



## **Amnion-Derived Stem Cells** (*Dale Woodbury, RWJMS 06-22*) Therapeutic

### **Background**

Recently, stem cells have been identified in a number of extra-embryonic tissues, including the placenta and chorion. The present invention revolves around identification and characterization of new fetal stem cell population isolated from the amniotic membrane. Unlike the previously described amniotic epithelial and mesenchymal cells, these amnion-derived stem cells (ADSCs) exhibit the prototypical stem cell traits of long-term self renewal, multi-differentiation and clonogenicity.

### **Description of the Technology**

The present invention discloses the methods for isolation of a novel stem cell population from the amnion, an extra-embryonic structure. Additionally, novel methodology for cryopreserving the amnion is disclosed, allowing for long-term storage in standard laboratory freezers. The isolated ADSCs express neuro-ectodermal (MAP-2, neurofilament-M, GAP-43), mesenchymal (vimentin, fibronectin, osteonectin) and endodermal (BDNF, NT-4/5) and growth factors (FGF2, BMP2). Also the isolated ADSCs differentiate into neural, fat, bone and liver cells. These ADSCs were found to survive for at least two months (the longest time investigated) after *in utero* transplantation into the embryonic brain and liver.

### **Applications**

- As an alternative stem cell population to embryonic stem cells.
- Potential to be utilized in any clinical application involving cell replacement including, but not limited to, Alzheimer's disease, Parkinson's disease, spinal cord injury, ischemic events (heart attack, stroke), heart failure, diabetes, osteoporosis, liver failure and kidney disease.

### **Patent Status**

United States Provisional Application – June 2006.

### **Contact Information**

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