Editorial
Immune Regulation by Regulatory Cells

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Inflammation is a protective response that occurs in response to tissue injury and microbial infections. A significant advancement has been made in our understanding of inflammation, which is one of the most fundamental concepts in medicine. Immunoregulation of immune-mediated inflammatory diseases depends on Th17/Treg balance. Costimulatory receptors, cytokines, metabolic pathways, and the intestinal microbiome all affect this balance in inflammatory conditions. Maintaining a functional equilibrium between these two subsets is very important to design an appropriate and effective treatment strategy.

Immune regulation is a complex process that involves the cooperation of the network of regulatory cells. Different regulatory cells such as regulatory T cells, tolerogenic dendritic cells, regulatory macrophages (alternatively activated, M2 macrophages), regulatory B cells, myeloid-derived suppressor cells, and mesenchymal stem cells, have been shown to play important roles in the regulation of immune responses and control of the pathophysiology of inflammatory responses in autoimmunity and graft rejection

Regulatory cell therapy is a potentially useful therapeutic approach in various immune-mediated inflammatory diseases such as autoimmune diseases, transplant rejection, or graft-versus-host disease in early clinical trials. Preclinical studies have shown the efficacy and safety of using various suppressor cells. Although a significant number of steps have already been taken toward clinical application, several challenges such as cell transplantation route, optimum dose and time, isolation and expansion technique, and combination therapy still need to be overcome in cell therapy of acute and chronic inflammatory disorders. More research is needed to overcome the challenges of using regulatory cell treatment in acute and chronic inflammatory disorders.

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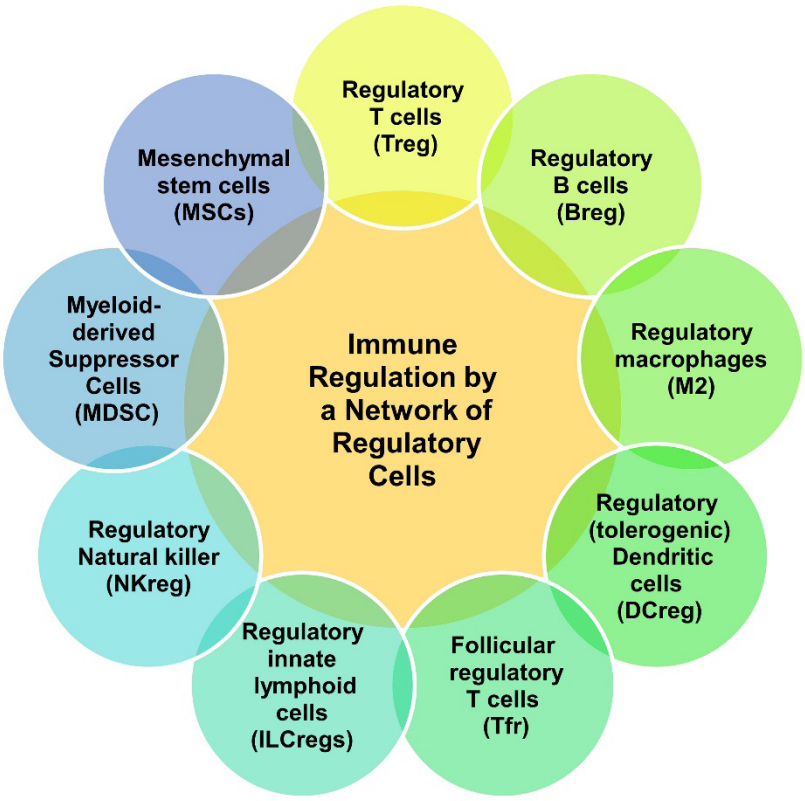
Regulatory T cells (Treg)
Regulatory B cells (Breg)
Regulatory macrophages (M2)
Regulatory (tolerogenic) Dendritic cells (DCreg)
Follicular regulatory T cells (Tfr)
Regulatory innate lymphoid cells (ILCregs)
Regulatory Natural killer (NKreg)
Myeloid-derived Suppressor Cells (MDSC)
Mesenchymal stem cells (MSCs)
Immune Regulation by a Network of Regulatory Cells