

TCS/19/12 - Developing an adoptive regulatory T cell therapy for the treatment of rheumatoid arthritis

The immune system contains a balance of cells that turn responses 'on' and those that turn it 'off'. When this balance breaks down, inappropriate immune responses can attack healthy tissues causing autoimmune disease, such as rheumatoid arthritis. We have developed an approach that directs regulatory cells, responsible for switching off the immune system, to sites of autoimmunity. This process is based on genetically modifying regulatory cells to express disease-targeting receptors. Notably, this approach completely ameliorates disease in an animal model of rheumatoid arthritis. Here we propose to translate this to treat patients with rheumatoid arthritis. This includes validating receptors that enable targeting of the rheumatoid arthritis joint; and defining the safest and most effective cell preparation approaches to generate the therapeutic cell product. This work is part of an exciting new wave of personalised therapy and would contribute to Scotland being at the forefront of this type of therapy.