세미나 초록

발표주제	Stem cell-derived extracellular vesicles for cardiovascular disease
발표내용	Stem or progenitor cell-based therapies, which trigger endogenous repair mechanisms, have become attractive candidates for treating cardiac diseases. Cell membrane nanovesicles are key communication molecules which transfer cargo between cells. Specifically, small extracellular vesicles (sEVs), also known as exosomes, have been implicated as the mechanistic unit in stem cell therapy, as inhibition of sEV synthesis abrogates the effect of cell therapy following cardiac injury. More importantly, increasing evidence indicates that microRNAs (miRNAs) within sEVs serve as important signaling molecules to regulate cell function including inflammation, cell recruitment, and proliferation. MiRNA is particularly potent and highly heterogenous among sEV cargo and not all miRNAs in sEV are beneficial. Two previous studies utilizing computational modeling identified miR-192-5p and miR-432-5p as potentially deleterious in cardiac function and repair. Here, we show that knocking down miR-192-5p and miR-432-5p in cardiac c-kit+ cell-derived sEVs enhances the therapeutic capabilities of sEVs *in vitro* and in a rat *in vivo* model of cardiac ischemia reperfusion. miR-192-5p and miR-432-5p depleted CPC-sEVs enhance cardiac function by reducing fibrosis, enhancing mesenchymal stromal cell-like cell mobilization, and inducing macrophage polarization to the M2 phenotype. Knocking down deleterious miRNAs from sEV could be a promising therapeutic strategy for treatment of chronic myocardial infarction.