AB-CAR: Engineered macrophages to deliver therapeutics locally in diseased lesions

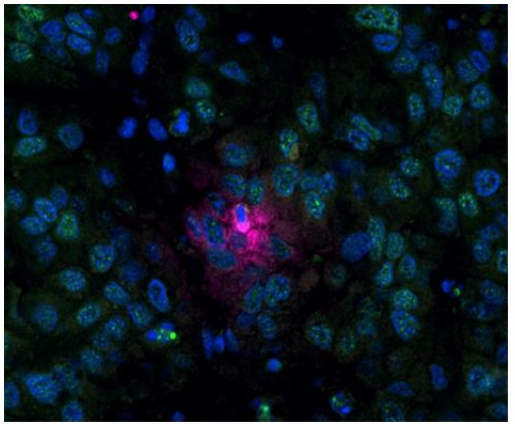
Principal Investigator: Professor Rio Sugimura

Technology

We engineered macrophages to secrete payloads as therapeutics. For example, we secreted antibody fragment against TGFb and CXCL12, cytokines such as IL-12, IL-18, and IL18BP-resistant form of IL-18. We validate optimal signal peptide and mature form of proteins to efficiently secrete payloads from macrophages. As macrophages are professional infiltrator to solid tissues and their orientation can be regulated by chemokines, they serve as ideal vector of therapeutics. We combined this approach with CAR technology to program macrophages as cell therapy agent against cancer and auto-immune diseases.

Key Advantages

- Can locally deliver therapeutics in solid tumor
- Blocked TGFb in order to reprogram immune suppressive tumor microenvironment
- Achieved tumor reduction, enhancement of CAR-macrophage function
- The increase of lymhoid infiltration indicates the reprogramming of tumor microenvironment into tumoricidal



Macrophage cluster in solid tumor

Intellectual Property

Centre for Translational Stem Cell Biology

Opportunities

Cell therapy for cancer and autoimmune diseases.

Stage of Development

US patent provisionally filed

Contact

: infottu@hku.hk

HKU Med LKS Faculty of Medicine Technology Transfer Unit 香港大學李嘉誠醫學院技術轉移部