발표 제목

MSC engineering for tumor-targeted immunotherapy

Abstract

As cancer progresses, tumor microenvironment (TME) becomes immune suppressive, resulting in a significant reduction in the number and functionality of tumor infiltrating lymphocytes (TILs). To address this, immunotherapies such as immune checkpoint blockade (ICB) and cytokine therapy have been explored. However, the therapeutic effect is limited in advanced solid tumor and severe adverse toxicity is often observed at therapeutic doses. Mesenchymal stem cells (MSCs), known for their capacity of tumor tropism, are encouraging vehicles to deliver therapeutics into the TME. In this study, we reported that newly designed MSCs become a potent cellular therapy for the targeted adjustable delivery of cytokines and immune-activating molecules into the TME. Tumor-targeted production of therapeutics remodels the TME to reinvigorate CD8 TILs and increase immune responses against tumor. Furthermore, this cell therapy can overcome the resistance in advanced solid tumor to ICB and adoptive T cell transfer (ACT). Overall, this next generation of MSC opens new avenues to improve the TME and rejuvenate CD8 TILs and thus potentiate ICB and ACT.