Supplemental Information

Supplemental Table 1: Glioma stem-like cell media recipe

Component	Volume or Concentration used	Company	Product number
Neurobasal media	Base media	Invitrogen	12348017
Recombinant human FGF	10 ng/mL	Peprotech	AF-100-18B
Recombinant human EGF	10 ng/mL	Peprotech	AF-100-15
B27	10 mL	Obtained from the Cleveland Clinic Lerner Research Institute Cell Culture Core	
L- glutamine	2 mmol/L		
Sodium Pyruvate	1 mmol/L		

Supplemental Table 2: Primary antibody information for Western Analysis

Target (sample species)	Company	Product number	Dilution used
pY705 STAT3 (human)	Cell signaling	9145	1:1000 in 5% BSA
pY705 STAT3 (mouse)	abcam	ab76315	1:10,000 in 5% BSA
STAT3 (human and mouse)	Cell signaling	30835	1:1000 in 5% BSA
Actin (human)	Sigma	A5316	1:5000 in 5% NFDM
Actin (mouse)	Cell signaling	3700	1:2000 in 5% BSA
GAPDH	Santa Cruz	Sc-47724	1:2000 in 5% NFDM
gp130	Cell signaling	3732	1:500 in 5% BSA
Myc	Abclonal	AE070	1:500 in 5% BSA
SOX2 (mouse)	Invitrogen	MA1-014	1:1000 in 5% BSA

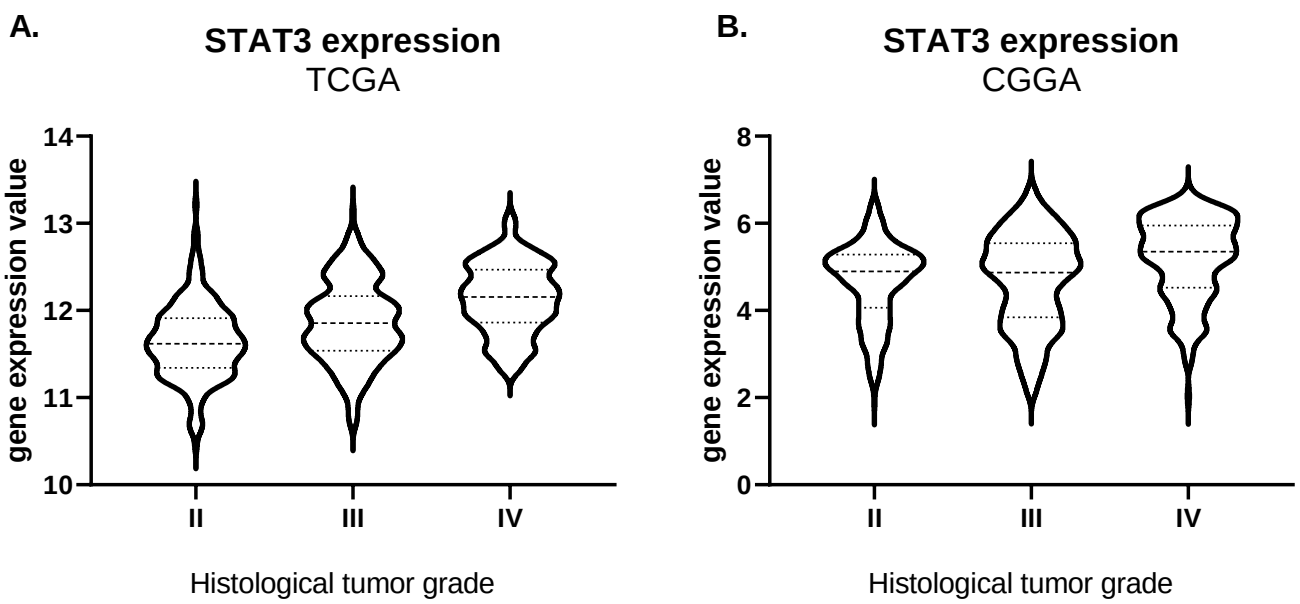
Supplemental Table 3: qPCR primer sequences

Human qPCR primers		
Target	Forward primer (5’ to 3’)	Reverse primer (5’ to 3’)
18S	GCTTAATTTGACTCAACACGGGA	AGCTATCAATCTGTCAATCCTGTC
SOX2	CACACTGCCCCTCTCAC	TCCATGCTGTTTCTTACTCTCC
OCT4	TCTCCCATGCATTCAAACTGAG	CCTTTGTGTTCCCAATTCCTTC
NES	CTGCTACCCTTGAGACACCTG	GGGCTCTGATCTCTGCATCTAC
Mouse qPCR primers		
Target	Forward primer (5’ to 3’)	Reverse primer (5’ to 3’)
18S	GATCCATTGGAGGGCAAGTCT	CCAAGATCCAACTACGAGCTTTTT
SOX2	AAGGGTTCTTGCTGGGTTTT	AGACCACGAAAACGGTCTTG
OCT4	TGTTCAGCCAGACCACCATC	GCTTCCTCCACCCACTTCTC
NES	AGCAGGTGAACAAGACTCCG	TTGGGTCCTCTAGCCCTACC

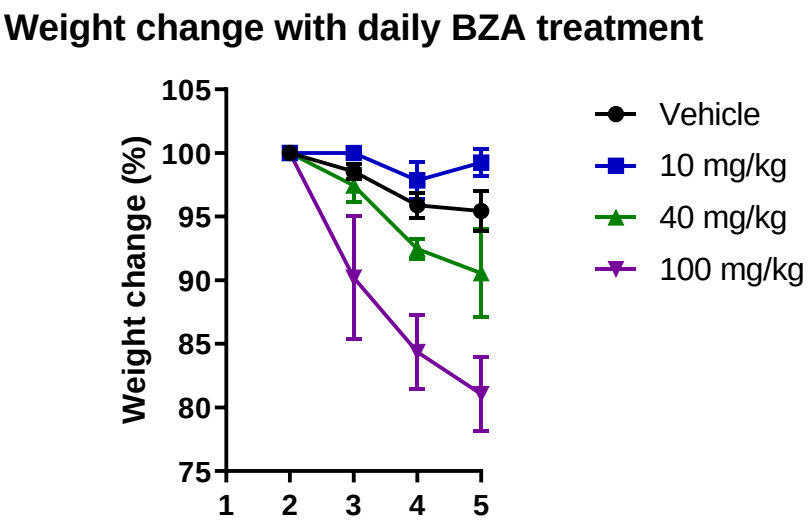
Supplemental Table 4: GSCs are sensitive to BZA treatment *in vitro*.

Model:	L1	L2	GL261	mAstro
Bazedoxifene (gp130)	0.67	0.452	4.12	4.37
Ruxolitinib (JAK1/2)	NA	NA	15.4	NA
WP1066 (JAK2/STAT3)	3.65	4.79	6.59	4.05
STATTIC (STAT3-SH2)	9.00	11.53	8.06	7.23

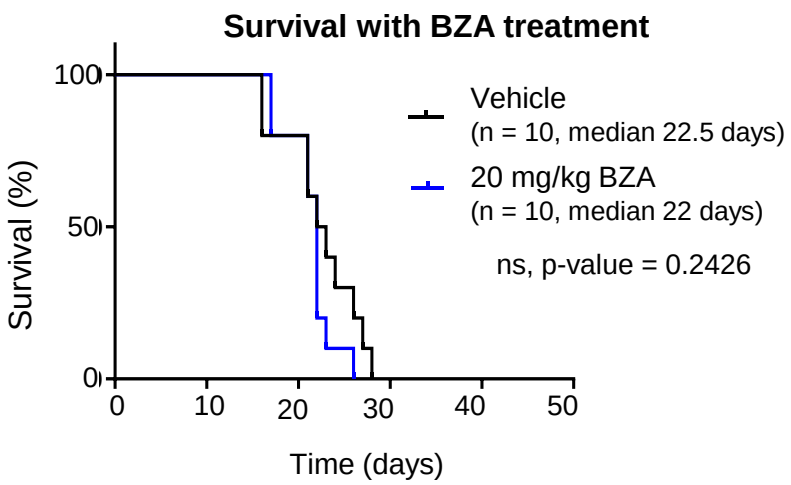
Supplemental table 4: Cells were treated with IL-6/STAT3 pathway inhibitors: BZA (targets gp130), Ruxolitinib (targets JAK1/2), WP1066 (targets JAK2/STAT3), and STATTIC (targets STAT3-SH2 domain), Cells were treated with one of the inhibitors for 72 hours before a MTT assay was performed. MTT measures the metabolic activity of a cell and was used to indirectly measure cell viability. The table shows the calculated IC_{50} concentrations (μM). Calculations were done using AAT BioQuest calculator (https://www.aatbio.com/tools/ic50-calculator)



Supplemental Fig 1. High-grade gliomas show high expression of STAT3. Patient data exported from TCGA (A) or CGGA (B) was plotted for STAT3 expression, based on the tumor grade. STAT3 levels, reported as mRNA expression, were measured by using an HG-U133A array in the TCGA set or through RNA sequencing in the CGGA data set.



Supplemental Fig 2. Daily treatment of BZA at high doses cause weight loss in our mouse model. The percent weight change is shown from the experiment described in fig 6A.



Supplemental Fig 3. Low dose BZA treatment does not show a difference survival advantage. Survival curve of 20 mg/kg BZA treatment compared to vehicle. Experimental design is described in fig. 6C.