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### Use of mesenchymal stem cells in anti-aging strategies

Autologous mesenchymal stem cell (MSC)-based therapies are preferable due to biosafety concerns. In addition, increasing evidence suggests that MSCs may not be immune privileged. However, the quantity and quality of MSCs decline with age and limit the effectiveness and regenerative potential of autologous MSC therapies in elderly patients. Interestingly, we have observed that a sub-population of MSCs (5-10% of the total population) from elderly donors possess a more “youthful” phenotype. The activity of these “youthful” cells *in vivo* may be deeply suppressed by the aging environment, and the viability of these cells is diminished by harmful factors released by neighboring senescent cells during expansion in culture. In this presentation, I will discuss principles for the use of MSCs in anti-aging, and specifically describe a novel strategy for isolating and expanding this “youthful” subpopulation from elderly patients to bank large quantities of high quality autologous MSCs for treating age-related diseases.

### Biography

Xiao Dong Chen is a Professor in the Department of Comprehensive Dentistry and Chief of the Regenerative Medicine Program in the School of Dentistry at the University of Texas Health Science Center at San Antonio. His group was the first to establish cell-free native ECM made by bone marrow stromal cells. This system was used for growing large numbers of high-quality non-hematopoietic stem cells from various sources. To closely replicate the tissue specific microenvironment (niche) *ex vivo*, he and his team have extended their technology by developing a variety of 3D tissue-specific scaffolds for facilitating stem cell-based applications.

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