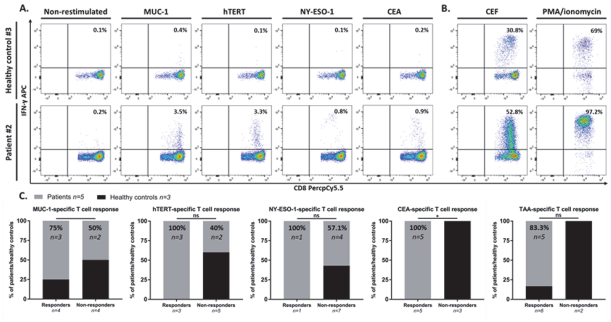
one healthy control (figure 1). When TAA responses were pooled together, 83.3% of responders were patients (n=5) and 100% of non-responders were healthy controls (n=2).



Abstract 758 Figure 1 CRC TAA-specific CD8 T cell responses in CRC patie

Dot plot of one representative healthy control (#3) and one representative patient (#2) showing IFN-γ production by CD8 T cells in response to (A) MUC-1, hTERT, NY-ESO-1 and CEA stimulations or without any restimulation (negative control) and (B) positive controls (CEF and PMA/ionomycin). Percentages of IFN-gamma+ CD8 T cells are displayed in each plot. C Frequency of MUC-1-, hTERT-, NY-ESO-1-, CEA- and pooled TAA-specific CD8 T cell responses in patients (grey) and healthy controls (black). Fisher exact test, * p=0.0179; ns=not significant.

Conclusions The presence of circulating T cells responding to CEA in all 5 patients, but also to MUC-1 and hTERT in 3 patients suggests that these TAAs may be good targets for immunotherapy in CRC. Our findings also provide a rationale to investigate the prognostic value of CEA-, MUC-1- and hTERT-specific T cells in the peripheral blood of CRC patients and to consider vaccination with these antigens to boost or induce responses to control residual tumor post-surgery.

Ethics Approval This study was approved by Health Sciences North's Research Ethics Board; approval number 18- 104.

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759 DEVELOPMENT OF AN IMPLANTABLE ARTIFICIAL LYMPH NODE AS A THERAPEUTIC CANCER VACCINE

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Background Personalized therapeutic cancer vaccines aim to target and reprogram the host immune system to achieve cancer eradication in situ. Cancer vaccines deliver two main components: immunostimulants (iS) and tumor antigens to reduce tumor burden with a robust T cell response; however, none have reached broad clinical success due to difficulty in vaccine administration, ex vivo cellular manipulation, low clinical efficacy and broad administrative barriers. While most efforts to date have focused on repeated bolus administrations, biomaterial-based vaccine strategies have led to promising clinical translation.

Methods In light of these challenges, we have designed a clinically-viable platform-based vaccine strategy, termed the NanoLymph, to provide spatiotemporal elution of immunostimulants and tumor antigens locally to recruit and activate antitumor immunity for cancer eradication. Here, we aim to target the release of granulocyte macrophage colony stimulating factor (GM-CSF) and TLR-7/8 agonist Resiquimod (R848) to promote recruitment and activation of dendritic cells (DCs), a key player in antitumor cytotoxicity.

Results We demonstrate the NanoLymph as an structurally stable and biocompatible immunostimulatory niche for durable DC-driven tumor specific T-cell mediated cytotoxicity. Additionally, we demonstrate the NanoLymph's ability to recruit and activate immune cells of interest, activating antitumor immunity against model antigen. Thus, we have provided the framework necessary to develop a personalized therapeutic cancer vaccine for tumor-specific T-cell mediated responses necessary to generate immunological memory.

Conclusions Future studies will evaluate immunostimulant and tumor antigen biodistribution in vivo and further apply the NanoLymph in a tumor bearing model to effect antitumor cytotoxicity. Ultimately, we aim to develop a personalized platform applicable for every patient of any cancer type aimed at direct clinical translation.

Ethics Approval This study was approved by the Houston Methodist Research Institute (HMRI), according to protocols approved by the Institutional Animal Care and Use Committee (IACUC). HMRI's Animal Welfare Assurance number is A4555-01. HMRI assures strict compliance with all federal regulations and guidelines involving the use of laboratory animals in biomedical research.

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760 TROUGH LEVELS OF IPILIMUMAB IN SERUM AS A POTENTIAL PREDICTIVE BIOMARKER OF CLINICAL OUTCOMES FOR PATIENTS WITH ADVANCED MELANOMA AFTER TREATMENT WITH IPILIMUMAB

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Background Immune checkpoint blockade (ICB) using anti-CTLA-4 and anti-PD-1/PD-L1 has revolutionized the treatment of advanced cancer. However, ICB cures only a fraction of patients, and biomarkers such as PD-L1 expression or CXCL11 have suboptimal sensitivity and specificity. Exposure-response (E-R) relationships have been observed in other therapeutic mAbs. There are many factors that can influence E-R,[1] yet several studies have shown that trough levels of anti-PD-1/PD-L1 correlated with clinical outcomes. Little is known about the potential utility of anti-CTLA-4 levels as a predictive biomarker.

Methods Serum was obtained after doses 2 and 4 from patients with advanced melanoma who received ipilimumab alone (3 mg/kg every 3 weeks for 4 treatments) via an expanded access program. We have successfully established a proteomics assay to measure ipilimumab concentration in serum using a versatile LC-MS/MS-based nano-surface and molecular-orientation limited proteolysis (nSMOL) approach.[2]

Results Serum samples from 38 patients were assessed for the ipilimumab trough levels by the nSMOL assay. The ipilimumab concentrations after dose 2 were ranged between 4.44 and 33.63 ug/ml (median:16.30, IQR: 11.41 – 20.87). We found that patients with lower serum trough levels of