

MCM Update November 2023: IL13RA1

Summary

We continue our work on characterizing lung cancer biomarkers identified in the MCM1 project. This update focuses on IL13RA1, a gene associated with lung cancer survival and differentially expressed across multiple cancer types compared to normal tissues.

Background

Recognizing patterns in cancer patients can be beneficial, as it can allow us to detect signs of cancer in other patients or personalize different patients' treatments to fit their genetic profiles. The Mapping Cancer Markers project analyzes databases with millions of data points collected from patients with cancers and sarcomas to find such diagnostic, prognostic and predictive signatures.

Since November 2013, World Community Grid volunteers have donated over 861,400 CPU years to the project, helping analyze research data on different cancer types at a significantly faster pace and more thoroughly than otherwise possible. We are immensely grateful for the volunteers who continue to donate to this project.

We continue our work on common lung cancer biomarkers. VAMP1, FARP1, GSDMB, and ADH6 were discussed in our [March](#), [April](#), [July](#), and [September](#) updates. Here, we outline information on IL13RA1.

IL13RA1 Research

IL13RA1, part of the interleukin receptor family, encodes interleukin-13 receptor subunit alpha-1, which, together with IL4RA, forms a functional receptor for interleukin-13 (IL13) (Uniprot). Interleukins are a type of cytokines that are expressed by a variety of body cells and play integral roles in immune cell activation and differentiation, as well as proliferation, maturation, migration, and adhesion. Therefore, as a subunit of an IL13 receptor, IL13RA1 enables IL13 to exert these effects.

Given its involvement in immune function, it is not surprising that a possible link has been identified between IL13RA1 and several diseases, including coronary heart disease^[1], Parkinson's disease^[2], ulcerative colitis^[3], asthma and other allergic diseases^[4,5,6]. IL13RA1 has also been identified as a synaptic protein that is implicated in plasticity and neuroprotection following injury^[7].

In line with the other genes we have presented, we investigated the role of IL13RA1 in lung cancer, finding that it has a protective role, as shown in Figure 1.

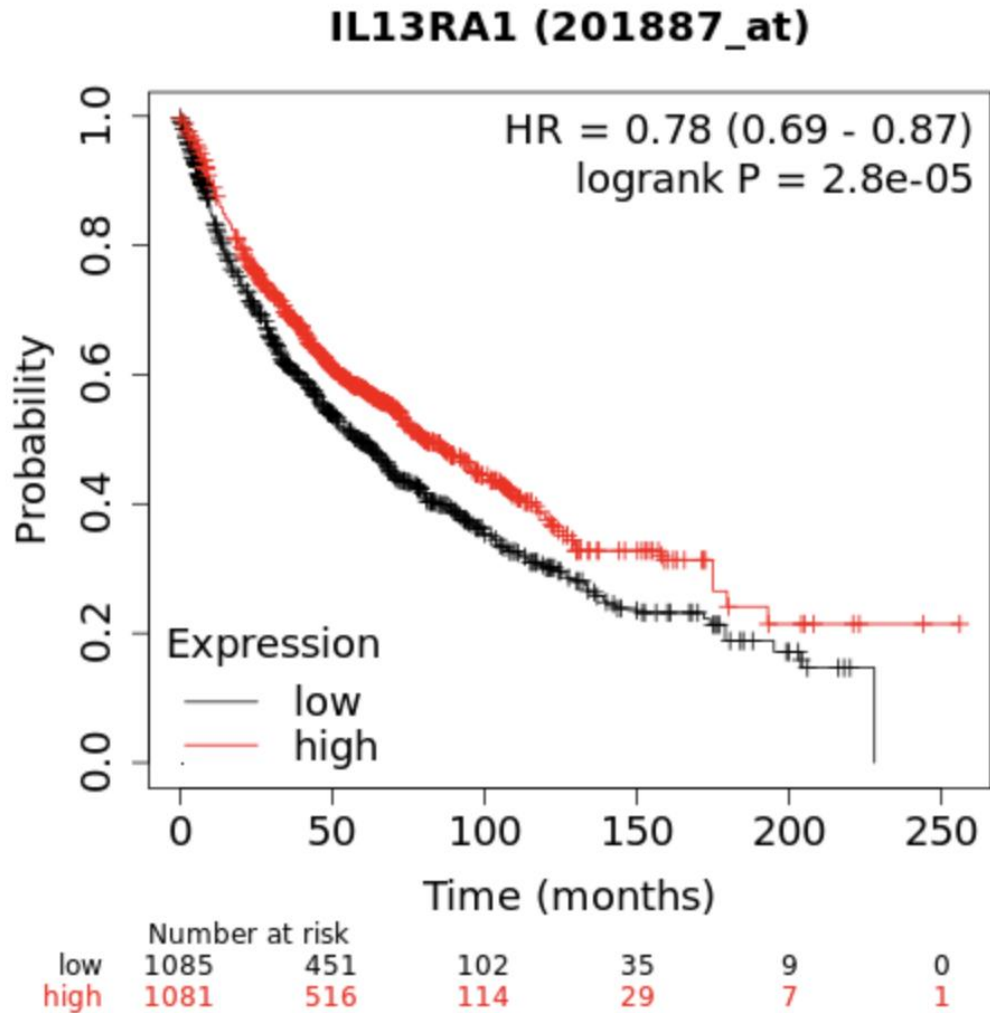


Figure 1. Survival curves for patients with high and low expression of IL13RA1 ([KMplotter](#)).

We also investigated whether this finding extends to other cancers. As shown in Figure 2, similar trends in IL13RA1 expression are seen across the majority of tested cancers. In line with this observation, within the literature, associations have been documented between IL13RA1 expression and pancreatic cancer^[8], thyroid cancer^[9], bladder cancer^[10], breast cancer^[11] and brain cancer^[12].

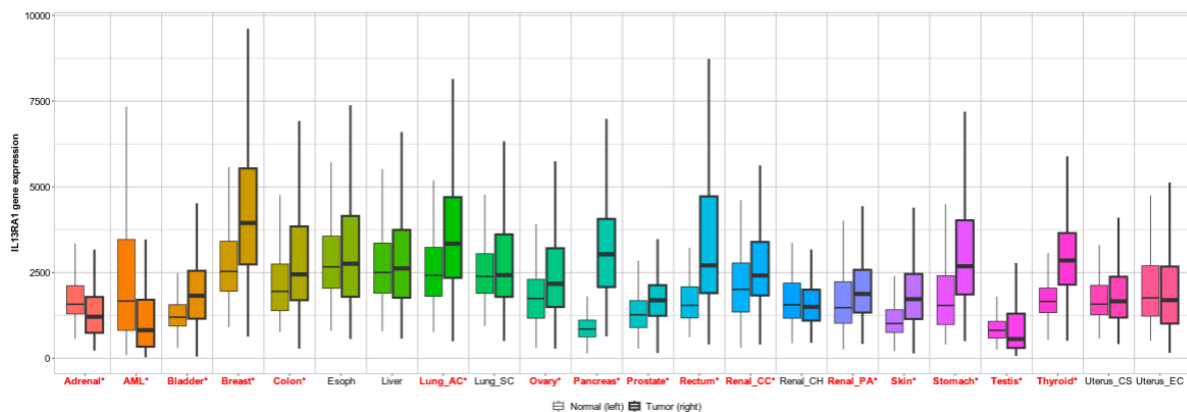


Figure 2. Expression of IL13RA1 in normal and cancer tissue for multiple cancer types. Red text represents a significant difference between expression in cancer tissue compared with normal tissue ([TNMplot](#)).

If you have any comments or questions, please leave them in this thread for us to answer. Thank you for your continued support.

WCG team

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