A personalized approach for increased clinical efficacy of cancer immuneotherapy

Despite great successes of cancer immunotherapy has led to complete tumor regressions in 5 to 10% of patients with incurable cancers (1), most patients have only a temporary benefit, or do not benefit at all (1,2). The key to obtain benefit appears to rely on the ability of the individual patient's immune system to generate responses to cancer mutations, or “neo-antigens”. In order to increase the fraction of patients benefitting from this therapeutic approach, we will bring together an interdisciplinary group of researchers. The high level of expertise and innovation reached in our respective research fields indicate that a collaborative effort may result in a breakthrough technology. Here, translational cancer immunologists, basic immunologists, genomics experts, immunobio-informaticians and quantum physico-chemists will create an efficient platform to predict on a personalized basis the most effective neo-antigen based cancer vaccine or engineered T cells. This way the individual patient’s immune system will be induced to recognize efficiently cancer neo-antigens, and deliver a cure to a larger fraction of patients with currently incurable cancers.

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Project ID: 18045
01/04/2018 → 31/03/2021
Collaborators: University Hospital Herlev
Project: Research