

Novel Anti-Cancer Vaccine: Inhibition of Tumor Stat3 Expression

Researchers at the University of South Florida have developed a new anti-cancer vaccine for treatment of a wide range of cancers.

Currently, the primary means of treating cancer is the use of chemotherapeutic drugs. These drugs can cause harsh side effects and can limit the quality of life of a cancer patient. As an alternative, an anti-cancer vaccine uses the patient's own immune system to combat cancer cells, reducing the potential for side effects caused by chemotherapeutic drugs.

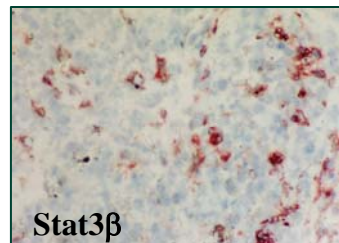
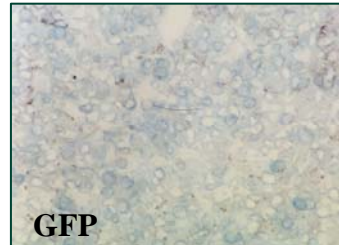
In vitro and *in vivo* data indicate that the vaccine developed by our investigators targets Stat3 activity in tumor cells, which allows the tumor cells to produce pro-inflammatory cytokines that activate immune cells, such as dendritic cells, cytotoxic T-cells, and macrophages (see Figure). These activated immune cells are then able to recognize and eliminate tumor cells in the patient.

Stat3 activity is high in a variety of tumor cells, so this technology has great potential as a therapeutic anti-cancer vaccine for a range of cancer types, including, but not limited to colon, breast, bladder, prostate, and lung cancers.

Advantages:

- Use of vaccines greatly reduces the potential for harsh side effects seen with chemotherapy.
- Targeting Stat3 activity in tumor cells allows for treatment of a wide range of cancer types.

Inhibition of tumor cell Stat3 expression induces anti-cancer immune cell activity



Pro-inflammatory mediators produced by Stat3-interrupted tumor cells activate immune cells in mice in vivo. Top: Section from tumor without Stat3 inhibition. Bottom: Section from Stat3-interrupted tumor shows infiltration of the tumor by macrophages.

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