세미나 초록

성명	김찬혁
소속	카이스트 생명과학과
발표 주제	Towards next generation T cell engineering for Cancer
발표 내용	Adoptive T-cell therapy (ACT) has the potential to revolutionize drug development for cancer therapy. The effectiveness of ACT, which is closely linked to the number of tumor-reactive T cells, can be enhanced by uniformly redirecting the antigen specificity of polyclonal T cells through the expression of either chimeric antigen receptors (CARs) or transgenic T-cell receptors (TCRs). Additionally, the incorporation of intracellular domains (ICDs) from co-stimulatory molecules CD28 or 4-1BB into second-generation CAR constructs has resulted in robust in vivo proliferation and persistence. To date, six second-generation CAR-T cells that have proven effective against relapsed/refractory hematological malignancies have been approved for clinical use. However, some patients experience relapse after CAR-T cell therapy due to antigen-negative escape variants. Another major challenge with CAR-T cell therapies is the limited clinical efficacy observed in solid tumors with high antigen heterogeneity. In this talk, I will discuss our recent efforts to enhance the therapeutic efficacy of TCR-T cells by incorporating co-stimulatory signaling into conventional TCR-T cells, aiming to achieve a therapeutic enhancement similar to second-generation CAR-T cells. Additionally, I will discuss the combinational approach of using unnatural sugar molecules with CAR-T to address antigen-negative and heterogeneous cancer cells.