

**Ex vivo natural killer cell surface engineering via multifunctional patching platform for  
Enhanced immune cancer therapy**

김성준, 김교범<sup>†</sup>

동국대학교

(kyobum.kim@dongguk.edu<sup>†</sup>)

Natural killer (NK) cells are a specialized immune effector cell type that is attracting attention as a T cell substitute, playing an important role in activating immune against cancer. Here, we designed multifunctional cell coating materials to enhance anticancer effect of NK cells. This platform has 6 major functional moieties; (1) cell surface anchoring lipid, (2) PEG intracellular penetration blocker, (3) positive charge moiety, (4) fluorescence dye, (5) cancer recognition moiety, and (6) stimuli responsive degradable moiety. NK cell surface was well-coated homogeneously and remained for 48 hr. In addition, intrinsic properties (i.e., viability, proliferation, cytokine production, availability of membrane ligands) of coated NK cells were not inhibited. Furthermore, cancer recognition and anticancer ability of NK cells were enhanced by folate mediated cancer recognition. Subsequently, anti-folate was released from the dissociated coating material in response to the molecules leaked by cancer cell disruption, inducing secondary anticancer efficacy. Therefore, this multifunctional NK cell coating approach could be utilized as an efficient anti-cancer immunotherapy platform.