

HEARING RESTORATION RESEARCH PROGRAM



MISSION: Deliver groundbreaking research and solutions for hearing restoration by advancing the understanding, diagnosis, repair and regeneration of the auditory system

Congressional Appropriations
FY17-FY24:
\$70M total



"Hearing loss is a global health concern, with the number of people with hearing loss expected to double by 2050, according to the World Health Organization. Any degree of hearing loss disrupts daily communication and affects people's ability to work, enjoy life, and stay active and not isolated. People use technology, strategies and medication, but there's a continued unmet need to treat hearing loss. While curative therapies are not yet available, the Hearing Restoration Research Program is working toward solutions that could restore or improve hearing, bringing a future of hope to those living with hearing loss."

*Barbara Kelley,
Hearing Loss Association of America,
FY23 Programmatic Panel Member*



SCOPE OF THE PROBLEM



1 in 8 Americans, **13% or 30 million**, aged 12 years or older diagnosed with hearing loss in both ears¹



Age is the strongest predictor of hearing loss:²
22% of people aged 65-74 years old and
55% of people aged 75 and older have disabling hearing loss³



There is no FDA-approved drug for restoring hearing after hearing loss

RELEVANCE TO MILITARY HEALTH



Combat experience increases the risk of hearing loss by **63%**⁴

More than **1.49 million** Veterans suffer from service-related hearing loss⁵

PROGRAM PRIORITIES

- Improve and accelerate the translation of biological regeneration/repair mechanisms into clinical applications
- Develop diagnostic tests that differentiate sensory, neural, synaptic and central processing disorders
- Develop reliable in-vitro human models to facilitate the understanding, derivation and characterization of human auditory cells

¹ Lin FR, et al. *Arch Intern Med* 171, no. 20, 2011: 1851-1852.

² Hoffman HJ, et al. *JAMA Otolaryngol Head Neck Surg* 143, no. 3, 2016: 274-285.

³ <https://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing>

⁴ Wells TS, et al. *Noise Health* 17, no. 74, 2015: 34-42.

⁵ <https://www.benefits.va.gov/REPORTS/abr/docs/2023-abr.pdf>



PROGRAM IMPACT AND OUTCOMES

Major Partnerships and Collaborations

The HRRP collaborates with investigators, consumers and federal partners to enhance hearing restoration research.



Hearing Research Funders Network



A group of federal, private and international organizations, the HRF-NET, convenes quarterly to align initiatives and create greater efficiencies in hearing research and development.

*Inaugural meeting held
January 2023*

40
participants

26
organizations

WORKING WITH SERVICE MEMBER AND VETERAN POPULATIONS

SELECT HRRP-FUNDED PROJECTS: ANTICIPATED RECRUITMENT NUMBERS

100

Service Members

Objective Assessment of Auditory Pathway Integrity and Functional Hearing Abilities

300

Veterans

Development of a Mobile Assessment/Differential Diagnosis of Auditory Dysfunction

120

Veterans

A Comparative Approach to Human Auditory Synaptopathy

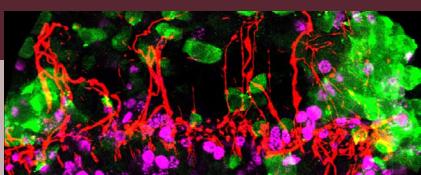
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Veterans

Rapid, Multilevelled Assessment of Hearing Dysfunction in Operational and Post-Deployment Environments

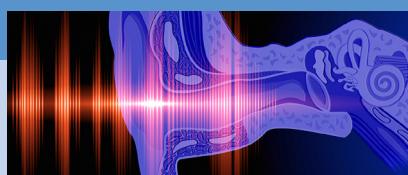
RESEARCH BREAKTHROUGHS – MAKING AN IMPACT

Cell Reprogramming



Regeneration in the Mature Mammalian Inner Ear

Miniature Intracochlear Imaging Probe



Enabling Precision Medicine

Human Inner Ear Model in a Dish



Opening Opportunities For Studying Human Inner-Ear Development, Disease and Regeneration

Point of Contact: CDMRP Public Affairs

dha.detrick.cdmrp.mbx.public-affairs@health.mil