Supplemental Table S1: Primer Sequences. The primer sequences used to amplify the 2.1kb AQP4 M1 promoter is given below. The primers used to create the miR-130a and miR-1280 recognition site mutants are also listed below. The miRNA recognition site was mutated by changing several of the nucleotides within the seed region. The mutated nucleotides are underlined.

Primers	Sequence
AQP4 M1 promoter	Forward: 5' CCCTGGTCAATTTTAAGCTACTCTGC 3'
	Reverse: 5' TCATGCCTTCCCCAGCCAGA 3'
miR-130a mutation	Forward: 5' ACCAAGGTGTCCTGCATTCATTCCTACAGTGGACCA 3'
	Reverse: 5' TGGTCCACTGTAGGAATGAATGCAGGACACCTTGGT 3'
miR-1280 mutation	Forward: 5' TCTAGATGTTTTGTAGAGTAATGTTTTCATAGAT 3'
	Reverse: 5' ATCTATGAAAACATTACTCTACAAAACATCTAGA 3'

Supplemental Table S2: miRNA profiling of astrocytoma cells. 1ug of total astrocytoma RNA was used to profile miRNA expression. A total of 293 miRNAs were detected. miRNAs are listed based on average signal intensity in ascending order. Raw signal intensities were averaged to provide average signal intensity values. miRNAs predicted to target the AQP4 M1 promoter are highlighted in grey.

miRNA	Average Signal Intensity	miRNA	Average Signal Intensity
hsa-miR-664	318.625	hsa-miR-18a	721.75
hsa-miR-502-5p	322.75	hsa-miR-412	729
hsa-miR-190	358.25	hsa-miR-551b*	760
hsa-miR-551a	397.75	hsa-miR-488	767.25
hsa-miR-145*	415.5	hsa-miR-203	768.125
hsa-let-7f-2*	435.25	hsa-miR-29a*	794.625
hsa-miR-652	443.75	hsa-miR-409-3p	804
hsa-miR-550*	450.125	hsa-miR-519c-5p	820.375
hsa-miR-16-1*	452	hsa-miR-1297	867.375
hsa-miR-622	457.75	hsa-miR-636	883.5
hsa-miR-450a	477.375	hsa-miR-16-2*	899.625
hsa-miR-656	485.75	hsa-miR-337-5p	901.375
hsa-miR-769-5p	485.875	hsa-let-7d*	903
hsa-miR-510	512.5	hsa-miR-553	906.25
hsa-miR-339-3p	520.625	hsa-miR-601	911
hsa-miR-196a	536.625	hsa-miR-490-3p	918.125
hsa-miR-1301	537.75	hsa-miR-122*	918.5
hsa-miR-200c*	539	hsa-miR-1270	925.125
hsa-miR-200b*	546.25	hsa-miR-345	929.625
hsa-miR-379	568.375	hsa-miR-602	946.875
hsa-miR-1184	568.625	hsa-miR-744	956.125
hsa-miR-18b	587.375	hsa-miR-99a*	981.875
hsa-miR-218	600	hsa-miR-520d-5p	983.875
hsa-miR-125b-2*	603.75	hsa-miR-186	1022.375
hsa-miR-29b-1*	614.875	hsa-miR-337-3p	1042
hsa-miR-513b	633	hsa-miR-149	1051.625
hsa-miR-1273	646.5	hsa-miR-483-5p	1071.625
hsa-miR-376a*	654.25	hsa-miR-138-2*	1097.375
hsa-miR-124	657.125	hsa-miR-874	1116.125
hsa-miR-497	662	hsa-miR-629	1142.125
hsa-miR-127-3p	675.875	hsa-miR-198	1173.25
hsa-miR-411	680.75	hsa-miR-508-5p	1182.5
hsa-miR-181a*	700.625	hsa-miR-548e	1187.5
hsa-miR-220b	701.875	hsa-miR-654-3p	1197.5
hsa-miR-615-3p	714	hsa-miR-1248	1222.25
hsa-miR-938	721.5	hsa-miR-625*	1236.875

miRNA	Average Signal Intensity	miRNA	Average Signal Intensity
hsa-miR-206	1256.25	hsa-miR-647	2173.5
hsa-miR-302c*	1292	hsa-miR-920	2181.625
hsa-miR-185*	1336.625	hsa-miR-30e*	2216.5
hsa-miR-1275	1337.375	hsa-miR-542-3p	2271
hsa-miR-659	1356.375	hsa-miR-148b	2275
hsa-miR-370	1358.125	hsa-miR-146b-3p	2284.25
hsa-miR-1258	1381.125	hsa-miR-625	2295.25
hsa-miR-92b	1387.25	hsa-miR-934	2364.625
hsa-miR-197	1388.5	hsa-miR-1284	2387.25
hsa-miR-140-5p	1414.125	hsa-miR-129*	2405
hsa-miR-493*	1425.5	hsa-miR-342-3p	2459.375
hsa-miR-671-5p	1428.25	hsa-miR-505*	2461.5
hsa-miR-129-5p	1451.625	hsa-miR-299-3p	2598.375
hsa-miR-597	1462.625	hsa-miR-10b	2634
hsa-miR-193b*	1467.875	hsa-miR-28-5p	2636.25
hsa-miR-106b*	1518	hsa-miR-1260	2684.625
hsa-miR-877	1521.625	hsa-miR-584	2776.625
hsa-miR-664*	1553.375	hsa-miR-340*	2790.5
hsa-miR-629*	1561.625	hsa-miR-376c	2801.375
hsa-miR-887	1600	hsa-let-7b*	2833.25
hsa-miR-1261	1614.125	hsa-miR-210	2856.25
hsa-miR-525-5p	1640	hsa-miR-98	2858.875
hsa-miR-381	1671	hsa-miR-374b	2870.25
hsa-miR-23a*	1696.5	hsa-miR-516b	2886.25
hsa-miR-21*	1710.125	hsa-miR-642	2917
hsa-miR-630	1711.875	hsa-miR-145	2995.875
hsa-miR-425	1718.25	hsa-miR-1304	3031
hsa-miR-422a	1734.25	hsa-miR-106b	3079.375
hsa-miR-375	1778.75	hsa-miR-99b*	3135.125
hsa-miR-485-3p	1798	hsa-miR-301a	3162.75
hsa-miR-187*	1802.125	hsa-miR-382	3460.375
hsa-miR-181b	1834.5	hsa-miR-634	3504
hsa-miR-576-5p	1836.75	hsa-miR-331-3p	3509.375
hsa-miR-183	1897.375	hsa-miR-1299	3518
hsa-miR-107	1899.75	hsa-miR-152	3527.75
hsa-miR-214	1966	hsa-miR-518a-5p	3606.75
hsa-miR-298	1984.75	hsa-miR-151-3p	3623.25
hsa-miR-221*	2067.25	hsa-miR-17	3626.625
hsa-miR-516a-5p	2072.875	hsa-miR-374b*	3631.875
hsa-miR-1300	2075.625	hsa-miR-130b	3725.375
hsa-miR-185	2086.5	hsa-miR-509-5p	3736.125
hsa-miR-7	2140.375	hsa-miR-29c	3806

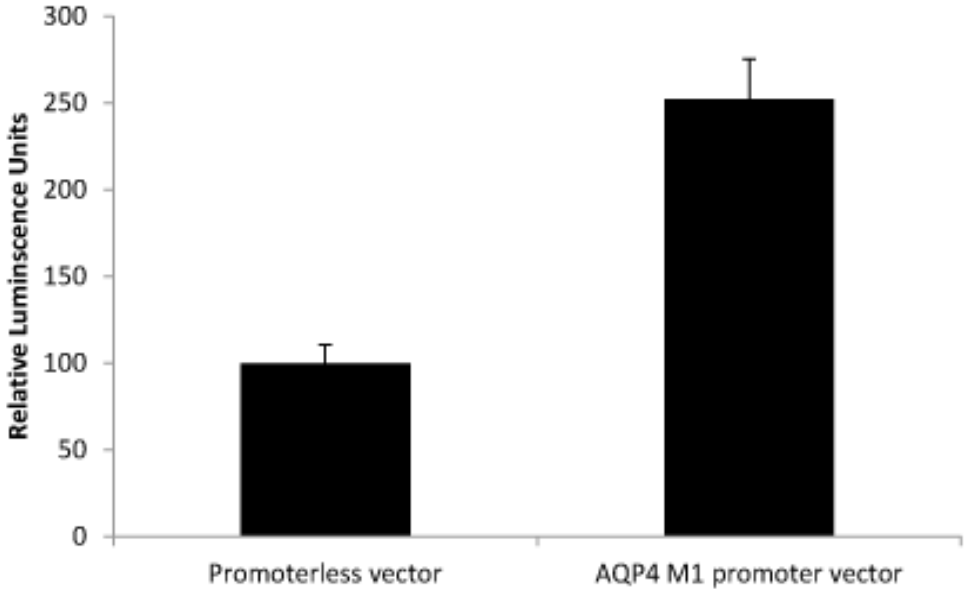
miRNA	Average Signal Intensity	miRNA	Average Signal Intensity
hsa-miR-125b-1*	3862.25	hsa-miR-513a-5p	9050.125
hsa-miR-22*	3903	hsa-miR-320c	9393.125
hsa-miR-140-3p	3908.375	hsa-miR-519e	9467
hsa-miR-208a	3954.625	hsa-miR-320a	9486.875
hsa-miR-363*	4188.5	hsa-miR-191	9639.625
hsa-miR-151-5p	4251.875	hsa-miR-628-3p	9833.375
hsa-miR-574-3p	4519	hsa-miR-365	9864
hsa-miR-377	4634.625	hsa-miR-424	10036.25
hsa-miR-708	4635	hsa-miR-576-3p	10528.75
hsa-miR-378	4688.5	hsa-miR-30e	10640.63
hsa-miR-196b	4864.625	hsa-miR-184	10822.63
hsa-miR-101	4918.125	hsa-miR-549	11173.75
hsa-miR-25*	5011.75	hsa-miR-193a-3p	11293.88
hsa-miR-20a	5021.5	hsa-miR-1255a	11699.5
hsa-miR-335	5100.125	hsa-let-7i	11921.38
hsa-miR-196a*	5142.875	hsa-let-7a*	12328
hsa-miR-937	5228.5	hsa-miR-1274a	13028.38
hsa-miR-1274b	5276.875	hsa-miR-1827	13111.13
hsa-miR-519e*	5305.5	hsa-miR-939	13863.63
hsa-miR-20b*	5412	hsa-miR-19b	13894
hsa-miR-320d	5466.25	hsa-miR-589	13900
hsa-miR-617	5758.5	hsa-miR-374a	14894
hsa-miR-1321	5809	hsa-miR-487b	15245.75
hsa-miR-99b	5813.875	hsa-let-7g	15774.13
hsa-miR-498	5816.75	hsa-miR-19a	15826
hsa-miR-30d	6084.75	hsa-miR-423-3p	16433.13
hsa-miR-103	6114.125	hsa-miR-93	16574.5
hsa-miR-1201	6130.75	hsa-let-7d	16646.13
hsa-miR-183*	6203.75	hsa-miR-665	16882
hsa-miR-25	6296.5	hsa-miR-519d	17082.38
hsa-miR-31	6384.75	hsa-miR-181a	17753.75
hsa-miR-130a	6586.625	hsa-miR-34a	17794
hsa-miR-24-1*	6700.375	hsa-miR-765	17903.38
hsa-miR-583	7005.5	hsa-miR-32*	18445.25
hsa-miR-620	7011.375	hsa-miR-339-5p	19122.5
hsa-miR-891a	7151.75	hsa-miR-551b	19779.5
hsa-miR-423-5p	7485.375	hsa-miR-149*	20432.88
hsa-miR-320b	7515.375	hsa-miR-15a	20441.13
hsa-miR-574-5p	7654.375	hsa-miR-9*	20515.38
hsa-miR-300	8077.125	hsa-miR-29b	20769.75
hsa-miR-27a	8096.625	hsa-miR-221	20869
hsa-miR-600	8168.5	hsa-miR-143	20893
hsa-miR-340	8583.375	hsa-miR-361-5p	21288.63

miRNA	Average Signal Intensity	miRNA	Average Signal Intensity
hsa-miR-99a	21533.75	hsa-miR-9	63247.25
hsa-miR-195	23275	hsa-miR-1280	63345.38
hsa-miR-138-1*	23535.25	hsa-miR-34b	64496.5
hsa-miR-768-5p	24411.5	hsa-miR-933	64520.5
hsa-miR-193b	24501.25	hsa-miR-21	64525.25
hsa-miR-30c	24630.25	hsa-miR-16	64528.5
hsa-let-7e	27117.13	hsa-miR-23a	64529.75
hsa-miR-106a	32866.38	hsa-miR-22	64532.75
hsa-let-7b	35360.13	hsa-miR-1246	64535.25
hsa-miR-888*	36086	hsa-miR-768-3p	64536.63
hsa-miR-494	37536.63	hsa-miR-222	64553
hsa-miR-886-5p	40660.5	hsa-miR-1285	64556.25
hsa-miR-1265	40991.25	hsa-let-7f	64569.75
hsa-let-7c	41872.75	hsa-miR-886-3p	64575
hsa-miR-1264	42460.38	hsa-miR-26b	64587.5
hsa-miR-26a	42562	hsa-miR-1259	64590
hsa-miR-15b	45313.88	hsa-miR-720	64602.25
hsa-miR-668	49085.75	hsa-miR-923	64610
hsa-miR-30b	49284.5	hsa-miR-550	64611.5
hsa-miR-125a-5p	54572.13	hsa-miR-24	64656.5
hsa-miR-30a	54821.25	hsa-miR-29a	64663.25
hsa-miR-491-3p	54910.25	hsa-miR-125b	64668.25
hsa-let-7a	57675.5	hsa-miR-1308	64668.75
hsa-miR-23b	61966.88	hsa-miR-1290	64669.63
hsa-miR-100	62049.5	hsa-miR-1826	64675

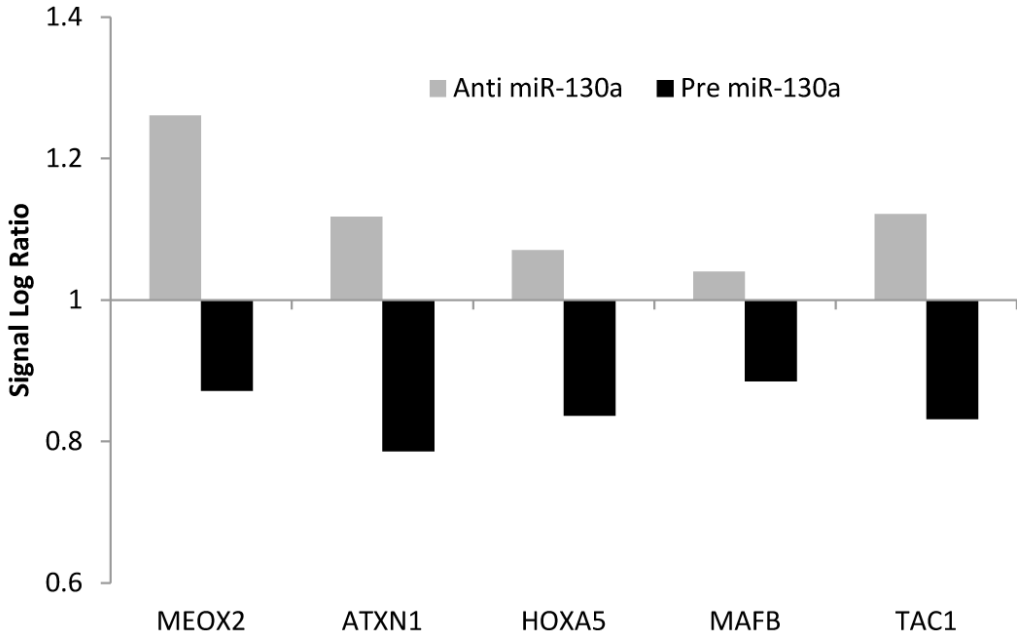
Supplemental Table S3: Relative mRNA expression of selected genes in ischemic samples. Changes in the expression of NFKB, IKB and ILIB genes in ischemic and LNA miR-130a treated brain samples are shown here. Data shown are the mean ± SD, n=3.

Relative mRNA Expression	MCAo untreated	MCAo LNA™ anti miR-130a treated
NFKB	**5.76 ± 0.287**	**1.16 ± 0.112**
IKB	**9.70 ± 0.314**	**5.38 ± 0.142**
IL1B	**14.11 ± 0.527**	**3.87 ± 0.424**
AQP4 M1	**1.54 ± 0.087**	**4.86 ± 0.243**
miR-130a	**2.13 ± 0.201**	**0.37 ± 0.122**

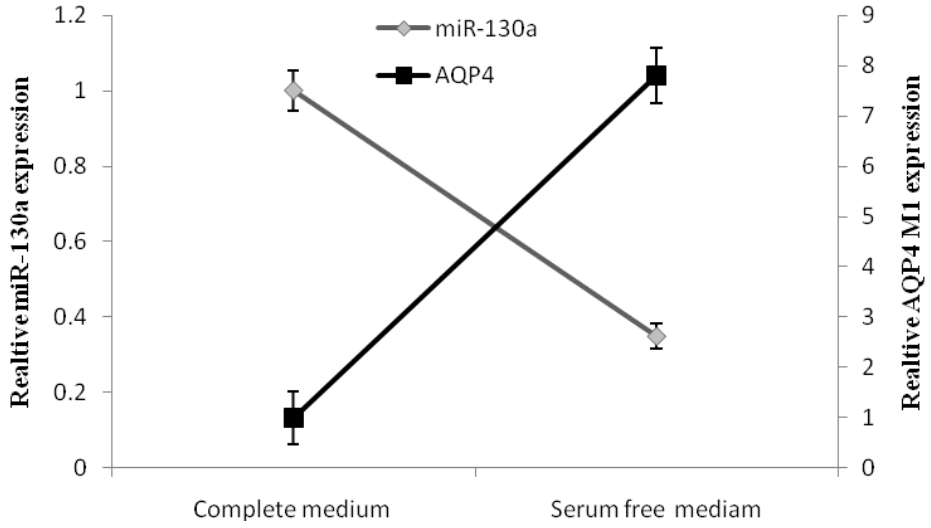
Supplemental Fig. S1: Relative expression of AQP4 M1 promoter. The entire promoter region upstream exon 0 of the AQP4 gene was amplified using specific primers and cloned into a pGL4 promoter-less luciferase vector. The constructs were then transfected into astrocytoma cells and the relative luciferase activity was determined. Data shown are the mean ± SD, n=3.



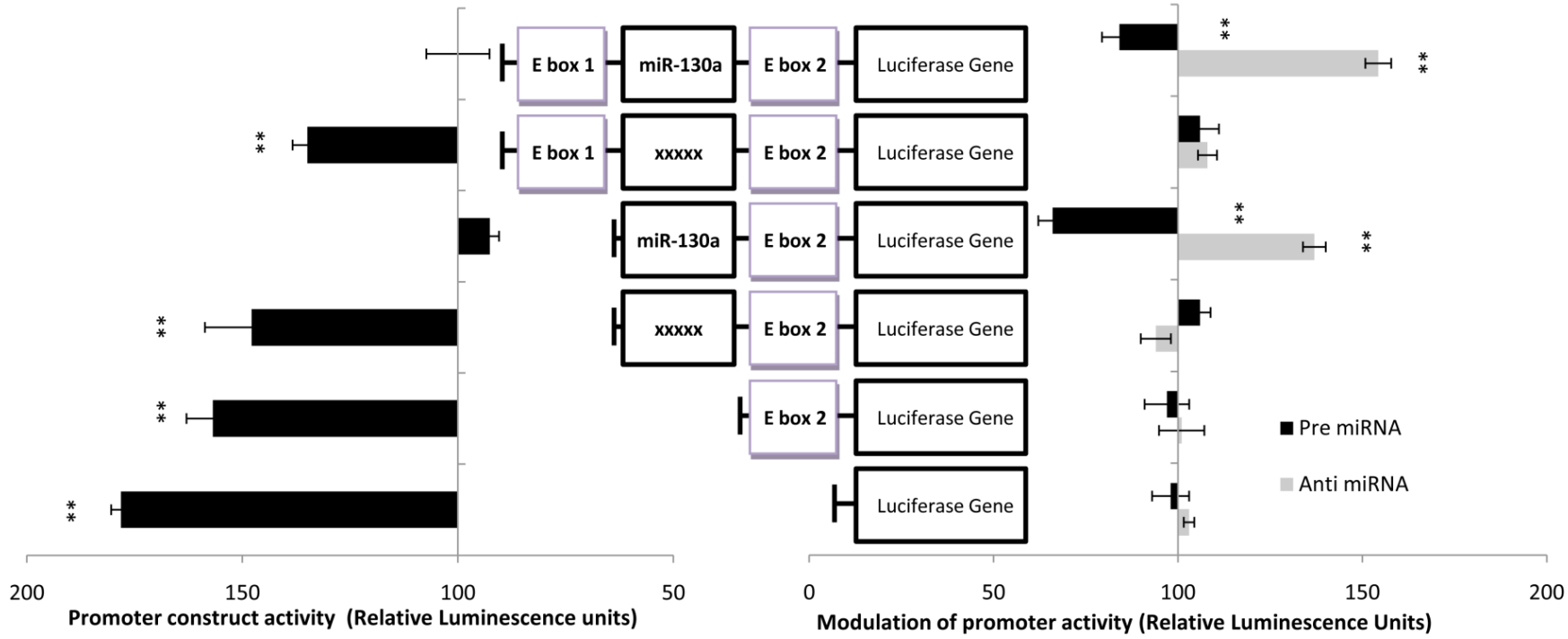
Supplemental Fig. S2: Experimentally validated targets of miR-130a. Total RNA extracted from human astrocytoma cells treated with 30 nm anti or pre miR-130a was subjected to mRNA profiling. The oligonucleotide array was performed according to the manufacturer's protocol using 500 ng of total RNA (Illumina, SanDiego, USA) Signal Log ratio of experimentally validated targets of miR-130a was extracted from the mRNA profiling data.



Supplemental Fig. S3: Relative AQP4 and miR-130a expression. Astrocytoma cells grown in complete medium supplemented with 10% FBS was replaced with serum free media. Total RNA was extracted and changes in AQP4 and miR-130a expression were determined by qPCR and stem-loop qPCR respectively. Data shown are the mean ± SD, n=3.



Supplemental Fig. S4: Promoter constructs of AQP4 M1. The luciferase reporter constructs containing the flanking regions of the promoter of AQP4 M1 are shown above. The constructs contain the suppressor region postulated by Umenishi et al. (21). This region consists of the miR-130a recognition site flanked by two E-boxes. The predicted recognition site of miR-939 was not taken into consideration as these constructs were transfected into HeLa cells which do not express miR-939. The graph on the left shows an increase in promoter activity as miR-130a sites are mutated or deleted. As expected, an increase in activity was also noted when the E2 region was deleted. The graph on the right shows the effect of miR-130a modulation on these promoter constructs. The extent of modulation was determined by normalizing the luminescence readings against the promoter activity of the respective constructs. Luciferase luminescence readings were obtained 48 h post transfection. Statistical analyses were done using t-tests **, $p < 0.01$, compared to respective controls. Data shown are the mean ± SD, n=3.



Supplemental Fig. S5: Relative IL1B, AQP4 M1 and miR-130a expression. Astrocytoma cells grown in complete medium were treated with IL1B antibodies at a concentration of 15nM for a period of 1 h before transfection of anti or pre miR-130a. Total RNA was extracted 48 h post transfection and changes in IL1B, AQP4 and miR-130a expression were determined by qPCR and stem-loop qPCR respectively. Data shown are the mean ± SD, n=3.