Nature Reviews Rheumatology | Published online 5 Oct 2017; doi:10.1038/nrrheum.2017.166

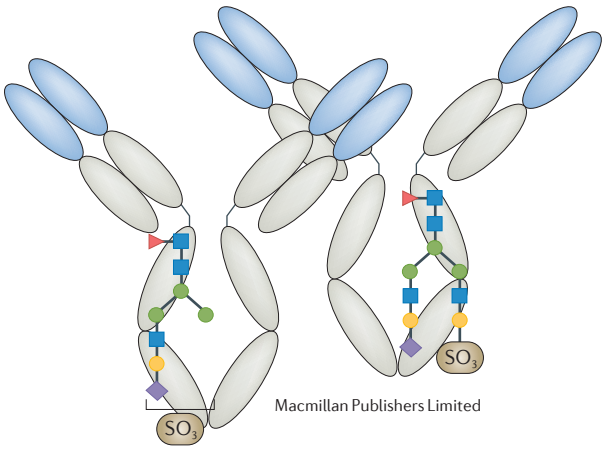
RHEUMATOID ARTHRITIS

Seronegative RA-specific biomarkers identified

> these sulfated glycans were … present in patients with RA, regardless of seronegativity

The links between autoantibodies and rheumatoid arthritis (RA) are well established, but the role of antibody glycosylation is less well understood. Now, a new microfluidic chip technology is helping to uncover antibody glycosylation patterns as potential biomarkers for RA.

Glycosylation helps to regulate the specificity and activity of antibodies; however, analysis of the glycome has remained a challenge owing to the heterogeneity of glycosylation patterns and the lack of easy-to-use, high-throughput technologies.



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To address this technology problem, researchers developed a microfluidic titanium dioxide–porous graphitized carbon chip to enable the enrichment of low-abundance acidic glycans from the complex mix of total glycans found on antibodies. "Our technology represents an automatic, rapid, sensitive and accurate quantitation method for biologically important but low-abundance acidic glycans," states corresponding author Zhi-Hong Jiang.

Using this new technology, Jiang and colleaques analysed serum samples from 90 patients with RA and 57 healthy individuals. From this data set, the authors identified potential biomarkers for RA using a machine learning tool. In particular, two sulfated glycans were identified as good candidate biomarkers for RA.

Interestingly, both of these sulfated glycans were reliably present in patients with RA, regardless of seronegativity; results that were confirmed in a validation cohort of 187 patients with RA and 84 healthy individuals. In addition, in patients with osteoarthritis or ankylosing spondylitis, these glycans were either not elevated above the levels seen in healthy individuals or were reduced, making them promising biomarkers for seronegative RA.

"We are now synthesizing the two sulfated glycans described in our article for the preparation of a potential kit for the clinical diagnosis of RA," says Jiang.

Joanna Collison

ORIGINAL ARTICLE Wang, J.-R. *et al.* A method to identify trace sulfated IgG N-glycans as biomarkers for rheumatoid arthritis. *Nat. Commun.* **8**, 631 (2017)
FURTHER READING Seeling, M., Brückner, C. & Nimmerjahn, F. Differential antibody glycosylation in autoimmunity: sweet biomarker or modulator of disease activity? *Nat. Rev. Rheumatol.* **13**, 621–630 (2017)