A	AKT1, AKT1S1, AKT2, AKT3, ASCL1, BRAF, CAB39, CAB39L, DDIT4, DEPDC5, Delta1, EIF4B, EIF4E, EIF4E1B, EIF4E2, EIF4EBP1, FOXG1, GSk3, HIF1A, ID1-4, IGF1, IKBKB, INS, IRS1, MAPK1, MAPK3, MIOS, MLST8, MTOR, NEUROD1, NEUROG1, NEUROG2, NPRL2, NPRL3, PDPK1, PIK3C2B, PIK3C3, PIK3CA, PIK3CB, PIK3CD, PIK3CG, PIK3R1, PIK3R2, PIK3R3, PIK3R5, PRKAA1, PRKAA2, PRKCA, PRKCB, PRKCG, PTEN, RAB6B, RALA, RHEB, RICTOR, RND1-3, RPS6, RPS6KA1, RPS6KA2, RPS6KA3, RPS6KA6, RPS6KB1, RPS6KB2, RPTOR, RRAGA, RRAGB, RRAGC, RRAGD, SEC13, SEH1L, STK11, STRADA, TBR2, TNF, TSC1, TSC2, ULK1, ULK2, ULK3, VEGFA, WDR24, WDR59, ZBTB18, ZNF337
B	C3orf33, GJA1, KCNAB1, SLC33A1
C	ATXN1, BCL11A, FANCL, GABRA2, GRIK1, KCNN2, PCDH7, PNPO, SCN1A, SCN2A, SCN3A, STAT4, STX1B, TTC21B, ZEB2
D	FANCL, BCL11A, SCN3A, SCN2A, TTC21B, SCN1A, HEATR3, BRD7
E	C8orf74, KIZ, KMT2E, LOC102723661, MACROD2, NKX2-2, NKX2-4, PINX1, PTBP2, SOX7, SRPK2, XRN2
F	ADCY2, ADD3, ANK3, CACNA1C, CD47, FADS2, FSTL5, GRIN2A, HDAC5, ITIH1, LMAN2L, MRPS33, NCAN, PACS1, PC, PLEKHO1, POU3F2, RIMS1, RPS6KA2, SCN2A, SHANK2, SRPK2, SSBP2, STARD9, STK4, THSD7A, TRANK1, ZCCHC2, ZNF592
G	BTNL2, C9orf72, GRN, HLA-DRA, HLA-DRB5, MAPT

Supplemental Table 1. The lists of candidate genes used for disease specificity analysis presented in Figure 3 for focal cortical dysplasia (**A**), hippocampal sclerosis (**B**), generalized epilepsy (**C**), all epilepsy (**D**), autism spectrum disorder (**E**), bipolar disorder (**F**) and frontotemporal dementia (**G**).

	Epilepsy	Generalized epilepsy	Hippocampal sclerosis	Autism spectrum disorder	Bipolar disorder	Frontotemporal dementia
PLS-1	-2.954 (0.003)	-1.629 (0.105)	-1.345 (0.185)	0.041 (0.961)	0.734 (0.473)	-1.197 (0.234)
PLS-2	-2.560 (0.014)	-2.348 (0.026)	-1.009 (0.303)	0.028 (0.988)	-0.786 (0.434)	-0.523 (0.579)

Supplemental Table 2. Enrichment ratio (uncorrected p value) of GWAS-derived risk genes used for disease specificity analysis presented in Figure 3.