

**S2. Molecular aberrations comparing paired primary breast cancer and brain metastases:
Group A case series.**

Case ID	Clinical subtype	Breast primary	Brain met
BCBM001	TNBC	TP53 (L257P)	TP53 (L257P)
BCBM002	HER2+	TP53 (R273H)	TP53 (R273H)
BCBM003	TNBC	TP53 (R248L)	TP53 (R248L)
BCBM004	HER2+	TP53 (R273C)	TP53 (R273C)
BCBM005	TNBC	Insufficient data due to poor coverage	TP53 (S106_R110 del) PIK3R1 (K567E), LOH
BCBM006	TNBC	TP53 (C176S), LOH	TP53 (C176S), LOH
BCBM007	HER2+	TP53 (R248Q), LOH	TP53 (R248Q), LOH CCNE1 Amplification
BCBM008	TNBC	TP53 (Q104*), LOH NOTCH2 (Y2392*) PTEN deletion CDH1 deletion	TP53 (p.Q104*), LOH NOTCH2 (p.Y2392*) PTEN deletion
BCBM009	HER2+	TP53 (V173L), LOH CCND1 Amplification	TP53 (V173L), LOH CCND1 Amplification CDKN2A deletion
BCBM010	HER2+	TP53 (G244D)	TP53 (G244D)
BCBM011	HR+HER2-	ARID1A (Q1095fs) GATA3 (V314fs, G378fs) SETD1B (Q371*)	ARID1A (p.Q1095fs) GATA3 (p.V314fs, p.G378fs) SETD1B (p.Q371*) Hyper-mutation (APOBEC) PIK3CA (E545K) ESR1 (E380Q, D273N, D351H)
BCBM012	TNBC	RB1 (Splice acceptor), LOH TP53 (S90fs), LOH	RB1 (Splice acceptor), LOH TP53 (p.S90fs, p.W91fs), LOH