

Scientists and Clinicians Discuss Regenerative Medicine and Philosophical Riddles at First Symposium on Ocular Regeneration

Synthesizing the latest developments in the field of regenerative medicine, the HMS Department of Ophthalmology presented the inaugural Symposium on Ocular Regeneration: Cell Therapy and Regeneration in the Retina. The symposium was held on October 23, 2014 and co-chaired by Michael Young and Demetrios Vavvas who also co-direct the Ocular Regenerative Medicine Institute.

“By studying the eye, we have a unique opportunity to directly observe and monitor microanatomy and function. This gives us an edge in the field of regenerative medicine,” explained Dr. Young.

“Ophthalmology is on the frontier of developing and utilizing regenerative medicine and stem cell therapies for degenerative conditions,” agrees Dr. Vavvas.

Experts from around the world delivered thought-provoking presentations, and engaged participants in thoughtful, open-ended panel discussions at the conclusion of each moderated session. This format was well received; according to one attendee, “The panel discussion after each session was a nice option to make the conference interactive and to promote discussion of ideas.” The wide array of topics ranged from refining surgical techniques in preclinical models to optimizing strategies for isolating, culturing, and preserving stem cells for cellular therapies.

Speakers explored the fundamental mechanisms of neuronal death in a variety of eye diseases, including age-related macular generation (AMD), glaucoma, and retinitis pigmentosa. Although the meeting focused primarily on regeneration of the retina, investigations from other parts of the eye (including the cornea) yielded insight into regenerative and cell-based therapeutic strategies overall. Basic stem cell biology was also discussed, down to the genetics and epigenetic mechanisms of cellular reprogramming and homeostasis.

Among the invited speakers, the large proportion of basic scientists highlighted the importance of scientific discovery in establishing the foundation for clinical trials. Indeed, scientists from the HMS Department of Ophthalmology are partnering with stem cell company ReNeuron to initiate the first-in-man restorative stem cell trial in the retinal, slated for early 2015 (see the [October 2014 Issue](#) [PDF] of EyeWitness, the newsletter of the HMS Department of Ophthalmology).

The symposium concluded with the keynote lecture “Learning to See Late in Life,” presented by [Pawan Sinha, PhD](#), Professor of Computational and Visual Neuroscience at MIT. In 2005, Dr. Sinha founded [Project Prakash](#) to provide treatment to children in rural India with curable blindness, while concomitantly studying the mechanisms of learning and plasticity in the brain.

Dr. Sinha’s research addresses a philosophical question first posed by Irish scientist William Molyneux in the late 1600s, which has since puzzled neuroscientists and philosophers alike. Called “one the most fruitful thought-experiments ever proposed in the history of philosophy” by the Stanford Encyclopedia of Philosophy, Molyneux’s problem questions whether a previously blind person, with newly gained vision, could recognize objects by sight that were formerly known only by touch. This avenue of research brings important implications to rehabilitation strategies for people cured of blindness.

The first Symposium on Ocular Regeneration was presented in partnership with the [Third International Biennial Symposium on AMD](#), and drew over 150 participants from United States and abroad. Attendees described the symposium as “great” and “excellent” overall, and particularly enjoyed the

interactions between trainees and faculty from both academia and industry. Said one participant. "This symposium presented a great opportunity to communicate with other scientists on a high level and to learn from them." According to one international participant, the Symposium on Ocular Regeneration "was the perfect prelude to AMD Symposium, and the best possible way to bide the time between that and the American Academy of Ophthalmology Meeting, which happened just days ago in Chicago. However, I would gladly travel just to attend the Ocular Symposium, so I hope it will continue!"