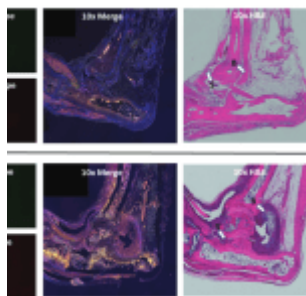
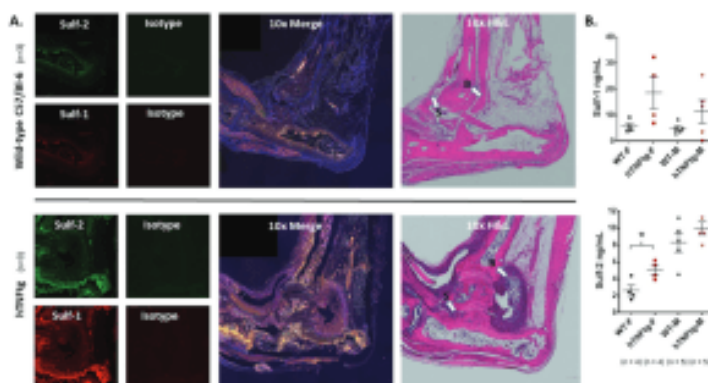


# Novel protein linked to rheumatoid pathogenesis



In a recent paper, researchers have discovered and described a protein known as sulfatase-2 that may be a key role player in the pathology of [rheumatoid arthritis](#) (RA) (Figure 1). This finding helps researchers understand the [mechanisms](#) underlying the inflammation seen in RA. Currently there is no cure, but these findings may lead to improved treatments of the disease.



**Figure 1: Extracellular sulfatase levels are elevated in inflamed joint tissues and serum of a human TNF-transgenic mouse model of RA. Extracellular sulfatase protein levels were compared in human TNF-transgenic mice of the 3647 line (hTNFtg) and littermate wild-type (WT) C57BL/6 mice. A Murine Sulf-1**

*and Sulf-2 proteins were at qualitatively higher levels in ankle sections of hTNFtg mice as determined by fluorescence IHC. Images are shown with isotype-matched controls on the same tissue and slide. H&E images illustrate synovial hyperplasia and leukocyte infiltration, which are characteristic of hTNFtg mice. Bone (B) and synovial tissues (S) are labeled. B Murine Sulf-1 and Sulf-2 proteins in serum samples from hTNFtg and littermate WT mice were quantitated by ELISA. Data are presented as the mean  $\pm$  SEM. \* $p < 0.05$*

RA is a chronic disease in which the immune system attacks the body's own joint tissues. Tumor necrosis factor-alpha (TNF- $\alpha$ ) is a common and major inflammatory marker driving RA and is the target of many therapies. Patients can develop resistant to treatments overtime; therefore new treatments are needed.

Investigating sulfatase-2 in synovial fibroblasts (cells which line the joints and lubricate them), the researchers removed the protein from one group of cells and stimulated the cells with TNF- $\alpha$ . They were able to show that the cells without sulfatase-2 showed reduced inflammation. This could open the field to new research into using the inhibition of sulfatase-2 to reduce RA symptoms.

**Journal article: Siegel, R.J., et al., 2022. [Extracellular sulfatase-2 is overexpressed in rheumatoid arthritis and mediates the TNF- \$\alpha\$ -induced inflammatory activation of synovial fibroblasts](#). *Cellular & Molecular Immunology*.**

*Summary by Stefan Botha*