

**Technology:** Medium for the storage and isolation of mature functional retinal cells

**Morehouse School of Medicine (MSM) Case No.:** IP-0017

**Patent Application:** US 12/967,696

**Abstract:**

One strategy that holds great potential as a treatment for retinal disease is to replace dying retinal cells with healthy ones via transplantation. Transplantation of embryo-derived stem cells in retinal transplantation surgeries have met with limited success and there are currently no options for using adult retinal cells in these procedures. This is partly due to an inability to use of adult retinal cells for research and transplantation surgeries because until now, it has been impossible isolating, maintaining and storing these cells for more than 3 days.

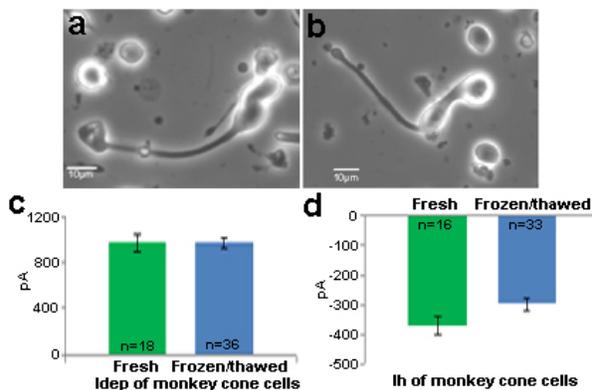
This technology has successfully and routinely demonstrated that mature retinal cells from primates can be extracted and dissociated in specific media prepared by them and subsequently cryopreserved as single cell suspensions. Further, they have demonstrated that when these frozen cells are retrieved, they are morphologically and electrophysiologically almost indistinguishable from freshly isolated retinal cone and rod cells. This appears to be one of the few studies that successfully demonstrate the functional viability of stored (retinal) neurons from adult primate tissue. Cells extracted using this technology hold tremendous research and clinical potential and open avenues for transplantation studies using mature neurons.

**Applications:**

- Technology enables a two-fold advantage, useful in the lab as well as the clinic for Adult retinal neurons storage
- Technology could enable the formation of “donor retinal cell banks” wherein retinal tissue from donor eyes could be harvested and the resulting cells stored as frozen aliquots for subsequent use in transplantation surgeries in tissue-matched recipients

**Value Proposition:**

- Demonstrated efficacy in mature retinal cells can be extracted and dissociated in this specific media. Subsequent cryopreserved single cell suspensions are viable.



**(a)** Phase contrast micrograph of a fresh monkey cone cell and **(b)** a frozen / thawed monkey cone cells both show a cone cell body, fibre of Henle, and synaptic terminal and are morphologically similar **(c)** No significant difference in Idep (measure of net current indicating the cell is alive and conducts ionic conductances) of fresh vs frozen/thawed cells **(d)** No significant difference in Ih (indicates the cell has the expected properties of healthy photoreceptor cells) of fresh vs frozen / thawed cells