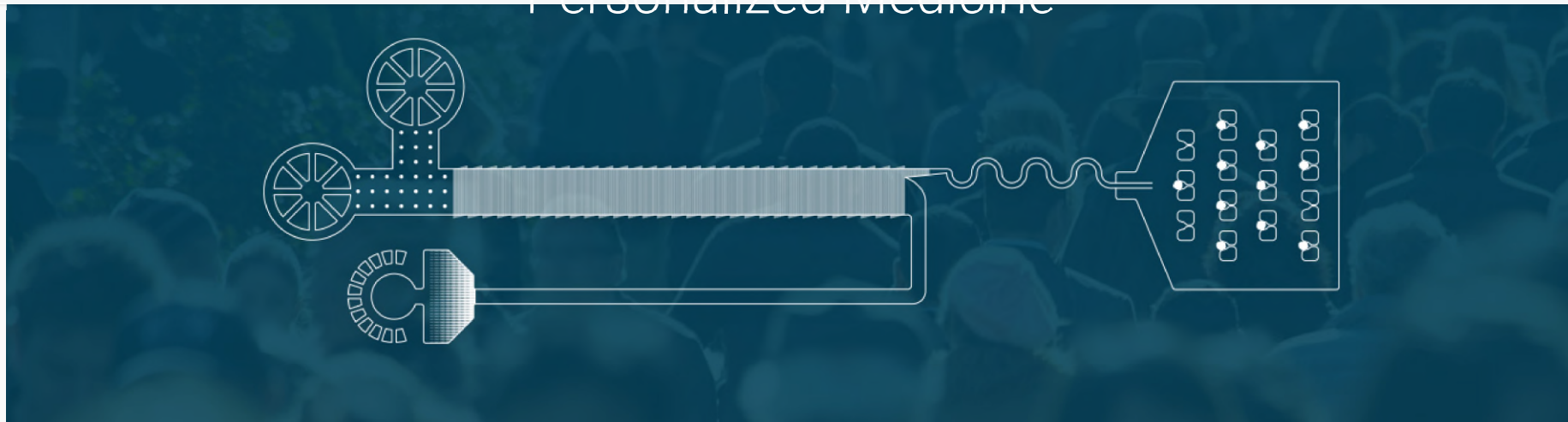




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Personalized Medicine



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...T cells that target tumor neoantigens arising from cancer mutations are the main mediators of many effective cancer immunotherapies in humans.

Eric Tran, Paul F. Robbins & Steven A. Rosenberg
Nature Immunology (2017)





The next wave in immuno-oncology success will depend on initiating highly specific T cell immune recognition of cancers. Based on the current evidence, unleashing a tsunami of T cells that recognize and kill cancer cells displaying patient-specific mutations (neo-epitopes) holds great potential to significantly increase the number of cancer patients that will benefit from I-O therapies.

PACT Pharma is dedicated to synthesizing a tsunami of neo-epitope targeted T cells and producing a personalized adoptive cell therapy designed to benefit each individual cancer patient (as outlined in the diagram below). The neo-epitope targeting is engineered into the patient's own T cells (autologous T cells) for programming to seek out, infiltrate into the tumor and kill the tumor cells displaying the unique neo-epitopes. In essence, PACT Pharma is engineering next generation synthetic tumor-infiltrating lymphocytes (synthetic TILs), tailored for each patient's cancer with highly efficient turnaround in manufacturing from tumor biopsy to re-infusion of autologous synthetic TILs back into the patient.



Our proprietary approach, the imPACT Isolation Technology[®], utilizes a highly sensitive nanoparticle and microfluidic engineering system and fabricated chips to identify and to isolate very rare T cells in patients that already recognize the cancer neo-epitopes. The figure below reveals that these T cells can be interrogated for their specificity of neo-epitope recognition. Using a barcode system on the nanoparticle, together with a series of three different fluor-bound DNA sequences, the neo-epitope specificity of each CD8 T cell trapped in the chip is translated (e.g. T cell #3 yielded a signal of yellow-red-green, which translates to neo-epitope #12 in the table below).



Decipher barcode with fluorescent nucleic acid probes to read out neo-epitope specificity of isolated T cells

Following impACT Isolation Technology®, our machine learning algorithms define the most relevant neo-epitope (**NeoE**) specific CD8 T cells for therapeutic benefit, from which we extract the T cell receptor (**TCR**) sequences for PACT TCR-T product development. Using (*non-viral*) precision genome engineering, the NeoE-targeted TCR sequences replace the endogenous TCR of fresh CD8 and CD4 T cells collected from that same patient's peripheral blood (autologous NeoE TCR engineered into autologous fresh T cells) followed by minimal expansion in preparation for re-infusion into the patient. These patient-specific TCR-T cells are formulated to immediately kill all neoantigen-

expressing tumors, together with a deep reservoir of 'ready-to-go' TCR-T cells for long term persistence and capable of responding to prevent future cancer recurrence.



... engineering autologous synthetic TILs, which, when administered into the patient, are unleashed as a tsunami of tumor-specific T cells capable of rapid elimination of cancer throughout the body for durable clinical benefit. This is the promise of next-generation immuno-oncology: to unleash the patient's immune system to eradicate cancer...

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Personalized Adoptive Cell
Therapies with
NeoAntigen-Targeted T
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