Losses of cytokines and chemokines are common genetic features of human cancers: the somatic copy number alterations are correlated with patient prognoses and therapeutic resistance

Henry Sung Ching Wong, Wei-Chiao Chang

Department of Pharmacy, Taipei Medical University, Taiwan

Intricate relationships among cytokines (including chemokines) shape the tumor microenvironment (TME) and reflect cell-cell interactions between malignant cells and other cells from the TME. Although our previous study indicated the transcriptional landscape of cytokines in 19 cancer types, the global pattern somatic copy number (SCN) alterations and the clinical relevance of cytokines have not been systematically investigated. Here, we reported a significant negative selection on cytokine genes. We also linked the SCN losses of cytokine genes to the abundance of immune infiltrates which affects cancer progression and patient prognoses. We also demonstrated and validated the correlations between SCN alterations of cytokine-containing loci and drug sensitivity. The results indicated the genomic loss of cytokines in malignant cells as a crucial theme for interrogating cancer progression, malignant cell-TME interactions, and therapeutics.