

SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Dr. Xinyi Su:

Date: 29 November 2017, Wednesday

Time: 11:00AM – 12:00PM

Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Speaker: Dr. Timothy Blenkinsop, Icahn School of Medicine at Mount Sinai, New York, USA

Title: Adult human RPE sheet transplantation for patients with AMD, a first in man

Cell replacement therapy for Age-related Macular Degeneration (AMD) has been in clinical trials for over 25 years with no successful therapy. While HLA matching to the recipient is a requirement for all organ transplants, previous RPE trials ignored this fact which may explain this result. The retinal pigmented epithelium (RPE) is a cell layer intimately associated with the photoreceptors in the retina, essential for phototransduction and therefore vision. RPE are one of the first cells lost in patients with AMD, after which photoreceptors degenerate. Providing photoreceptors with healthy RPE has been demonstrated to rescue vision in surgeries such as macular translocation and peripheral RPE/choroid patch. However due to surgical complexity, application has not been adopted. A simple transplant of healthy RPE is a very promising option and as a result many groups have been developing RPE replacement strategies throughout the years. One missing element to previous attempts has been HLA matching and therefore HLA typed adult human RPE for transplantation offers a promising advantage to previous attempts. We have developed a pipeline which allows the treatment of thousands of patients from one donor globe. We have demonstrated vision rescue in animal models of AMD and are moving forward to clinical trials transplanting RPE as a suspension. However previous studies have shown transplantation of a sheet instead of suspension ensures functional replacement by reestablishing the natural relationship between the photoreceptors, RPE and the underlying vasculature. Future steps will take this into account to develop a HLA matched adult RPE sheets for rescuing vision in patients with AMD.

Biography:

During my PhD at NYU, under the supervision of Dr. Eric Lang, directed by Dr. Rodolfo Llinas, I conducted *in vivo* multielectrode experiments of the cerebellar system, which demonstrated the importance of gap junctions in the inferior olive on the cerebellum for motor coordination. This electrophysiological background benefited me greatly during my post-doctoral fellowship in the laboratory of Dr. Sally Temple at the Neural Stem Cell Institute. I established an *in vitro* RPE culture system from adult human donors, which exhibits native RPE physiology with high fidelity. We discovered that a stem cell in the RPE layer. I have continued to develop models of RPE related eye diseases as an Assistant Professor at the Icahn School of Medicine at Mount Sinai: including Age-Related Macular Degeneration and Proliferative Vitreoretinopathy. Moreover, I am developing a cell replacement therapy using these adult human derived RPE in *in vivo* models of Age-related Macular Degeneration.