

Circulating Mitochondrial DNA as Marker for Autoimmune and Autoinflammatory Diseases

A sensitive diagnostic tool and superior biomarker of disease activity

Technology

Autoimmune and autoinflammatory diseases (AID) are disorders characterized by an aberrant response of the acquired or innate immune system, resulting in systemic inflammation and destruction of cells and tissues. Toll-like receptor (TLR) 9 signaling is important to the pathogenesis of AID. TLR9 recognizes dsDNA which may be released by mtDNA containing neutrophil extracellular traps (NETs) upon stimulation by tissue injury. Circulating mtDNA, unlike nDNA molecules, are markedly increased in AID and may contribute to AID. Furthermore circulating mtDNA copies are better markers of disease activity than current markers and are suitable in supporting or decreasing the likelihood of the diagnosis of AID in clinically unclear situations.

Innovation

- Quantification of circulating mitochondrial DNA copy numbers in plasma as a marker of AID
- Direct involvement in the systemic disease process
- Extraordinary reliability and sensitivity
- Disease activity marker, superior to current laboratory standards

Application

- Ruling out and differentiating connective tissue diseases, vasculitis and other AID from clinical mimics
- Reliable monitoring of disease activity in
 - Systemic lupus erythematosus, systemic sclerosis, myositis and other connective tissue diseases
 - ANCA-associated vasculitis (Wegener's granulomatosis, Churg-Strauss vasculitis, microscopic polyangiitis)
 - Behcet's disease
 - Inflammatory bowel disease (Crohn's disease and colitis ulcerosa)
 - Adult Respiratory Distress Syndrome

Market Potential

- Estimated sales about 150 Million Euro/ year in EU and US markets assuming a price of Euro 18/ assay. Further large potentials in other markets and indications.

Responsible Scientist

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Patent Status

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