



← Mandeep Singh, M.B.B.S., M.D., Ph.D., consults
with Karl Hudspith, Ph.D., a member of Singh's lab.

FINDING HOPE IN REGENERATION

MANDEEP SINGH IS AT THE VANGUARD OF FAST-TRACKING
STEM CELL TREATMENTS FOR EYE DISEASE.

For every day of Jorge Marcos' 90 years, he has suffered from retinitis pigmentosa. This chronic degenerative condition, in which the cells of the retina die, has brought Marcos and his son, Ruben, from Monterrey, Mexico, to the world-renowned halls of the Wilmer Eye Institute and into the care of Mandeep Singh, M.B.B.S., M.D., Ph.D.

"We've been closely following the medical progress on this

disease since the 1970s, and we consider Wilmer to be at the cutting edge of retinitis pigmentosa research," Ruben says, explaining the reason that he and his father now travel such a great distance for the elder Marcos' treatment.

"My father received a thorough evaluation, but it was the insights I received from Dr. Singh and others that were truly enlightening to me," Ruben says.

Singh is among a handful of specialists in the world who are exploring the surgical transplantation of stem cells to regenerate photoreceptors, in the hopes of halting, or even reversing, the degeneration that causes diseases like retinitis pigmentosa. This work is at the very forefront of medical care. Much of it has never been done before.

“Our goals have really crystallized recently,” Singh says. “We’re working to find the right number of stem cells to inject, at the right age and in the right place to achieve the best outcome possible. This is new-age surgery, and the old methods aren’t really optimally suited to these tasks. We need to create all the surgical steps from scratch.”

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As a doctoral student at Oxford, Singh was able to return sight to blind mice using immature photoreceptor cells that had been surgically transplanted. After surgical training in Singapore, Oxford and London, Singh chose Wilmer as the place to begin his career. He is now singularly focused on honing the surgical methods necessary to get stem cells to take hold and to generate new tissues in human eyes.

He is working with human-derived stem cells generated in the lab and investigating their survival after surgery by transplanting them into animal models. The long-range goal: transplantation into humans.

“With impeccable training and his cutting-edge research, Mandeep is uniquely poised to be one of the next generation of surgeons who can fast-track stem cell treatments,” says Neil Bressler, M.D.,

chief of the Retina Division at Wilmer, who was instrumental in bringing Singh to Johns Hopkins. “He’s one of the best seeds, and he’s chosen the fertile soil of Wilmer to grow his career in this exciting field.”

As apparent and encouraging as Singh’s future might seem to Bressler and the Marcoses, it is just getting started. The financial going can be tough, even in a promising field. The Marcoses, however, were so impressed by Singh’s care and his research that the family decided to make a considerable philanthropic gift to support his groundbreaking work. It was one of the family’s first gifts outside of their native Mexico.

“Retinitis pigmentosa is not a widespread or life-threatening disease, and funding is limited,” says Ruben. “We want to help find a cure for it as fast as possible, and we considered Wilmer to be the place. If people with retinitis pigmentosa who can help don’t, then who else will?”

Last summer, Singh’s work received another financial boost: He won a Clinician Scientist Career Development Award from the school of medicine, which comes with institutional financial support that is renewable annually.

“Stem cells are still part of the dream,” Singh says. “It’s not going to be easy creating this sort of a treatment, especially at these early stages. It will take visionary people, like Mr. Jorge Marcos and his family, with the foresight and faith to believe in a long-range goal.” ▲



† Far right, Mandeep Singh, M.B.B.S., M.D., Ph.D., runs a meeting with members of his lab, left to right, Diana Ottulich; Karl Hudspeth, Ph.D.; Ying Liu, M.D., Ph.D.; and Simrat Sodhi.