



Professor Chris Passaglia awarded NIH \$1.4M RO1 Grant for Glaucoma Research

Glaucoma is a leading cause of blindness for millions of Americans.

According to the American Academy of Ophthalmology as many as three million Americans have glaucoma, but only half of them know it. The National Eye Institute of the National Institutes of Health (NIH) recently awarded Biomedical Engineering Professor Christopher Passaglia a four-year, \$1.4 million RO1 grant to continue his novel research for the treatment of glaucoma.

Glaucoma is a prevalent eye disease that gradually causes blindness when left untreated. A main risk factor for the disease is chronically high eye pressure, but the exact relationship between the pressure history and eye damage is not fully understood.

The Ocular Neuroscience and Neuroengineering Lab at USF, directed by Professor Passaglia, has created novel wirelessly-powered implantable devices that can continually measure and regulate eye pressure with high accuracy, near-zero failure rate, and virtually unlimited operational lifetime. For the first time, the devices give glaucoma researchers complete control of the pressure history to which an eye is exposed.

Current methods of glaucoma induction do work, but they are time consuming, irreversible, and offer no control over pressure amplitude or dynamics. These limitations hamper research efforts into the causes and effects of the disease.

The awarded project will use the one-of-a-kind technology to study eye pressure variability, fluid outflow biomechanics, retinal structure and physiological function, and visual sensitivity in animals with and without pressure-induced glaucoma. The project findings will help speed progress in the fight against this visually-debilitating disease.

Since glaucoma displays no symptoms in the early stages – no pain, vision is normal – the disease can develop silently in one or both eyes. Without treatment a person will slowly lose peripheral sight. Regular comprehensive dilated eye exams can detect the disease and early treatment can stave off loss of eyesight.

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The University of South Florida is a high-impact, global research university dedicated to student success. USF is a Top 25 research university among public institutions nationwide in total research expenditures, according to the National Science Foundation. Serving over 48,000 students, the USF System has an annual budget of \$1.6 billion and an annual economic impact of \$4.4 billion.

Led by Dean Robert H. Bishop, the College of Engineering at the University of South Florida is ranked at #64 among public institutions (#100 overall) by U.S. News & World Report's 2017 engineering graduate school rankings. The college serves 5,500 students, offering ABET-accredited undergraduate degrees in

seven programs, as well as 13 master's and nine doctoral degrees. The College is actively engaged in local and global research activities with \$36.3 million in research awards for the fiscal year 2014-15.