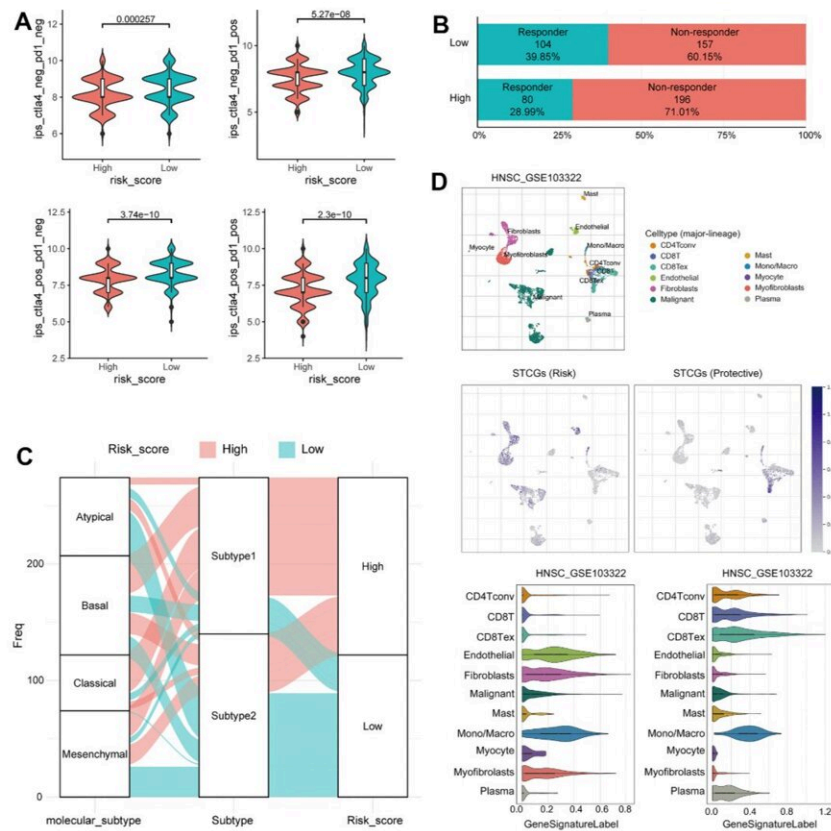


Prognostic significance of senescence-related tumor microenvironment genes in head and neck squamous cell carcinoma

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Immunotherapy response prediction of senescence related TME risk model and STCGs expression in single cell level. Credit: 2024 Lee et al.

A new research paper titled "Prognostic significance of senescence-

related tumor microenvironment genes in head and neck squamous cell carcinoma" has been [published](#) in *Aging*.

The impact of the senescence-related microenvironment on cancer prognosis and therapeutic response remains poorly understood. In this new study, researchers Young Chan Lee, Yonghyun Nam, Minjeong Kim, Su Il Kim, Jung-Woo Lee, Young-Gyu Eun, and Dokyoon Kim from Kyung Hee University, Kyung Hee University Hospital at Gangdong, and the University of Pennsylvania investigated the prognostic significance of senescence-related tumor microenvironment genes (PSTGs) and their potential implications for immunotherapy response.

Using the Cancer Genome Atlas- head and neck [squamous cell carcinoma](#) (HNSC) data, the researchers identified two subtypes based on the expression of PSTGs, acquired from tumor-associated senescence genes, [tumor microenvironment](#) (TME)-related genes, and immune-related genes, using consensus clustering. Using the LASSO, they constructed a risk model consisting of senescence-related TME core genes (STCGs). The two subtypes exhibited significant differences in prognosis, genetic alterations, methylation patterns, and enriched pathways, and immune infiltration.

"Our [risk model](#) stratified patients into high-risk and low-risk groups and validated in independent cohorts," the researchers explain.

The high-risk group showed poorer prognosis and immune inactivation, suggesting reduced responsiveness to immunotherapy. Additionally, the team observed a significant enrichment of STCGs in [stromal cells](#) using single-cell RNA transcriptome data. Their findings highlight the importance of the senescence-related TME in HNSC prognosis and response to immunotherapy.

"This study contributes to a deeper understanding of the complex interplay between [senescence](#) and the TME, with potential implications for precision medicine and personalized treatment approaches in HNSC," the researchers write in summary.

More information: Young Chan Lee et al, Prognostic significance of senescence related tumor microenvironment genes in head and neck squamous cell carcinoma, *Aging* (2023). [DOI: 10.18632/aging.205346](https://doi.org/10.18632/aging.205346)

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