Therapeutics & Vaccines

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Inventors: Zachary Morris, Justin Jagodinsky

The Invention

UW researchers have identified a molecule commonly used as a vaccine adjuvant to add to the combination of radiation therapy and checkpoint inhibitor treatment to drive the immune system's response to tumor cells. The researchers explored the ability of radiation therapy, anti-CTLA4, and the adjuvant to shrink melanoma or prostate cancer tumors in mice and to prolong survival. Adding the adjuvant to the radiation therapy + CTLA4 treatment resulted in additional tumor growth reduction, prolonged survival and an observed complete response rate in both tumor models as compared to the radiation therapy and CTLA4 combination by itself. The adjuvant tested is monophosphoryl lipid A, and it was injected intratumorally. Tumor bearing mice received either RT (12 Gy, day 1), RT+anti-CTLA4 (C4, day 3, 6, 9), MPL (20 µg IT injection days 5, 7, 9), RT+C4+MPL combination, or PBS control. To evaluate the effect of MPL on the irradiated tumor microenvironment, primary tumor with tumor draining lymph nodes were harvested for immune cell infiltration analysis and cytokine profiling, and serum was collected for analysis of anti-tumor antibody populations. MPL treatment significantly increased production of Th1-associated, IgG2c anti-tumor antibodies which were required for and predictive of anti-tumor response to RT+C4+MPL, and enabled macrophage-mediated antibody-dependent direct tumor cell killing by MPL-stimulated macrophages.

Additional Information

For More Information About the Inventors

- Zachary Morris

Tech Fields

- Therapeutics & Vaccines : Oncology

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847