

# Prospective Isolation Of Tumor-Reactive Cytotoxic CD4+ T Cells For Bladder Cancer Therapy

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## INVENTORS

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## OTHER INFORMATION

### KEYWORDS

Immunotherapy, CD4+,  
Cytotoxic T cells, Bladder  
cancer

### CATEGORIZED AS

- ▶ **Medical**
- ▶ Disease: Cancer
- ▶ Therapeutics

### RELATED CASES

2018-159-0

## INVENTION NOVELTY

UCSF researchers have discovered a method for the isolation and expansion ex vivo of an endogenous population of bladder tumor-reactive cytotoxic CD4+ T cells that can be used to specifically and potently treat bladder cancer.

## VALUE PROPOSITION

Bladder cancer is one of the most common types of cancers in the US, with approximately 80,000 new cases diagnosed in 2018 alone. Current treatments include checkpoint immunotherapy, a broad method of inhibiting a mechanism by which cancer cells evade the immune system.

Utilizing a novel combination of cell-surface markers, this method of isolating and expanding endogenous tumor reactive CD4+ T cells provides a more specific immune response towards the treatment of bladder cancer.

## ADVANTAGES OF TECHNOLOGY

- ▶ Identifies a **novel, bladder tumor infiltrating population of T cells**
- ▶ More **specific to bladder cancer** than other immunotherapy treatments
- ▶ **Can be expanded ex vivo** and has shown to **possess cytotoxic activity towards tumor cells**
- ▶ May have **fewer regulatory challenges** over engineered chimeric antigen receptor (CAR) approaches due to the endogenous nature of these cytotoxic CD4+ T cells
- ▶ These **identified markers and T cell receptor sequences could be used to transduce T cells** to specifically target bladder cancer
- ▶ Identified markers and T cell receptors are **potential targets for pharmacological manipulation** for enhancement of activity

## TECHNOLOGY DESCRIPTION

Researchers at UCSF, using single-cell RNA sequencing and T cell receptor sequencing of patient-derived bladder tumor cells, have identified a series of gene expression markers and specific T cell receptors specific to infiltrating bladder tumor resident CD4+ T cells. Utilizing these cell surface markers, they isolated this novel CD4+ T cell population, expanded it ex-vivo, and confirmed its cytotoxic potential.

## LOOKING FOR PARTNERS

To develop & commercialize the technology for cancer therapeutics.

## STAGE OF DEVELOPMENT

Pre-clinical

## DATA AVAILABILITY

Under CDA / NDA

## PATENT STATUS

Country	Type	Number	Dated	Case
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Patent Pending

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [T Cell Signature Predictive of Clinical Outcome with Immunomodulatory Treatment](#)
- ▶ [NOVEL ANTIGEN TARGETS IN AUTOIMMUNE DISEASES \(LUPUS AND TYPE I DIABETES\) USEFUL FOR VACCINE DEVELOPMENT AND TREATMENT](#)
- ▶ [XYZeq – Spatially-Resolved Single Cell Sequencing](#)
- ▶ [Genome-Wide Interaction Screens In Primary Human Cells For Target Discovery And Drug Validation.](#)

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