

Supplementary Table S1 Mass spectrometry analysis for lipid mediators in the spinal cord of wild-type and *Per2^{m/m}* mice after injection of α 1D-AR antagonist BMY7378 or saline.

Name	Transition (m/z)	Wild-type (Saline)	<i>Per2^{m/m}</i> (Saline)	<i>Per2^{m/m}</i> (BMY7378)	Statistical significance
11,12-EET-EA	346 → 62	0.19 ± 0.04	0.12 ± 0.06	0.15 ± 0.05	N.S.
11-HETE	319 → 167	0.9 ± 0.51	0.85 ± 0.37	0.87 ± 0.39	N.S.
12,13-DiHOME	313 → 183	6.71 ± 2.53	5.69 ± 0.76	9.67 ± 3.44	N.S.
12-HHT	279.2 → 179.1	2.89 ± 0.92	2.56 ± 0.86	3.92 ± 1.29	N.S.
13-HODE	295.2 → 195.1	4.02 ± 1.04	3.65 ± 1.44	5.96 ± 1.88	N.S.
15-HETE	319 → 219	1.48 ± 0.89	0.87 ± 0.21	1.36 ± 0.49	N.S.
2-AG	287.2 → 379.4	233.24 ± 80.30	386.19 ± 111.58*	182.17 ± 84.64 ^{##}	* <i>P</i> <0.05, ^{##} <i>P</i> <0.01
6-keto-PGF1 α	369 → 163	33.82 ± 6.65	29.50 ± 5.90	33.68 ± 7.67	N.S.
8,15-DiHETE	335.2 → 127.1	2.46 ± 0.73	1.95 ± 0.96	3.12 ± 0.65	N.S.
8-iso-PGE2	351.2 → 271.5	4.76 ± 1.50	4.79 ± 0.98	7.32 ± 2.38	N.S.
9,10-DiHOME	313 → 201	9.58 ± 3.60	7.05 ± 1.21	12.95 ± 3.27 [#]	[#] <i>P</i> <0.05
9-HODE	295 → 183	1.29 ± 0.42	1.07 ± 0.41	1.35 ± 0.23	N.S.
AA	303 → 205	1.43 ± 1.34	0.94 ± 0.48	1.37 ± 0.42	N.S.
AEA	348.3 → 62	10.33 ± 3.82	11.56 ± 2.13	10.30 ± 3.13	N.S.
DHA	327.2 → 229.2	0.87 ± 0.29	1.13 ± 0.36	1.73 ± 0.46 ^{##}	^{##} <i>P</i> <0.01
dOEA	328.7 → 62.2	2.43 ± 0.30	2.76 ± 0.38	2.70 ± 0.27	N.S.
EPA	301.2 → 257.2	1.91 ± 1.04	0.98 ± 0.29	1.58 ± 0.34	N.S.
LBT4-EA	362.3 → 189.1	0.76 ± 0.15	0.65 ± 0.29	0.95 ± 0.24	N.S.
OEA	326.3 → 62.1	595.97 ± 151.21	751.96 ± 142.35	628.14 ± 180.25	N.S.
PGD2	351.2 → 271.5	4.18 ± 1.62	4.61 ± 0.81	6.30 ± 1.56	N.S.
PGE1	353.2 → 235.2	4.11 ± 0.78	3.48 ± 1.12	6.68 ± 1.47 ^{##}	^{##} <i>P</i> <0.01
PGE2	351.2 → 271.5	3.98 ± 1.31	4.47 ± 1.09	5.50 ± 1.35	N.S.
PGF2 α	353 → 193	1.79 ± 1.36	0.87 ± 0.21	1.33 ± 0.41	N.S.
TXB2	369 → 169	1.12 ± 0.31	1.04 ± 0.27	1.65 ± 0.45 [#]	[#] <i>P</i> <0.05

The levels of each substance were expressed as ratio to the internal standard per mg of total protein. Values represent the mean $\pm$ S.D. (n=5-6). * $P < 0.05$, significant difference from saline-injected wild-type mice. ^{##} $P < 0.01$, significant difference from saline-injected *Per2^{m/m}* mice. (ANOVA with Tukey-Kramer's post hoc test).

Abbreviations: 11,12-EET-EA; 11(12)-EET ethanolamide: 11-HETE; hydroxyeicosatetraenoic acids: 12,13-DiHOME; 12,13-dihydroxy-9Z-octadecenoic acid: 12-HHT; 12-hydroxy-heptadecatrienoic acid: 13-HODE; 13-hydroxyoctadecadienoic acid: 15-HETE; 15-hydroxyeicosatetraenoic acids: 2-AG; 2-arachidonoylglycerol: 6-keto-PGF1 α ; 6-keto prostaglandin F1 α : 8,15-DiHETE; 8,15-dihydroxyeicosatetraenoic acids: 8-iso-PGE2; 8-iso-prostaglandin E2: 9,10-DiHOME; 9,10-dihydroxy-9Z-octadecenoic acid: 9-HODE; 9-hydroxyoctadecadienoic acid: AA; arachidonic acid: AEA; anandamide: DHA; docosahexaenoic acid: EPA; eicosapentaenoic acid: LBT4-EA; leukotriene B4 ethanolamide: OEA; N-oleoylethanolamine: PGD2; prostaglandin D2: PGE1; prostaglandin E1: PGE2; prostaglandin E2: PGF2 α ; prostaglandin F2 α : TXB2; thromboxane B2;

Supplementary Table S2 Primer sequences for RT-PCR analysis

Gene symbol	Primer
Mouse <i>β-Actin</i>	Forward: 5'- ACTGTGCGAGTCGCGTCC -3' Reverse: 5'- CGCAGCGATATCGTCATCCAT-3'
Mouse <i>Irf8</i>	Forward: 5'- GGATATGCCGCCTATGACACA -3' Reverse: 5'- CATCCGGCCCCATACAACTTAG -3'
Mouse <i>P2ry12</i>	Forward: 5'- CACAGAGGGCTTTGGGAACCTTA -3' Reverse: 5'- TGGTCCTGCTTCTGCTGAATC -3'
Mouse <i>P2rx4</i>	Forward: 5'- ACAACGTGTCTCCTGGCTACAAT -3' Reverse: 5'- GTCAAACCTTGCCAGCCTTTCC -3'
Mouse <i>Bdnf</i>	Forward: 5'- GCCCAACGAAGAAAACCATAAG -3' Reverse: 5'- TGTTTGCGGCATCCAGGTA -3'
Mouse <i>Csf1r</i>	Forward: 5'- TGTCATCGAGCCTAGTGGC -3' Reverse: 5'- GGTCCAAGGTCCAGTAGGG -3'
Mouse <i>Slc12a5</i>	Forward: 5'- GGGCAGAGAGTACGATGGC -3' Reverse: 5'- CCCTGGGGTAGGTTGGTGTA -3'
Mouse <i>Cnr1</i>	Forward: 5'- AAGTCGATCTTAGACGGCCTT -3' Reverse: 5'- TCCTAATTTGGATGCCATGTCTC -3'
Mouse <i>Cnr2</i>	Forward: 5'- ATGGCCGTGCTCTATATTATCCT -3' Reverse: 5'- ATGGTCACACTGCCGATCTTC -3'
Mouse <i>Mgl1</i>	Forward: 5'- CGGACTTCCAAGTTTTTGTGAGA -3' Reverse: 5'- GCAGCCACTAGGATGGAGATG -3'
Mouse <i>Dagla</i>	Forward: 5'- GTCCTGCCAGCTATCTTCCTC -3' Reverse: 5'- CGTGTGGGTTATAGACCAAGC -3'
Mouse <i>Dagb</i>	Forward: 5'- AGCGACGACTTGGTGTTC -3' Reverse: 5'- GCGTGAGATACAACGTCAGACT -3'
Mouse <i>Plcb1</i>	Forward: 5'- AGACCTGGTGAACATTTCCCA -3' Reverse: 5'- ACAAGCCTCTAGTGCAGTTTC -3'
Mouse <i>Plcb2</i>	Forward: 5'- TGCTGATCGAAAACGGGTGG -3' Reverse: 5'- AGCTTTAGAGTGGTAGGAAGTGA -3'
Mouse <i>Plcb3</i>	Forward: 5'- CGCGGGAGTAAGTTCATCAA -3' Reverse: 5'- AGAAGCCATTAGGGTCCACAC -3'
Mouse <i>Plcb4</i>	Forward: 5'- AGTGCTAGAATGTTCCCTCATCA -3' Reverse: 5'- GAAGCCGATATTCACCAGATCC -3'
Mouse <i>Plcg1</i>	Forward: 5'- GAGACGCGCCAGATCACAT -3' Reverse: 5'- AAAGTCCCGAGAAGTCTTCCC -3'
Mouse <i>Plcg2</i>	Forward: 5'- GTGGACACCCTTCCAGAATATG -3' Reverse: 5'- GGGCGTTGAACACGGTCAT -3'
Mouse <i>Adra1a</i>	Forward: 5'- CGGTGACTCACTACTACATTGTC -3' Reverse: 5'- GACGCTGTGCAGCATAAGAC -3'
Mouse <i>Adra1b</i>	Forward: 5'- ACATTGGGGTGCGATACTCTC -3' Reverse: 5'- TTGGGCGCAGGTTCTTTCC -3'
Mouse <i>Adra1d</i>	Forward: 5'- CGCTGTGGTGGGAACCGGCAG -3' Reverse: 5'- AGTTGGTGACCGTCTGCAAGT -3'
Mouse <i>Adra2a</i>	Forward: 5'- GGTGACACTGACGCTGGTTT -3' Reverse: 5'- ACTGGTGAACACCGCGATAATA -3'
Mouse <i>Adra2b</i>	Forward: 5'- TCTTCACCATTTTCGGCAATGC -3' Reverse: 5'- AGAGTAGCCACTAGGATGTCG -3'
Mouse <i>Adra2c</i>	Forward: 5'- CCTACTGGTACTTCGGGCAAG -3' Reverse: 5'- CGGTCCAGACTAATGGCACA -3'

Mouse <i>Adrb1</i>	Forward: 5'- CAGAAGGCGCTCAAGACACT -3' Reverse: 5'- GAAGACGAAGAGGCGATCCG -3'
Mouse <i>Adrb2</i>	Forward: 5'- AATAGCAACGGCAGAACGGA -3' Reverse: 5'- GTCAACGCTAAGGCTAGGCA -3'
Mouse <i>Adrb3</i>	Forward: 5'- CTCCTCGTAATGCCACCAGG -3' Reverse: 5'- CGCACAAGGTCTCGATGCTA -3'

Supplementary Table S3 Sequences of primer set for identification cell fraction

Gene symbol	Primer
Mouse <i>18S</i>	Forward: 5'- CGGCTACCACATCCAAGGAA -3' Reverse: 5'- GCTGGAATTACCGCGGCT -3'
Mouse <i>Rbfox</i>	Forward: 5'- GGCAAATGTTTCGGGCAATTCTG -3' Reverse: 5'- TCAATTTTCCGTCCCTCTACGAT -3'
Mouse <i>CD11b</i>	Forward: 5'- AGTGCTGGGAGACGTGAATG -3' Reverse: 5'- GCACTGAGGCTGGCTATTGA -3'
Mouse <i>Sox9</i>	Forward: 5'- CAGCCCCTTCAACCTTCCTC -3' Reverse: 5'- TGATGGTCAGCGTAGTCGTATT -3'
Mouse <i>Adra1d</i>	Forward: 5'- CGGACCTTCTGCGACGTATG -3' Reverse: 5'- TGGCTGGATACTTGAGCGAGT -3'