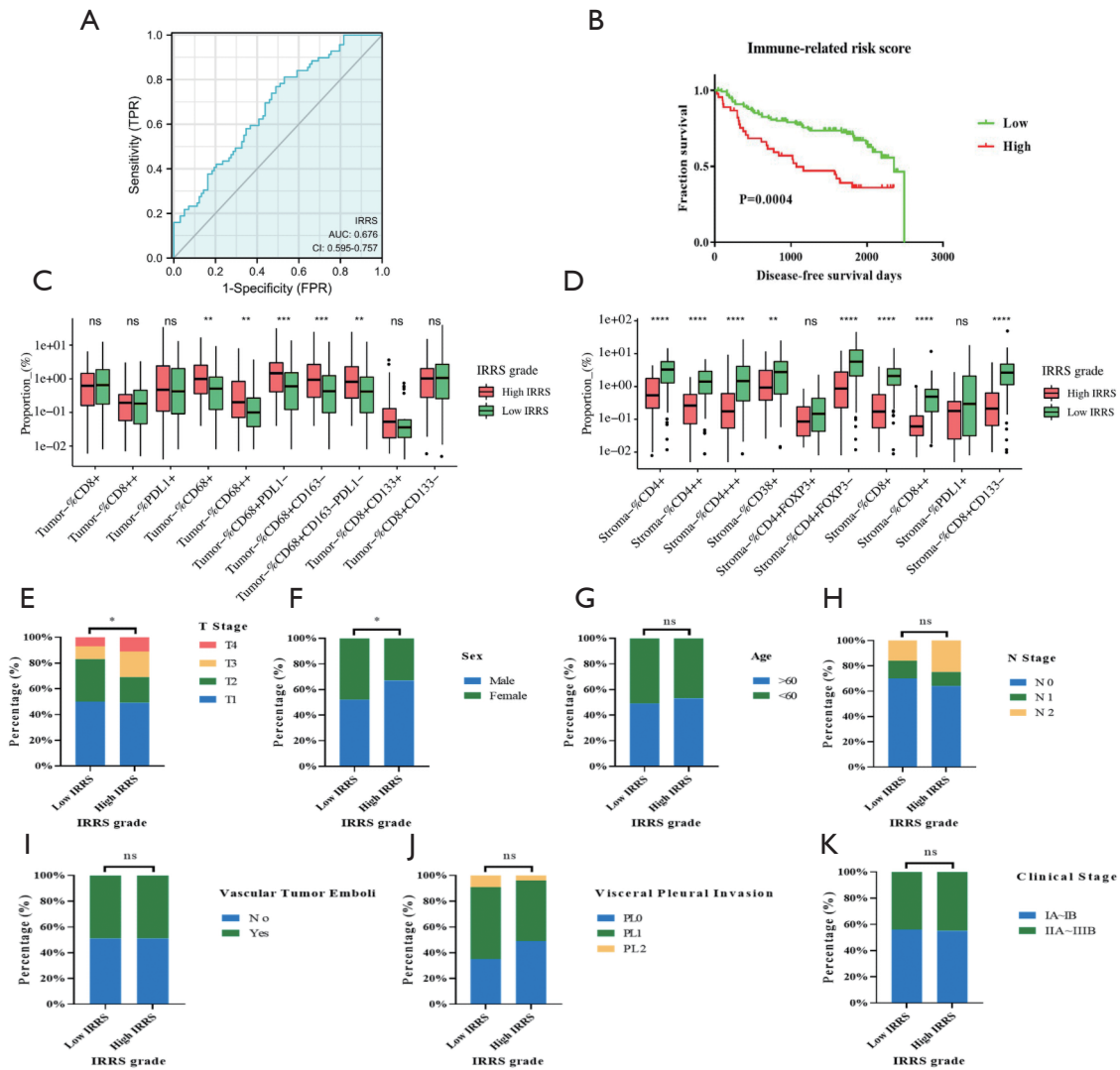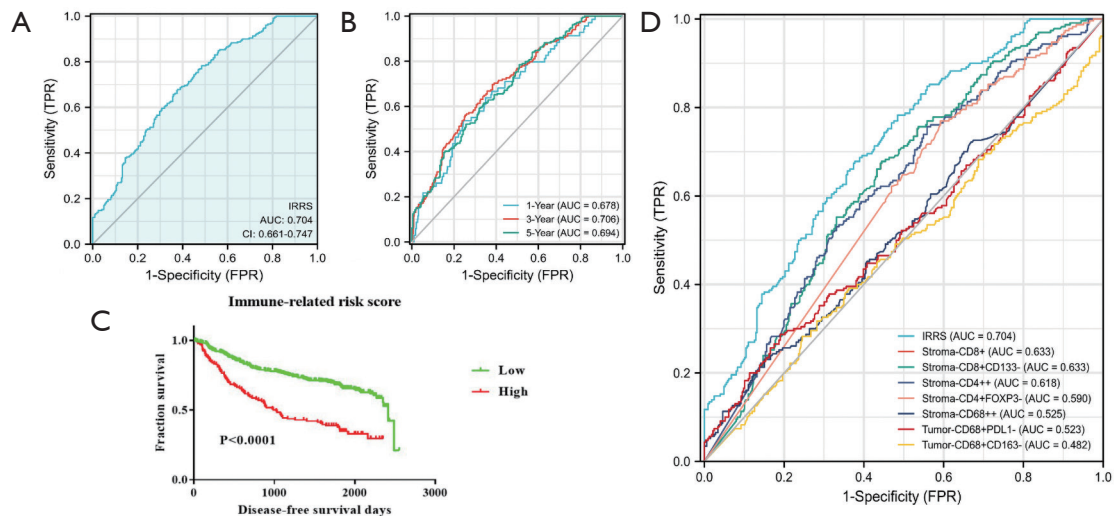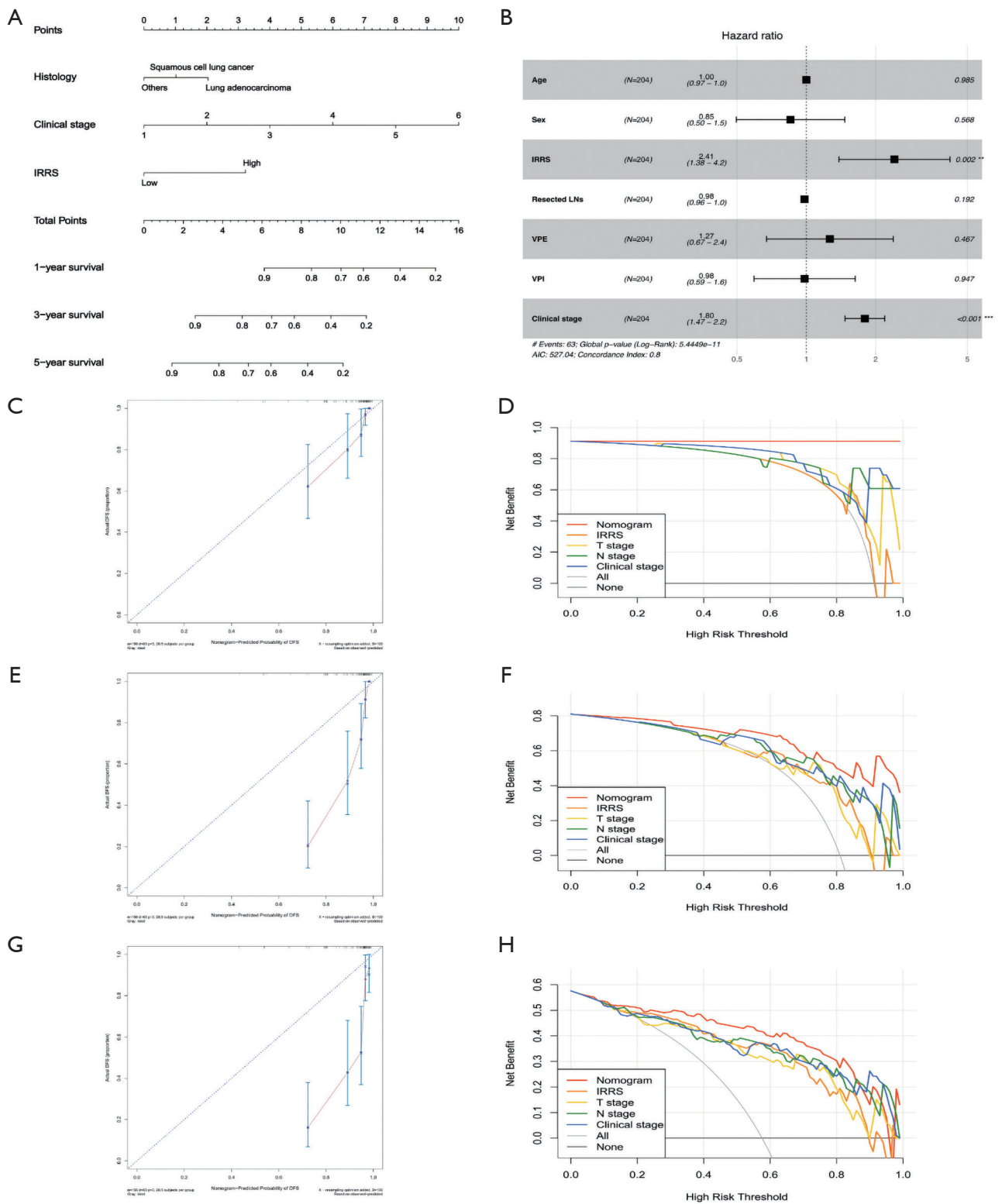**Figure S1** Multivariate Cox regression analysis investigating the prognostic significance of immune biomarkers.
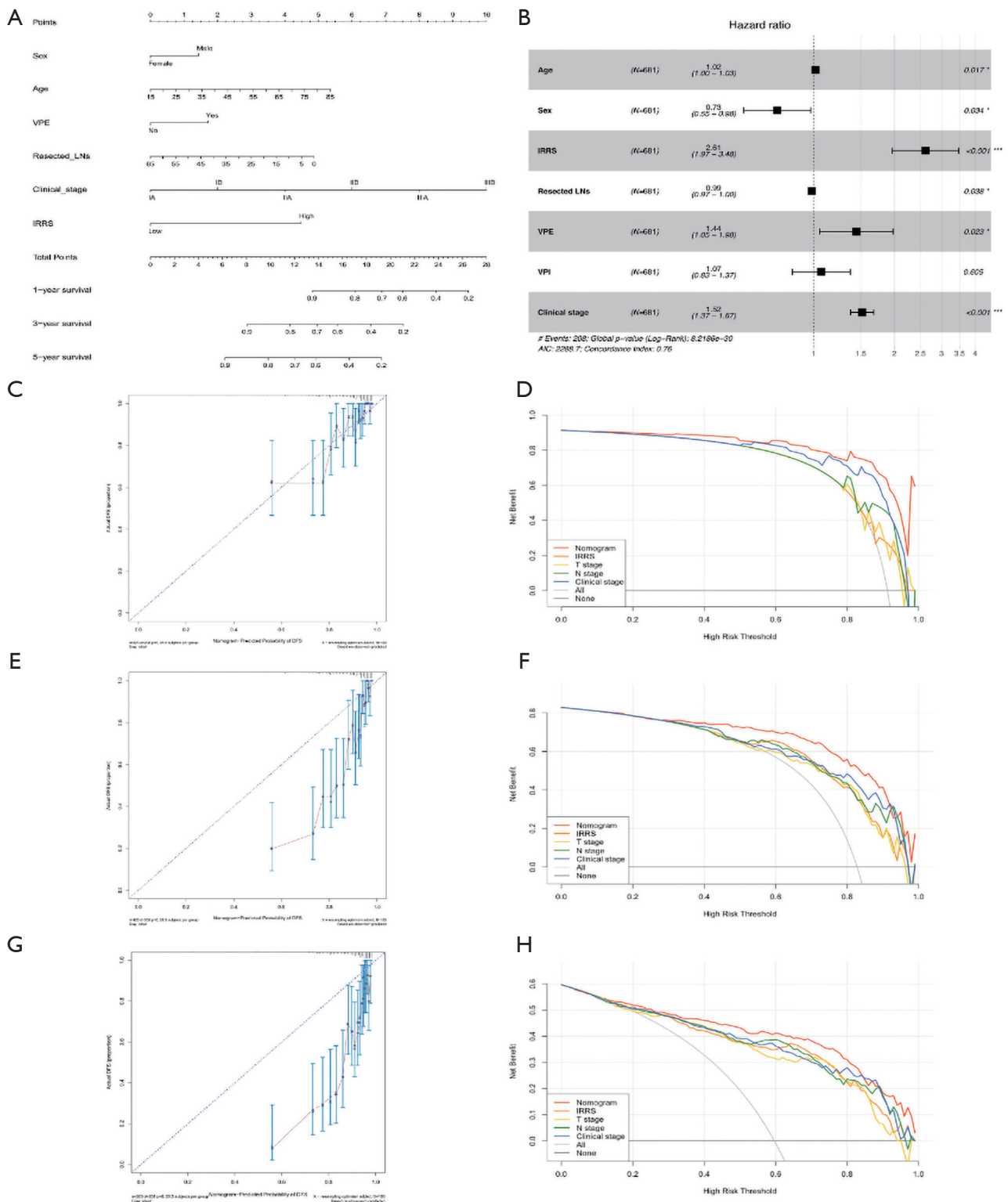
Figure S2 Validating the immune-related risk score (IRRS) model in the testing cohort. (A) ROC curves and AUC values indicated the accuracy of the IRRS model. (B) Kaplan–Meier estimate of the disease-free survival based on IRRS (high IRRS group *vs.* low IRRS group). Infiltration disparities of two immune-related risk score subgroups (high *vs.* low) in tumor nest (C) and tumor stroma (D). Disparities of patients' clinical characteristics of two immune-related risk score subgroups (high *vs.* low) (E-K). IRRS, immune-related risk score; ROC, receiver operating characteristic; AUC, area under the curve.

Figure S3 Validating the immune-related risk score (IRRS) model in the entire cohort. (A-B) Time-dependent ROC curves and AUC values indicated the accuracy of the IRRS model. (C) Kaplan–Meier estimate of the disease-free survival based on IRRS (high IRRS group *vs.* low IRRS group). (D) Comparison of the predictive performance between IRRS and single biomarkers using ROC curve analysis. IRRS, immune-related risk score; ROC, receiver operating characteristic; AUC, area under the curve.

Figure S4 Construction of nomogram for predicting the disease-free survival in the testing cohort. (A) The nomogram was constructed with the immune-related risk score in the testing cohort. (B) Forest plot of the multivariate Cox regression analysis Calibration plot and decision curve analysis of the nomogram in terms of agreement between the predicted and observed (C-D) 1-, (E-F) 3- and (G-H) 5-year outcomes.

Figure S5 Construction of nomogram for predicting the disease-free survival in the entire cohort. (A) The nomogram was constructed with the immune-related risk score in the entire cohort. (B) Forest plot of the multivariate Cox regression analysis. Calibration plot and decision curve analysis of the nomogram in terms of agreement between the predicted and observed (C-D) 1-, (E-F) 3- and (G-H) 5-year outcomes.