Hearing Health Foundation (HHF) Progress Report, May 2020

Thanks to your generous support, HHF is moving forward to improve the lives of millions who suffer from hearing loss, tinnitus, and related disorders by funding groundbreaking research.

HHF is able to award grants to top-tier scientists only because of your partnership. Thank you for your continued investment in this life-changing work and for trusting us with your contributions. HHF remains highly rated by all charity watchdogs.

We are pleased to provide an update on the work you fund.

Research Continuity During COVID-19: HHF research remains ongoing despite shelter-in-place orders throughout the nation. From the safety of their homes, our scientists are performing data analysis, conducting virtual experiments, collaborating online, and preparing manuscripts summarizing their findings. HHF-funded scientist Ronna Hertzano, M.D., Ph.D., at University of Maryland, recently spoke to us about her work. Dr. Herztano leads the ongoing development of gEAR (gene Expression Analysis Resource), a data visualization tool for hearing restoration research. She says: "We have not slowed down during this period toward our goals of hearing restoration. The gEAR tool is making big strides forward and we look forward to applying it to understanding the machinery of hair cell regeneration."

Hearing Restoration Project (HRP): The HRP is an international consortium investigating hair cell regeneration as a biological cure for hearing loss and tinnitus. The HRP consists of fifteen senior scientists located at world-renowned academic medical centers collaborating on their studies of bird, fish, and mouse models of hair cell damage and restoration. The goal is to apply this knowledge to ultimately restore hearing in humans.

- HRP members Jennifer Stone, Ph.D., Michael Lovett, Ph.D., and Marc Warchol, Ph.D. uncovered a novel mechanism that controls hair cell regeneration in birds. The molecule, vascular endothelial growth factor (VEGF), is released when hair cells die, stimulating supporting cells to form new hair cells. Future studies should test if VEGF can enhance hair cell regeneration in adult mammals.

- Knowing that many instances of genetic hearing loss present from birth are attributed to the misalignment of or damage to hair cells, HRP member Tatjana Piotrowski, Ph.D., and team switched off two cell signaling pathways present in both humans and fish, PCP and Wnt genes, in zebrafish models. This allowed them to identify the multiple effects these genes have on hair cell direction.

Emerging Research Grants (ERG): ERG provides capital investment to new researchers who focus on hearing and balance conditions. Many of these scientists go on to receive grant awards from the National Institute of Health (NIH), in large part because of their HHF-funded research. The work of ERG alumni has led to dramatic innovations in hearing and balance science because the grants are awarded to the most promising researchers.

- Applications to HHF's 2020-2021 ERG program closed in February with impressive results. After introducing changes, including increasing the maximum funding per project from $30,000 to $50,000 and making the grants renewable for a second year, **HHF saw a 62% increase in the number of applications compared to last year**, with all topic areas of the grant program well represented. Awardees will be announced this summer with projects commencing in the fall.

- Gail Ishiyama, M.D., conducted interventions preventing damage to the inner ear microvasculature (micro vessels) that may help stop the progression of damage to the vestibular system in Ménière's disease patients, thus restoring balance and preventing vertigo.

- Kelly Radizwon, Ph.D., discovered a new mechanism to identify regions of abnormal activity in hyperacusis animal models. Hyperacusis is a debilitating hearing condition causing sounds to be perceived as too loud, aversive, annoying, or painful.

- Christina Reuterskiöld, Ph.D., studied the relationship among rhyme awareness, vocabulary size, working memory, and linguistic characteristics of words in children with typical hearing and children with cochlear implants. Her research underscores the importance of early treatment for hearing loss.

- Richard Felix, Ph.D., looked at genetically engineered mice to find degraded, abnormal timing in the brain. Further studies of this specific genetic signaling aim to increase scientific understanding of central auditory processing disorder (CAPD).

- Ian Swinburne, Ph.D., built a probe inserted into the tiny ear of a zebrafish embryo to detect the increases in pressure and accumulation of fluid that occur with growth. These mechanical forces and the behavior of cells will help future investigations of hearing and balance diseases where inner ear fluid pressure is out of control, such as Ménière's disease.

Charity Recognition: HHF underwent its biennial evaluation by the Better Business Bureau Wise Giving Alliance (BBB WGA) and was again named an Accredited Charity. The BBB WGA evaluates charities according to 20 standards, including financial transparency and planning, internal governance, effectiveness measurements, and fundraising disclosure practices and accuracy. In addition, HHF maintains four stars (the highest) from Charity Navigator, an A+ rating from Charity Watch, and a Platinum rating from Guidestar.

Board Leadership: HHF welcomes new Board members Cary Kopczynski and Jay Grushkin and applauds Board of Directors member Anil Lalwani, M.D., for his innovative contributions to the fight against COVID-19. Dr. Lalwani was part of the design process for a new protective face shield for frontline healthcare workers that was mass produced by NewYork-Presbyterian and Columbia University Irving Medical Center. Dr. Lalwani is the Medical Director of Perioperative Services at NewYork-Presbyterian/Columbia University Irving Medical Center and Vice Chairman of Otolaryngology – Head & Neck Surgery and Co-Director of the cochlear implant program at Columbia University Vagelos College of Physicians and Surgeons.

Advocacy: HHF and the 12 other members of the Friends of the Congressional Hearing Health Caucus (FCHHC) have urged the U.S. Federal Government to preserve full funding for the Early Hearing Detection and Intervention (EHDI) initiative in a letter to the Subcommittee on Labor, Health and Human Services, Education, and Related Agencies. Any delay in treatment inhibits the social, speech and language development and academic performance of the 2 to 3 out of every 1,000 babies born each year in the U.S. with hearing loss.

Conclusion: Thanks to you, we are witnessing great progress in our research programs. With your continued generous support we will accelerate scientists' work toward better hearing loss treatments and cures. Please know how grateful our Board of Directors, researchers, volunteers, and staff are to you during this extraordinarily challenging time. If you have any questions or concerns, you can always reach us at development@hhf.org or (212) 257-6140. Please be safe and we wish you and your families good health.

Sincerely,

Timothy Higdon
CEO