Our Research Strategy 2021

Vision

Our vision is a future where hearing is never lost. We will achieve this by bringing about medical treatments to prevent the onset of hearing loss, enable people to regain their hearing and silence tinnitus.

Why our research matters

Hearing loss and tinnitus have a big impact on people and society

Hearing loss is a life-changing condition that affects 1 in 3 adults in the UK. It's an invisible condition that can have a devastating effect on relationships, education and job prospects.

With a population that's getting older, it's also a growing problem. Over half the population aged 55 or more have hearing loss.

It is a risk factor for dementia – people with age-related hearing loss are more likely to develop dementia than people without.

Hearing loss is estimated to cost the economy £30 billion a year due to lost earnings, reduced quality of life, additional GP visits and increased social-care costs.[1]

Hearing loss can also affect children. There are 50,000 children in the UK with hearing loss – half are born with it, half lose their hearing during childhood.

Tinnitus, noise in the ears or head that doesn't have an external source, affects more than 7 million people in the UK. For some people, it has a serious impact on their quality of life, causing sleep and concentration difficulties, stress and anxiety.

1 Archbold, S., Lamb, B., O'Neill, C. and Atkins, J. (2014). The real cost of adult hearing loss. The Ear Foundation 2014.

2 Action on Hearing Loss, 2019

Better treatments are needed

People with hearing loss and tinnitus tell us that being able to hear well or for their tinnitus to stop would make the biggest difference to their lives.[2]

Today's treatments are largely limited to hearing aids and cochlear implants, and for tinnitus, management strategies. While these treatments bring benefit to people who use them, they're not perfect. Hearing aids and implants don't work well when there is a lot of background noise. Neither device restores natural hearing, nor can they delay the onset of hearing loss or the gradual decline in hearing that so many people experience.

We need to improve existing technology, and develop effective treatments to prevent hearing loss, restore hearing and silence tinnitus. These treatments will transform the lives of deaf people and people who have hearing loss or tinnitus, both now and in the future.

Now is the time to invest in hearing research

Our long-standing support of research, alongside other funders, is already having a huge impact on people's lives – from the technology used to test the hearing of new born babies to advances in the way hearing aids are set up, from evidence broadening the availability of cochlear implants to advances in genetic testing.

We have brought about:

- advances in stem cell research that could lead to therapies to repair damage to the auditory nerve
- the discovery of genes linked to age-related hearing loss that could lead to treatments to prevent this type of hearing loss
- the identification of drugs that may be able to protect hearing from noise.

These and other scientific advances now being made, coupled with increasing interest from the pharmaceutical sector, means the prospect of treatments emerging over the next 5-10 years is real. There has never been a more promising time to invest in research.

But to fully realise the potential benefits research can bring, more investment in hearing research is needed. In 2018, only 83p per person with hearing loss was spent on 'ear-related' research by the UK's main public funders of research. This compared to £193 per person living with cancer, £21 per person living with cardiovascular disease and £16 per person living with sight loss.[3]

3 UK Health Research Analysis 2018
https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2018/

Our approach

We will put people with hearing loss and tinnitus at the heart of our research, and work internationally with academics, clinical groups, companies, investors and other funders to discover and develop treatments.

Areas of research we will support

We will support research to bring about effective medical treatments to:

Prevent hearing loss

While we know many of the causes of hearing disorders, including ageing, exposure to loud noise, genetic factors, infections, and ototoxic medicines, there is still a lot we don't know about how these factors cause damage at a cellular and molecular level.

We will support research to:

- better understand the cellular and molecular mechanisms that underlie hearing difficulties
- advance the development and testing of treatments to prevent any type of hearing disorder.

  This includes hearing disorders involving either the peripheral or central auditory systems.

Restore hearing

Damage to or loss of cells within any part of the auditory system can lead to permanent and irreversible hearing loss or other hearing difficulties. Current treatments are limited to medical devices which, at least in part, compensate for loss of function. Difficulties with speech intelligibility in the presence of background noise remains a key issue.

We will support research that will:

- lead to transformative improvements to the quality of hearing gained from medical devices
- advance the discovery, development and testing of drug, gene or cell-based therapies to repair damage to any part of the auditory system to improve hearing.

Silence tinnitus

While significant progress has been made towards understanding the causes of tinnitus, the parts of the auditory system involved and exploring potential therapeutic approaches, we still do not have a full understanding of how tinnitus arises or how to alleviate it. Current treatments are limited to strategies to help people manage their condition.

We will support research to:

- improve our understanding of the biological mechanisms involved in tinnitus
- discover and test new approaches to reduce the perception of tinnitus.

  This includes research that will lead to better diagnostics, preclinical models and outcome measures, that can be used to evaluate new treatments.

How we will support research

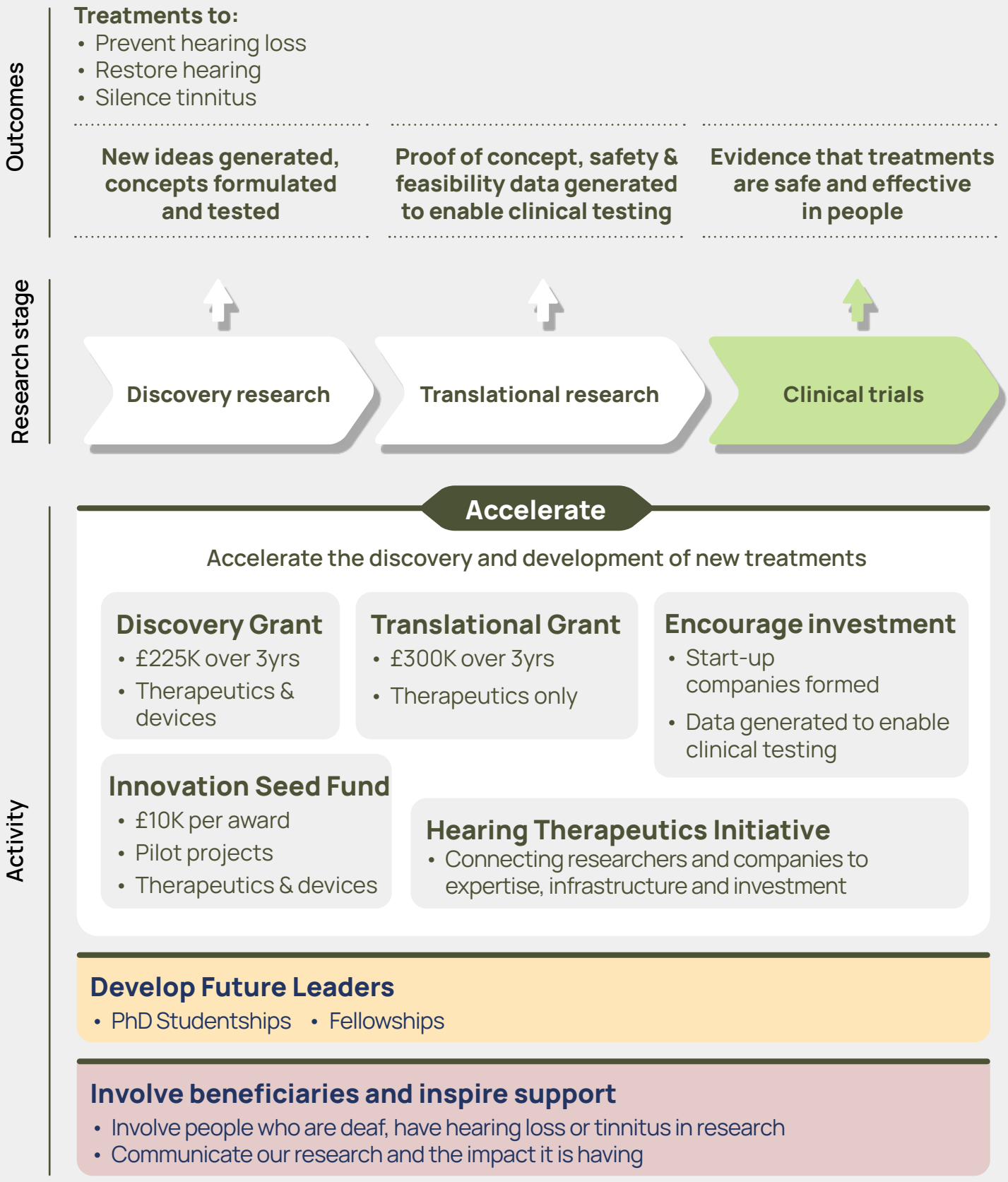

Figure 1 An overview of our Research Strategy

How we will support research

1) Accelerate the discovery and development of new treatments

The remarkable progress being made gives us confidence that new treatments will be found. Now, we want to accelerate progress and tackle key challenges in the development of new treatments.

We will achieve this by:

Funding Discovery Research
Discovery Research Grants

Our Discovery Research Grant scheme will generate new knowledge about the biological processes involved in hearing loss and tinnitus, and identify ways of manipulating them to prevent hearing loss, restore hearing or silence tinnitus.

We will also target funding at key barriers to developing treatments, such as the need for better diagnostics to precisely identify the site of damage, better ways to measure if a treatment is working and experimental models that are more relevant to human hearing disorders.

Our Discovery Grant scheme will also generate knowledge that will lead to a step change in the quality of hearing provided by medical devices.

Summary of grant:

- Value: up to £225K over three years
- Eligibility: researchers based at non-profit research institutes in any country.

Grants will be awarded annually following an open call for project proposals that address our research priorities and a rigorous peer-review process. We will forge strategic partnerships with other funders and industry to target resources at priority areas.

Innovation Seed Fund

Small awards to generate preliminary data that can be used to secure larger follow-on awards. The aim of the scheme is to fund pilot projects that will kick-start new lines of research.

Summary of grant:

- Value: up to £10K
- Eligibility: researchers based at any research institute or SME in any country

Funding Translational Research
Translational Research Grants

Our Translational Research Grant scheme will support the initial stages of development of a promising treatment to a point where it becomes of commercial interest. This includes research to strengthen proof of concept in a relevant experimental model or to generate data to enable progression to clinical testing.

We will not fund medical device research at this stage of development as existing hearing aid and cochlear implant companies are well placed to take forward promising findings.

Summary of grant:

- Value: up to £300K over three years
- Eligibility: researchers based at any research organisation or SME in any country

Grants will be awarded annually following an open call for project proposals and a rigorous peer-review process.

We will work in partnership with other organisations to increase the impact of our translational research.

Encouraging investment in start-up companies

For companies developing hearing therapeutics, securing the investment needed to take a potential new treatment into clinical trials can be challenging. Despite the significant commercial opportunities, investors are cautious of supporting new areas where there is no well-trodden path through clinical trials to market.

We will unlock new types of investment to support the later stages of translational research, allowing companies to generate the evidence needed to gain regulatory approval to start clinical trials and drive their projects to the next value inflection point.

Connecting innovators to the expertise they need

We have established the Hearing Therapeutics Initiative to bring together expertise and infrastructure in hearing research, drug, gene and cell therapy, allowing us to rapidly connect innovators to the expertise they need.

We will continue to strengthen the Initiative to coordinate and leverage national resources into supporting the development of treatments for hearing loss and tinnitus.

2) Develop future research leaders

With only a relatively small number of scientists working in hearing research, it is not surprising that the field attracts a disproportionately low amount of funding relative to the scale of the issue. We need to increase the number of hearing research leaders. These leaders will build research teams to attract increasing amounts of public funding into hearing research, creating the capacity needed to develop treatments.

We will achieve this by:

Funding PhD Studentships

Our PhD Studentship scheme will support the training of a new generation of hearing researchers.

Summary of grant:

- Value: £91K (£97K in London) over 3 years
- Eligibility: students and supervisors based at any non-profit research institute in the UK

Grants will be awarded every other year following an open call for proposals and a rigorous peer-review process.

We will seek to work in partnership with other organisations to maximise the number of students we can support.

Funding early career Fellowships

Our Fellowship scheme will support rising stars in hearing research to progress towards becoming independent scientists. The scheme will help to retain talented researchers in the hearing field, enabling them to secure senior fellowships and to ultimately establish their own research groups.

Summary of grant:

- Value: up to £225K over 3 years
- Eligibility: early-career researchers based at any non-profit research institute in the UK

Grants will be awarded annually following an open call for proposals and a rigorous peer-review and interview process.

We will seek to work in partnership with other organisations to maximise the number of fellows we can support.

3) Be beneficiary-focussed and inspire support

It is vital that people who are deaf, have hearing loss or tinnitus are involved in the development of treatments. This will ensure that the treatments developed are those that people want, will accept and that meet their 'real-life' needs.

It will also improve the design of clinical studies and aid recruitment of participants, making them more successful. Public awareness of research into hearing loss is low compared to other conditions. But we know that our research work resonates with supporters and inspires people to donate.

We will:

- Establish a research network made up of people who are deaf, have hearing loss or tinnitus and who have a desire to get involved in research
- Communicate our research and the impact it is having to inspire people to support our work

Outcomes

By 2025 we will have:

- Identified biological processes that can be targeted to protect and restore hearing, or reduce tinnitus
- Developed diagnostic tests and biomarkers able to precisely pinpoint the cause of hearing loss/tinnitus, and experimental models that are predictive of human hearing disorders
- More treatments in clinical trials
- Seen ideas for improving medical devices taken up by manufacturers
- Launched the careers of a new generation of researchers
- Enabled people who are deaf, have hearing loss or tinnitus to get involved in research
- Inspired people to support and champion research into treatments to prevent hearing loss, restore hearing and silence tinnitus

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