

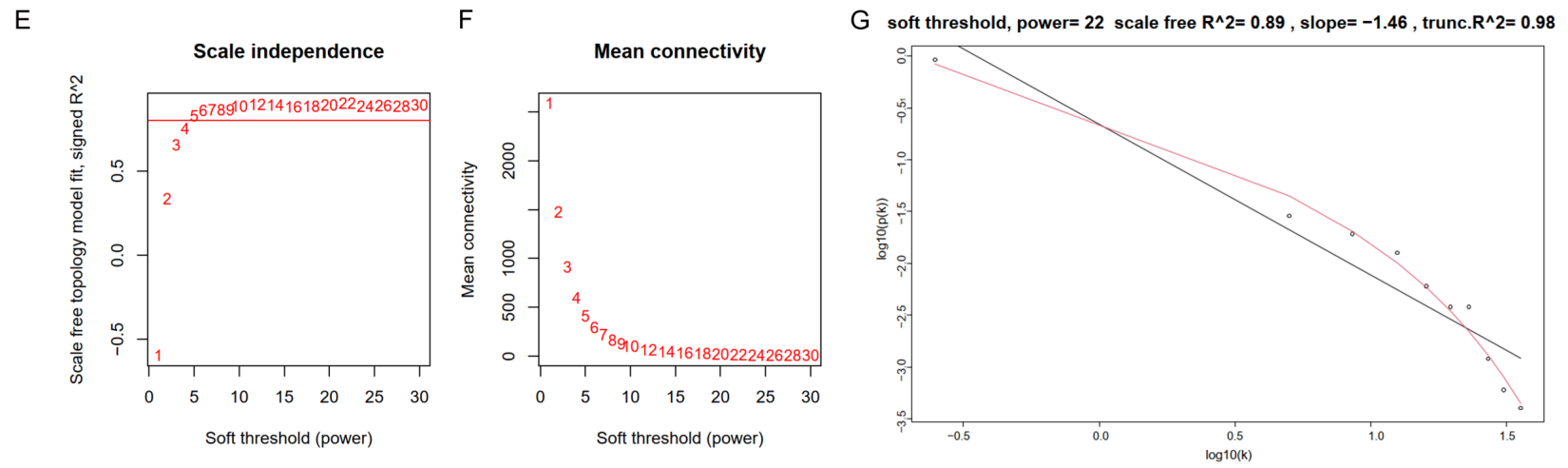
## ARAP3 regulates the tumor microenvironment of Ewing sarcoma

**Table S1.** Primer sequences used in this study

Gene	Forward primer (5'→3')	Reverse primer (5'→3')
Human <i>ARAP3</i>	AGTATGCAGACACGTTCCGAC	AGGCGTAGAATGCGTTTCCG
Human <i>TP53</i>	CAGCACATGACGGAGGTTGT	TCATCCAATACTCCACACGC
Human <i>CDKN1A</i>	CGATGGAACCTCGACTTTGTCA	GCACAAGGGTACAAGACAGTG
Human <i>BAX</i>	CCCGAGAGGTCTTTTCCGAG	CCAGCCCATGATGGTTCTGAT
Human <i>MDM2</i>	GAATCATCGGACTCAGGTACATC	TCTGTCTACTAATTGCTCTCCT
Human <i>GAPDH</i>	CTGGGCTACACTGAGCACCC	AAGTGGTCGTTGAGGGCAATG
Human <i>IL1B</i>	GGACAGGATATGGAGCAACAAG	TTC AACACGCAGGACAGGTA
Human <i>IL11</i>	ACTGCTGCTGCTGAAGACTC	CCACCCCTGCTCCTGAAATA
Mouse <i>Top2a</i>	ATGGCTATGGAGCTAAACTGTGT	CTTTGTCCAGGCTTTGCATTTT
Mouse <i>Acp5</i>	CACTCCCACCCTGAGATTTGT	CATCGTCTGCACGGTTCTG
Mouse <i>Nfatc1</i>	GACCCGGAGTTTCGACTTCG	TGACACTAGGGGACACATAACTG
Mouse <i>Gapdh</i>	TGGCCTCCGTGTTCTAC	GAGTTGCTGTTGAAGTCGCA



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**Figure S1.** Correction of batch effects and determination of soft threshold.

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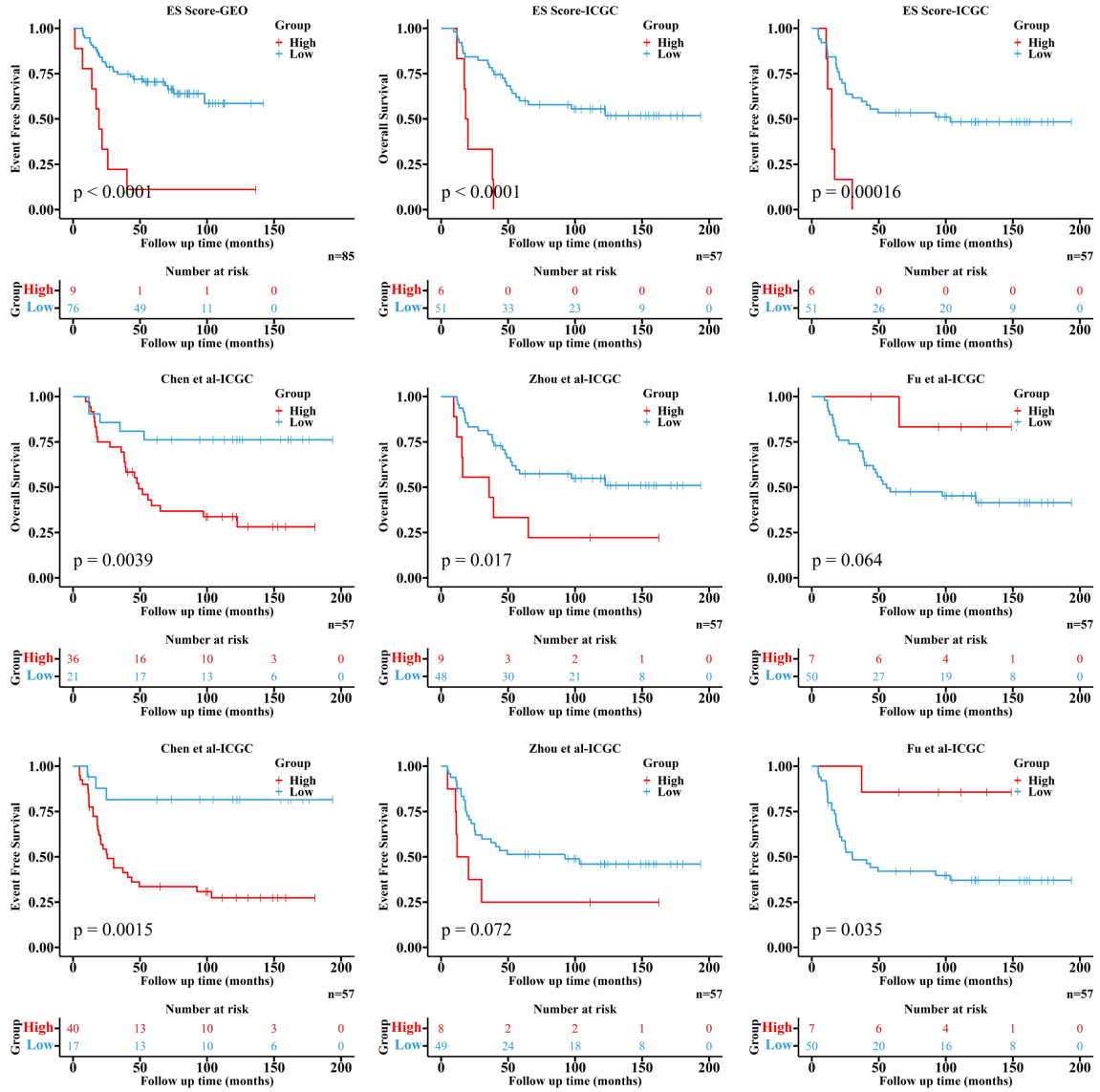


Figure S2. Kaplan-Meier curves for OS and EFS of ES Score and other published models.



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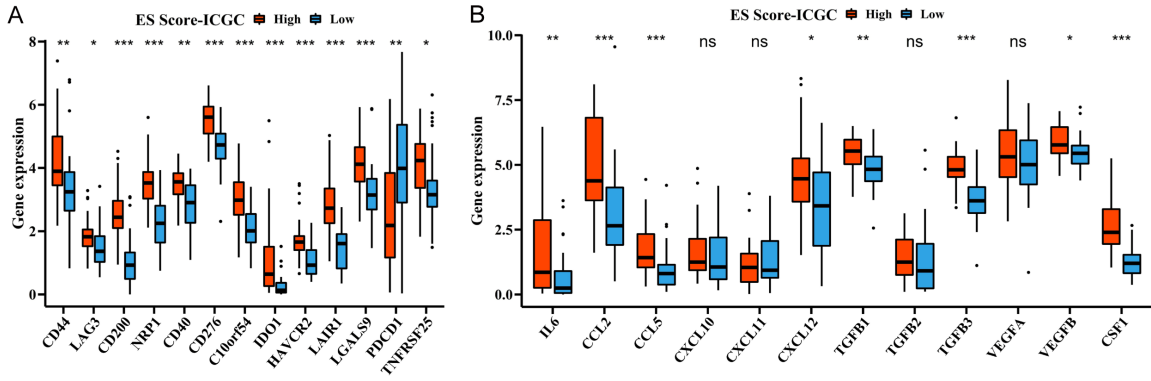


Figure S3. Expression of checkpoints and cytokines of high- and low-ES Score groups in ICGC cohort.

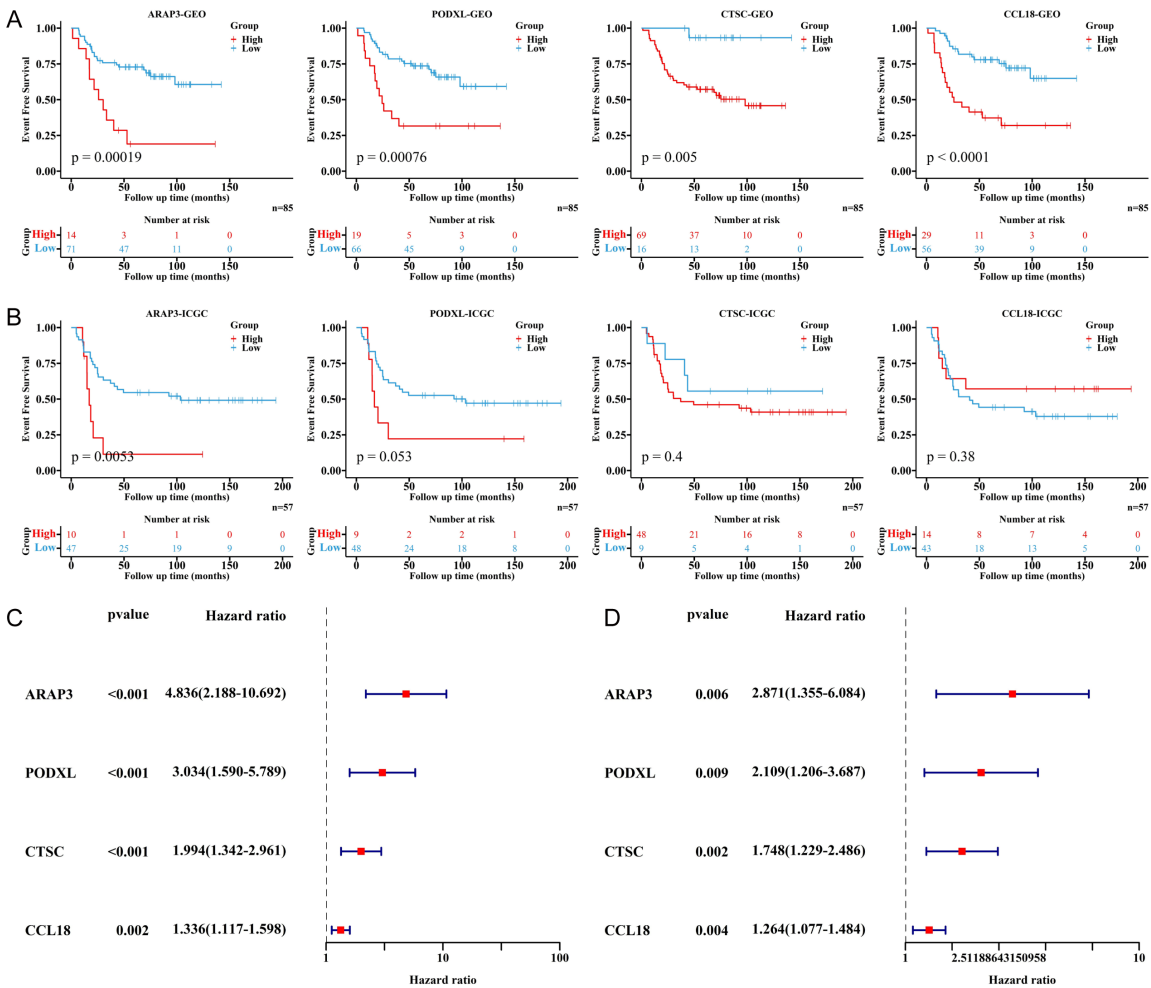


Figure S4. Survival analysis of ARAP3, PODXL, CTSC and CCL18.

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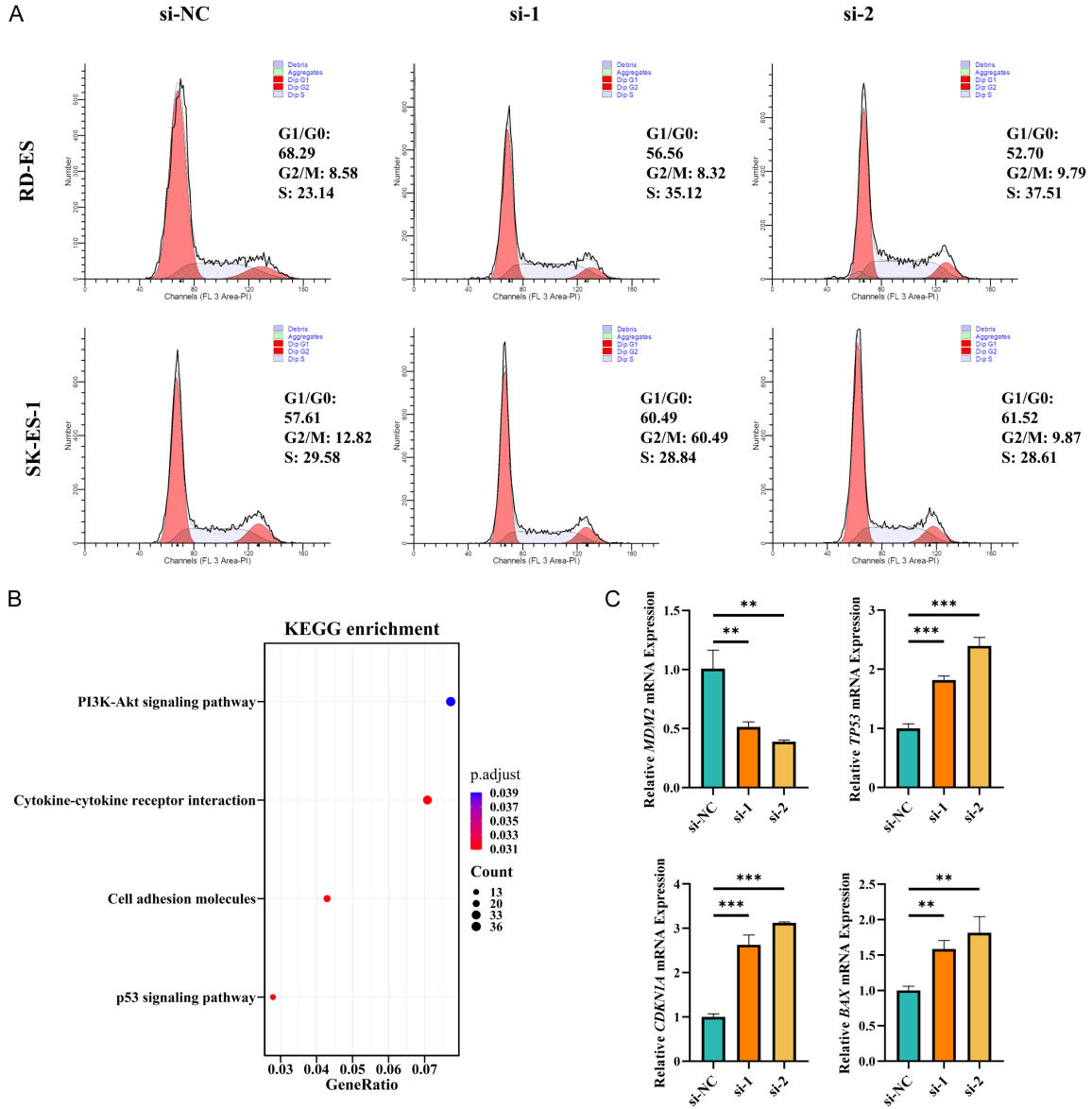
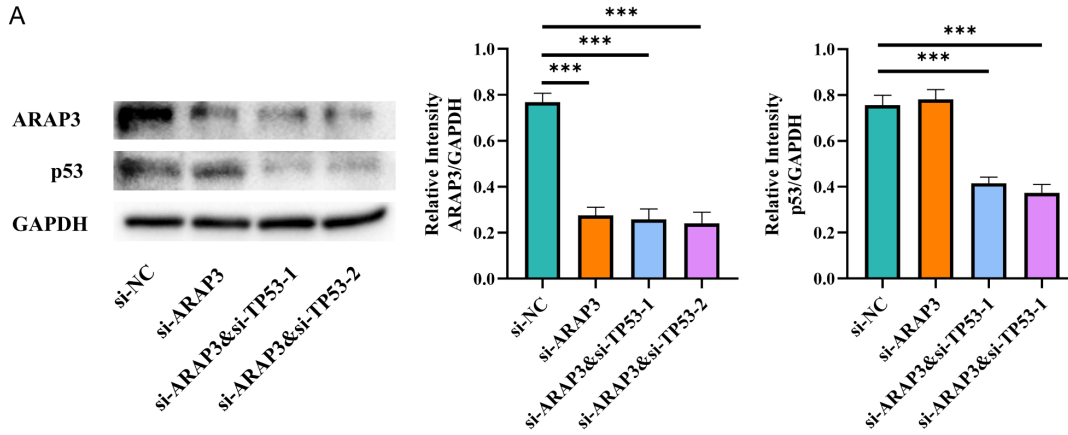


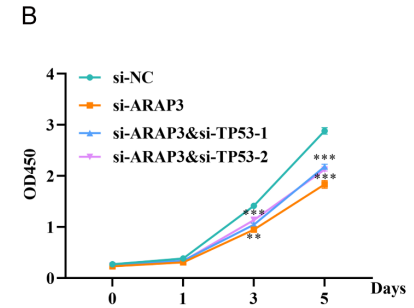
Figure S5. P53 signaling pathway may regulate the malignant behavior of ARAP3 knockdown ES cells.

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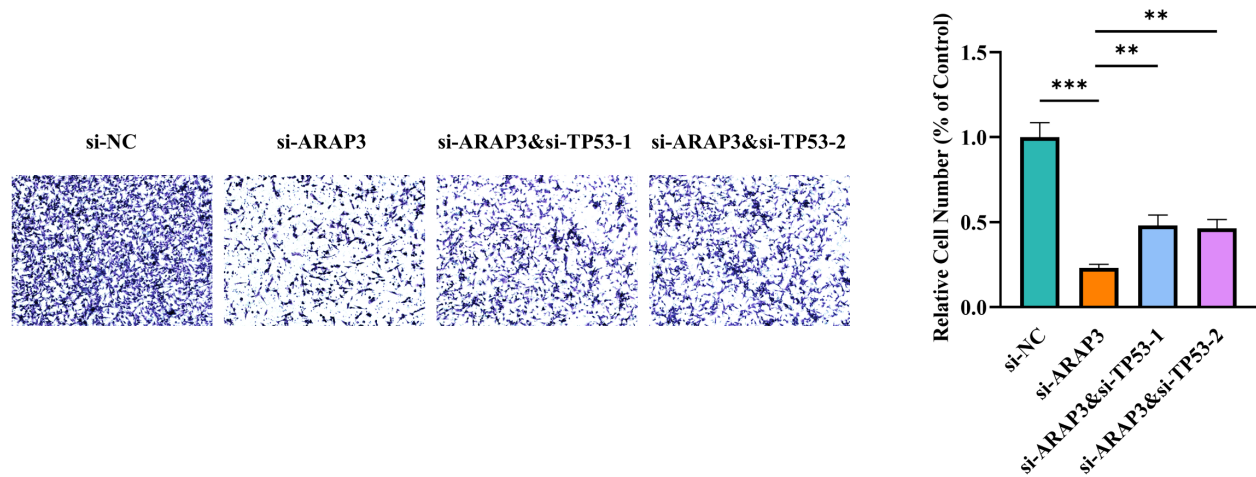
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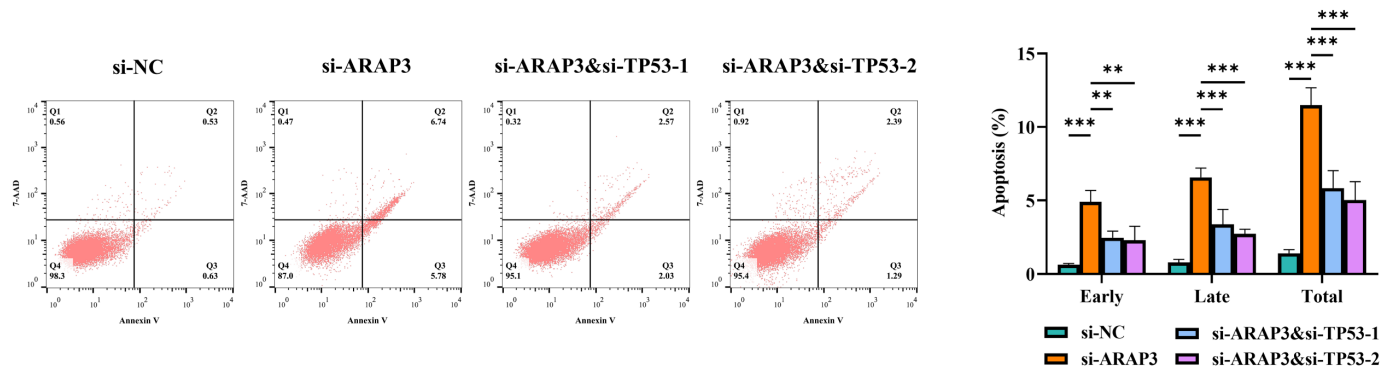
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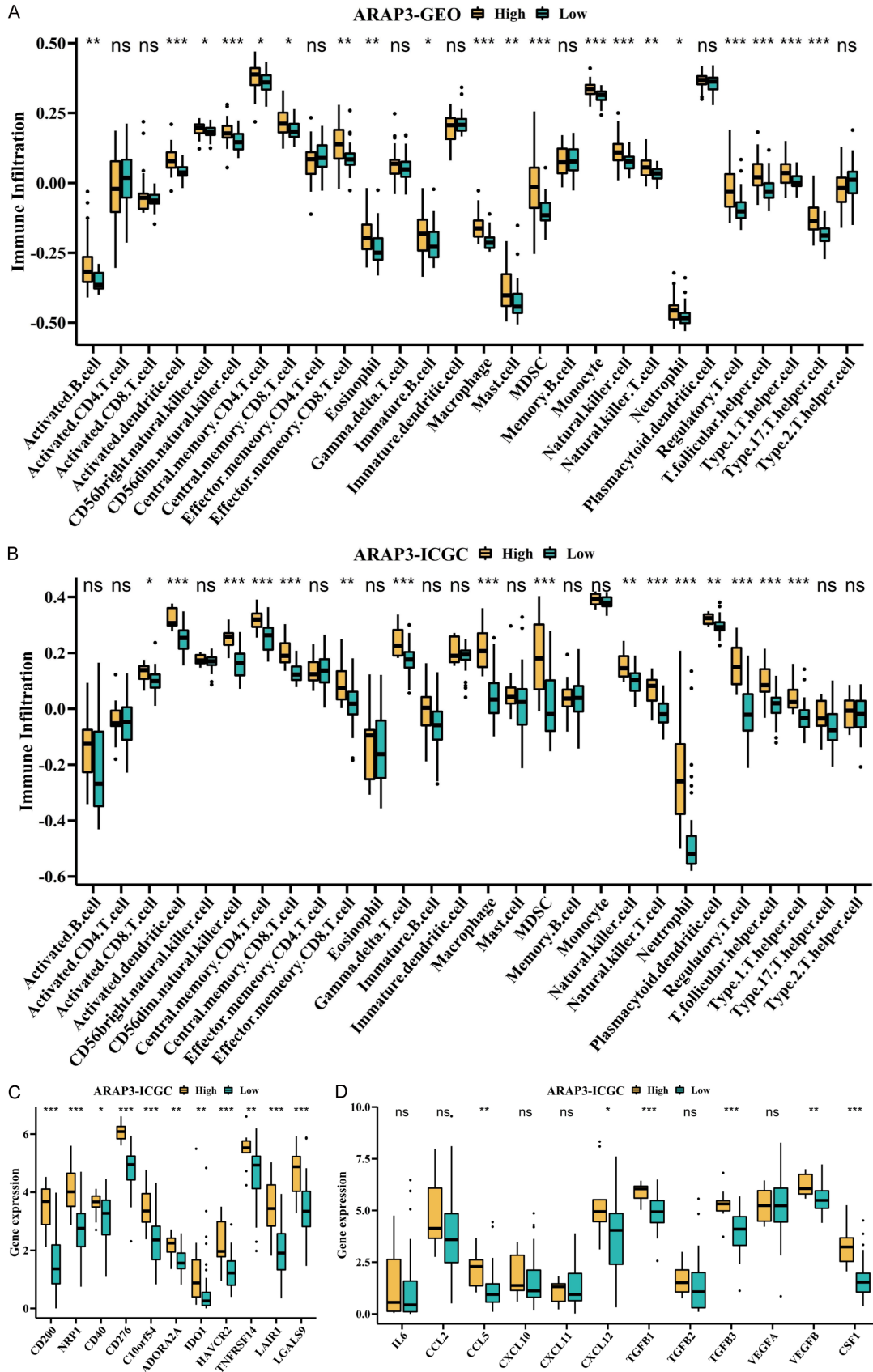


D



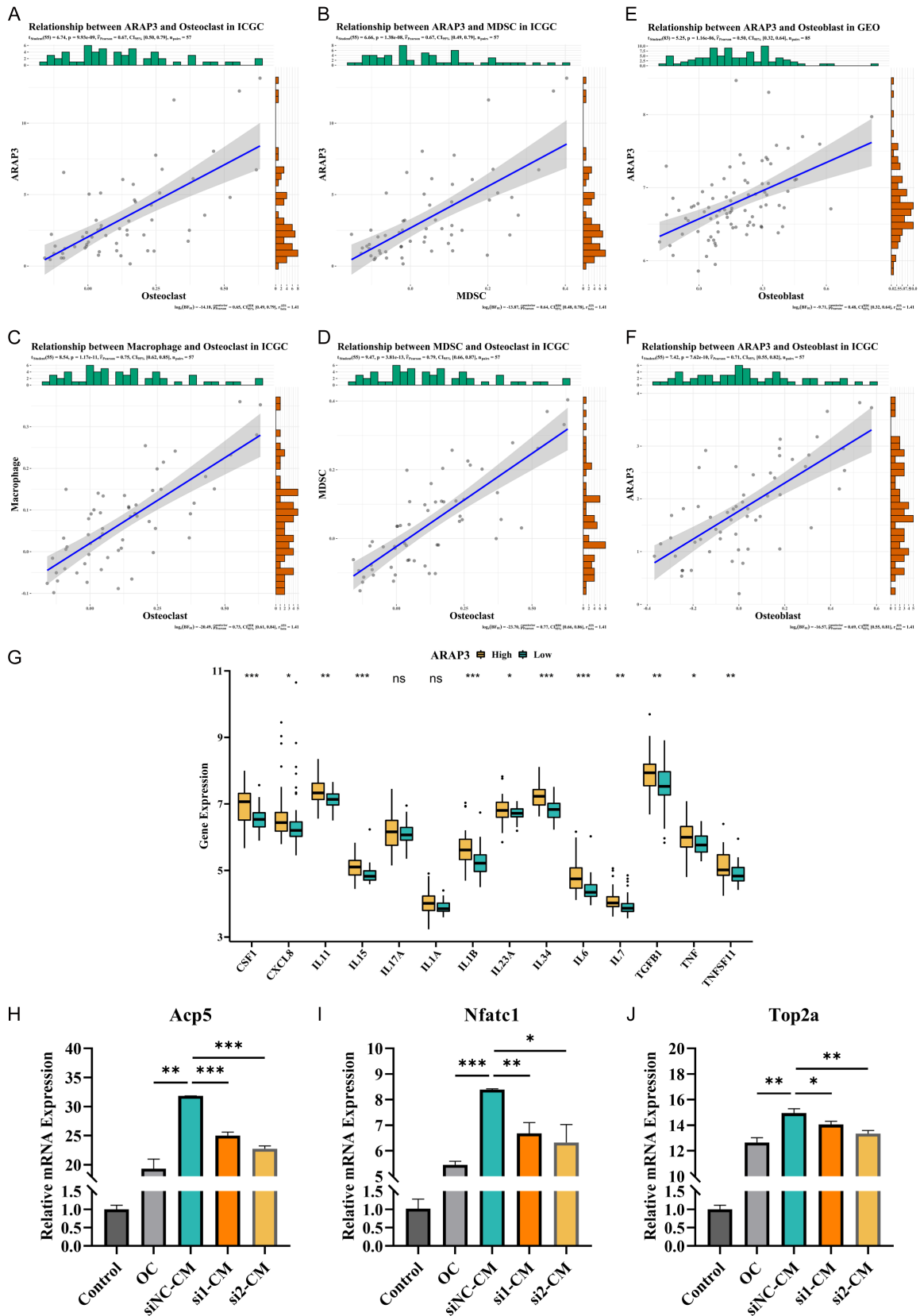
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Figure S6. The ability of proliferation, migration, and apoptosis of ES cells co-transfected with si-ARAP3 and si-TP53.



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**Figure S7.** Immune cell infiltration analysis of high- and low-expressed ARAP3 groups in both GEO and ICGC cohorts.



**Figure S8.** Role of ARAP3 in regulation of osteoclast differentiation.