

The world FIRST and ONLY
“Listening with the brain”
Presbycusis Sensorineural Hearing Impairment Aid
PRESTIN™

Presbycusis (age-related hearing impairment) can not be solved by modern medical treatment.

Hardness of hearing is the most common of human ailments, with 80% being sensorineural, and 20% air conductive hearing impairment.

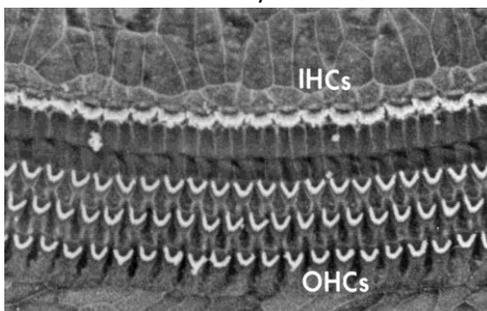
While air conductive hearing impairment is treatable by surgery, there is no medical treatment for sensorineural hearing impairment.

Currently available hearing aids are specifically designed for air conductive hardness of hearing, (other than Bone Anchored Hearing Aid (BAHA) implant) no efficacious hearing aids have yet been developed for the sensorineural hearing impairment. Sufferers of this type of illness have only one available choice if they wish to hear: major implant surgery in cochlea.

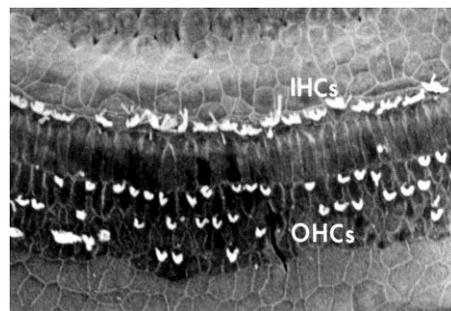
Sensorineural impairment is due to the death of auditory hair cells, which do not regenerate. Therefore, once this severe illness occurs hearing is never regained regardless of the age of the patient.

Presbycusis is caused by hair cell extinction due to age-related elevation of the free radicals levels. 50% of individuals of 65 years or older in developed countries suffer from this ailment, which renders accurate perception of consonants more difficult, consequently resulting in a drastic fall in word intelligibility. Words sound like gibberish making conversation becomes impossible, television sounds are impossible to hear, and even listening to music is no longer an option.

Normal sensory hair cells



Damaged sensory hair cells



(pic.: Exclusive v.d. Sandt Audiology)

The PRESTIN™ hearing aid for sensorineural hearing impairment

PRESTIN™ has a 15 year successful track record with treating sensory hearing problems. As a result of our continuing research in pursuit of a safe, next generation hearing aid, we released the **PRESTIN™** Bone Conduction Sensory Hearing Aid in 2013, which uses Joulian magnetostriction, a technology completely different than piezoelectric or electromagnetic induction used in current Air Conductive Hearing Aid, Bone Conducted Hearing Aids, and BAHA.

The hallmarks of this device are:

1. Sounds are transmitted through even thicker skin, so clarity of consonants in the high range is maintained. Melodies in music and lyrics can be heard, while the subtlety of violin and the brilliance of cymbals is maintained.

2. The quantity of aural data is 1,000 to 100,000 times greater than conventional hearing aids, allowing or detailed sound clarity.
3. Vastly improved response speed (the time between when aural data enters the driver and actually exits as sound) is vastly superior (1 mil sec. in conventional hearing aids as opposed to our aid, at 1 micro seconds up to 10 nano seconds. This allows listeners to comprehend who they are trying to listen to even with multiple speakers present. This response time clears the threshold of 2/100,000 sec. ~4/100,000 sec. necessary for the brain to have the "Selective Attention" (known as "Cocktail Party Effect"). As a result of selective attention, noise levels are minimal just as with a subject with healthy hearing.
4. Surgical operations like those with BAHA are not necessary.
5. The device is scalable to mass production.

Clinical Testing

A monitor was conducted at a national hospital of over 100 subjects with serious hearing problems using the proto type transducer of **PRESTIN™ U**. With the support of the Ministry of Health, Labor and Welfare (MHLW), clinical data was taken on 40 subjects with severe or profound impairment (70dB~90dB) of varying causes, different age, and sex. This data was publicly approved by Kimitaka Kaga, Hon. Prof. Tokyo Univ., Former head director of the Japan Otological Society). The results showed that the device was effective in the majority of the sensory impaired patients (70dB~90dB).



PRESTIN™ U



PRESTIN™ Beta