CDB SEMINAR

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Friday, September 11, 2009
17:00~18:00 **REVISED** A7F CDB Seminar Room

Stemming Vision Loss with Stem Cells

Summary

The vast majority of diseases that lead to vision loss in industrialized nations do so as a result of abnormalities in the retinal or choroidal vasculature. Newly emerging paradigms describe the existence of trophic "cross-talk" between local vascular networks and the tissues they supply and such interactions almost certainly help maintain a functional differentiated state in a variety of organ systems. Recent advances in the field of vascular biology strongly suggest that specific molecules already identified as critical to normal angiogenesis (e.g., adhesion receptors, their ligands and ECM components) will have utility in preventing the abnormal growth of new blood vessels in the eye. While this "anti-angiogenic" approach is currently the basis for a number of treatments and human clinical trials, we are hopeful that a new therapeutic paradigm, one in which it may be possible to "mature" or stabilize immature, abnormal vessels, will be of far greater benefit to patients suffering from ischemic retinopathies. This may be possible through the use of autologous bone marrow or cord blood derived hematopoietic stem cells that selectively target sites of neovascularization and gliosis where they provide vasculo- and neurotrophic effects. In addition, the use of endogenous cell-based delivery of trophic and static molecules, as well as autologous grafts generated from human iPSC derived from somatic tissue will provide new opportunities for maintaining or replacing dysfunctional retinal, and other, tissue. Such therapeutic approaches would obviate the need to employ destructive treatment modalities and should facilitate vascularization of ischemic and otherwise damaged retinal tissue. Such treatments would have application to ischemic retinopathies such as ROP and diabetes as well as degenerative retinopathies such as ARMD and retinitis pigmentosa.

Host:
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