



**Supplementary Table 1: Enriched shRNAs and their fold change from in vivo shRNA library screening.**

shRNA	Tumor/vector
Alox12b.587	500
Alox12b.728	25
Alox15b.1252	245
Alox15b.2865	50
Aloxe3.550	2
Chd3.2619	16
Chd3.400	5
Chrb1.1097	67
Chrb1.1830	10
Ctdnep1.426	27
Ctdnep1.599	6
Ctdnep1.602	20
Fgf11.417	300
Fgf11.418	36
Fgf11.553	69
Lsmd1.421	8
Lsmd1.428	17
Mgl2.435	51
Mgl2.84	16
Myh1.2253	27
Myh1.3191	10
Myh1.4537	20
Myh3.5619	5
Myh3.910	25
Myh8.48	21
Myh8.5400	14
Ndel1.1600	140
Ndel1.1637	40
Ndel1.2287	2
Ndel1.324	2
Ndel1.332	21
Ntn1.1687	115
Ntn1.3919	52
Phf23.338	80
Phf23.877	57
Phf23.971	46
Rcvrn.1033	76
Rcvrn.17	63
Usp43.4137	20
Usp43.4248	3

**Supplementary Table 2: Primer sequences**

Genotyping primers and PCR primers for Southern probes:

11B3-F(puroF)	TGCATCCATCTAGATCCACTG
11B3-R(puroR)	CCTTCCATCTGTTGCTGCG
Neo-F	TTGAACAAGATGGATTGCACG
Neo-R	AAGAAGGCGATAGAAGGCGA
91j22-F	TGCTCTATTTGCTCAGTGTGCTT
91j22-R	AAGGCTGGATCCTGAGTGAAA
248j19-F	TGTCTCATGCACTGAGGTTTTTG
248j19-R	ACTCTGAGAGCACCTGCATGTT
df-F	CCTCATGGACTAATTATGGAC
df-R	CCAGTTTCACTAATGACACA
dp-F	AACTGGCTGAGTGACGCCCTTTAT
dp-R	TGAGACGTGCTACTTCCATTTGTC

Q- PCR primers:

Sco1-F	AGCATTGGGAAGCCTTTACT
Sco1-R	CAATACCCATTGACCCAGGTAG
Trp53 exon3-F	TCCAGACTTCCTCCAGAAGATA
Trp53 exon3-R	CTGTGGATGGGACAAAGAAGA
Trp53 exon5-F	ACAGCGTGGTGGTACCTTAT
Trp53 exon5-R	GGGTTGCTAGAAAGTCAACATC

Trp53 exon9-F TTGTCCAGTGCTTCCATCTC  
Trp53 exon9-R TCCTTTAACTCTAAGGCCTCATTC  
Eif5a-F ACACTCTTCTAAGCCACCAATC  
Eif5a-R GATATCTGCCCGTCAACTCATAA  
Alox12-F CTTTGATACTCTACTTCAGGGAGTT  
Alox12-R CAGATTTGGTGTGGCCATTG  
Nf1-F GCTTCACTCATTGCCCTGATA  
Nf1-R GCAGATCATGAGTGGTCTCTTAC  
Rpa3-F TGAACAGTACGGTGCTTTACTC  
Rpa3-R CCGTGCTCTGTGCATCTTAT  
11B3-Q-F AGCTGCAAGAACTCTTCCTCACG  
11B3-Q-R AGGAGGCCTTCCATCTGTTGCT  
Actin-F TGGTGATAAGTGGCCTTGGAGTGT  
Actin-R ATGCAAGGAGTGCAAGAACACAGC  
p21-Q-F ATCACCAGGATTGGACATGG  
p21-Q-R CGGTGTCAGAGTCTAGGGGA  
HPRT-F GCGTCGTGATTAGCGATGATGAAC  
HPRT-R GAGCAAGTCTTTCAGTCCTGTCCA

PCR primers for Trp53 sequencing:

p53-exon2-4-F TGGATGTCCACCTTCTTTT  
p53-exon2-4-R AGCCAAGAAAGGAATGTGAGG

p53-exon5-6-F	AAAGGTCCCAGTCCTCTCTTT
p53-exon5-6-R	TGTTAAAGTAGACCCTGGGCT
p53-exon7-9-F	TGTGCCGAACAGGTGGAATAT
p53-exon7-9-R	ACGGCTAGAGATAAAGCCACTGA
p53-exon10-F	CCCCCAAAAAAAAAAAAAACAA
p53-exon10-R	TCAAGAAGTCAGTTCTCGTAGGGT
p53-exon11-F	ATCCCTACCCATAGTAGAAGCCAT
p53-exon11-R	TTCTGGAACCCAAGTTCCC

**Supplementary Table 3: shRNA sequences**

Alox15b.1252	TTGATGTGCAGTGTGTACCGAA
Alox15b.2865	TATGTGCATACACTGTCGCTGT
Eif5a.691	TAGGCTCATGGATCACTGCTGC
Eif5a.754	TTGAATAGGAGTCCAGCCAAG
p53.1148	AACTCTAAGGCCTCATT CAGCT
p53.1224	TTACACATGTACTTGTAGTGGA
Ren.713	TAGATAAGCATTATAATTCCTA