

Identification of Survival Genes in Human Glioblastoma Cells Using siRNA Screening

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Molecular Pharmacology

Supplementary
Table S2
Genes identified as
reproducibly
essential genes for
glioma cell viability
using the MAD
method

Gene Symbol	Full Gene Name	Accession No	Percent viability (%)
RAN	RAN, member RAS oncogene family	NM_006325	5.84
DDX39	DEAD (Asp-Glu-Ala-Asp) box polypeptide 39	NM_138998	6.90
K-ALPHA-1	K-ALPHA-1	NM_006082	8.22
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3	NM_002804	8.35
POLR2F	polymerase (RNA) II (DNA directed) polypeptide F	NM_021974	9.66
PSMD14	proteasome (prosome, macropain) 26S subunit, non-ATPase, 14	NM_005805	10.90
SIAT7E	ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1,3)-N-acetylgalactosaminide alpha-2,6-sialyltransferase 5	NM_030965	11.16
SPINK1	serine protease inhibitor, Kazal type 1	NM_003122	11.19
SIAT4B	ST3 beta-galactoside alpha-2,3-sialyltransferase 2	NM_006927	11.25
BTN2A3	butyrophilin, subfamily 2, member A3	NM_024018	11.45
SPTLC1	serine palmitoyltransferase, long chain base subunit 1	NM_178324	11.66
PSMC6	proteasome (prosome, macropain) 26S subunit, ATPase, 6	NM_002806	12.17
HLCS	holocarboxylase synthetase (biotin-[propionyl-Coenzyme A-carboxylase (ATP-hydrolysing)] ligase)	NM_000411	12.48
TUBGCP6	tubulin, gamma complex associated protein 6	NM_020461	13.45
BUB1B	BUB1 budding uninhibited by benzimidazoles 1 homolog beta (yeast)	NM_001211	13.49
GRHPR	glyoxylate reductase/hydroxypyruvate reductase	NM_012203	14.21
TLR2	toll-like receptor 2	NM_003264	15.52
PRKCD	protein kinase C, delta	NM_006254	15.55
CHN1	chimerin (chimaerin) 1	NM_001025201	15.67

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AKT3	v-akt murine thymoma viral oncogene homolog 3 (protein kinase B, gamma)	NM_181690	16.28
PSMC5	proteasome (prosome, macropain) 26S subunit, ATPase, 5	NM_002805	17.05
SRCRB4D	scavenger receptor cysteine rich domain containing, group B (4 domains)	NM_080744	17.78
UBL5	ubiquitin-like 5	NM_024292	19.35
ITGAV	integrin, alpha V (vitronectin receptor, alpha polypeptide, antigen CD51)	NM_002210	19.38
POMT1	protein-O-mannosyltransferase 1	NM_007171	19.39
IDH3B	isocitrate dehydrogenase 3 (NAD+) beta	NM_174856	19.42
TNNI3K	TNNI3 interacting kinase	NM_015978	20.08
COX7A2	cytochrome c oxidase subunit VIIa polypeptide 2 (liver)	NM_001865	20.23
ZAP128	ZAP128	NM_006821	20.51
ITGB3	integrin, beta 3 (platelet glycoprotein IIIa, antigen CD61)	NM_000212	20.75
PIGQ	phosphatidylinositol glycan, class Q	NM_148920	20.85
CYB5R2	CYB5R2	NM_016229	21.18
ITGA3	integrin, alpha 3 (antigen CD49C, alpha 3 subunit of VLA-3 receptor)	NM_002204	21.49
GABRB2	gamma-aminobutyric acid (GABA) A receptor, beta 2	NM_021911	21.53
BST1	bone marrow stromal cell antigen 1	NM_004334	21.57
RRM1	ribonucleotide reductase M1 polypeptide	NM_001033	21.76
C11orf8	chromosome 11 open reading frame 8	NM_001584	21.87
CLCN3	chloride channel 3	NM_173872	22.20
CHST3	carbohydrate (chondroitin 6) sulfotransferase 3	NM_004273	22.31
CARM1	coactivator-associated arginine methyltransferase 1	NM_199141	22.40
EP300	E1A binding protein p300	NM_001429	22.40
LOC144125	olfactory receptor, family 2, subfamily AG, member 1	XM_090203	22.66
DKFZP434L1717	DKFZP434L1717	NM_032136	22.66
VCP	valosin-containing protein	NM_007126	22.68
GPX2	glutathione peroxidase 2 (gastrointestinal)	NM_002083	22.70
SLC7A2	solute carrier family 7 (cationic amino acid transporter, y+ system), member 2	NM_003046	23.17

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FCN3	ficolin (collagen/fibrinogen domain containing) 3 (Hakata antigen)	NM_173452	23.74
TLR4	toll-like receptor 4	NM_138557	23.93
GUCY1A2	guanylate cyclase 1, soluble, alpha 2	NM_000855	24.08
RAB35	RAB35, member RAS oncogene family	NM_006861	24.24
SEC23B	Sec23 homolog B (<i>S. cerevisiae</i>)	NM_032985	24.47
ARHGEF11	Rho guanine nucleotide exchange factor (GEF) 11	NM_014784	24.52
RHOT1	ras homolog gene family, member T1	NM_018307	24.72
POLR2A	polymerase (RNA) II (DNA directed) polypeptide A, 220kDa	NM_000937	24.82
SMS	spermine synthase	NM_004595	24.90
PSMD7	proteasome (prosome, macropain) 26S subunit, non-ATPase, 7 (Mov34 homolog)	NM_002811	24.96
KCNH7	potassium voltage-gated channel, subfamily H (eag-related), member 7	NM_033272	25.04
OAZ1	ornithine decarboxylase antizyme 1	NM_004152	25.14
GALNS	galactosamine (N-acetyl)-6-sulfate sulfatase (Morquio syndrome, mucopolysaccharidosis type IVA)	NM_000512	25.30
B3GNT7	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 7	NM_145236	25.52
COQ6	coenzyme Q6 homolog (yeast)	NM_182476	25.53
GABRB3	gamma-aminobutyric acid (GABA) A receptor, beta 3	NM_000814	25.94
AGPAT4	1-acylglycerol-3-phosphate O-acyltransferase 4 (lysophosphatidic acid acyltransferase, delta)	NM_020133	25.97
ALOX15B	arachidonate 15-lipoxygenase, second type	NM_001141	26.00
RABGGTA	Rab geranylgeranyltransferase, alpha subunit	NM_182836	26.01
MPHOSPH1	M-phase phosphoprotein 1	NM_016195	26.04
B3GNT6	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 6	NM_006876	26.04
DCT	dopachrome tautomerase (dopachrome delta-isomerase, tyrosine-related protein 2)	NM_001922	26.05
BGLAP	bone gamma-carboxyglutamate (gla) protein (osteocalcin)	NM_199173	26.35
DDX1	DEAD (Asp-Glu-Ala-Asp) box polypeptide 1	NM_004939	26.35
PSMC4	proteasome (prosome, macropain) 26S subunit, ATPase, 4	NM_153001	26.43
GRCC9	GRCC9	NM_032641	26.60

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PSMB2	proteasome (prosome, macropain) subunit, beta type, 2	NM_002794	26.70
ENTPD2	ectonucleoside triphosphate diphosphohydrolase 2	NM_203468	26.83
DNTT	deoxynucleotidyltransferase, terminal	NM_001017520	27.23
HIBCH	3-hydroxyisobutyryl-Coenzyme A hydrolase	NM_014362	27.53
OR1D4	olfactory receptor, family 1, subfamily D, member 4	NM_003552	27.57
CGI-04	tyrosyl-tRNA synthetase 2 (mitochondrial)	NM_015936	27.61
AGPS	alkylglycerone phosphate synthase	NM_003659	27.69
SLC12A5	solute carrier family 12, (potassium-chloride transporter) member 5	NM_020708	27.79
RYK	RYK receptor-like tyrosine kinase	NM_002958	28.17
TOPORS	topoisomerase I binding, arginine/serine-rich	NM_005802	28.31
RAB6A	RAB6A, member RAS oncogene family	NM_198896	28.35
CDK5R2	cyclin-dependent kinase 5, regulatory subunit 2 (p39)	NM_003936	28.45
SORCS3	sortilin-related VPS10 domain containing receptor 3	NM_014978	28.46
RPE	ribulose-5-phosphate-3-epimerase	NM_199229	28.79
GRIN1	glutamate receptor, ionotropic, N-methyl D-aspartate 1	NM_007327	29.05
GCNT3	glucosaminyl (N-acetyl) transferase 3, mucin type	NM_004751	29.23
CKS1B	CDC28 protein kinase regulatory subunit 1B	NM_001826	29.49
RAB40C	RAB40C, member RAS oncogene family	NM_021168	29.55
SLC25A19	solute carrier family 25 (mitochondrial deoxynucleotide carrier), member 19	NM_021734	29.63
RAB40B	RAB40B, member RAS oncogene family	NM_006822	29.68
LOC57168	LOC57168	NM_020437	29.73
B4GALT3	UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 3	NM_003779	29.78
SOD1	superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult))	NM_000454	29.90
GUSB	glucuronidase, beta	NM_000181	29.93
KIR2DL3	killer cell immunoglobulin-like receptor, two domains, long cytoplasmic tail, 3	NM_015868	29.97
GOSR1	golgi SNAP receptor complex member 1	NM_004871	29.97
MGST2	microsomal glutathione S-transferase 2	NM_002413	30.19

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POLE3	polymerase (DNA directed), epsilon 3 (p17 subunit)	NM_017443	30.41
PKD1L3	polycystic kidney disease 1-like 3	NM_181536	30.47
PSMB4	proteasome (prosome, macropain) subunit, beta type, 4	NM_002796	30.56
PSMA6	proteasome (prosome, macropain) subunit, alpha type, 6	NM_002791	30.62
POLR2G	polymerase (RNA) II (DNA directed) polypeptide G	NM_002696	30.81
UBE2V2	ubiquitin-conjugating enzyme E2 variant 2	NM_003350	30.87
TST	thiosulfate sulfurtransferase (rhodanese)	NM_003312	30.97
UBE2D2	ubiquitin-conjugating enzyme E2D 2 (UBC4/5 homolog, yeast)	NM_003339	31.06
SIAT10	ST3 beta-galactoside alpha-2,3-sialyltransferase 6	NM_006100	31.16
UNC119	unc-119 homolog (C. elegans)	NM_054035	31.27
GALNT12	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 12 (GalNAc-T12)	NM_024642	31.32
UROD	uroporphyrinogen decarboxylase	NM_000374	31.49
CTSS	cathepsin S	NM_004079	31.55
PSMA4	proteasome (prosome, macropain) subunit, alpha type, 4	NM_002789	31.58
ADAR	adenosine deaminase, RNA-specific	NM_001111	31.95
APP	amyloid beta (A4) precursor protein (protease nexin-II, Alzheimer disease)	NM_201414	32.08
BPHL	biphenyl hydrolase-like (serine hydrolase; breast epithelial mucin-associated antigen)	NM_004332	32.20
CYP1B1	cytochrome P450, family 1, subfamily B, polypeptide 1	NM_000104	32.29
TXNRD1	thioredoxin reductase 1	NM_182729	32.30
SENP2	SUMO1/sentrin/SMT3 specific protease 2	NM_021627	32.61
PSMA3	proteasome (prosome, macropain) subunit, alpha type, 3	NM_152132	33.00
RERG	RAS-like, estrogen-regulated, growth inhibitor	NM_032918	33.02
AGXT	alanine-glyoxylate aminotransferase (oxalosis I; hyperoxaluria I; glycolicaciduria; serine-pyruvate aminotransferase)	NM_000030	33.06
GRK4	G protein-coupled receptor kinase 4	NM_001004056	33.22

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ELOVL5	ELOVL family member 5, elongation of long chain fatty acids (FEN1/Elo2, SUR4/Elo3-like, yeast)	NM_021814	33.47
CREBBP	CREB binding protein (Rubinstein-Taybi syndrome)	NM_004380	33.56
PSMA5	proteasome (prosome, macropain) subunit, alpha type, 5	NM_002790	33.87
OSBP	oxysterol binding protein	NM_002556	33.91
XRN2	5-3 exoribonuclease 2	NM_012255	34.12
CHRNB1	cholinergic receptor, nicotinic, beta polypeptide 1 (muscle)	NM_000747	34.30
PSMA2	proteasome (prosome, macropain) subunit, alpha type, 2	NM_002787	34.50
PSMA1	proteasome (prosome, macropain) subunit, alpha type, 1	NM_148976	34.72
CDK9	cyclin-dependent kinase 9 (CDC2-related kinase)	NM_001261	34.79
PCBD	6-pyruvoyl-tetrahydropterin synthase/dimerization cofactor of hepatocyte nuclear factor 1 alpha (TCF1)	NM_000281	34.79
POLR2D	polymerase (RNA) II (DNA directed) polypeptide D	NM_004805	34.85
MRGPRD	MAS-related GPR, member D	NM_198923	35.06
CHST5	carbohydrate (N-acetylglucosamine 6-O) sulfotransferase 5	NM_012126	35.07
HYAL1	hyaluronoglucosaminidase 1	NM_153281	35.20
PLSCR3	phospholipid scramblase 3	NM_020360	35.31