

RCSI team highlights TRIM proteins as emerging targets in autoimmune and inflammatory disease

New insights into how a family of proteins called the TRIMs regulate immune responses suggest that they may be important new targets in the treatment of autoimmune and autoinflammatory conditions such as diabetes, gout and Lupus. An article published in *Nature Reviews in Immunology* this month by Dr. Caroline Jefferies and Ms. Claire Wynne (Molecular & Cellular Therapeutics, RCSI), together with a former colleague Dr. Rowan Higgs (TCD), reviews recent developments in this field and reveals how TRIMs may contribute to the development and pathology of such diseases¹.

Autoimmune disease currently affects a significant proportion of the Irish population, with in most cases treatment being limited to targeting symptoms rather than the underlying causes of the disease. In recent years members of the TRIM family of protein (currently numbering 75) have been shown to play a role in anti-viral detection and immunity. Given the link between viral infection and the onset of many autoimmune conditions, it is not surprising that interest in this family is growing as potential players in driving autoimmune disease.

In recent years Dr. Jefferies and her team at RCSI have studied the potential role of specific members of this family in the pathology of the systemic autoimmune disease systemic lupus erythematosus (SLE), commonly known as Lupus. In commenting on the impact of the recent publication, Dr. Jefferies said 'Our work is highlighting the importance of specific TRIMs in turning off immune responses. In particular, evidence is emerging that TRIM21, also known as Ro52, plays a critical role in protecting us against diseases such as Lupus by turning off the production of key inflammatory signals that are known to play a key role in the pathology of this disease. Our work would suggest that TRIM21 activity may be altered in Lupus patients and that therefore we may be able to use this knowledge to treat disease'.

The article published this month in *Nature Reviews in Immunology* presents the evidence for the involvement of TRIMs in autoimmune and autoinflammatory conditions. In particular, it highlights a hitherto unrecognised role for this family of proteins as regulators of the inflammasome, a large protein complex known to be a key player in autoimmune and inflammatory diseases such as type I diabetes, osteoarthritis and gout. The fact that members of the TRIM family regulate the activity of the inflammasome suggests they may also be important in protecting against such diseases. In light of these emerging data, Dr. Jefferies and colleagues suggest strategies aimed at targeting the activity of specific TRIM family members that may give rise to the development of novel therapeutics for the treatment of autoimmune and autoinflammatory conditions.

The article can be viewed at: <http://www.ncbi.nlm.nih.gov/pubmed/21866173>

- 1 Jefferies, C., Wynne, C. & Higgs, R. Antiviral TRIMs: friend or foe in autoimmune and autoinflammatory disease? *Nature reviews Immunology* **11**, 617-625, doi:10.1038/nri3043 (2011).

