

Balancing T cell populations

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Depending on the signals received, naïve T cells are able to differentiate into mature T cell populations, which play different roles in the immune system. For example, regulatory T cells (Tregs) are important for tamping down the immune response and preventing development of autoimmune disease, while effector T cells promote inflammation. Maintaining the proper balance between Tregs and effector T cells prevents immune dysfunction.

In this issue of the *Journal of Clinical Investigation*, Yun-Cai Lu and colleagues at the La Jolla Institute for Allergy and Immunology investigated the role of the mTOR regulator tuberous sclerosis 1 (TSC1) in maintaining immune homeostasis.

Using a mouse model, the authors found that loss of TSC1 in T cells, tipped the balance between Tregs and effector T cells and promoted severe inflammation in a colitis model. In the absence of TSC1, Tregs inappropriately produced proinflammatory cytokines, thereby promoting inflammation and damage responses.

In an accompanying commentary, Kai Yang and Hongbo Chi at St. Jude Children's Research Hospital discuss how fine tuning mTOR activity through regulators such as TSC1 may be beneficial for treating autoimmune and inflammatory diseases.

More information: TSC1 regulates the balance between effector and regulatory T cells, *J Clin Invest.* DOI: [10.1172/JCI69751](https://doi.org/10.1172/JCI69751)
Tuning mTOR activity for immune balance, *J Clin Invest.* 2013;123(12):5001–5004. DOI: [10.1172/JCI73202](https://doi.org/10.1172/JCI73202)

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