 (**)
IL-17 (stimuli: ConA)	0.0301 (*)	0.0741 (ns)
IFNy (stimuli: ConA)	0.0084 (**)	0.0383 (*)
IL-2 (stimuli: ConA)	0.176 (ns)	0.5 (ns)
GM-CSF (stimuli: ConA)	0.2965 (ns)	0.2 (ns)
OPN (stimuli: ConA)	0.1464 (ns)	0.2 (ns)
proliferation (stimuli: ConA)	0.0114 (*)	0.0065 (**)

FIGURE 4B

% T cell populations (control vs adrenomedullin)	P value T-test	P value Mann-Whitney Test
%CD4+IL17+	0.8866 (NS)	0.9087 (NS)
%CD4+IFN+	0.0036 (**)	0.0063 (**)
%CD4+IL4+	<0.0001 (***)	<0.0001 (***)
%CD4+IL10+	<0.0001 (***)	<0.0001 (***)

FIGURE 4C

serum autoantibodies (control vs adrenomedullin)	P value T-test	P value Mann-Whitney Test
IgG2a/IgG1	0.0005 (***)	0.0008 (***)

FIGURE 5A

number CD4 T cell (control vs adrenomedullin)	P value T test	P value Mann-Whitney Test
CD4 total	0.0001 (***)	0.0294 (*)
Th1	<0.0001 (***)	0.0286 (*)
Th17	0.0009 (***)	0.0286 (*)

FIGURE 5B

Cytokine (control vs adrenomedullin)	P value T test	P value Mann-Whitney Test
Spinal cord		
IL-17 (stimuli: MOG)	0.0005 (***)	0.0179 (*)
IFN $\gamma$ (stimuli: MOG)	<0.0001 (***)	0.0179 (*)
IL-2 (stimuli: MOG)	0.0013 (**)	0.0179 (*)
CXCL10 (stimuli: MOG)	0.0001 (***)	0.0179 (*)
IL-17 (stimuli: ConA)	0.0826 (ns)	0.0714 (ns)
IFN $\gamma$ (stimuli: ConA)	0.2056 (ns)	0.3929 (ns)
IL-2 (stimuli: ConA)	0.0653 (ns)	0.0357 (*)
CXCL10 (stimuli: ConA)	0.0361 (*)	0.0179 (*)
Brain		
IL-17 (stimuli: MOG)	0.0025 (**)	0.0083 (**)
IFN $\gamma$ (stimuli: MOG)	0.0651 (ns)	0.0083 (**)
IL-2 (stimuli: MOG)	<0.0001 (***)	0.0083 (**)
CXCL10 (stimuli: MOG)	0.0030 (**)	0.0083 (**)
IL-17 (stimuli: ConA)	0.1325 (ns)	0.1333 (ns)
IFN $\gamma$ (stimuli: ConA)	0.0274 (*)	0.0917 (ns)
IL-2 (stimuli: ConA)	0.0541 (ns)	0.0583 (ns)
CXCL10 (stimuli: ConA)	0.0161 (*)	0.0083 (**)

FIGURE 6A

%CD25+Foxp3+IL10+  
(control vs adrenomedullin)

P-values  
T test

0.0004 (\*\*\*)

Mann-Whitney Test

0.0238 (\*)

Number CD25+Foxp3+IL10+  
(control vs adrenomedullin)

0.0002 (\*\*\*)

0.0238 (\*)

FIGURE 6B

%brain Foxp3+ (control vs adrenomedullin)  
%spinal cord Foxp3+ (control vs adrenomedullin)

P value T test

0.0004 (\*\*\*)

Mann-Whitney Test

0.002 (\*\*)

0.0253 (\*)

0.0286 (\*)

FIGURE 6C, left graph

## Groups for comparison

Untreated EAE vs Total T-cell control  
Untreated EAE vs Total T-cell adrenomedullin  
Total T-cell control vs Total T-cell adrenomedullin

## One way ANOVA Kruskal-Wallis

ns ns

<0.0001 (\*\*\*) <0.01 (\*\*)

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

## Groups for comparison (day by day)

Untreated EAE vs Total T-cell control-D20  
Untreated EAE vs Total T-cell adrenomedullin-D20  
Total T-cell control vs Total T-cell adrenomedullin-D20  
Untreated EAE vs Total T-cell control-D21  
Untreated EAE vs Total T-cell adrenomedullin-D21  
Total T-cell control vs Total T-cell adrenomedullin-D21  
Untreated EAE vs Total T-cell control-D22  
Untreated EAE vs Total T-cell adrenomedullin-D22  
Total T-cell control vs Total T-cell adrenomedullin-D22  
Untreated EAE vs Total T-cell control-D23  
Untreated EAE vs Total T-cell adrenomedullin-D23  
Total T-cell control vs Total T-cell adrenomedullin-D23  
Untreated EAE vs Total T-cell control-D24  
Untreated EAE vs Total T-cell adrenomedullin-D24  
Total T-cell control vs Total T-cell adrenomedullin-D24  
Untreated EAE vs Total T-cell control-D26  
Untreated EAE vs Total T-cell adrenomedullin-D26  
Total T-cell control vs Total T-cell adrenomedullin-D26  
Untreated EAE vs Total T-cell control-D27  
Untreated EAE vs Total T-cell adrenomedullin-D27  
Total T-cell control vs Total T-cell adrenomedullin-D27  
Untreated EAE vs Total T-cell control-D28  
Untreated EAE vs Total T-cell adrenomedullin-D28  
Total T-cell control vs Total T-cell adrenomedullin-D28  
Untreated EAE vs Total T-cell control-D29  
Untreated EAE vs Total T-cell adrenomedullin-D29  
Total T-cell control vs Total T-cell adrenomedullin-D29  
Untreated EAE vs Total T-cell control-D30  
Untreated EAE vs Total T-cell adrenomedullin-D30  
Total T-cell control vs Total T-cell adrenomedullin-D30  
Untreated EAE vs Total T-cell control-D33  
Untreated EAE vs Total T-cell adrenomedullin-D33

## One way ANOVA Kruskal-Wallis

ns ns

ns ns

<0.01 (\*\*) <0.01 (\*\*)

ns ns

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

ns ns

<0.01 (\*\*) <0.01 (\*\*)

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

ns ns

<0.01 (\*\*) <0.01 (\*\*)

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

ns ns

<0.01 (\*\*) <0.01 (\*\*)

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

ns ns

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

ns ns

<0.0001 (\*\*\*) <0.0001 (\*\*\*)

Total T-cell control vs Total T-cell adrenomedullin-D33	<0.001 (***)	<0.001 (***)
Untreated EAE vs Total T-cell control-D35	ns	ns
Untreated EAE vs Total T-cell adrenomedullin-D35	<0.001 (***)	<0.001 (***)
Total T-cell control vs Total T-cell adrenomedullin-D35	<0.001 (***)	<0.001 (***)
Untreated EAE vs Total T-cell control-D37	ns	ns
Untreated EAE vs Total T-cell adrenomedullin-D37	<0.01 (**)	<0.01 (**)
Total T-cell control vs Total T-cell adrenomedullin-D37	<0.001 (***)	<0.001 (***)
Untreated EAE vs Total T-cell control-D41	ns	ns
Untreated EAE vs Total T-cell adrenomedullin-D41	<0.01 (**)	<0.01 (**)
Total T-cell control vs Total T-cell adrenomedullin-D41	<0.01 (**)	<0.01 (**)
Untreated EAE vs Total T-cell control-D43	ns	ns
Untreated EAE vs Total T-cell adrenomedullin-D43	<0.01 (**)	<0.01 (**)
Total T-cell control vs Total T-cell adrenomedullin-D43	<0.01 (**)	<0.01 (**)
Untreated EAE vs Total T-cell control-D47	ns	ns
Untreated EAE vs Total T-cell adrenomedullin-D47	<0.001 (***)	<0.001 (***)
Total T-cell control vs Total T-cell adrenomedullin-D47	<0.001 (***)	<0.001 (***)

FIGURE 6C, right graph

Groups for comparison	One way ANOVA		Kruskal-Wallis
Untreated EAE vs CD25-depleted control	ns	ns	ns
Untreated EAE vs CD25-depleted adrenomedullin	ns	ns	ns
CD25-depleted control vs CD25-depleted adrenomedullin	ns	ns	ns

FIGURE 7A

Cytokine (+DCcontrol vs +DCadrenomedullin)	P value T test	P value Mann-Whitney Test
IFNy (stimuli: MOG)	0.8802 (ns)	0.6579 (ns)
IL-17 (stimuli: MOG)	<0.0001 (***)	0.0097 (**)
IL-2 (stimuli: MOG)	<0.0001 (***)	0.0097 (**)
IL10 (stimuli: MOG)	1000 (ns)	0.6579 (ns)
IFNy (stimuli: ConA)	0.2160 (ns)	0.0765 (ns)
IL-17 (stimuli: ConA)	0.3880 (ns)	0.3758 (ns)
IL-2 (stimuli: ConA)	0.2929 (ns)	0.0765 (ns)
IL10 (stimuli: ConA)	0.7477 (ns)	0.6579 (ns)

FIGURE 7B

Groups for comparison	One way ANOVA Test	Kruskal-Wallis Test
Untreated EAE vs DC control	ns	ns
Untreated EAE vs DC adrenomedullin	<0.0001 (***)	<0.01 (**)
DC control vs DC adrenomedullin	<0.0001 (***)	<0.01 (**)
Groups for comparison (day by day)	One way ANOVA Test	Kruskal-Wallis Test
Untreated EAE vs DC control-D15	ns	ns
Untreated EAE vs DC adrenomedullin-D15	<0.001 (***)	<0.001 (***)
DC control vs DC adrenomedullin-D15	<0.05 (*)	ns
Untreated EAE vs DC control-D17	ns	ns
Untreated EAE vs DC adrenomedullin-D17	<0.001 (***)	<0.01 (**)
DC control vs DC adrenomedullin-D17	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D18	ns	ns
Untreated EAE vs DC adrenomedullin-D18	<0.001 (***)	<0.01 (**)
DC control vs DC adrenomedullin-D18	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D19	ns	ns
Untreated EAE vs DC adrenomedullin-D19	<0.001 (***)	<0.05 (*)
DC control vs DC adrenomedullin-D19	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D20	ns	ns
Untreated EAE vs DC adrenomedullin-D20	<0.001 (***)	<0.001 (***)
DC control vs DC adrenomedullin-D20	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D21	ns	ns
Untreated EAE vs DC adrenomedullin-D21	<0.001 (***)	<0.001 (***)
DC control vs DC adrenomedullin-D21	<0.01 (**)	<0.001 (***)
Untreated EAE vs DC control-D22	ns	ns
Untreated EAE vs DC adrenomedullin-D22	<0.001 (***)	<0.001 (***)
DC control vs DC adrenomedullin-D22	<0.001 (***)	<0.01 (**)
Untreated EAE vs DC control-D24	ns	ns
Untreated EAE vs DC adrenomedullin-D24	<0.01 (**)	<0.01 (**)
DC control vs DC adrenomedullin-D24	<0.01 (**)	<0.01 (**)
Untreated EAE vs DC control-D25	ns	ns
Untreated EAE vs DC adrenomedullin-D25	<0.05 (*)	ns
DC control vs DC adrenomedullin-D25	<0.01 (**)	<0.05 (*)
Untreated EAE vs DC control-D26	ns	ns
Untreated EAE vs DC adrenomedullin-D26	<0.05 (*)	<0.05 (*)
DC control vs DC adrenomedullin-D26	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D27	ns	ns
Untreated EAE vs DC adrenomedullin-D27	<0.01 (**)	<0.05 (*)
DC control vs DC adrenomedullin-D27	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D28	ns	ns

FIGURE 8A

Cytokine (LPS vs LPS+adrenomedullin)	P-value unpaired T Test	P value Mann-Whitney Test
TNF $\alpha$ -astrocytes	0.0062 (**)	0.05 (*)
TNF $\alpha$ -microglia	0.1370 (ns)	0.0906 (ns)
TNF $\alpha$ -neuron-glia	0.0018 (**)	0.05 (*)
IL-6-astrocytes	0.0109 (*)	0.0460 (*)
IL-6-microglia	0.0157 (*)	0.0383 (*)
IL-6-neuron-glia	0.0038 (**)	0.05 (*)
IL-12-astrocytes	0.0418 (*)	0.05 (*)
IL-12-microglia	0.0039 (**)	0.0383 (*)
IL-12-neuron-glia	0.0028 (**)	0.05 (*)

FIGURE 8B

Survival comparison (H2O <sub>2</sub> vs H2O <sub>2</sub> +adrenomedullin)	P-value unpaired T Test	P value Mann-Whitney Test
Precursor-oligodendrocytes	0.0022 (**)	0.0031 (**)
Mature-oligodendrocytes	0.0163 (*)	0.0294 (*)

FIGURE 8C

gene expression (control vs adrenomedullin)	P-value unpaired T Test	P value Mann-Whitney Test
ADNP	0.0084 (**)	0.0249 (*)
BDNF	0.0047 (**)	0.0007 (***)

Untreated EAE vs DC adrenomedullin-D28	<0.05 (*)	<0.05 (*)
DC control vs DC adrenomedullin-D28	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D29	ns	ns
Untreated EAE vs DC adrenomedullin-D29	<0.05 (*)	<0.05 (*)
DC control vs DC adrenomedullin-D29	<0.01 (**)	<0.01 (**)
Untreated EAE vs DC control-D31	ns	ns
Untreated EAE vs DC adrenomedullin-D31	<0.01 (**)	<0.01 (**)
DC control vs DC adrenomedullin-D31	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D32	ns	ns
Untreated EAE vs DC adrenomedullin-D32	<0.01 (**)	<0.01 (**)
DC control vs DC adrenomedullin-D32	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D34	ns	ns
Untreated EAE vs DC adrenomedullin-D34	<0.01 (**)	<0.01 (**)
DC control vs DC adrenomedullin-D34	<0.001 (***)	<0.001 (***)
Untreated EAE vs DC control-D36	ns	ns
Untreated EAE vs DC adrenomedullin-D36	<0.001 (***)	<0.001 (***)
DC control vs DC adrenomedullin-D36	<0.001 (***)	<0.001 (***)

FIGURE 9A

Adrenomedullin (medium vs LPS)	P-value unpaired T Test	P value Mann-Whitney Test
Astrocyte	0.003 (**)	0.05 (*)
Microglia	0.2089 (ns)	0.1509 (ns)

FIGURE 9B

Adrenomedullin (naive vs EAE mice)	P-value unpaired T Test	P value Mann-Whitney Test
brain	0.014 (**)	0.0022 (**)
spinal cord	0.0155 (*)	0.0159 (*)