

# Predicting sensitivity to disease-modifying antirheumatic drugs (DMARDs) with pro-resolving mediators

## **Applications**

**Rheumatoid arthritis (RA) patient stratification tool to predict treatment:** This test allows to predict sensitivity to treatments for rheumatoid arthritis (RA) patients based on their pro-resolving mediators as prognostic indicators

## **Benefits**

Early identification of unresponsive to methotrexate patients could save costs and prevent secondary complications.

Improving quality of life: fast-tracking patients to advanced RA treatments, potentially preventing structural damage

**Pro-resolving mediators were demonstrated to be powerful prognostic markers for drug response in RA, predicting patient response to DMARDs, enabling selection of the most appropriate therapy for each patient.**

## Background

Rheumatoid arthritis (RA) is an autoimmune disease that leads to the progressive destruction of joints. RA is not curable, requires life-long treatment, with the challenge of the efficient stratification of patients to align them with the most appropriate existing treatments. This is particularly important as some patients may exhibit treatment resistance, while others could potentially gain benefits from repurposed drugs.

## The problem

- Lifelong treatment with its associated risks of drug-related side effects
- Patients treated with DMARDs rarely go into full remission, with as many as 50% of patients being or becoming resistant to treatment
- DMARDs exert several unwanted side effects, thus, there is great need in identifying biomarkers that can predict responsiveness
- Existing drugs could be repurposed to benefit treatment of RA, but patient stratification approaches are required

## Invention: Benefits and application

QMUL researchers identified 5 specialized pro-resolving mediators as prognostic indicators for treatment success with methotrexate, the current first-line of treatment for RA. These biomarkers could be used clinically to help identify patients unlikely to respond to methotrexate and other conventional DMARD therapy, fast-tracking them to advanced RA treatments, potentially preventing structural damage, and improving quality of life. Early identification of unresponsive to methotrexate patients could save costs and prevent secondary complications. Furthermore, evidence has been obtained for the diagnostic utility of specialised pro-resolving mediators at predicting responses to other RA drugs.

