

**Table S9. Oncogenic mutations detected in the breast tumor tissues from four BRCA1 mutation carriers.**

<b>Sample</b>	<b>Molecular subtype</b>	<b>Main oncogenic mutations</b>
Case 1 tumor	Luminal A	GATA3 c.984dup, p.R329Efs
Case 2 tumor	Luminal B	SPATA1 c.1354del, p.I452X; CCDC178 c.874dup, p.M292Nfs; BHLHE22 c.241_245del, p.G81Rfs; CCDC34 c.753G>C, p.K251N; MAGEB4 c.236G>T, p.G79V TBC1D31 c.1893dup <sup>#</sup>
Case 3 tumor	Basal-like	TP53 c.808T>A, p.F270I
Case 4 tumor	Basal-like	TP53 c.817C>T, p.R273C

<sup>#</sup>There weren't definite oncogenic mutations detected in tumor sample from case 2, and here we listed the high-quality non-synonymous somatic mutations with uncertain oncogenic significance detected from this tumor.