



Rincell-1- A cell therapy for neural hearing loss

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“

Rinri's mission is to realise the potential of cell therapy to treat hearing loss.

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Advanced Therapy Medicinal Products (ATMPs)

Gene Therapy

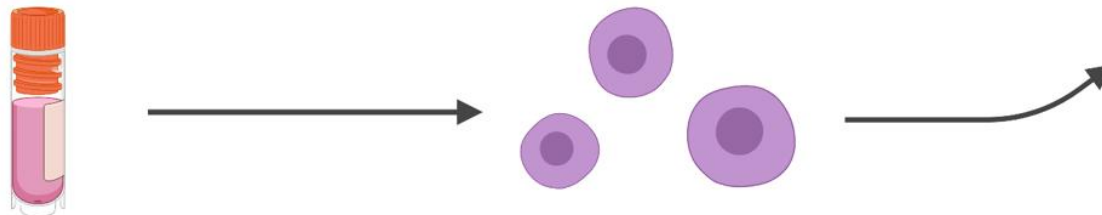
Regulate, repair or replace a genetic sequence



Delivers genetic information to fix a **well defined** genetic mutation/defect

Cell Therapy (Tissue Engineered Product)

Regenerate, repair or replace human tissue



Delivers whole functioning “living” cells. Can restore cells **regardless of the cause of loss.**

Current standard of care

- Hearing aids for mild to moderately severe
- Cochlear implants for severe to profound
- Hearing aids and cochlear implants don't restore **natural hearing**
- No disease modifying treatments for hearing loss
- No treatments for neural hearing loss



Hearing aid

Cochlear Implant

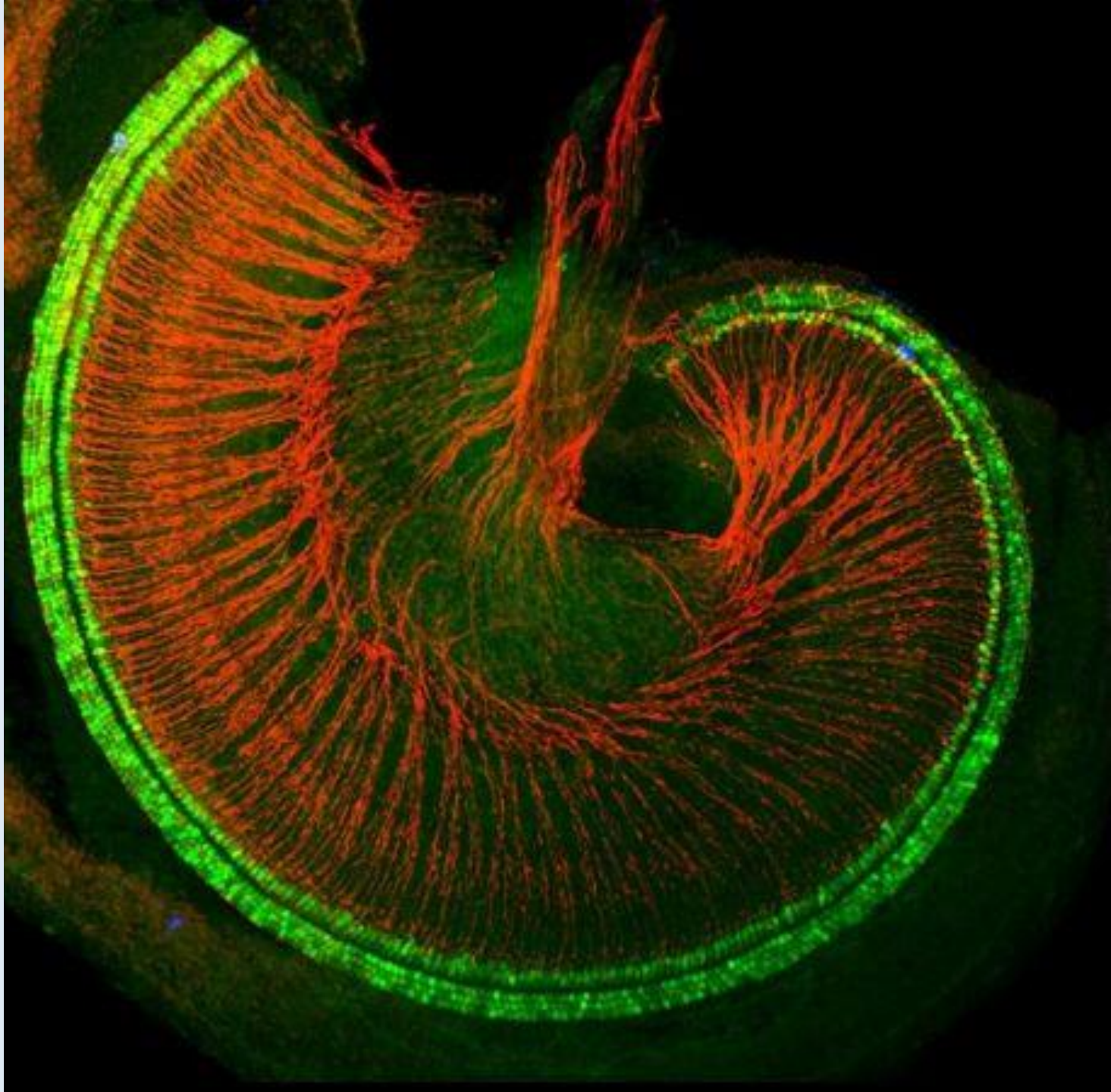
Neural Hearing Loss

There is a misconception that hearing loss is caused by loss of inner hair cells (in green).

Loss of auditory neuron cells (in red) or 'neural hearing loss' has largely been ignored.

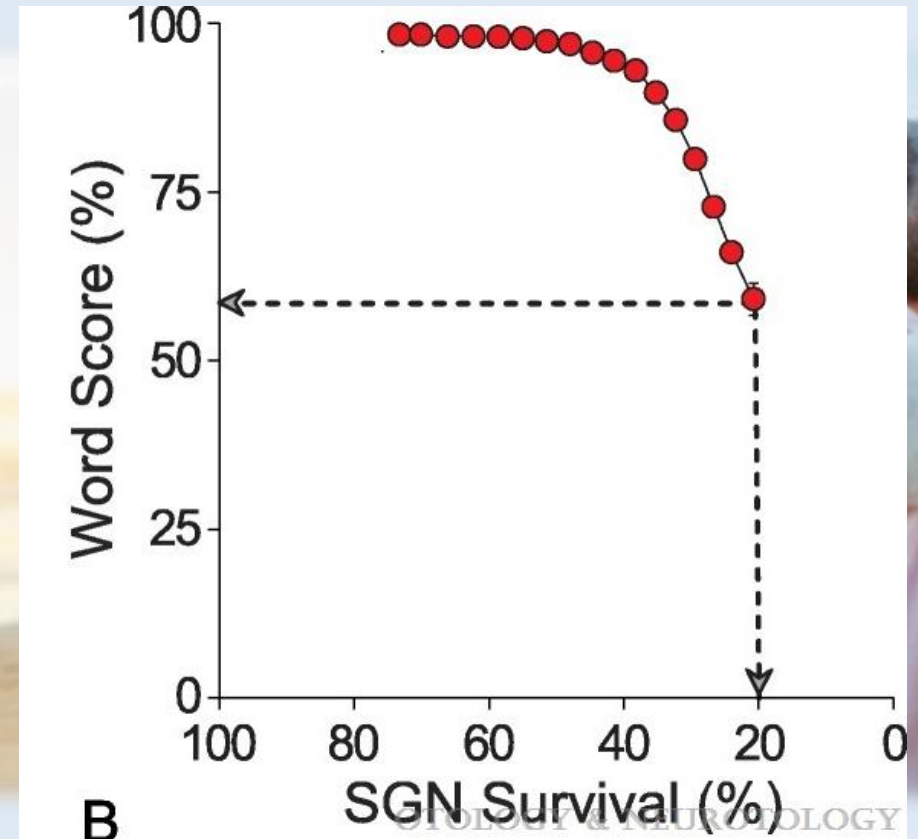
Loss of auditory neurons is associated with:

- Progressive hearing loss (presbycusis)
- Auditory Neuropathy



Progressive hearing loss (Presbycusis)

- Most common form of sensorineural hearing loss - affects 1 in 3 adults over 65 years old
- Loss of auditory neurons is ~3 times greater than loss of hair cells
- Strong correlation between loss of auditory neurons and speech perception



Bowl and Dawson, 2019
Wu et al., 2019
Bardi et al., 2011
Bartholomew et al., 2024

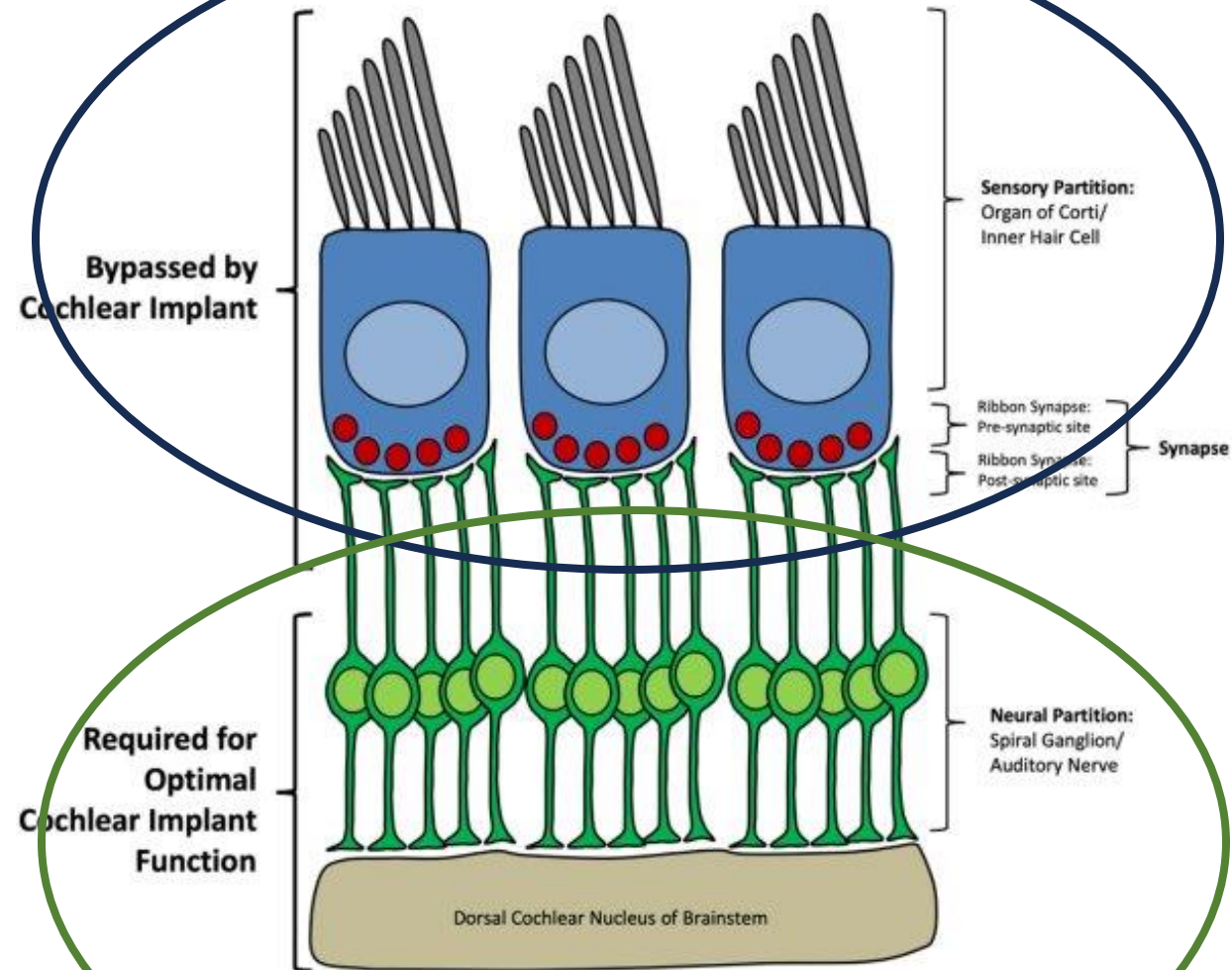
Auditory Neuropathy Spectrum disorder

Auditory Synaptopathy

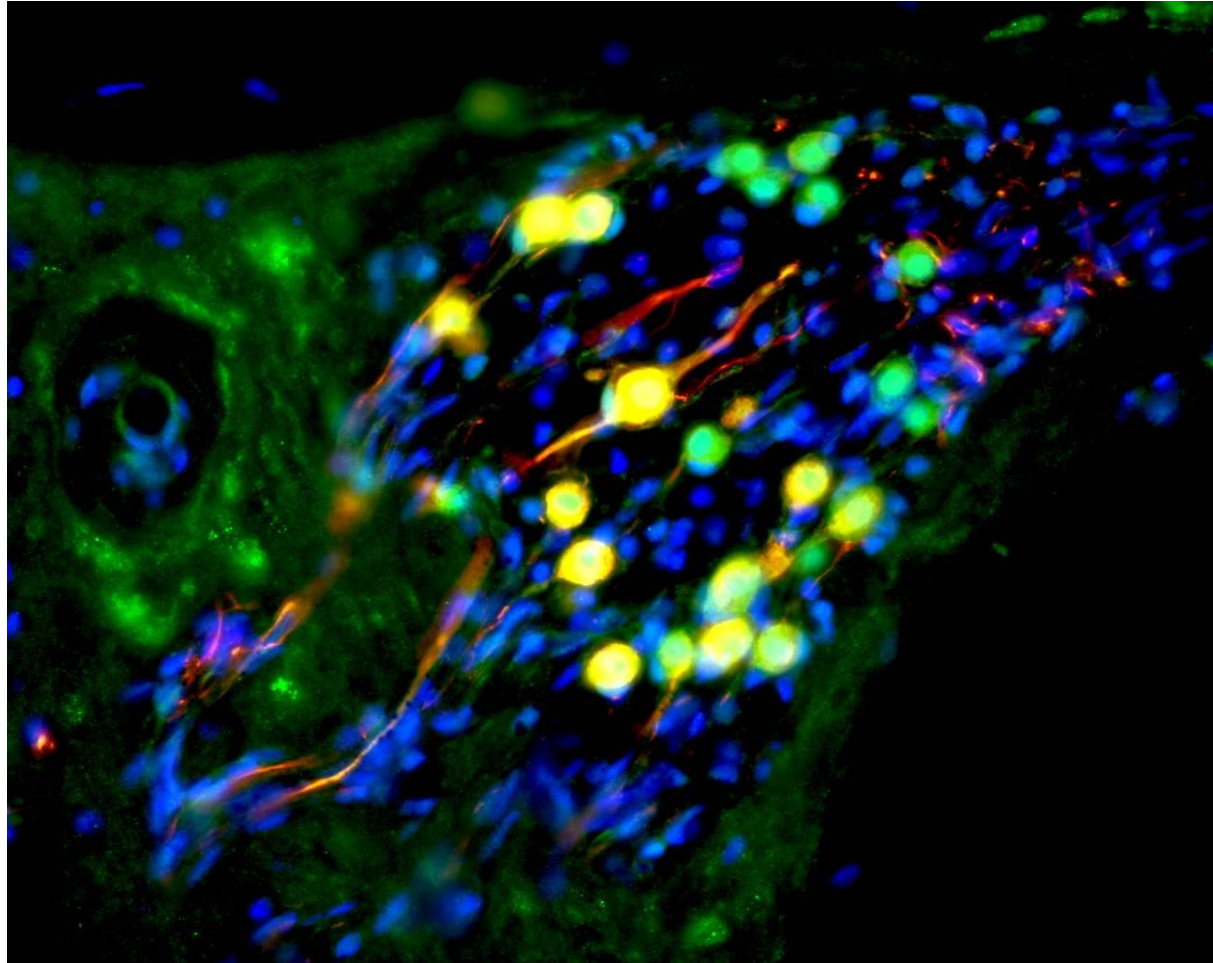
- Lesions in inner hair cells or synapses
- Prevalence: ~ 5-10% of individuals with mild to moderate hearing loss
- Example: Mutations in the otoferlin gene
- Good outcomes after Cochlear Implantation for some therapy
- Mismatch between pure tone audiometry results and speech perception

Auditory Neuropathy

- Lesions in the auditory neurons of sound signals from the inner ear to the brain
- Example: mutations leading to Charcot Marie Tooth Syndrome
- Poor outcomes after cochlear implantation



Rincell-1 - A cell therapy for hearing loss



Yellow cell bodies = matured human ONPs with cell bodies (in yellow) and axons (in red)

First-in-human **randomised open label** trial
to assess the **safety** and feasibility of
Rincell-1 otic neuron progenitor cell therapy
in addition to standard care,
compared with standard care alone
in participants with **presbycusis**, or **auditory neuropathy**
who meet UK guidelines for Cochlear implantation

Clinical Trial Design



Primary Outcome

- Frequency and severity of **adverse events** of Rincell-1



Secondary Outcomes

- Feasibility
- Auditory neuron survival, health and function
- Residual hearing



Tertiary Outcomes

- Maintenance of treatment effects
- Functional, Real-World Measures of hearing
 - Speech perception and Quality of Life

Population



People Eligible for Standard of Care Cochlear Implantation

Group 1: People with Presbycusis

Group 2: People with Auditory Neuropathy

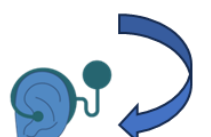
Treatment



Randomisation



Rincell-1 + Cochlear Implant



Cochlear Implant

Follow-Up



Clinic Visits for 13 months post-surgery



Daily Measures of Cochlear Health for 13 months post-surgery

Long Term Follow-Up



10 Years Follow-Up, monitoring safety and efficacy

Volunteer Opportunity

Help us develop new hearing tests to measure the health of auditory neurons in the ear!

- Advanced Bionics CI users
- Guys and St' Thomas
- 5 visits
- 3-4 hour long
- **All expenses covered + gift voucher**



Thank you!

Questions?

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Rinri
Website

