

**Additional file 29: Proposed therapeutic strategies in function of GES and robust subtyping results.**

Subtyping result	GES name	Proposed therapeutic strategy	Reference
C1	AR	Antiandrogens	(S45)
	ERBB2	Dual anti-HER2 therapeutic approach	(S46, S47)
	Molecular apocrine	Antiandrogens	(S45)
	PIK3CA	PIK3 inhibitors + antiandrogens	(S48)
C2 and C3	PRL	Anti-prolactin	(S49)
	p53	p53 restoration	(S50)
	CIN	Centrosome amplification inhibition	(S51)
	EGFR	EGFR inhibitors	(S52)
	IRGS	Iron depletion	(S53)
	MYC	MYC pathway inhibition	(S54, S55)
	PTEN loss	PTEN loss restoration	(S56, S57)
	CIBERSORT	Immunosuppression reversion	(S58)
C2	E2F3	E2F3 inhibitors	(S59)
	PNI	Perineural invasion inhibitors	(S60)
	M2/M1	TAM-focused therapeutic strategies	(S61)
	Neurons/Axonogenesis	Antineurogenic therapies, nerve dependence inhibitors	(S62-S64)
	VEGF	Antiangiogenesis	(S65)
C3	B-cell	Stimulation of adaptive immune response	(S58)
	CIBERSORT	Stimulation of adaptive immune response	(S58)
	CYT	Stimulation of adaptive immune response	(S58)
	MHC-1	Stimulation of adaptive immune response	(S58)
	MHC-2	Stimulation of adaptive immune response	(S58)
	STAT1	Stimulation of adaptive immune response	(S58)
	T-cell	Stimulation of adaptive immune response	(S58)
	Type I IFN	Stimulation of adaptive immune response	(S58)

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