

The development of antigen-specific therapies for rheumatoid arthritis patients by the identification of citrullinated epitopes

Market Sector: Rheumatoid Arthritis Diagnostics and Therapeutics



Fig. 1 X-ray picture of the hands of a rheumatoid arthritis patient. There is a typical presentation of bony erosion (white arrowheads). Progressive joint deformities (large white arrows) are due to muscle spasm, atrophy and contracture, as well as the erosion of articular surfaces, stretched ligaments and tendon rupture.

Anti-citrullinated protein/peptide antibodies (ACPA) have an excellent diagnostic performance for rheumatoid arthritis (RA). Indeed, antibodies directed against citrullinated antigens are uniquely specific for RA, associated with unfavourable prognosis, and predictive of disease severity. Scientists from Leiden University Medical Centre have now identified novel citrullinated epitopes, a target of ACPA, that are recognized by memory T cells in ACPA-positive rheumatoid arthritis patients. There is currently no antigen-specific therapy for RA and available regimens apply immune suppressive and/or anti-inflammatory drugs.

Given the potential role of ACPA in RA pathogenesis, a therapeutic intervention specifically inhibiting ACPA production by suppressing the antigen-specific T cell response, can have a great advantage compared to current non-specific treatments. Therefore, the identification of these epitopes can lead to development of peptide-based therapeutic immune interventions.

Furthermore, in conjugation with MHC molecules these peptides can be used for early screening of antigen-specific T cells in synovial fluid and/or peripheral blood as predictive biomarker in a diagnostic test, as well as a therapeutic biomarker of response to immunomodulatory treatments.

Keywords

Rheumatoid Arthritis, Antibodies, Peptide-based immune intervention, Diagnostics, Early Screening.

Key Benefits

- Earlier diagnosis of RA by t screening of synovial fluids and/or the blood.
- Antigen-specific peptide-based safe and tolerable immune intervention.

Current stage of development

The scientists are collecting clinical data to achieve clinical proof of concept.

Applications

- Early screening for RA
- Diagnostic test screening for autoimmune T cells in RA patients.
- Peptide-based immunotherapeutic interventions involving ex vivo loading of dendritic cells with RA antigens.

Patent / IP Status

Premier depot filed in 2009.

Commercial Partner

We are looking for a partner interested to acquire a license for clinical development of this technology and to commercialize diagnostic and therapeutic products for the Rheumatoid arthritis market.

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Leiden University Medical Center (LUMC) is strongly committed to the advancement of health care, through research and innovation. In particular, the focus is on translational research, with the overall aim to accelerate transfer of findings from the laboratory to clinical application, and to the market.

LUMC has a reputation as a pioneering institute in its field, both nationally and internationally.