

Genomics, proteomics and metabolomics: Their emerging roles in the discovery and validation of rheumatoid arthritis biomarkers

Castro-Santos P.

Laborde C.M.

Díaz-Peña R.

Rheumatoid arthritis (RA) is an autoimmune inflammatory rheumatic disease which affects several organs and tissues, predominantly the synovial joints. Despite major advances, the aetiology of this disease is not completely understood. Although several biomarkers are routinely used in RA management and some of them can be detected even prior to the onset of the clinical disease, there is a high demand for novel biomarkers to further improve the early diagnosis of RA. The '-omics' techniques that have emerged and have been developed in recent years have allowed researchers to improve their knowledge of the aetiopathology of RA. At the same time, advances in screening technologies offer an excellent opportunity to find new biomarkers potentially useful for early diagnosis, stratification of patients, and even prediction of a better response to a specific therapy. This review describes what is known about the methodologies used in the discovery of novel biomarkers in RA, along with the findings of these methodologies, with specific attention to recent advances in the fields of genomics, proteomics and metabolomics. © Clinical and Experimental Rheumatology 2015.

Genomics

Metabolomics

Proteomics

Rheumatoid arthritis

biological marker

microRNA

biological marker

genetic marker

blood analysis

DNA methylation

epigenetics

gel electrophoresis

gene locus

genetic association

genetic risk

genomics

histone modification

human

liquid chromatography

major histocompatibility complex

metabolomics

nonhuman

priority journal

proteomics

Review

rheumatoid arthritis

synovial fluid

urinalysis

animal

Arthritis, Rheumatoid

early diagnosis

genetic marker

genetic predisposition

genetics

immunology

metabolism

predictive value

procedures

prognosis

Animals

Arthritis, Rheumatoid

Biological Markers

Early Diagnosis

Genetic Markers

Genetic Predisposition to Disease

Genomics

Humans

Metabolomics

Predictive Value of Tests

Prognosis

Proteomics