# Interleukin-13 Receptor Subunit Alpha 2 (IL13RA2) Suppresses Malignant Phenotypes of Prostate Cancer Cells

Syue-Ting Chen[1], Horng-Heng Juang[1]

[1] Department of Anatomy, College of Medicine, Chang Gung University, Kwei-Shan, Tao-Yuan 33302, Taiwan

Prostate cancer is the second most common cause of cancer-related death in the United States, with 34,611 people dying from it in 2022. Metastasis is the major cause of prostate cancer-related death. However, no treatment can cure metastatic prostate cancer so far. Plenty of studies have reported that IL13RA2, initially known to inhibit the production of inflammatory cytokines, is overexpressed in several types of human tumors. However, the specific functions of IL13RA2 in cancers remain largely unknown. In this study, we found that IL13RA2 is downregulated in prostate cancer, and low expression of IL13RA2 correlates with poor overall survival. Additionally, IL13RA2 inhibits migration and invasion and suppresses phosphorylation of AKT and ERK in prostate cancer cells. Moreover, IL13RA2 inhibits angiogenesis and decreases tumor growth in a xenograft animal model. Interestingly, IL13RA2 expression is downregulated by treatments of TGF-β or TNF-α in human prostate fibroblasts, HPrF cells. We therefore hypothesized that IL13RA2 plays important roles in tumor progression and has the potential to be used in the treatment of prostate cancer. Importantly, the information gained from this project will shed light on the development of therapeutic agents for prostate cancer treatment in the future.