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Discovery of cancer neoantigens by high throughput capture of the human antibody repertoire from checkpoint inhibitor responsive cancer patients enables creation of novel mAb targeted cancer immunotherapies

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Tumor draining lymph nodes contain B-cells that produce antibodies that are reactive with tumor neoantigens. The Immunome RealMAb system directly immortalizes B-cells so that they can grow and maintain antibody secretion indefinitely. RealMAb uses a genetically stabilized fusion partner cell line licensed from the Whitehead Institute in Cambridge, MA. RealMAb produces libraries of thousand of unique, stable cells that secrete high levels of human monoclonal antibodies (mAbs) in their real "native" configurations. The Immunome ScreenMAb system is an integrated, high-throughput platform for screening RealMAb libraries to identify the mAbs that bind novel cancer neoantigens and to assess their potential as anti-tumor therapeutic leads. We are examining B-cell repertoire in lymph nodes from breast cancer patients and non-small cell lung cancer patients and in peripheral blood memory B-cell populations of solid tumor patients who respond to anti-PD1 antibody therapy. We have cloned a variety of human mAbs that specifically recognize human cancer neoantigens. Many of the neoantigens are expressed on multiple tumor cell types indicating diverse breast cancer and lung cancers. Neoantigens selected by the studying the human anti-tumor antibody response includes many that cannot be identified by other methods. The RealMAbs used to identify and characterize the biology of the cancer neoantigens can themselves be used as molecular leads for the creation of novel therapeutics based on recombinant mAbs, antibody-drug conjugates and Chimeric Antigen Receptors for T-cells and NK cells.

Biography

Scott K Dessain is the Co-Founder and CTO of Immunome Inc., and an Associate Professor at the Lankenau Institute for Medical Research, Wynnewood, PA. He has received MD and PhD degrees from Yale University, Postgraduate Medical Training at Brigham and Women's Hospital and Dana Farber/Partners Cancer Care Boston, MA. His Post-doctoral Training was with Dr. Robert Weinberg, with whom he discovered the scientific basis for the RealMAbs platform. He currently attends in clinical oncology at the Lankenau Medical Center and runs an Immunology Research Laboratory.

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