COVID-19 research seminar

Cornelis Melief

Leiden University,
ISA Pharmaceuticals

Talk title: T cell based vaccination against SARS-CoV-2

Sara Mangsbo

Uppsala University,
Strike Pharma

Talk title: T cell responses as SARS-CoV-2, what have we learned so far?

Wednesday, September 15, 2021
At 15:15-16:45, Online via Zoom

Cornelis (Kees) Melief is emeritus professor of immunology at Leiden University. Since 2011 he is Chief Scientific Officer (CSO) of ISA Pharmaceuticals, a biotech company specializing in development of synthetic therapeutic vaccines against cancer. Of his many contributions to basic immunology, including work in mouse models, and clinical immunology, the most striking highlights are the eradication of large vascularized mouse tumors by adoptive transfer of cytotoxic T lymphocytes directed against an oncogene-encoded protein as well as the discovery that T cell help for cytotoxic T lymphocyte induction involves cognate interaction between CD40 ligand on T helper cells and CD40 on Dendritic Cells.

Assoc prof Mangsbo is an expert in the field immunotherapy and a specific interest and passion within protein-based drugs and immunotoxicology. She currently holds a senior lecture position as the Dept of Pharmaceutical Biosciences and is also the Chief Innovation Officer at Ultimovacs. She is also the co-founder of Immuneed AB, Vivologica AB and Strike pharma AB.

Abstracts ⇩

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Abstract Cornelis Melief

T cell based vaccination against SARS-CoV-2

Preventive vaccines operate by induction of neutralizing antibodies against the S protein of SARS CoV-2. Many patients, through their disease or through immunosuppressive treatment are deficient in their capacity to generate neutralizing antibodies. Particularly vulnerable are patients with B cell depletion by anti-CD20 antibodies as treatment for B cell lymphoma or autoimmune diseases. These patients would benefit from T cell immunity against multiple proteins of SARS-CoV-2.

Recovery from SARS-CoV-2 infection often occurs without serum antibodies, but with robust T cell immunity against the viral S, N and M proteins. We have therefore developed an anti-SARS-CoV-2 vaccine against these three proteins by selecting T cell epitope-rich regions, using prediction algorithms for T cell epitopes and for GMP manufacturability of synthetic long peptides (SLP, 20-35 amino acids long). After natural infection, PBMC showed robust T cell immunity against the selected SLP (called ISA106). A similar vaccine (ISA101b) is effective against diseases induced by human papillomavirus type 16.

Abstract Sara Mangsbo

T cell responses as SARS-CoV-2, what have we learned so far?

Synthetic peptides are used as research tools as well as therapeutic drug candidates with the aim to evaluate T cell responses as well as improve T cell responses within vaccine development. This talk will focus on our identified SARS-CoV-2 specific peptide mix for the measurement of specific SARS-CoV-2 responses and the possible use of peptides in therapeutic vaccine strategies and delivery/formulation systems for improved therapeutic efficacy of peptide therapeutics.

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