

World's Smallest Medical Implant Delivers Big Results

University of California Irvine



More than 3 million Americans suffer from glaucoma, a disease that blocks the eyes' drains, causing fluid to build up and increase pressure in the eye, potentially damaging the optic nerve. The result is eye pain and vision loss, which make glaucoma the second leading cause of blindness worldwide.

Professor Richard Hill was a physician of ophthalmology at University of California, Irvine's (UCI's) School of Medicine when he developed a microinvasive glaucoma surgery (MIGS) device called iStent, a tiny tube to relieve ocular pressure by allowing fluid to move into the eye's normal drainage system.

Known as 'the world's tiniest medical device', iStent is 20,000 times smaller than the intraocular lenses used in cataract surgery. But the size of iStent is only part of its story. In a U.S. clinical study, 68% of glaucoma patients who received iStent remained medication-free at 12 months.

UCI filed patents on Hill's invention beginning in 2000, and in 2002 Hill founded a startup called Glaukos Corporation to commercialize the iStent and license the invention from UCI. For the next decade, UCI's technology transfer office provided Hill and his startup support, in the form of patent strategy, business plan consultation, introduction to investors, and regulatory guidance.

Together, UCI and Glaukos shared time, resources, and intellectual capital to bring the product to market. In 2012 Glaukos became one of the first companies to have a MIGS device FDA cleared and commercially available in the US. Since then, the invention has been used all over the world to prevent vision loss and blindness. In 2022, the device had been used in more than one million procedures.

“The success of the iStent is an example of how academic research commercialization can impact the world and make the lives of people healthier and happier,” said Alvin Viray, Associate Director of UCI’s technology transfer office, currently manages Hill’s UCI patent portfolio. “The iStent has also resulted in domestic and worldwide economic development in the form of job creation and IPO. UCI’s partnership and relationship with Glaukos helps fulfill our mission to facilitate the transfer of the university’s research and technologies into commerce for the public benefit.”

The iStent technology and the work of UCI’s technology transfer office were honored as one of three finalists in the 2023 Better World Project Awards program.

This story was originally published in 2023.

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