Supplementary Material

## Supplementary Figures



**Supplementary** **Figure 1.** Processing of original data and obtaining of immune lncrna

**Figure Legends**

Figure. 1. Classification of 88 ES samples based on immune score.

A. Box plot of the immune scores of the high- and low-risk groups. B. Box plot of stromal scores. C. Box plot of ESTIMATE scores. D. Box diagram of tumor purity.

Figure. 2. Conditional survival estimates over time

Each column represents a survival period, and each row represents the percentage to reach a certain survival time from that point (in years).

Figure. 3. Univariate Cox regression analysis of immune-related differentially expressed lncRNAs

Figure. 4. Construction and evaluation of the optimal immune-related lncRNA signature

A. Line chart of the AUC of different immune-related lncRNA signature models. B. ROC curve of the immune-related 11-lncRNA signature. C. Kaplan-Meier analysis of the signature. Survival was compared using the log-rank test. D. Evaluation of the 11-lncRNA signature based on risk factors in the high- and low-risk groups, the RFS, and gene expression in the signature.

Figure. 5. Verification of the optimal immune-related 11-lncRNA signature

A. 3-, 5-, and 8-year ROC curves of the 11-lncRNA signature in the external verification set. B. Comparison of the 11-lncRNA signature and common prognostic biomarkers of ES.

Figure. 6. Survival analysis of the immune-related 11-lncRNA signature with different clinical characteristics

Figure. 7. Time-dependent ROC curve

Figure. 8. Immune cell infiltration in ES

A. PCA analysis of immune cell infiltration in ES samples and healthy skeletal muscle samples. B. Correlation heat maps of 24 immune cell types. The size of each colored circle represents the related p-value; the color represents the strength of the correlation (blue and red indicate positive and negative correlations, respectively, with darker colors indicating stronger correlations). C. Interaction network between 24 immune cell types. The circle size represents the strength of the interaction. D. Violin chart showing differences in the infiltration of 24 immune cell types in the ES and healthy skeletal muscle groups.

Figure. 9. Correlation analysis between the immune-related 11-lncRNA signature and prognosis-related immune cells

A. Kaplan-Meier survival analysis of immune cell infiltration and ES prognosis. B. Heat map of correlations between the 11-lncRNA signature and prognostic immune cells. The ordinate is the gene name, the abscissa is the immune cell type, and the color represents the correlation coefficient; \* p<0.05, \*\* p<0.01.

Figure. 10. GSEA and GSVA analyses

GSEA analysis based on h.all.v7.1.symbols.gmt. B. GSEA analysis based on c7.all.v7.1.symbols.gmt. C. GSVA analysis.

Figure. 11. Immune checkpoint expression in the high and low risk groups

A-C. Expression of (A) CD40, (B) CD70, and (C) CD276.