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Agents to induce immunogenicity and improve efficacy of anti-cancer therapeutics

Researchers at Stanford have developed agents to enhance the therapeutic efficacy of a variety of anti-cancer therapeutics. Cell loss by apoptosis occurs in normal development and in tumor environments. Apoptotic cells are distinguished from nearly living cells by the exposure of phosphatidylserine (PtdSer) on the cellular membrane. This serves as a signal to limit the immune response to protect nearby cells and tissues. While critical to normal development, it presents an obstacle to establishing an immune response to tumors. To overcome this protective response and provide better immunogenicity, the inventors generated agents that alter the clearance mechanisms of apoptotic tumor cells to promote an immune response. The agents are phosphatidylserine-binding bridge proteins that tether apoptotic cells to immunogenic receptors, thereby blocking normal elimination of cells while simultaneously enhancing the immune response. The agents provided by this technology help generate an immune response and improve the effectiveness of anti-cancer therapeutics.

Stage of research
The inventors have shown that these agents potentiate the immune response against tumor cells and enhance therapeutic efficacy.

Applications

- Adjunct to increase efficacy of anti-cancer therapeutics including:
    - Cellular therapeutics- chimeric antigen receptor T cells (CAR-T) or engineered T cell receptors (TCRs)
    - Immune checkpoint therapeutics
    - Antibody-based therapeutics

    - Radiation therapy
    - Cytotoxic chemotherapy

Advantages

- New immunotherapy approach
- Increases efficacy of anti-cancer therapeutics
- Increases efficacy of cellular therapies in solid tumors, which had previously had only limited success.
- Novel phosphatidylserine-binding bridge agents

Publications

- WO2018031419: Compositions and Methods for Enhancing Immunogenic Cross-Presentation of Tumor Antigens

Patents

- Published Application: WO2018031419
- Published Application: 20190218260
- Issued: 10,934,331 (USA)

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