

# Biography Donald J. ZACK

Donald J. Zack, M.D., Ph.D., is the Guerrieri Professor of Genetic Engineering and Molecular Ophthalmology at the Wilmer Eye Institute, Johns Hopkins University. He is also a professor in the Departments of Molecular Biology and Genetics, Neuroscience, and the Institute of Genetic Medicine, and co-director of the new Wilmer Stem Cell Ocular Regenerative Medicine (STORM) Center. Dr. Zack graduated from the Albert Einstein College of Medicine in 1984, and then completed ophthalmology residency training at the Massachusetts Eye and Ear Infirmary, Harvard University. In 1988, he moved to Johns Hopkins where he pursued specialty training in glaucoma, under the direction of Dr. Harry Quigley, and molecular biology post-doctoral work, under the direction of Dr. Jeremy Nathans. Dr. Zack was appointed Assistant Professor at Hopkins in 1991, Associate Professor in 1997, and Professor in 2001. Dr. Zack has published over 200 peer-reviewed journal articles and has won a number of awards, including the Alcon Research Award. He is a former chairperson of the National Eye Institute (NEI) study section that is responsible for determining funding priorities for a large number of retinal research grants, and is currently the Co-Chair of the Board of Scientific Counselors, which advises on intramural research at the NEI. He has served on scientific advisory boards for a number of academic institutions, journals, non-profit research foundations, and biotech and pharmaceutical companies. Dr. Zack used to have a limited glaucoma clinical practice, and was involved in a number of clinical trials, but in 2011 he stopped his clinical practice to have more time to devote to research and teaching.

Dr. Zack's research activities cover the spectrum from basic research to translational studies to clinical trials. His lab studies the control of gene expression in retinal photoreceptor and ganglion cells, the cells whose death in retinal degenerations (including retinitis pigmentosa and age-related macular degeneration) and glaucoma, respectively, leads to visual loss and potentially blindness. They also study the mechanisms by which these cells die, and in collaboration with colleagues at Wilmer and NIH, they are using high content screening approaches to develop novel drugs to slow down and hopefully to prevent, their death. The molecules that Dr. Zack's team are identifying and developing could lead to novel treatments for these blinding conditions. As an additional approach that someday may offer the possibility of restoring vision to glaucoma patients and those with retinal degenerative diseases, they are pioneering ways to promote the differentiation of stem cells into retinal ganglion and photoreceptor cells, with the goal of someday being able to restore retinal function with cell-based therapeutic approaches. Additionally, Dr. Zack's lab is developing approaches to use gene therapy-based gene targeting (CRISPR/Cas9) approaches for the treatment of retinitis pigmentosa and related retinal degenerations.