

T Cell Regulation in Tolerance and Autoimmunity

Our groups have a major interest in the biology of regulatory T cells and the understanding of T cell involvement in autoimmunity. These interests are based on distinct but highly complementary experimental approaches.

1. How the T cell proteins CD28 and CTLA-4 control the balance between tolerance and immunity. We carry out detailed studies into the molecular basis of CD28 and CTLA-4 function with a view to understanding how these pathways influence human T cell responses. In addition the Sansom lab is interested in the role of environmental factors (such as vitamin D) in shaping T cell differentiation. These interests are applied in the context of autoimmune diseases, in particular rheumatoid arthritis in collaboration with [Dr Karim Raza](/staff/profiles/landi/raza-karim.aspx).

2. We are seeking to understand the pathogenesis of T cell driven autoimmune diseases, in particular type 1 diabetes. The Lab uses a TCR transgenic mouse model of diabetes to probe the pathways that control CD4 T cell activation, differentiation and regulation. Our primary interests relate to T cell costimulation (specifically the CD28/CTLA-4 pathway) and the homeostasis and function of regulatory T cells in vivo. The impact of cytokines such as interleukin-21 on T cell regulation and the contribution of different B cell subsets to autoimmune diabetes are also under study. Both the Sansom and Walker Labs collaborate closely with [Dr Parth Narendran](/staff/profiles/cem/EDM/Narendran-Parth.aspx) in translating our understanding of T cell responses into human type 1 diabetes.

Research group staff members...

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