An Oncolytic Virus for Prostate Cancer (Ramot)

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An oncolytic virus for melanoma tumors with defective interferon signaling, designed as a potent, specific and safe therapy. Promising in-vivo murine melanoma model shows potential for development as a mono or an add-on to chemotherapy or check-point inhibitors

UNMET NEED

On Nov. 2015 the FDA approved the first oncolytic virus based treatment. Oncolytic viruses are a promising category of anti-cancer therapeutic agents that have a dual action: 1) kill cancer cells directly and specifically and 2) stimulate of anti-tumor immunity. The currently approved therapy enhances a durable response in a small subset of prostate cancer patients, leaving the majority of the patients as non-responders. Viral characteristics such as size, genome composition, lytic abilities etc. determine the interactions of oncolytic viruses with cancer cells. There is a need for an oncolytic virus with markedly different characteristics to target the non-responding prostate cancer patients.

VIRUS DEVELOPMENT

Directed evolution enabled to develop the oncolytic virus, EHDV-TAU. A clone of the epizootic hemorrhagic disease virus matured on interferon-defective human prostate cells. The directed evolution process increased the viral replication by 107 on human prostate cancer cells.

INTELLECTUAL PROPERTY

On June 2017 Ramot filed a provision patent application on the novel viral agent and its use in the treatment of cancer, specifically cancer presenting a defective antiviral response.

DIFFERENTIATION FROM THE ONCOLYTIC VIRUS GOLD STANDARD

EHDV-TAU has some unique immunological and molecular features in comparison to the oncolytic virus gold standard:

Comparison Parameter	Gold Standard (T-VEC)	EHDV-TAU
Previous immunity	Previous immunity exist (Herpex simplex virus)	Veterinary virus - lack of previous immunity in humans
Stimulator of immune response by viral genome	No stimulation (ds**D**NA)	Stimulates (ds**R**NA)
Cancer cell killing mechanisms	1 (apoptosis)	3 (apoptosis, necrosis, & necroptosis)

REFERENCES

- Two modes of cell death induction: Interleukin-6 and Interferon-α Signaling via JAK1-STAT Differentially Regulate Oncolytic versus Cytoprotective Antiviral States. Danziger O, Pupko T, Bacharach E, Ehrlich M. Front Immunol. 2018 Jan 30;9:94. doi: 10.3389/fimmu.2018.00094. eCollection 2018.
- Viral Selection: Combined genetic and epigenetic interferences with interferon signaling expose prostate cancer cells to viral infection. Danziger O, Shai B, Sabo Y, Bacharach E, Ehrlich M. Oncotarget. 2016 Aug 9;7(32):52115-52134.
- Manipulation of cells by virus: Shai, B., et al., Epizootic hemorrhagic disease virus induces and benefits from cell stress, autophagy, and apoptosis. J Virol, 2013. 87(24): p. 13397-408.

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