



Micro-lenses bring new cataract treatments in sight

Stem cells are being used to rapidly test and improve treatments for cataracts, thanks to an innovative solution developed by Dr Michael O'Connor and his team from Western Sydney University.

With novel stem cell technology, Michael has created hundreds of thousands of micro-lenses similar to the ones in the human eye. These micro-lenses offer a way to rapidly improve drug research and offer the potential for lens cell transplants in the future.

Michael O'Connor has created hundreds of thousands of micro-lenses similar to the ones in the human eye for testing cataract treatments.

Billions of dollars are spent each year around the world on cataract surgery, and hundreds of millions more treating resulting complications.

Finding drugs to treat cataracts or slow cataract development would be a significant improvement.

Michael's human micro-lens technology does away with the need for animal lenses in research and drug screening, meaning more relevant results and fewer animals used.

As well as identifying drugs that prevent or limit cataract formation, in future it may be possible to transplant lens cells to restore lens transparency in patients. This would be particularly beneficial for children, Michael says.

"Treating kids with cataracts is much more challenging than treating adults," he says.

"Surgery is more difficult. It takes longer to complete the treatment—up to 10 years—and the vision outcomes are often much worse."

"This is why I work with Megan Pricor from Cataract Kids Australia. We see lens cell transplantation as a huge potential opportunity for better treating childhood cataract to benefit children and their families," he says.

Megan agrees, saying many families face great difficulties from when the baby is tiny.

"We see multiple surgeries and very challenging care regimes post-surgery and often the vision outcomes are poor. Treatment methods for congenital cataract haven't changed in years. We urgently need new approaches," she says.

Michael and Megan were brought together by Stem Cells Australia, which has also provided funding to test whether or not light-focusing lenses can be regrown in the eye after transplantation.

Collaboration with researchers and others around the world has been crucial for Michael's work. He is currently working with a US-based company to test potential anti-cataract drugs. He also collaborates with cataract surgeons, including Professor Stephanie Watson who has had success in patients with corneal damage using a different type of stem cell.

"There is a lot of interest in furthering this technology. Industry and the community can clearly see the benefits," says Michael.

"I'm excited about the potential to give children and adults with cataracts better vision outcomes. Being able to identify anti-cataract drugs could fix this problem for many patients and negate the common side effects of surgery, particularly poor vision," he says.

