Therapeutic Vaccines

Therapeutic vaccines are an innovative approach to cancer immunotherapy that aim to instruct the patients' immune system on what cancer cells 'look like,' so that the immune system can recognize and eliminate tumors.

The Therapeutic Vaccines Workstream provides Demonstrator Project partners with a unified pipeline that bundles the latest innovations and high-quality technologies from different partners and top cancer institutes. This open platform supports vaccine development, production, and clinical testing.

This infographic highlights the services and capabilities available to drug developers during a Demonstrator Project, which can be executed at any stage of the Workstream pipeline and incorporates at least one of the innovative Platforms: Patient Cohorts, Organoids and Artificial Intelligence.

Oncode Accelerator

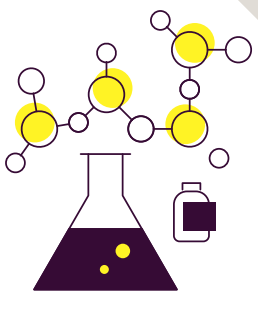
Outsmarting cancer
Impacting lives

Antigen Discovery

Artificial Intelligence | Organoids | Patient Cohorts

DNA, RNA, Ribo-seq screening vaccine lead finding, immunopeptidomics
Screen for vaccine leads using WGS, RNAseq (short and long read), Ribo-Seq, and/or Immunopeptidomics combined with artificial intelligence and the deep scientific expertise within the Workstream

Immune profiling & Epitope immunogenicity
Assembly of biological sample (PBMC, TDLN, tumor) cohorts (in collaboration with Patient Cohorts Platform) • Spatial immune cell quantification by Vectra Polaris (7 plex) and Image Mass Cytometry (Hyperion 24 plex) • Analyze immune cell signaling by bulk (Nanostring Ncounter) and spatial (GeoMX DSP) transcriptomics • Single cell spatial immune cell identification, quantification, functional qualification, and interaction analysis by Nanostring CosMX • 40-plex Aurora flow cytometry analyses to understand immune signaling complexity • Immunogenicity testing of targets in human T cell repertoire • Isolate antigen-specific TCRs

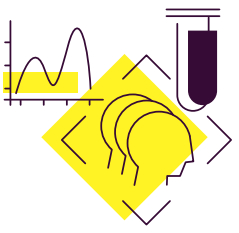


The Oncode Accelerator Project receives funding from the Dutch National Growth Fund (NGF). It is a collaboration between 6 coordinating partners: Leiden University, Leiden University Medical Center, the Netherlands Cancer Institute, Princess Máxima Center, UMC Utrecht, and the Oncode Accelerator Foundation, who lead individual consortia within the Oncode Accelerator Project.

Adjuvants and Formulation

Artificial Intelligence | Organoids | Patient Cohorts

Adjuvants and delivery systems
Design a new vaccine type using our panel of flexible vaccine platforms and new molecular adjuvants • Select from and combine dendritic cells, lipid nanoparticles, cationic liposomes, peptides, mRNA, DNA, and targeted conjugates as vaccine delivery platforms • Develop vaccine formulations for peptides, DNA or mRNA • Adjuvanticity and immunogenicity testing in in vitro 2D and 3D complex cell cultures, including human skin • Pharmaceutical characterization • Vaccine/Adjuvant in vivo testing for tumor growth control in mouse models



Interested in applying for a Demonstrator Project?

Scan the QR-code to get started or go to **oncodeaccelerator.nl**

Vaccine Development and Validation

Organoids | Patient Cohorts

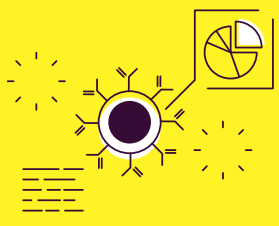
Candidate specific Immune Monitoring Development
Qualification and quantification of the antitumor immune response – both by flow cytometry and spatially • Analyze immune composition of blood by 40-plex Aurora flow cytometry to uncover clues into mechanisms underlying efficacy or resistance to vaccination and/or immunotherapy in general • Functional and quantitative assays for assessing vaccine-induced T cell responses (e.g. ELISPOT, MHC multimers, activation markers, multiple cytokine production) • Immune status assays

GMP Vaccine Production

Patient Cohorts

Pre-GMP activities
Produce clinical grade peptide, mRNA, DNA or DC types of vaccines using scalable manufacturing systems and GMP compatible materials • Perform process development and define critical process parameters for later success in GMP production • Perform assay development and definition of critical quality attributes for later success in GMP production

GMP manufacturing of therapeutic vaccines
Access state-of-the-art processing equipment and instruments such as Quantum Flex cell expansion systems, Lovo automated cell processing systems, and Prodigy cell isolation systems • Support with technology transfer, process validation, and assay validation • Perform GMP vaccine production for peptide, mRNA, DNA or DC types of vaccines • Support in developing an Investigational Medicinal Product Dossier (IMPD)



Immune Monitoring

Blood and tissue processing • Functional and quantitative assays for assessing vaccine-induced T cell responses (e.g. ELISPOT, MHC multimers, activation markers, multiple cytokine production), quality-controlled in time • Blood composition analyses, quality controlled in time • Analyze specific (pre-determined) cell types in tumor tissue alongside bulk transcriptomics (pre/post) • TCR repertoire analyses

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