

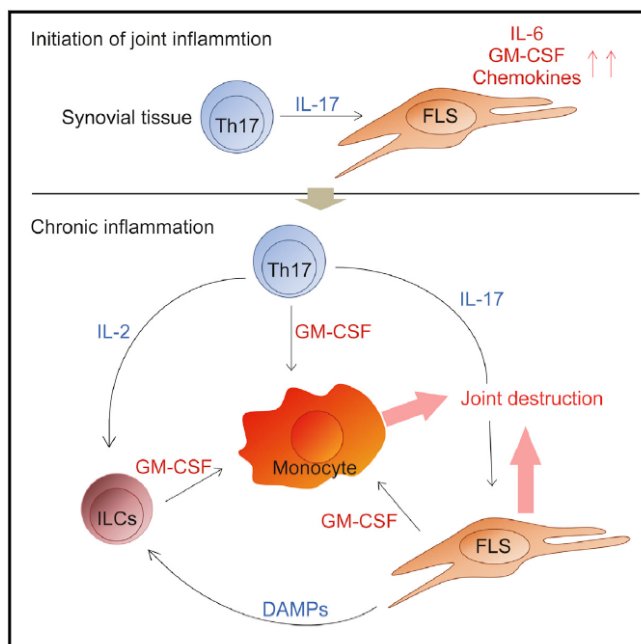
Autoimmune Th17 cells induced synovial stromal and innate lymphoid cell secretion of the cytokine GM-CSF to initiate and augment autoimmune arthritis

Keywords: rheumatoid arthritis, autoimmune disease, GM-CSF, Th17, inflammatory cytokine

- T cell production of GM-CSF is dispensable for the initiation of arthritis
- GM-CSF from stromal cells is crucial for the initiation of autoimmune arthritis
- GM-CSF-producing synovial-resident ILCs augment autoimmune arthritis
- ILC production of GM-CSF is stimulated by IL-2, IL-33, or TLR9 ligands

Abstract

Despite the importance of Th17 cells in autoimmune diseases, it remains unclear how they control other inflammatory cells in autoimmune tissue damage. Using a model of spontaneous autoimmune arthritis, Hirota and Sakaguchi's group showed arthritogenic Th17 cells stimulated fibroblast-like synoviocytes via interleukin-17 (IL-17) to secrete the cytokine GM-CSF and also expanded synovial-resident innate lymphoid cells (ILCs) in inflamed joints. Activated synovial ILCs, which expressed CD25, IL33Ra, and TLR9, produced abundant GM-CSF upon stimulation by IL-2, IL-33, or CpG DNA. Loss of GM-CSF production by either ILCs or radio-resistant stroma cells prevented Th17 cell-mediated arthritis. GM-CSF production by Th17 cells augmented chronic inflammation but was dispensable for the initiation of arthritis. The authors showed GM-CSF-producing ILCs were present in inflamed joints of rheumatoid arthritis patients. Thus, a cellular cascade of autoimmune Th17 cells, ILCs, and stroma cells, via IL-17 and GM-CSF, mediates chronic joint inflammation and can be a target for therapeutic intervention.



Graphical Abstract

Hirota et al. identified in an animal model of rheumatoid arthritis an inflammatory cellular cascade instigated by an arthritogenic T helper subset and enhanced by GM-CSF-producing synovial-resident innate lymphoid cells.

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【Article Title】

Autoimmune Th17 Cells Induced Synovial Stromal and Innate Lymphoid Cell Secretion of the Cytokine GM-CSF to Initiate and Augment Autoimmune Arthritis

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