JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN

Justus-Liebig-Universität Gießen •
Med. Klinik V • Innere Medizin, Infektiologie und experimentelle Pneumologie
Center for Infection and Genomics of the Lung (CIGL)

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Citation Summary

Influenza A virus (IAV) infection mobilizes bone marrow-derived macrophages (BMDM) that gradually undergo transition to tissue-resident alveolar macrophages (TR-AM) in the inflamed lung. Combining high-dimensional single-cell transcriptomics with complex lung organoid modeling, in vivo adoptive cell transfer, and BMDM-specific gene targeting, we found that transitioning ("regenerative") BMDM and TR-AM highly express Placenta-expressed transcript 1 (Plet1). We reveal that Plet1 is released from alveolar macrophages, and acts as important mediator of macrophage-epithelial cross-talk during lung repair by inducing proliferation of alveolar epithelial cells and re-sealing of the epithelial barrier. Intratracheal administration of recombinant Plet1 early in the disease course attenuated viral lung injury and rescued mice from otherwise fatal disease, highlighting its therapeutic potential.

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