A rapid platform immunogenicity testing of cancer (neo) epitopes amenable to predict responders from non-responders

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Only a fraction of cancer patients benefits from immune checkpoint blockades (ICB). Those who respond to ICB have some intrinsic anti-tumor immune responses. The effectiveness of such therapies depends on the intrinsic antitumor immunity namely preexisting tumor-specific cytotoxic T cells. A notion that has intensified research studies on cancer vaccines to assist ICB, with an aim to treat those cancer patients that currently do not respond to ICB therapies. In the recent years, the research tools and technologies for the identification of cancer mutations and of potential neoepitopes have improved dramatically, to the point that they have never been this promising. However, such candidate neoepitopes must be validated functionally for their immunogenicity, only those that are expressed and can be processed and presented are real neoepitopes. A solid characterization or indication of true neoepitopes is that they can bind to the MHC groove. Indeed, it is difficult to make a verdict on the immunogenicity of (neo) epitopes without a rapid method to measure the binding of these peptides to MHC of the hosts. We have devised a rapid, user-friendly peptide exchange tetramer assay (that can help determine the binding of novel peptides to MHC class I molecules and to generate new specificity MHC class I tetramers for peptide specific T cell detection. Here, we show data on the validation of the platform and present data on how this platform may be used to discriminate responders from non-responders. For the validation of the platform, peptides were assessed for their HLA-A2402 binding and data from three different laboratories. Studies are ongoing to determine how this assay may discriminate between responders and non-responders to peptide based vaccine therapy, which will be discussed.

Speaker Biography

Pirouz Daftarian is the Applications Manager, at MBL International focusing on applications in immuno-oncology. He is also a Volunteer Assistant Professor University of Miami, USA. He is a Vaccinologist/Immuno-Oncologist with 20 years of experience in T-cell biology, vaccine development. IVD assay development for I-O biomarker and surrogates of tumor rejection. He has nine patents and more than 50 publications in peer reviewed journals.

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