**Multiple WT1 Peptides Pulsed Dendritic Cell Vaccines**

**Koido et al.**

Dendritic cell (DC)-based cancer vaccines have targeted only CD8$^+$ cytotoxic T lymphocytes; however, the antitumor effects of these vaccines are not as vigorous in clinical settings. To explore the safety and the clinical and immunologic responses of DCs pulsed with a mixture of three types of Wilms’ tumor gene 1 (WT1) peptides, including MHC class I- and II-restricted epitopes (DC/WT1-I/II), Koido and colleagues designed a phase I clinical trial. The combination of DC/WT1-I/II and chemotherapy induced WT1-specific CD4$^+$ and CD8$^+$ T-cell responses, and these responses lasted throughout long-term vaccination and were associated with disease stability in patients with advanced pancreatic cancer.

**Selective Targeting of Tumor Cells by DPP-23**

**Shin et al.**

Therapeutic strategies with limited side effects are urgently needed for use in cancer chemotherapy. The primary objective of this study was to develop a novel antitumor agent that would be safe for normal cells and exert the preferential killing of tumor cells. Polyphenols are common compounds found in dietary plants that display a broad spectrum of biologic activities. Shin and colleagues synthesized a novel polyphenol derivate, (E)-3-(3,5-dimethoxyphenyl)-1-(2-methoxyphenyl)prop-2-en-1-one (named DPP-23), which produces reactive-oxygen species in a cancer-selective manner, leading to stimulation of the unfolded protein response and caspase-dependent apoptosis. The results of this study support a molecular basis for further evaluation in early-phase clinical trials.

**PBX1 Promotes Differentiation in Neuroblastoma**

**Shah et al.**

The HOX cofactor and transcriptional regulator PBX1 is a known critical regulator of differentiation in multiple tissues but had never been evaluated in the childhood embryonic cancer neuroblastoma. Shah and colleagues demonstrate that PBX1 is specifically induced by retinoic acid in neuroblastoma cell lines. PBX1 directly induces terminal differentiation in retinoid-sensitive neuroblastoma cell lines. In primary human neuroblastoma samples, PBX1 expression was correlated with tumor grade and also with outcome, across tumor subtypes and specifically in low-grade disease. These studies suggest that PBX1 plays a critical role in neuroblastoma differentiation and may be used as a prognostic biomarker.

**Functional Kinomics Identifies Therapeutic Targets in HNSCC**

**Moser et al.**

Moser and colleagues used a functional kinomic approach to identify novel therapeutic kinase targets for metastatic head and neck squamous cell carcinoma (HNSCC) with inactivating TP53 mutations. Furthermore, they demonstrate that HNSCC cells with functional loss of p53 either by somatic mutation or HPV infection are sensitive to inhibition of the G2–M mitotic kinase, WEE1. A preclinical evaluation performed with a WEE1 inhibitor, MK-1775, suppressed tumor growth and increased the efficacy of the first-line chemotherapeutic agent cisplatin in vivo, thus showing its promise as a novel targeted therapy for HNSCC.
Clinical Cancer Research

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