A New Biomarker to Predict Patient Response to Anti-TNF Therapy

A method of employing a protein biomarker in patient's peripheral blood monocytes (PBMCs) that can be used to predict the response to anti-TNF treatment.

Problem Solved by This Technology
Patients with rheumatoid arthritis (RA) and psoriatic arthritis (PsA) endure synovial inflammation and joint destruction caused by excessively high levels of tumor necrosis factor (TNF) in both the circulation and within the affected joints. Anti-TNF therapy is commonly used to treat RA and PsA. However, only 50 - 60% of patients respond to this therapy, and less than 25% achieve true remission with continuous therapy.

Applications
This protein marker will be the first predictor of patient response to anti-TNF therapy. It can be further developed into a PBMC-based companion diagnostic test for the anti-TNF regimen, either by flow cytometry or Western blotting using PBMCs. Patients who are predicted to be unresponsive to anti-TNF therapy can thus start alternative treatment right away to avoid unnecessary joint inflammation and destruction while being spared the costs associated with the initial anti-TNF treatments.

Technology Status
Initial mouse studies have shown that this biomarker is up-regulated in response to increased TNF levels in the blood. Extended human studies further revealed that the protein levels in PBMCs were elevated in 50 - 60% of RA and PsA patients. More importantly, normal protein levels were observed in >90% of patients who responded positively to anti-TNF treatment. This discovery is currently being verified in a larger patient population.

UR Ventures
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URV Reference Number
6-2129

~1% of the general population have rheumatoid arthritis. Between 1 and 3% have psoriasis - ~40% of them will develop psoriatic arthritis.

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Intellectual Property Status
Patent application pending in the United States.

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