

## OS02-6 Development of fluorescent labeling methods for stem cells

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For the development of cell-based therapy, both disposition and differentiation of transplanted cells is directly related with therapeutic effects. In vivo imaging is an attractive tool to obtain the real-time information of the disposition of target cells. In various types of imaging methods such as PET, MRI etc., fluorescence imaging is suitable for visualizing the disposition of cells, because it could visualize a single cell both in vitro and in vivo. For the trafficking of stem cells after transplantation, it is necessary to label living cells for a long time without disturbing function or differentiation of labeled cells. Recently, we have developed quantum dots modified with PAMAM dendrimers. They could rapidly escape from endosome and sustain its fluorescent intensity comparing with unmodified quantum dots in primary cultured mesenchymal stem cells (MSCs). Fluorescent intensity also sustained after intravenous injection of MSCs labeled with PAMAM dendrimer-modified quantum dots. In order to study the dynamics of MSCs in vivo, we constructed piggyBack transposon vector, which can integrate target gene to the genome in mammalian cells, and established primary MSCs with long-term expression of EmGFP. In this section, I would like to present our recent findings about long-term fluorescent label of MSCs.