

**Supplemental table 1. Type of mutation and allele frequency in 11 LCNEC patients with solitary brain metastases**

	Gene	Sample place	Allele frequency	Position	Type of mutation	Change base	Change codon
<b>SCLC-like</b>							
<b>A</b>	TP53	Lung	0.61	7577538	Nonsynonymous SNV Stopgain	C → A	Arg → Leu
			0.29	7574012		C → A	Glu → STOP
		Brain	0.61	7577538	Nonsynonymous SNV Stopgain	C → A	Arg → Leu
			0.32	7574012		C → A	Glu → STOP
	RB1	Lung	0.45	48955517	Stopgain	G → T	Glu → STOP
			0.45	48955517		G → T	Glu → STOP
<b>B</b>	RB1	Lung	0.64	49033822	Splice mutation	A → C	Splice mutation
		Brain	0.79	49033822	Splice mutation	A → C	Splice mutation
<b>C</b>	TP53	Lung	0.39	7578257	Stopgain	C → A	Glu → STOP
		Brain	0.48	7578257	Stopgain	C → A	Glu → STOP
	RB1	Lung	0.75	49033932	Nonsynonymous SNV	A → G	Asn → Ser
		Brain	0.79	49033932	Nonsynonymous SNV	A → G	Asn → Ser
<b>D</b>	TP53	Lung	0.72	7579529	Frameshift deletion	A → .	Trp → frameshift
		Brain	0.89	7579529	Frameshift deletion	A → .	Trp → frameshift
	RB1	Lung	0.81	49047515	Stopgain	G → T	Glu → STOP
		Brain	0.94	49047515	Stopgain	G → T	Glu → STOP
<b>E</b>	TP53	Lung	0.34	7576928	Splice mutation	T → A	Splice mutation
		Brain	0.62	7576928	Splice mutation	T → A	Splice mutation
<b>F</b>	TP53	Lung	0.76	7578449	Nonsynonymous SNV	C → T	Ala → Thr
<b>NSCLC-like</b>							
<b>G</b>	TP53	Brain	0.74	7578188	Nonframeshift deletion	ATAGGGCACCCAC CACACT → .	Nonframeshift deletion
	KEAP1	Brain	0.80	10610349	Stopgain	C → A	Glu → STOP

			0.81	10610350	Nonsynonymous SNV	C → A	Met → Ile
	STK11	Brain	0.78	1207120	Stopgain	G → T	Glu → stop
<b>H</b>	TP53	Brain	0.80	7578457	Nonsynonymous SNV	C → A	Arg → Leu
<b>Indefinite</b>							
<b>I</b>	TP53	Brain	0.94	7578525	Nonsynonymous SNV	G → C	Cys → Trp
	RB1	Brain	0.87	49039185	Nonsynonymous SNV	T → G	Phe → Val
<b>J</b>	KEAP1	Lung	0.89	10602341	Nonsynonymous SNV	G → A	Arg → Cys
		Brain	0.95	10602341	Nonsynonymous SNV	G → A	Arg → Cys
<b>K</b>	TP53	Lung	0.17	7577097	Nonsynonymous SNV	C → T	Asp → Asn
		Brain	0.55	7577506	Nonsynonymous SNV (different)	C → A	Asp → Tyr
	RB1	Brain	0.83	48916851	Splice mutation	G → C	Splice mutation
	KEAP1	Lung	0.45	10597423	Nonsynonymous SNV	C → T	Val → Met
		Brain	0.74	10597423	Nonsynonymous SNV	C → T	Val → Met
	STK11	Brain	0.79	1207078	Frameshift insertion	G → T	Gly → Trp

SNV = single nucleotide variant, Arg = Arginine, Leu = Leucine, Glu = Glutamic acid, N/a = not applicable, Asn = Asparagine, Ser = Serine, Trp = Tryptophan, Ala = Alanine, Thr = Threonine, Met = Methionine, Ile = Isoleucine, Cys = Cysteine, Phe = Phenylalanine, Val = Valine, Asp = Aspartic acid, Tyr = Tyrosine, Gly = Glycine.