Docket #: S24-186

Selective sensitization of cancer cells to elimination by cytotoxic lymphocytes

Researchers at Stanford University have developed a novel method for the treatment and prevention of cancer.

The immune system is an integral part of the human body's response to outside threats, including cancer. Specifically, cytotoxic CD8+ T cells have been shown to selectively seek and eliminate cancer cells. However, cancer cells have evolved several ways to evade this immune response, including downregulating receptors, altering tumor associated antigens, and changing the tumor microenvironment. High throughput genetic knockdown and knockout screens have been highly effective in identifying key genetic drivers of these mechanisms. However, these screens are most likely to identify factors that are necessary but not sufficient for a response. A need exists for new methods in identifying and isolating novel regulators of the cancer immune interface.

Stage of Research
The inventors have developed a method by which cancer cells are able to be specifically sensitized to enhance their elimination by cytotoxic lymphocytes. Specifically, the inventors performed a screen to identify factors which make cancer cells more susceptible to killing by CD8+ T cells. These targets were then overexpressed, individually or in combination, in cancer cells in order to sensitize them to cytotoxic lymphocyte killing. Targets for this sensitization also include ligands that can act in a paracrine signalling mechanism to induce cytotoxic killing activity in engineered lymphocytes. Taken together, this invention comprises a promising therapeutic avenue for the treatment and prevention of cancer.

Stage of Development
Research - in vitro

Applications

- Production of sensitized cancer cells and engineered cytotoxic lymphocytes
- Novel therapeutic avenue for the treatment and/or prevention of cancer

Advantages

- Targets are more likely to be necessary and sufficient to produce significant anti-cancer effects

Patents

- Published Application: WO2025245495

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