

化学生命科学研究所 講演会のお知らせ

LCS Open Seminar

Engineered macrophages for immune cell therapies

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場所：S8棟 1F レクチャーホール



The Chimera antigen receptor (CAR)-macrophages have emerged as a new cell therapy modality to treat solid tumors due to their high infiltration, phagocytosis activity, and capacity to regulate the immune microenvironment. We have developed iPSC-derived CAR-macrophages that possesses antigen-dependent polarization and cytotoxicity against tumor cells. Ex vivo engineered CAR-macrophages face the challenge of low transfection efficiency and long preparation cycle. Thus we also developed in vivo engineered CAR-macrophages by the LNP-mRNA system, and found they efficiently killed tumor cells, broke down physical barriers around the tumor constructed by CAFs, and significantly promoted infiltration and expansion of CD8+ T cells within tumors. Moreover, the transiently formed CAR-macrophages in vivo are sufficient to form long-lasting T cell memory which can effectively prevent tumor recurrence. Finally, we have developed anti-inflammatory and pro-wound healing CAR-macrophages that can be applied to treat autoimmune diseases.

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