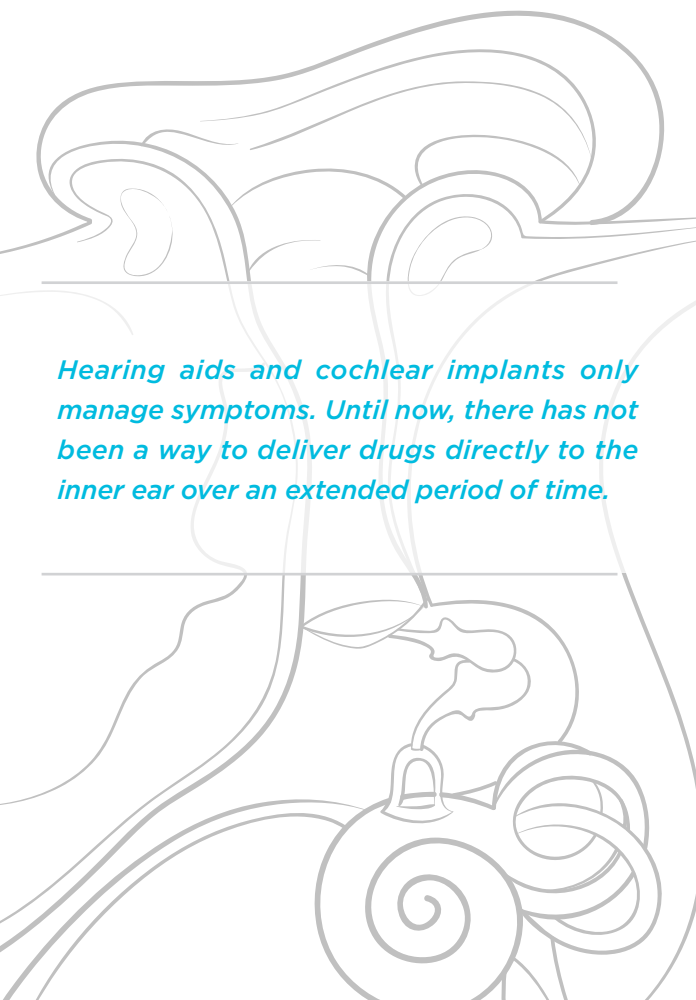


**DRAPER<sup>®</sup>**

# **INTRACOCCHLEAR DRUG DELIVERY**

Delivering Drugs Directly  
to the Inner Ear

*Hearing aids and cochlear implants only manage symptoms. Until now, there has not been a way to deliver drugs directly to the inner ear over an extended period of time.*



**Hearing loss affects  
360 million people,  
more than 5% of the world's population.<sup>[1]</sup>**

**In the US alone, 48 million people  
have a significant hearing impairment.<sup>[2]</sup>**

**Untreated hearing loss costs  
\$750 billion USD per year.<sup>[3]</sup>**

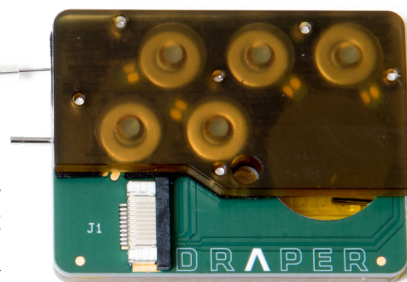
Draper designed and prototyped the first implantable micropump that provides targeted, controllable and extended intracochlear drug delivery (ICDD). This device enables both realistic testing of drugs and delivery of approved drugs for treatment. Combining expertise in miniaturization and microfluidics, Draper's ICDD device enables

- Effective diffusion and precise dose control
- Concurrent infusion of one or more compounds
- Continuous drug delivery programmable over periods from hours to months

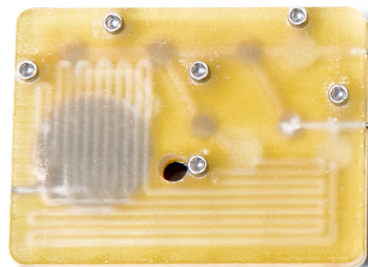
Accuracy and safety were assessed in guinea pig subjects. With further miniaturization, ICDD offers a path to a delivery system for new otic therapies, bridging the gap between drug candidates and patients with hearing loss.

CURRENT  
PROTOTYPE

FRONT ▶  
REVERSE ▼



40 mm



[1] World Health Organization: Deafness and hearing loss, [www.who.int/mediacentre/factsheets/fs300/en/](http://www.who.int/mediacentre/factsheets/fs300/en/)

[2] Center for Hearing and Communication: Statistics and facts about hearing loss, <http://chcheating.org/facts-about-hearing-loss/>

[3] World Health Organization: Action for Hearing Loss, [www.who.int/pbd/deafness/world-hearing-day/WH2017Brochure.pdf](http://www.who.int/pbd/deafness/world-hearing-day/WH2017Brochure.pdf)