

Interferon Regulatory Factor 4 in Cancer Gene Regulation

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Abstract

Abnormal activities of epigenetic modifiers and transcription factors play critical roles in shaping the aberrant gene expression programs of cancer cells. Identification of the target genes and signaling pathways controlled by such factors are an important step in designing targeted therapies against cancers. Interferon regulatory factor 4 (IRF4) is a transcriptional regulator with crucial roles in the development and functioning of immune cells, and implicated in malignant transformation (1). We have previously shown a critical role for IRF4 in a variety of B-cell cancer cells, and identified its mechanisms of action (2-4). These and related work point to IRF4 pathways as therapy targets in cancers. Several studies also implicate IRF4 function in non-immune cells, such as in melanocytes (5). For instance, a number of genome-wide genetic studies associated variation at the IRF4 gene with pigmentation phenotypes and skin cancers. However, despite the observed genetic links and generally high expression, the role of IRF4 in skin cancers remains under-studied and poorly understood. Therefore, we set out to identify the functions of IRF4 in skin cancer cells using genome-wide, cell and molecular biological approaches. We have taken a candidate approach to discover the upstream modulators of IRF4 expression in these cells. In parallel, we have performed localization (ChIP-seq) and transcriptomic (RNA-seq) assays in order to identify its genome-wide targets. These analyses, together with an analyses of The Cancer Genome Atlas (TCGA) data, point to a role of IRF4 in epigenetic regulation of these cells, in addition to other cancer- and development- related pathways. Furthermore, our preliminary studies implicate IRF4 as a critical factor in skin cancer cell proliferation and survival.

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Biography

Tolga Emre received his doctoral degree from the University of Pennsylvania in 2005, and did postdoctoral work at US National Institutes of Health. He is a faculty at Boğaziçi University's

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