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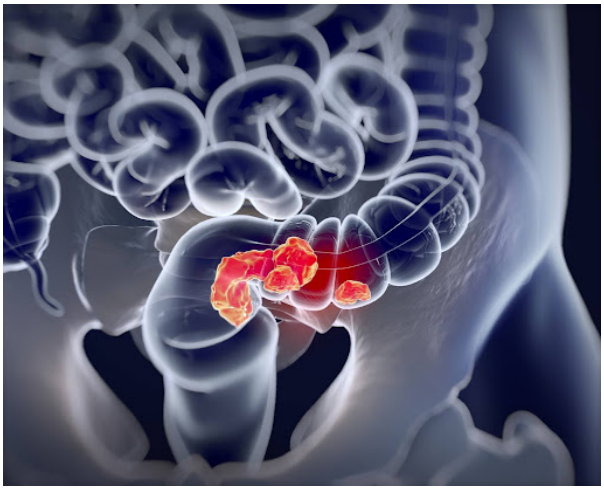
Use of extracellular vesicles to enhance colorectal cancer therapeutics

Cancer-derived extracellular vesicles (EVs) that enhance the efficacy of checkpoint inhibitor therapeutics for colorectal tumors.



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Life Sciences/Human Health
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Applications

- Colorectal cancer therapy
- Checkpoint inhibitor combination therapy
- Cancer therapy immune response enhancer

Key Benefits & Differentiators

- **Potentiates FDA-approved therapies:** Cancer-derived EVs elicit an immune response that facilitates the use of approved checkpoint inhibitor therapies.
- **Effective approach to colorectal cancer:** Cancer EVs combined with checkpoint inhibitors completely eradicate colorectal tumors in xenografted mouse models.
- **Flexible source of EVs:** EVs can be created from patients' own tumors, or from donors as a standardized source.

Improving the approach to colorectal cancer

Colorectal cancer (CRC) is the third most common cancer type in the U.S. and the second and third leading cause of cancer death in men and women, respectively. Unfortunately, the majority of CRC tumors are non-immunogenic, failing to produce a response from the immune system. This causes traditional therapies that target immune checkpoints to be ineffective for most CRC patients. To solve this problem, researchers at the University of Minnesota developed cancer-derived extracellular vesicles (EVs) that can be injected into the patients, producing an

immune response. This approach has the potential to increase the efficacy of immune checkpoint therapies in CRC patients.

Eliciting the required immune response

Since many CRC tumors suppress the immune response and do not respond to immune checkpoint therapy alone, the current primary treatment is surgery and chemotherapy. Unfortunately, 55-75% of CRC patients exhibit metastasis, making this approach of limited efficacy. As an alternative, the developed method uses cancer-derived EVs to increase T-cell infiltration and two major immune checkpoint factors (PD-1 and CTLA-4) at the tumor site. Mice receiving this EV treatment showed increased CD28 levels on T cells (required for T cell stimulation) in tumor-draining lymph nodes and increased sensitivity to traditional immune checkpoint inhibitors. These results provide in vivo proof of concept that this strategy will be an effective treatment approach in previously unresponsive CRC populations.

Phase of Development

TRL: 3
In vivo mouse studies illustrate the efficacy of cancer EVs combined with checkpoint inhibitors to treat xenografted colorectal tumors.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

Researchers

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