Pseudogene

A pseudogene is a gene copy that has lost its original coding ability. Pseudogenes participate in numerous biological processes including oncogenesis.

Liu et al., screened for prognostic pseudogenes for low-grade glioma (LGG) and explored the potential molecular mechanisms.

LGG data downloaded from The Cancer Genome Atlas (TCGA) and the Chinese Glioma Genome Atlas (CGGA) databases were used as training dataset and validation dataset, respectively. Univariate Cox Proportional Hazards Model regression was performed to identify pseudogenes with significant prognostic value. Robust likelihood-based survival model and LASSO regression were performed to screen for the most survival-relevant pseudogenes. A risk score model was constructed based on the prognostic pseudogenes to predict the prognosis of LGG patients.

Five pseudogenes (PKMP3, AC027612.4, HILS1, RP5-1132H15.3 and HSPB1P1) were identified as prognostic gene-signatures. Using the risk score model established based on the five pseudogenes, LGG patients were stratified into distinct prognosis groups in both TCGA and CGGA datasets ($P < 0.0001$). Univariate and multivariate Cox regression analyses confirmed that the risk score generated from the model was an independent prognostic factor in LGG patients ($p < 0.05$). Furthermore, functional analysis revealed the potential biological mechanisms mediated by the five prognostic pseudogenes.

Five novel pseudogenes capable of predicting survival in LGG patients were identified. The findings provide novel insights into the biological role of pseudogenes in LGG [1].

1)
Liu B, Liu J, Liu K, Huang H, Li Y, Hu X, Wang K, Cao H, Cheng Q. A prognostic signature of five pseudogenes for predicting lower-grade gliomas. Biomed Pharmacother. 2019 Jun 24;117:109116. doi: 10.1016/j.biopha.2019.109116. [Epub ahead of print] PubMed PMID: 31247469.