

Supplementary table 1.

	Pt 4	Pt 3	Pt 2	Pt 5	Pt 9	Mean
<i>PIK3CD</i>	184.31	240.68	163.02	251.8	245.87	217.136
<i>MTOR</i>	221.82	273.82	250.18	271.08	420.03	287.386
<i>RPS6KA1</i>	240.29	333.75	258.36	311.37	436.89	316.132
<i>ARID1A</i>	275.93	390.69	328.22	406.58	532.42	386.768
<i>RRAGC</i>	196.64	273.73	281.66	289.57	426.4	293.6
<i>MACF1</i>	210.13	269.18	275.34	272.9	444.78	294.466
<i>KIAA0754</i>	180.32	204.99	202.58	253.1	407.31	249.66
<i>SLC2A1</i>	181.55	225.73	172.79	204.35	331.55	223.194
<i>PIK3R3</i>	183.58	238.87	243.55	244.69	403.63	262.864
<i>PRKAA2</i>	164.06	223.86	246.86	229.04	345.74	241.912
<i>FUBP1</i>	127.26	164.94	192.34	158.78	328.29	194.322
<i>KCNA2</i>	216.99	331.66	315.79	319.79	573.64	351.574
<i>FASLG</i>	152.3	193.92	176.02	199.84	283.56	201.128
<i>H3F3A</i>	122.08	169.13	176.9	150.77	360.39	195.854
<i>SDCCAG8</i>	131.94	202.98	248.09	195.32	437.05	243.076
<i>AKT3</i>	125	160.88	203.63	162.58	322.69	194.956
<i>HNRNPU</i>	168.01	239.22	242.48	242.33	437.97	266.002
<i>DNMT3A</i>	194.87	246.05	177.32	237.71	316.53	234.496
<i>SCN2A</i>	148.05	196.92	228.4	195.95	389.87	231.838
<i>SCN1A</i>	146.65	191.14	220.15	189.33	366.35	222.724
<i>IDH1</i>	163.48	210.68	225.01	204.9	385.52	237.918
<i>IRS1</i>	171.07	265.87	176.33	263.36	326.76	240.678
<i>CAB39</i>	142.07	170.36	196.38	171.42	315.1	199.066
<i>EIF4E2</i>	208.02	252.42	233.42	257.64	395.08	269.316
<i>CHL1</i>	144.5	184.74	213.17	193.96	353.14	217.902
<i>CNTN6</i>	138.86	180.86	223.39	184.56	355.33	216.6
<i>CNTN4</i>	158.76	208.12	232.86	220.26	378.6	239.72
<i>VHL</i>	194.45	235.12	211	251.37	335.55	245.498
<i>SEC13</i>	189.96	241.46	211.24	238.68	341.83	244.634
<i>SLC6A1</i>	206.27	257.12	206.61	243.87	358.42	254.458
<i>MYD88</i>	217.21	300.18	224.03	293.34	396.08	286.168
<i>NPRL2</i>	203.67	263.18	202.71	223.47	397.85	258.176
<i>TLR9</i>	199.17	278.95	192.51	289.04	307.8	253.494
<i>TWF2</i>	143.32	179.45	123.85	164.8	202.03	162.69

PBRM1	206.49	259.38	281.7	277.31	434.95	291.966
PIK3CB	167.56	203.5	235.5	209.42	358.24	234.844
PIK3CA	133.62	173.52	220.87	171.65	348.3	209.592
FGFR3	137.97	200.08	108.69	220.64	139.41	161.358
LDB2	198.94	255.81	251.22	251.43	446.97	280.874
EIF4E	155.93	240.51	236.88	263.47	377.64	254.886
TLR2	178.61	228.73	265.39	245.44	421.89	268.012
FAT1	213.31	290.19	311.15	288.6	489.96	318.642
TERT	144.85	189.91	126.7	199.79	168.79	166.008
RICTOR	125.2	170.04	208.38	167.18	347.84	203.728
PRKAA1	142.55	201.35	217.67	204.48	367.98	226.806
HCN1	145.02	187.35	182.71	201.77	295.25	202.42
MEF2C	157.79	203.46	213.88	193.82	437.75	241.34
APC	214.16	317.21	349.93	330.41	571.74	356.69
CD14	210.08	325.21	236.84	339.58	437.71	309.884
GABRG2	162.62	220.09	249.76	236.47	410.06	255.8
EIF4E1B	143.68	172.18	129.99	164.35	225.03	167.046
TUBB2B	104.79	157.43	124.1	156.57	231.29	154.836
TNF	226.04	253.95	204.46	255.91	325.76	253.224
SYNGAP1	299.37	403.97	319.79	446.19	485.06	390.876
VEGFA	192.13	227.41	181.14	228.58	277.3	221.312
RRAGD	161.88	221.74	240.23	226.49	408.71	251.81
LAMA2	152.71	216.16	233.15	206.81	400.56	241.878
MYB	192.31	271.09	308.87	287.84	465.6	305.142
RPS6KA2	192.47	233.46	195.97	222.15	333.76	235.562
MIOS	157.49	220.95	271.33	212.37	445.63	261.554
EGFR	193.15	237.5	220.19	239.47	377.06	253.474
ADAM22	138.37	185.04	213.79	192.03	359.4	217.726
RELN	165.91	224.52	229.02	213.61	369.73	240.558
PIK3CG	202.72	276.69	261.48	287.29	422.12	290.06
BRAF	144.93	176.18	210.19	173.96	316.83	204.418
CNTNAP2	171.6	227.66	232.72	225.81	393.83	250.324
RHEB	147.7	195.21	200.82	207.14	322.18	214.61
KMT2C	197.56	258.5	272.58	253.86	420.98	280.696
EIF4EBP1	143.76	178.91	144.44	173.85	237.19	175.63
FGFR1	196.72	242.63	196.38	236.07	323.81	239.122
IKBKB	203.43	240.29	208.34	243.14	362.47	251.534
CPA6	156.31	202.88	216.75	210.1	329.04	223.016

KCNQ3	180.78	217.26	190.55	224.04	315.56	225.638
RRAGA	229.43	360.86	328.51	318.41	674.38	382.318
RPS6	189.56	276.89	268.28	260.87	538.79	306.878
CDKN2A	191.1	264.46	172.42	301.02	307.83	247.366
CDKN2B	127.35	205.42	116.08	212.04	190.53	170.284
STXBP1	218.15	260.13	230.46	267.94	383.65	272.066
DNM1	202.12	237.16	174.85	254.93	285.9	230.992
SPTAN1	209.89	251.52	223.1	244.82	361.56	258.178
TSC1	197.1	260.83	250.85	249.97	415.4	274.83
KCNT1	153.19	214.79	132.66	235.97	163.78	180.078
GRIN1	157.71	218.08	149.61	254.57	191.54	194.302
ITGB1	166.4	222.18	267.93	236.5	416.03	261.808
ANK3	193.08	266.31	287.1	266.66	469.25	296.48
DDIT4	168.71	288.17	181.14	276.35	358.08	254.49
KCNMA1	216.24	284.41	282.81	302.17	440.37	305.2
PTEN	113.44	169.19	185.7	168.14	311.96	189.686
LGI1	159.45	214.76	247.01	222.65	409.29	250.632
DMBT1	171.83	234.56	221.1	239.45	318.43	237.074
MGMT	165.86	209.07	180.21	206.81	261.73	204.736
INS	98.59	125.73	64.92	145.55	80.61	103.08
INS-IGF2	95.55	147.86	96.72	156.75	123.9	124.156
KCNC1	213.51	301.89	226.86	331.51	351.94	285.142
AHNAK	248.64	356.02	369.81	351.2	553.04	375.742
RPS6KB2	181.14	238.76	159.23	230.97	290.22	220.064
PAK1	222.17	302.85	324.33	327.76	488.18	333.058
HEPACAM	162.53	205.3	159.84	183.29	307.74	203.74
GRIN2B	215.11	287.82	256.82	290.6	431.27	296.324
KRAS	135.22	175.2	225.87	162.93	356.58	211.16
NELL2	150.19	200.75	220.02	196.81	379.79	229.512
KMT2D	286.26	376.19	304.28	387.72	502.92	371.474
TUBA1A	173.89	236.92	204.51	206.17	467.8	257.858
SCN8A	214.02	274.76	268.07	285.4	409.19	290.288
EIF4B	205.87	268.81	265.88	277.98	443.79	292.466
CDK4	294.45	388.32	343.76	398.2	662.36	417.418
IGF1	164.77	209.33	206.88	222.61	341.63	229.044
ULK1	178.16	242.84	131.27	260.81	182.27	199.07
CAB39L	167.7	198.59	215.79	188.56	347.11	223.55
FOXG1	301.91	550.79	376.47	667.95	666.84	512.792

Epileptic
Disorders

HIF1A	178.06	232.2	258.17	253.98	415.97	267.676
FOS	194.2	308.72	216.95	289.2	479.22	297.658
GABRB3	223.68	338.63	284.57	384	421.43	330.462
ULK3	167.26	198.24	144.19	192.14	256.38	191.642
CHD2	193	250.94	266.05	250.56	464.42	284.994
NPRL3	258.76	355.86	262.96	363.84	428.97	334.078
WDR24	193.57	292.76	174.68	286.26	290.43	247.54
TSC2	178.75	243.33	162.77	253.95	235.52	214.864
MLST8	180.22	276.76	174.53	272.69	304.35	241.71
TBC1D24	214.18	314.25	196.9	315.41	299.09	267.966
PDPK1	77.8	113.2	88.9	110.27	127.79	103.592
GRIN2A	209.39	283.42	264.19	281.88	449.18	297.612
PRKCB	228.16	291.55	270.61	302.05	406.86	299.846
PRRT2	175.09	224.17	145.44	224.43	303.6	214.546
MAPK3	193.89	232.67	162.52	209.97	295.8	218.97
STX1B	197.79	229.84	168.7	249.05	260.81	221.238
GNAO1	242.89	321.26	253.16	318.53	437.4	314.648
WDR59	252.9	313.75	285.05	318.79	445.23	323.144
MC1R	237.55	383.8	250.11	403.71	398.21	334.676
TUBB3	216	306.41	213.36	309.47	304.76	270
TP53	311.04	381.24	328.2	420.95	503.58	389.002
PIK3R5	158.59	178.32	127.96	183.65	188.47	167.398
ULK2	190.42	243.68	252.75	259.31	369.71	263.174
NF1	159.18	203.41	237.22	201.33	378.62	235.952
RPS6KB1	166.95	207.5	221.72	220.4	337.73	230.86
STRADA	197.14	239.32	219.57	239.27	340.89	247.238
PRKCA	229.13	282.46	274.74	285.87	449.81	304.402
RPTOR	217.22	287.39	218.55	281.84	325.43	266.086
SEH1L	170	230.33	237.57	240.4	358.88	247.436
PIK3R2	178.58	219	141.47	206.35	251.89	199.458
AKT2	185.42	222.44	165.78	216.93	271.93	212.5
AKT1S1	108.34	142.95	82.29	144.43	165.81	128.764
PRKCG	192.88	222.78	172.2	232.4	258.43	215.738
RIN2	207.43	287.14	249.93	264	488.88	299.476
KCNB1	229.72	280.95	244.44	276.58	400.88	286.514
CHRNA4	163.55	220.91	138.48	227.14	185.26	187.068
KCNQ2	147.76	196.34	123.91	209.61	165.2	168.564
EEF1A2	162.37	231.85	150.2	244.24	203.23	198.378

Epileptic
Disorders

SIK1	157.22	205.47	135.11	215.46	200.64	182.78
MAPK1	202.87	242.27	246.7	267.94	376.8	267.316
DEPDC5	253.16	316.57	295.49	330.17	466.25	332.328
OFD1	72.59	188.2	211.89	96.81	362.78	186.454
CDKL5	103.19	250.71	251.97	134.28	386.84	225.398
RPS6KA3	76.23	166.33	186.75	98.24	271.44	159.798
ARX	45.94	136.4	79.23	72.78	123.49	91.568
SYN1	75.06	176.17	147.03	93.94	219.18	142.276
SLC35A2	97.85	250.16	181.46	135.81	284.03	189.862
RRAGB	75.23	191.46	216.98	100.86	310.78	179.062
ARHGEF9	95.22	234.88	222.96	126.73	337.43	203.444
ATRX	75.71	176.95	217.89	99.95	316.89	177.478
RPS6KA6	50.48	127.94	160.25	67.88	231.23	127.556
PCDH19	112.44	308.88	263.2	148.74	422.48	251.148
BTK	98.71	238.06	235.45	133.28	341.97	209.494
DCX	90.97	220.11	223.35	122.88	345.17	200.496
ALG13	78.48	203.94	219.23	108.52	338.61	189.756
FLNA	93.52	243.62	165.2	132.25	236.08	174.134
Mean	174.6814	241.5904	216.8182	236.7475	355.369	245.041 ± 59.999
Total reads	144339845	198040482	185741318	193696048	298990125	
10x coverage	98.9%	99.1%	98.7%	99%	99%	98.94%
50x coverage	94.7%	97.2%	95.9%	96.3%	97.3%	96.28%

List of 166 genes for targeted next-generation sequencing in five patients. Genes from the mTOR and PI3K-AKT signalling pathway, associated with low-grade brain tumours, and associated with epilepsy were included. Coverage per gene for every patient and mean coverage for all genes for every patient is shown. Pt: patient, as specified in *table 1*.

Supplementary table 2.

Pt	Chr	Start	Ref	Alt	Gene	Exonic Func	AAChange	Freq	ACMG	DX
4	11	62287497	G	A	AHNAK	SNV	NM_001620:exon5:c.C14392T;p.P4798S	0.43	VUS	FCDIIa
4	16	31012276	C	A	STX1B	SNV	NM_052874:exon4:c.G253T;p.A85S	0.47	VUS	FCDIIa
4	22	32253527	-	GAAAGGT	DEPDC5	INS	NM_001136029:exon31:c.3225_3226insGAAAGGT;p.D1075fs	0.41	PATH	FCDIIa
2	6	129634115	G	A	LAMA2	SNV	NM_000426:exon23:c.G3284A;p.R1095Q	0.5	VUS	FCDIIb
2	6	129637267	C	T	LAMA2	SNV	NM_000426:exon27:c.C4009T;p.H1337Y	0.53	VUS	FCDIIb
2	6	129687364	T	C	LAMA2	SNV	NM_000426:exon33:c.T4718C;p.F1573S	0.5	VUS	FCDIIb
2	X	153594950	C	T	FLNA	SNV	NM_001110556:exon7:c.G1045A;p.E349K	0.46	VUS	FCDIIb
5	16	29825022	C	G	PRRT2	SNV	NM_001256442:exon2:c.C647G;p.P216R	0.51	VUS	FCDIIb
9	12	132403787	C	T	ULK1	SNV	NM_003565:exon24:c.C2542T;p.R848C	0.45	VUS	FCDIIb
9	16	2547027	G	A	TBC1D24	SNV	NM_001199107:exon2:c.G878A;p.R293H	0.47	VUS	FCDIIb

List of variants after filtering showing variant allele frequency and ACMG classification. Pt: patient, as specified in *table 1*. Chr: chromosome; Start: genomic position in genome build GRCh37; Ref: reference allele; Alt: alternative allele; Exonic Func: exonic function of variant; SNV: single nucleotide variant; INS: frameshift insertion; AA change: predicted amino acid (AA) change; Freq: frequency of variant; ACMG: ACMG classification; VUS: variants of uncertain significance; PATH: likely pathogenic.