

HEARING THE NEED FOR SAFER DRUGS

PETER STEYGER, PH.D., SCIENTIST/INVENTOR OF THE MONTH

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As a full-service law firm with a dynamic life sciences practice, Davis Wright Tremaine is privileged to work with a wide array of extraordinarily talented scientists and inventors. Dr. Peter Steyger is featured as a *Scientist/Inventor of the Month* in the ongoing series on our website because his determination to solve the mystery of drug-induced hearing loss will contribute to safer antibiotic treatment.

Dr. Peter Steyger's scientific passion is combined with intense personal investment in his research. When he was 14 months old, Peter contracted meningitis that was treated with the antibiotic streptomycin. One of the unfortunate side effects of this drug is damage to the auditory system, and he suffered severe hearing loss in both ears.

Peter points out that children who lose their hearing often experience an assortment of resulting problems, including learning, motor and speech disorders, and depression. By helping children retain their hearing, science can significantly improve their quality of life. "When you become deafened, you lose an incredible source of information about the world around you," he says.

A native of England, Peter has spent his career studying inner-ear anatomy and ototoxicity, beginning with his Ph.D. at Keele University in the United Kingdom. He joined Oregon Health Sciences University (OHSU) in Portland, Oregon, in 1997 after a stint at the Neurological Sciences Institute, which is now part of OHSU.

Now, as an assistant professor of otolaryngology/head and neck surgery, Peter is searching for ways to prevent drug-induced hearing loss, with a focus on understanding and preventing ototoxicity induced by aminoglycosides—the class of antibiotics that caused his own hearing loss.

Because ototoxic drugs also damage portions of the kidney, combining inner-ear research with in vitro manipulation of the kidney's epithelial cells has proven to be a potent platform for re-assessing how ototoxic drugs damage the inner ear. The goal of this work is to develop prevention strategies that will allow antibiotics such as streptomycin to be used without harming the inner ear's sensory hair cells. Peter's recent studies have been on the mechanisms that allow ototoxic drugs to penetrate both inner ear hair cells and kidney cells.



"We have now found the mechanisms by which aminoglycoside antibiotics — as well as certain other ototoxic drugs, including some anti-cancer agents enter these cells," Peter reports. As a result, drugs that are currently used cautiously, and in limited circumstances, may be used more aggressively without inducing hearing loss or kidney damage.

Davis Wright Tremaine LLP is proud to feature Dr. Peter Steyger as an Inventor of the Month. Peter credits the Alexander Graham Bell Association for the Deaf and the National Association for the Deaf with helping him realize that there are "extremely strong role models" who live well with hearing loss: individuals like Vinton Cerf, developer of the Internet, and baseball player Curtis Pride.

We believe Peter has himself become a role model, in addition to being a scientist whose discoveries will protect others from this disability.

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