Supplementary Table 1. Genetic aberrations tested in this study

Groups with gene aberrations	Tumor subtypes
CDKN2A	GBM
CDKN2B	GBM
NF1	GBM
PTEN	GBM
p53	GBM, Pediatric GBM
ATRX	Pediatric GBM
RB1	GBM
CDK4	GBM, Pediatric GBM
MDM2-B	GBM, Pediatric GBM
EGFR	GBM
EGFRvIII	GBM
PDGFRA	GBM, Paediatric GBM
H3F3A-K27M	Paediatric GBM
H3F3A-G34R	Paediatric GBM
MYC	GBM, CNS-PNET, MB
SMARB1	AT/RT
PTCH1	MB
CTNNB1	MB
CDKN2A/CDKN2B	GBM
CDKN2A/CDKN2B/EGFR	GBM
CDKN2A/CDKN2B/EGFRvIII	GBM
CDKN2A/CDKN2B/EGFR/EGFRvIII	GBM
CDKN2A/CDKN2B/PTEN	GBM
CDKN2A/CDKN2B/p53	GBM
CDKN2A/CDKN2B/PDGFRA	GBM
EGFR/CDK4	GBM
EGFRvIII/CDK4	GBM
EGFR/EGFRvIII/CDK4	GBM
MDM2-B/CDK4	GBM
NF1/PTEN/p53	GBM
EGFRvIII/CDKN2A/PTEN	GBM
H3F3A-K27M/ARTX/p53	Paediatric GBM
H3F3A-G34R/ARTX/p53	Paediatric GBM

Abbreviation
GBM: glioblastoma;
CNS-PNET: center nervous system primitive neuroectodermal tumor;
MB: medulloblastoma
AT/RT: atypical teratoid/rhabdoid tumor

Supplementary Table 2. Primers for cloning oncogenes into sleeping beauty construct

Gene symbols	Primers	
MYC	upstream	GACGGCGCGCCCGCCACCATGCTGGATTTTTTTCGGGTAG
	downstream	GACACCGGTTTACGCACAAGAGTTCCGTAG
EGFR/EGFRvIII	upstream	GACGGCGCGCCCGCCACCATGCGACCCTCCGGGACG
	downstream	GACACCGGTTCATGCTCCAATAAATTCACTG
PDGFRA	upstream	GACGGCGCGCCCGCCACCATGGGGACTTCCCATCCGGCGTTC
	downstream	GACACCGGTTTACAGGAAGCTGTCTTCCACCAG
CDK4	upstream	GACGGCGCGCCCGCCACCATGGCTACCTCTCGATATGAGC
	downstream	GACACCGGTTCACTCCGGATTACCTTCATCC
MDM2-B	upstream	GACGGCGCGCCCGCCACCATGTGCAATACCAACATGTCTG
	downstream	GACACCGGTCTAGGGGAAATAAGTTAGCAC
H3F3A-K27M/ H3F3A-G34R	upstream	CATTTTGGCAAAGAATTCCCTCGATACCGGGGGCGCGCCCGCCACCATGGCTCGTACAAAGCAGACTGC
	downstream	CGGGAATGCTAGCAATCATTGGTTGATCAGCTTTGTTACCGGTTTAAGCACGTTCTCCACGTATG

Supplementary Table 3. Primers for cloning tumor suppressor guide RNAs into CRISPR-Cas9 construct

Gene symbols	Primers	
CDKN2A	Top	CACCGTCCCGGGCAGCGTCGTGCAC
	Bottom	AAACGTGCACGACGCTGCCCGGGAC
CDKN2B	Top	CACCGACGGAGTCAACCGTTTCGGG
	Bottom	AAACCCCGAAACGGTTGACTCCGTC
NF1	Top	CACCGCTCGTCGAAGCGGCTGACCA
	Bottom	AAACTGGTCAGCCGCTTCGACGAGC
PTEN	Top	CACCGAACTTGTCTTCCCGTCGTGT
	Bottom	AAACACACGACGGGAAGACAAGTTC
p53	Top	CACCGTCGACGCTAGGATCTGACTG
	Bottom	AAACCAGTCAGATCCTAGCGTCGAC
RB1	Top	CACCGCGGTGGCGGCCGTTTTTCGG
	Bottom	AAACCCGAAAAACGGCCGCCACCGC
ATRX	Top	CACCGAAATTCCGAGTTTCGAGCGA
	Bottom	AAACTCGCTCGAAACTCGGAATTTC
SMARCB1	Top	CACCGAGAACCTCGGAACATACGG
	Bottom	AAACCCGTATGTTCCGAGGTTCTC
PTCH1	Top	CACCGCAGATAGTCCCGGTCCGGCG
	Bottom	AAACCGCCGGACCGGGACTATCTGC
CTNNB1	Top	CACCGAAACAGCTCGTTGTACCGCT
	Bottom	AAACAGCGGTACAACGAGCTGTTTC

Supplementary Table 4. Primers for RT-PCR

Gene symbols	Primers	
MYC	Top	TCGGATTCTCTGCTCTCCTC
	Bottom	CCTGCCTCTTTTCCACAGAA
EGFR/EGFRvIII	Top	CGGGCTCTGGAGGAAAAG
	Bottom	GCCCTTCGCACTTCTTACAC
TBP	Top	GGGCACCACTCCACTGTATC
	Bottom	CGAAGTGCAATGGTCTTTAGG

Supplementary Table 5. Primers for amplification of CRISPR-Cas9 targeting gene locus

Gene symbols	Primers	
CDKN2A	Top	CAGTGCTCTCTGCCTGTGAC
	Bottom	TGTGCTGGAAAATGAATGCT
CDKN2B	Top	CGTTAAGTTTACGGCCAACG
	Bottom	GGAATCCCGTCTCATTCTCA
NF1	Top	CGTGGAAAGGATCCCACTT
	Bottom	CCCCTAAACGTTACCCACCT
PTEN	Top	TGCTTGAGATCAAGATTGCAG
	Bottom	GCCATAAGGCCTTTTCCTTC
TP53	Top	TTTAGTGGTGGGAAGGTTGG
	Bottom	GGGGACTGTAGATGGGTGAA

Supplementary Table 6. Primary Antibodies

Antigen	Species	Company	Catalog No.	Dilution	Application	Datasheet links
BRACHYURY	Goat	R&D Systems	AF2085	1:200	IF	https://resources.rndsystems.com/pdfs/datasheets/af2085.pdf
CD31	Mouse	Dako	M0832	1:200	IF	http://www.finels.com/product/up_files/M0823.pdf
CD99	Rabbit	Abcam	ab108297	1:500	IF	http://www.abcam.com/CD99-antibody-EPR3096-ab108297.pdf
FOXF1	Goat	R&D Systems	AF4798	1:200	IF	https://resources.rndsystems.com/pdfs/datasheets/af4798.pdf
GFAP	Rabbit	DAKO	Z0334	1:500	IF&IHC	https://www.agilent.com/en/products/immunohistochemistry/antibodies-controls/multipurpose-antibodies/glial-fibrillary-acidic-protein
GFP	Chicken	Abcam	ab13970	1:500	IF&IHC	http://www.abcam.com/GFP-antibody-ab13970.pdf
HuC/D	Mouse	Thermo Fisher Scientific	A-21271	1:100	IF	https://www.thermofisher.com/order/genome-database/generatePdf?productName=HuC/HuD&assayType=PRANT&detailed=true&productId=A-21271
Ki67	Mouse	BD Biosciences	550609	1:100	IF&IHC	http://www.bdbiosciences.com/ds/pm/tds/550609.pdf
MAP2	Rabbit	Merck Millipore	MAB3418	1:500	IHC	http://www.merckmillipore.com/AT/de/product/Anti-MAP2-Antibody-clone-AP20,MM_NF-MAB3418
MMP2	Rabbit	Abcam	ab92536	1:200	IF	http://www.abcam.com/MMP2-antibody-EPR1184-ab92536.pdf
N-CADHERIN	Mouse	BD Biosciences	610920	1:500	IF	http://www.bdbiosciences.com/ds/pm/tds/610920.pdf
NESTIN	Mouse	BD Biosciences	611658	1:200	IF	http://www.bdbiosciences.com/ds/pm/tds/611658.pdf
PLAU	Rabbit	Abcam	ab24121	1:200	IF	http://www.abcam.com/Urokinase-antibody-ab24121.pdf
S100β	Rabbit	Abcam	ab52642	1:200	IF	http://www.abcam.com/S100-beta-antibody-EP1576Y-ab52642.pdf
SOX1	Goat	R&D Systems	AF3389	1:200	IF&IHC	https://resources.rndsystems.com/pdfs/datasheets/af3369.pdf
SOX2	Rabbit	Abcam	ab97959	1:1000	IF	http://www.abcam.com/SOX2-antibody-ab97959.pdf
SOX17	Goat	R&D Systems	AF1924	1:100	IF	https://resources.rndsystems.com/pdfs/datasheets/af1924.pdf
VIM	Mouse	Santa Cruz Biotechnology	sc-6260	1:100	IF	https://datasheets.scbt.com/sc-6260.pdf

Supplementary Table 7. Secondary Antibodies

Host	Recognizes	Fluophore	Company	Catalog No.	Dilution	Application
Donkey	Chicken	Alexa Fluor 488	Jackson Immuno	703-605-155	1:500	IF
Donkey	Rabbit	Alexa Fluor 568	Invitrogen	A10042	1:500	IF
Donkey	Rabbit	Alexa Fluor 647	Invitrogen	A31573	1:500	IF
Donkey	Mouse	Alexa Fluor 647	Invitrogen	A31571	1:500	IF
Donkey	Mouse	Alexa Fluor 568	Invitrogen	A10036	1:500	IF
Donkey	Goat	Alexa Fluor 568	Invitrogen	A11057	1:500	IF
Goat	Mouse IgG2b	Alexa Fluor 568	Invitrogen	A21144	1:500	IF
Goat	Rabbit	n/a	Dako	E0432	1:500	IHC
Goat	Chicken	n/a	Abcam	Ab97135	1:500	IHC
Rabbit	Goat	n/a	Dako	F0250	1:500	IHC