

OncoSec Announces Publication of New Research in the Journal Immunity Highlighting the Role of IL-12 in Anti-PD-1 Therapies with TAVO™ Directly Activating TILs in Patients

"Successful Anti-PD-1 Cancer Immunotherapy Requires T Cell-Dendritic Cell Crosstalk Involving the Cytokines IFN- γ and IL-12" appears in the December 18, 2018 issue of Immunity

SAN DIEGO and PENNINGTON, N.J., Dec. 18, 2018 /PRNewswire/ -- OncoSec Medical Incorporated (OncoSec) (NASDAQ:ONCS), a company developing novel cancer immunotherapies, today announced the publication of new research in the journal *Immunity* that finds that IL-12 producing dendritic cells play an essential role in enabling tumor responses to anti-PD-1 immunotherapy. The study was conducted by researchers from Massachusetts General Hospital, Harvard Medical School, Dana-Farber Cancer Institute, and OncoSec, among others. As noted in the study, OncoSec's lead compound, TAVO™ (tavokinogene telseplasmid; plasmid plasmid IL-12), which delivers IL-12 directly into tumors, was found to play an important role in enhancing the expression of cytolytic genes within tumors that are associated with anti-tumor responses. The paper, titled "Successful Anti-PD-1 Cancer Immunotherapy Requires T Cell-Dendritic Cell Crosstalk Involving the Cytokines IFN- γ and IL-12" appears in the December 18, 2018 issue of *Immunity*.

"The evidence continues to build that IL-12 plays an important role in eliciting anti-tumor responses with anti-PD-1 immunotherapies. We've seen this in our own pre-clinical data and in our clinical programs to date," said Christopher G. Twitty, Ph.D., Chief Scientific Officer of OncoSec. "This study elegantly demonstrated that a critical subset of IL-12-producing dendritic cells in concert with IFN- γ^+ T cells are necessary for an effective anti-PD-1 therapy. Additionally, it was reported that intratumoral delivery of IL-12 with our TAVO system dramatically enhanced the tumor's immunogenicity as well as cytolytic signature, further supporting this important mechanism of action."

The study explored the transcriptional effects of TAVO™ monotherapy in melanoma patients and found that IL-12 activates a cytolytic gene signature in tumor-infiltrating lymphocyte (TIL). Furthermore, this TAVO™-related anti-tumor immune signature was more pronounced in patients with better clinical responses compared to those patients with progressive disease. This publication continues to elucidate the power of IL-12 to activate CD8 $^+$ TIL in patient's tumor.

The full manuscript is available on the journal's website at [https://www.cell.com/immunity/pdfExtended/S1074-7613\(18\)30439-4](https://www.cell.com/immunity/pdfExtended/S1074-7613(18)30439-4) and will be posted to

the OncoSec website at www.oncosec.com.

About OncoSec Medical Incorporated

OncoSec is a clinical-stage biotechnology company focused on developing cytokine-based intratumoral immunotherapies to stimulate the body's immune system to target and attack cancer. OncoSec's lead immunotherapy platform – TAVO™ (tavokinogene telseplasmid) – enables the intratumoral delivery of DNA-based interleukin-12 (IL-12), a naturally occurring protein with immune-stimulating functions. The technology, which employs electroporation, is designed to produce a controlled, localized expression of IL-12 in the tumor microenvironment, enabling the immune system to target and attack tumors throughout the body. OncoSec has built a deep and diverse clinical pipeline utilizing TAVO™ as a potential treatment for multiple cancer indications either as a monotherapy or in combination with leading checkpoint inhibitors; with the latter potentially enabling OncoSec to address a great unmet medical need in oncology: anti-PD-1 non-responders. Results from recently completed clinical studies of TAVO™ have demonstrated a local immune response, and subsequently, a systemic effect as either a monotherapy or combination treatment approach. In addition to TAVO™, OncoSec is identifying and developing new DNA-encoded therapeutic candidates and tumor indications for use with its ImmunoPulse® platform. For more information, please visit www.oncosec.com.

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