SUPPLEMENTARY MATERIALS

Pleomorphic adenomas and mucoepidermoid carcinomas of the breast are underpinned by fusion genes

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Supplementary Tables 1-3

Supplementary Table 1. Fusion genes identified in three breast pleomorphic adenomas and a breast mucoepidermoid carcinoma.

Case ID	Histology	Oncogenic fusion genes identified by RNA-sequencing	Oncogenic fusion gene identified by Archer FusionPlex	*PLAG1*/*HMGA2* rearrangement detected by FISH	*CRTC1-MAML2* fusion gene detected by FISH
BPA1	Pleomorphic adenoma	None	NT	No	NT
BPA2	Pleomorphic adenoma	NT	*CTNNB-PLAG1*	Yes *(PLAG1)*	NT
BPA3	Pleomorphic adenoma	*HMGA2-WIF1*	NT	NT	NT
BMEC2	Mucoepidermoid carcinoma	*CRTC1-MAML2*	NT	NT	Yes

FISH, fluorescence *in situ* hybridization; NT, not tested.

Supplementary Table 2: Fusion candidate genes identified by RNA-sequencing and Archer FusionPlex in the breast pleomorphic adenomas and mucoepidermoid carcinoma included in this study.

Case ID	Fusion Caller (RNA-seq)/Archer FusionPlex	5' Gene	3' Gene	5' Mapping	3' Mapping	Fusion Type	Crossing Reads	Encompassing Reads	In-Frame	Driver Probability (Oncofuse)
BPA3	STAR-Integrate, FusionCatcher, Defuse	WIF1	HMGA2	12:66232350+	12:66232349-	Intra-Chromosomal	56	145	No	0.024531268
BMEC2	STAR-Integrate, FusionCatcher, Defuse	CRTC1	MAML2	19:18794638+	11:95826681-	Inter-Chromosomal	4	7	No	0.128278142
BPA2	Archer FusionPlex	CTNNB1	PLAG1	3:41241161+	8:57083748-	Inter-Chromosomal	6	25	Yes	0.995056115

Supplementary Table 3. Primer sets for validation of candidate fusion genes by RT-PCR

Fusion gene	Primer set	Primer direction	Primer ID	Primer sequence
HMGA2-WIF1	Set #1	Forward	HW-1-Fwd	AATGACTTCCTTTTTCATTTGC
		Reverse	HW-1-Rv	TTAAGTGAAGGCGTGTGCTG
	Set #2	Forward	HW-2-Fwd	AATGTGTCCCTTGGTGCAGT
		Reverse	HW-2-Rv	TTAAGTGAAGGCGTGTGCTG
CRTC1-MAML2	Set #1	Forward	CM-1-Fwd	GCTGCACAATCAGAAGCAG
		Reverse	CM-1-Rv	TGAGTTGTCCACAAAGCCATT
	Set #2	Forward	CM-2-Fwd	CGGAAATTCAGCGAGAAGAT
		Reverse	CM-2-Rv	TGAGTTGTCCACAAAGCCATT