



A WORLD OF CONNECTION FOR PEOPLE WITH HEARING AND BALANCE DISORDERS™

August 2022



Decibel
THERAPEUTICS™

Forward-Looking Statements

This presentation contains forward looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this presentation, including statements regarding Decibel Therapeutics, Inc.'s (the "Company") strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, the therapeutic potential for the Company's product candidates and preclinical programs, the expected timeline for submitting investigational new drug applications and achieving other anticipated milestones and the sufficiency of Decibel's existing cash resources, are forward looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The words "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "might," "plan," "potential," "predict," "project," "should," or "would," or the negative of these terms, or other comparable terminology are intended to identify forward looking statements, although not all forward looking statements contain these identifying words. The Company may not actually achieve the plans, intentions or expectations disclosed in these forward-looking statements, and you should not place undue reliance on these forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in these forward-looking statements as a result of various important factors, including: uncertainties inherent in the identification and development of product candidates, including the conduct of research activities and the initiation and completion of preclinical studies and clinical trials, the timing of and the Company's ability to submit and obtain approval to initiate clinical development of its product candidates, whether results from preclinical studies will be predictive of the results of later preclinical studies and clinical trials, whether Company's cash resources are sufficient to fund its foreseeable and unforeseeable operating expenses and capital expenditure requirements, uncertainties related to the impact of the COVID-19 pandemic on Company's business and operations, as well as the risks and uncertainties identified in Company's filings with the Securities and Exchange Commission. In addition, the forward-looking statements included in this presentation represent the Company's views as of the date of this presentation. The Company anticipates that subsequent events and developments will cause its views to change. However, while the Company may elect to update these forward-looking statements at some point in the future, it specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing the Company's views as of any date subsequent to the date of this presentation.

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Hearing & Balance: Significant Unmet Needs, No Approved Therapies

Otic Gene Therapy: Many Opportunities, Deploy GT Field Knowledge

Integrated Platform: Single-Cell Genomics, Precision Gene Therapy

Focused Pipeline: Monogenic Hearing Loss, Hair Cell Regeneration

Experienced Team; Leading Biotech Investors

Pipeline: Decibel Retains 100% Worldwide Commercial Rights

PROGRAM <i>Target</i>	INDICATION	RESEARCH	IND-ENABLING	EARLY CLINICAL <i>Phase 1/2</i>	LATE CLINICAL <i>Phase 3</i>
Gene Therapies for Congenital, Monogenic Hearing Loss					
DB-OTO <i>Otoferlin</i>	OTOF-Related Hearing Loss				
AAV.103 <i>GJB2</i>	GJB2-Related Hearing Loss				
AAV.104 <i>Stereocilin</i>	STRC-Related Hearing Loss				
Gene Therapies for Hair Cell Regeneration					
AAV.201 <i>ATOH1 +Reprog Factor</i>	Bilateral Vestibulopathy				
DB-ATO <i>ATOH1</i>	Bilateral Vestibulopathy				
Cochlear Hair Cell Regeneration	Sensorineural Hearing Loss				
Otoprotection Therapeutic					
DB-020 <i>Cisplatin Inactivation</i>	Cisplatin-Induced Hearing Loss	Phase 1B			

Hearing Loss Profoundly Limits Connection to People and Environment

- Delays in language development
- Risk of impairment in executive function
- Highest relative risk of dementia among all modifiable and non-modifiable risks

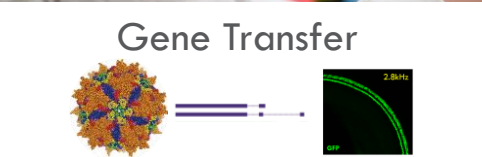


Loss of connection often results in **limited social interaction**, feelings of **loneliness** and **isolation** across all ages

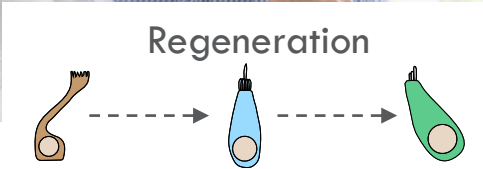
Significant Unmet Needs, No Approved Therapies

Hearing Loss and Balance Disorders

Monogenic Hearing Loss



Acquired Hearing and Balance Loss



Decibel Strategy: Restore Hearing and Balance



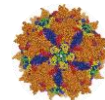
Rare, Monogenic
Acquired



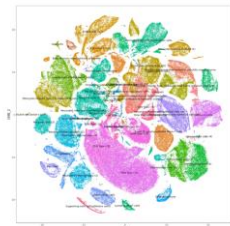
Restore Hair Cell Functionality

Gene Transfer

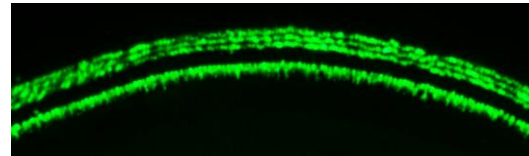
Regenerate



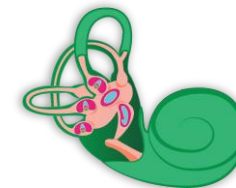
Single-Cell Genomics and
Bioinformatics



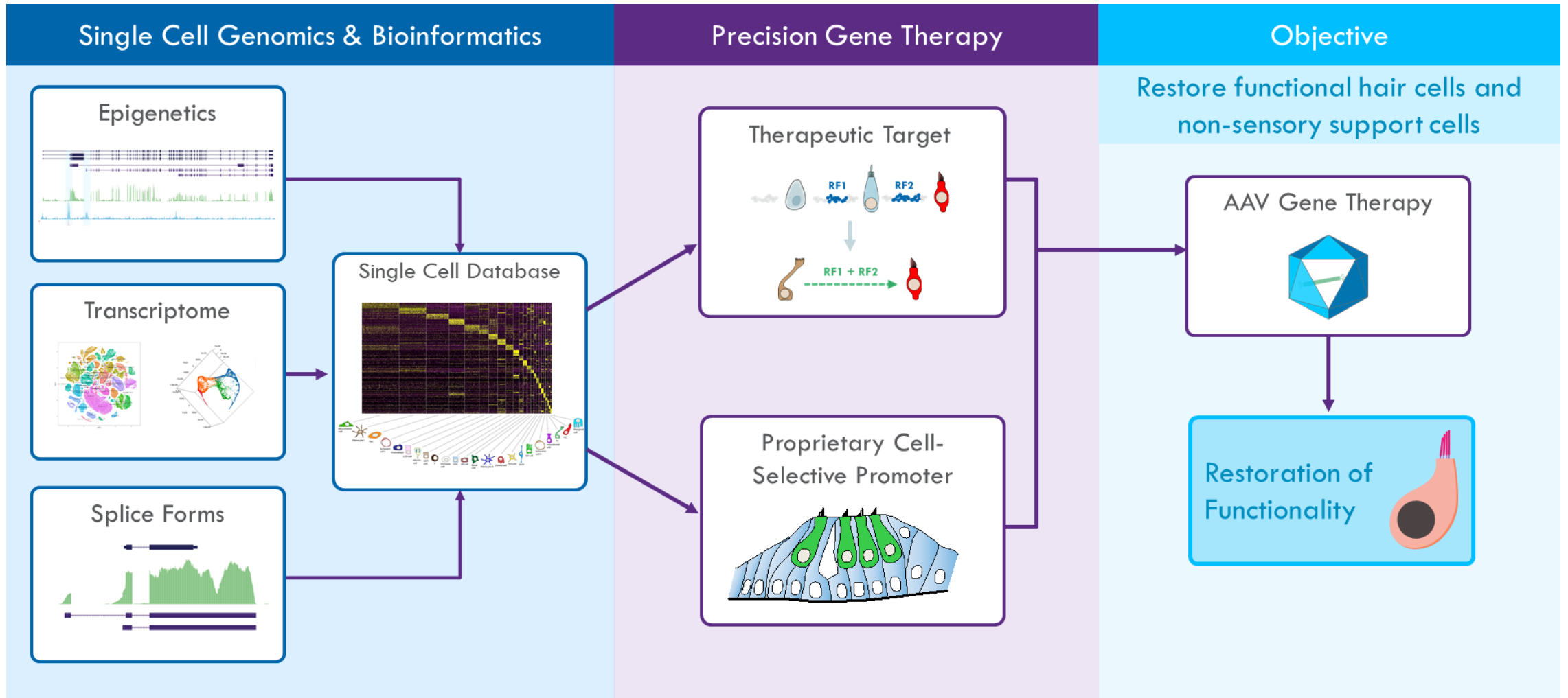
Precision Gene
Therapy



Inner Ear Expertise



Our Platform



Gene Therapy: Promising Modality For the Ear

Strong Parallels to the Eye

Potential Advantages of the Inner Ear



Small, enclosed compartment

- Low dose requirement
- Control of contents
- High ratio of drug product to target cell number



Exposure and Immunology

- Minimal systemic distribution
- Improved tolerability
- Immune privileged

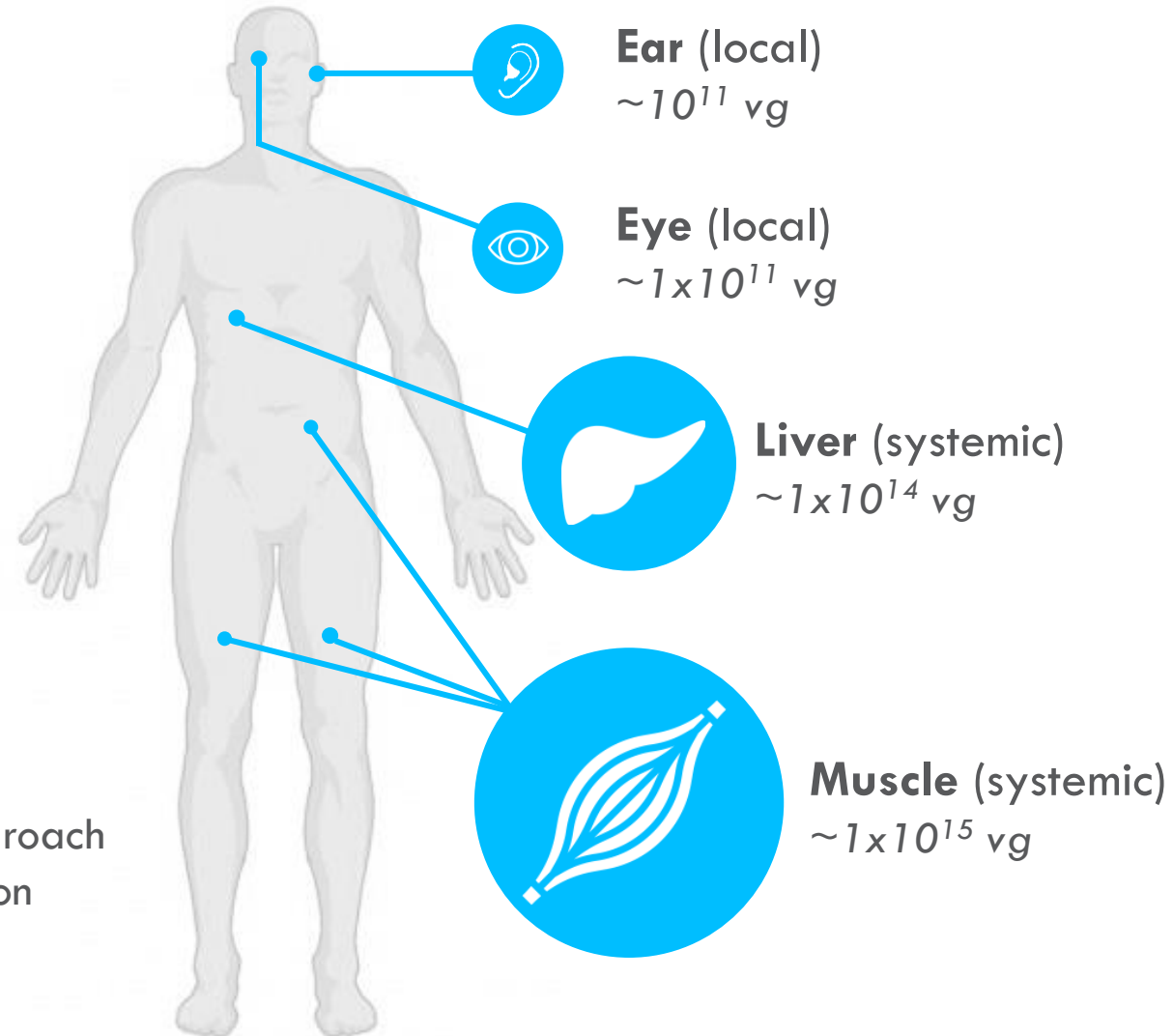


Target cells

- One location accessible via established surgical approach
- Non-dividing target cells, promote durable expression

Target Tissue

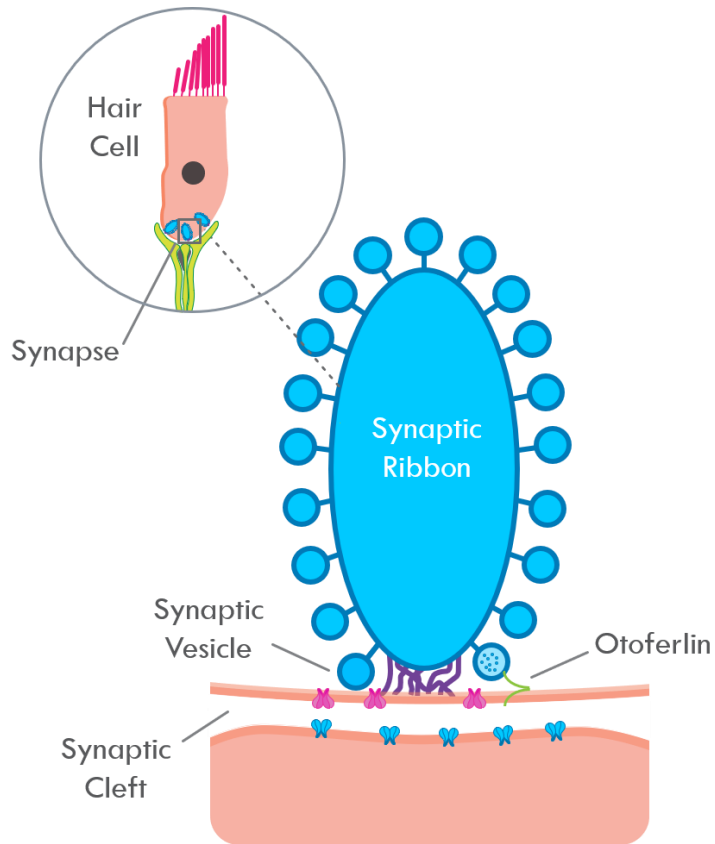
Estimated Dose of AAV gene therapy (vg)





Gene Therapies for Congenital, Monogenic Hearing Loss

DB-OTO for Congenital OTOF Deficiency



Biology Otoferlin (OTOF) is a calcium sensor at base of inner hair cell

Patient Phenotype Congenital, profound hearing loss

Identification Newborn testing; OTOF genetic test

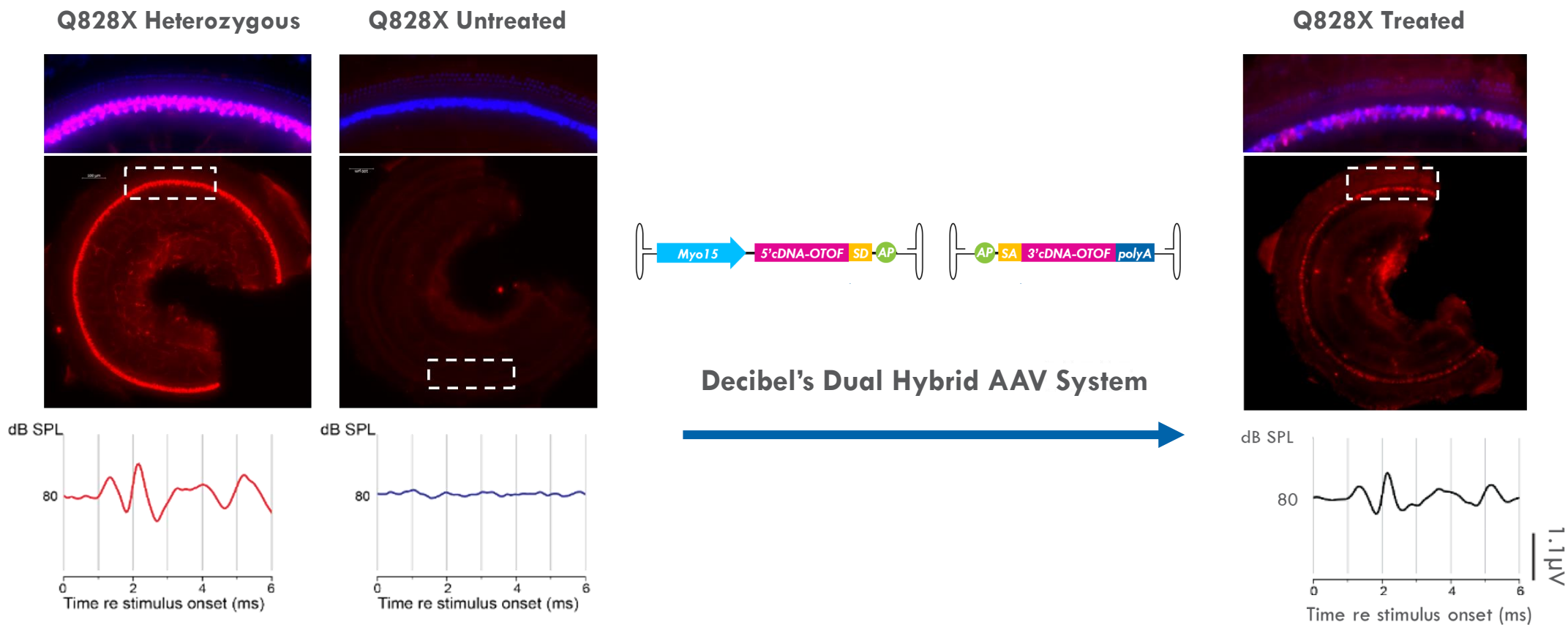
Epidemiology 20,000 estimated in US & major EU markets

Regulatory Orphan Drug and Rare Pediatric Disease Designation from US FDA

DB-OTO: Differentiated vs Competition

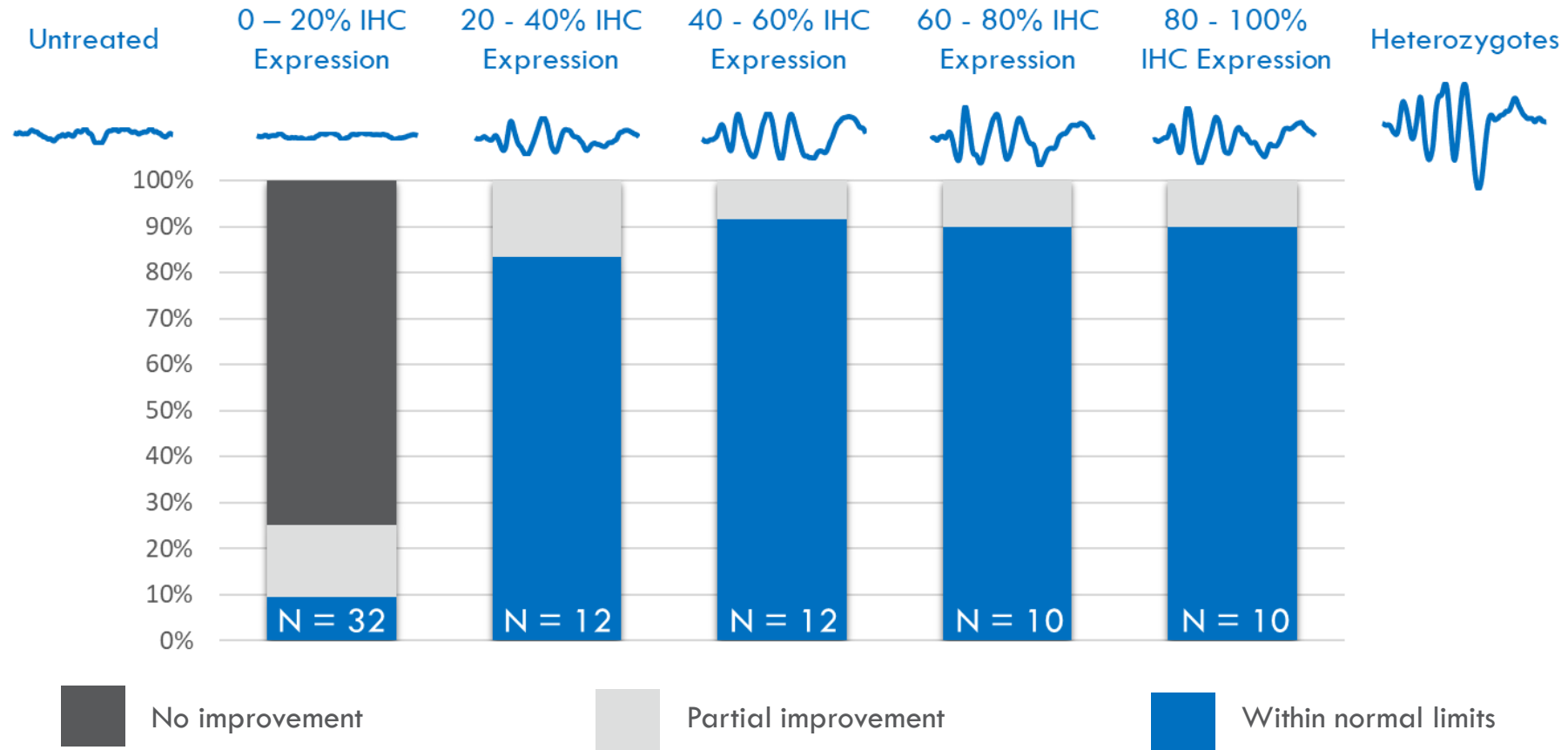
- Precision gene therapy: hair cell-selective expression of OTOF
- Standard surgical procedure per cochlear implantation
- Collaboration with Hospital Ramon y Cajal; largest characterized patient cohort

Restoration of Function in Translational Mouse Model with Dual-AAV Candidate: DB-OTO



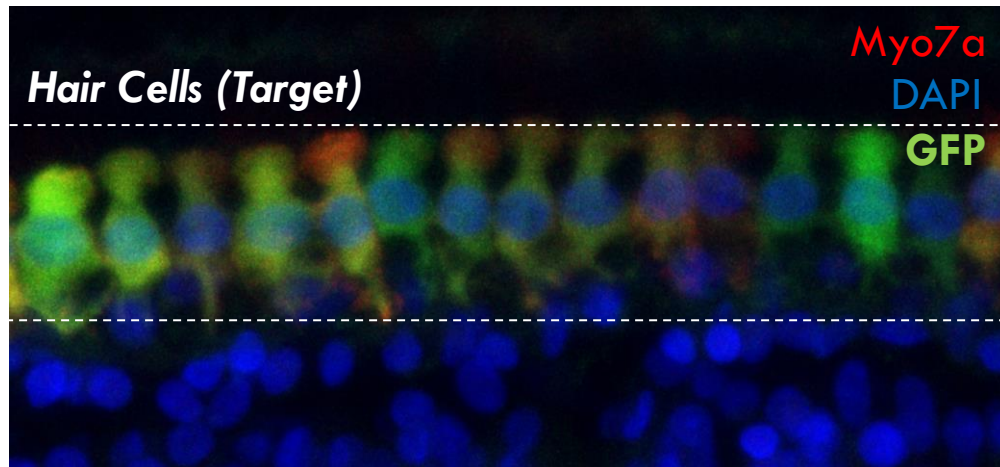
Expression of OTOF Transgene: Observed selective expression, robust functional recovery

OTOF Expression in >20% Inner Hair Cells Conferred Normal ABR Sensitivity in Mice

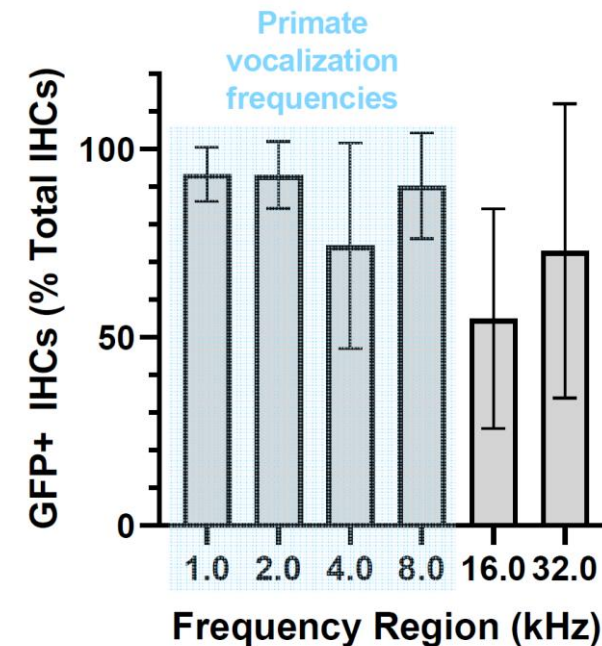


Proprietary Promoter Drove Hair Cell-Selective Expression in NHPs

Dual Vector AAV, Myo15 Drove Cell-Selective Expression in NHP

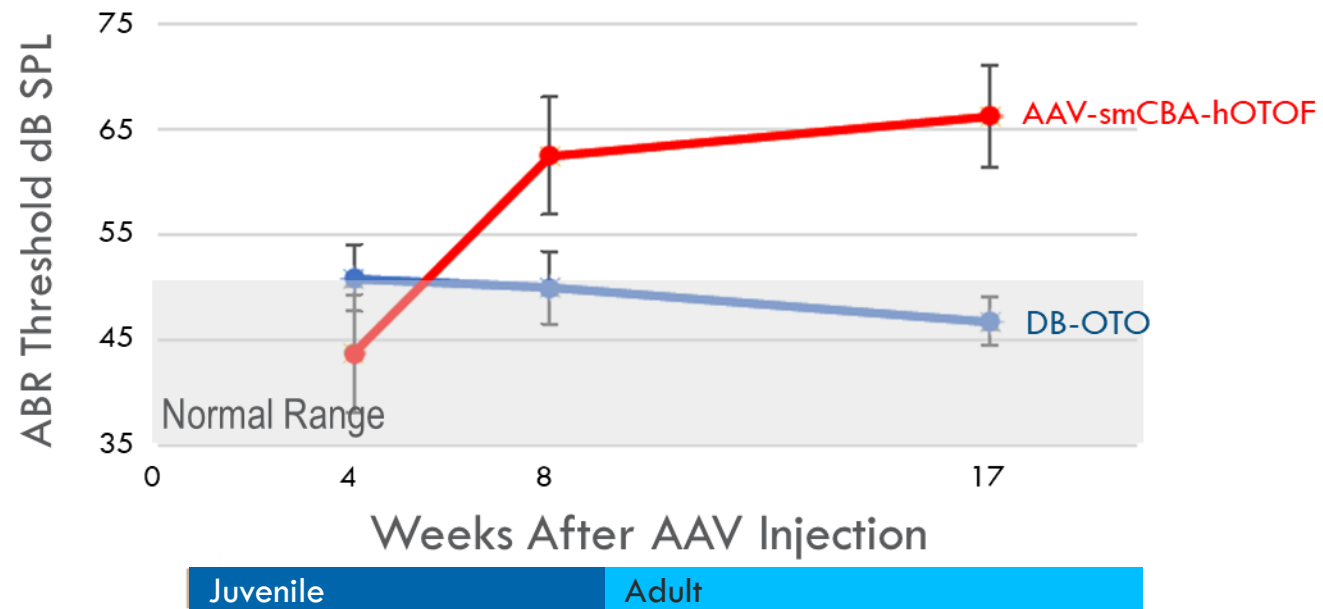


Dual Vector AAV, Myo15 Drove Expression of GFP in >75% of Inner Hair Cells in NHP



DB-OTO: Cell-Selective Expression Enabled Improved Durability in Preclinical Studies

Durability of ABR Sensitivity with DB-OTO vs. AAV Vector with Ubiquitous Promoter in Q828X Mice



Emerging safety data in eye suggest importance of cell-selective transgene expression. *Xiong et al (2019) PNAS*

Integrated Strategy to Support DB-OTO Planned Phase 1/2 Clinical Trial

Access to Patients in EU and US Important for Clinical Development

Ongoing natural history study with Ramon y Cajal Medical Institute in Spain

- Chart review of 149 individuals with OTOF-related hearing loss completed
 - Patient demographics, hearing loss and clinical history, hearing device history, audiometric assessments

Clinical development strategy involves sites in US and EU (Spain)

Launched Amplify™, sponsored testing program in US and Australia with Invitae

- Free genetic testing for infants with auditory neuropathy launched in US in December 2020
- Drive awareness of genetic testing



DB-OTO Planned Clinical Development

Based on Feedback from US FDA Pre-IND Meeting

Proposed Phase 1/2 Clinical Trial Design

- Enrollment of pediatrics
- Unilateral dose escalation
- Evaluating safety, tolerability, bioactivity
- Efficacy endpoints expected to include ABR, age-appropriate behavioral measurements of hearing

Manufacturing

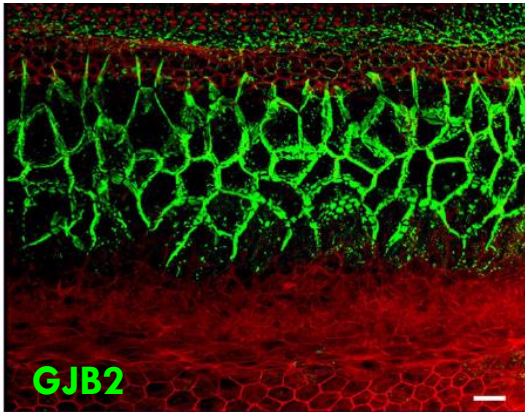
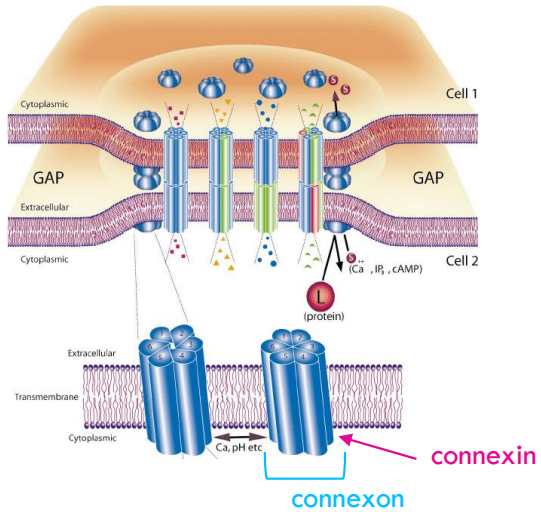
- Relationship with Catalent, leading commercial manufacturer

Timeline

- Planned IND and/or CTA in 2022
- CMC Development and Manufacturing ongoing
- Commenced trial site startup activities
- Initiation of Phase 1/2 clinical trial in first half of 2023



AAV.103 Program to Restore Hearing in Individuals with GJB2 Deficiency



Biology GJB2 encodes the connexin 26 gap junction protein, which is expressed in non-sensory support cells of the inner ear

Patient Phenotype Congenital, severe-to-profound hearing loss

Identification Newborn testing; GJB2 genetic test

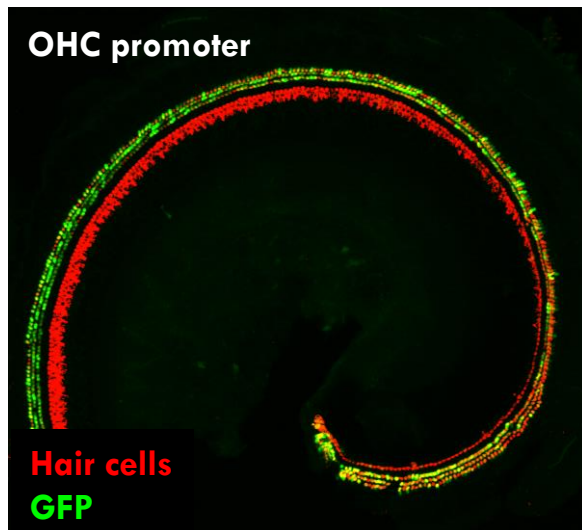
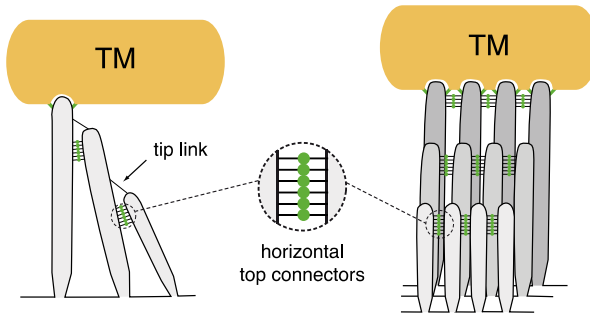
Epidemiology 280,000 estimated in US & major European markets

Treatable GJB2 Mutations Single gene transfer

AAV.103: Our Approach

- Combine AAV capsid with proprietary, cell-selective promoter to express GJB2 in cells that normally express GJB2
- Restore gap junctions to restore hearing
- Currently conducting preclinical studies

AAV.104 Program to Restore Hearing in Individuals with STRC Deficiency



Biology STRC is a structural protein that forms links between outer hair cell stereocilia tips and the tectorial membrane

Patient Phenotype Congenital, mild-to-moderate hearing loss

Identification Newborn testing; STRC genetic test

Epidemiology 70,000 estimated in US & major European markets

Treatable STRC Mutations Single gene transfer

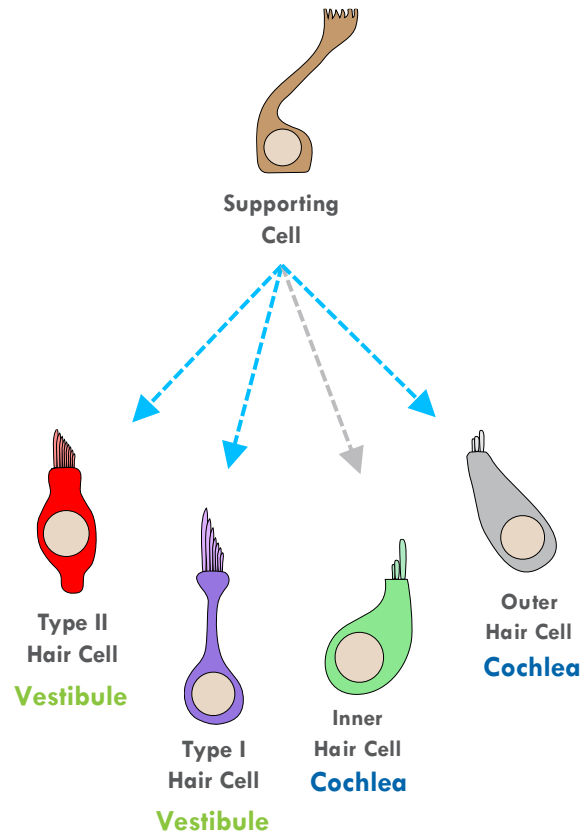
AAV.104: Our Approach

- Dual AAV to deliver full length STRC gene
- Combine AAV capsid with proprietary, cell-selective promoter to express STRC in outer hair cells
- Restore stereocilin protein to restore hearing
- Currently conducting preclinical studies

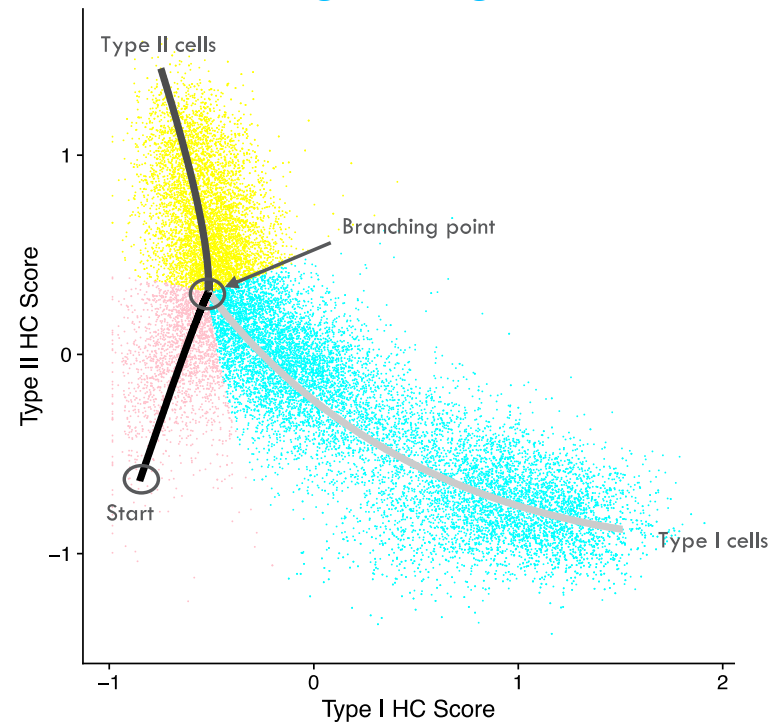


Gene Therapies for Hair Cell Regeneration

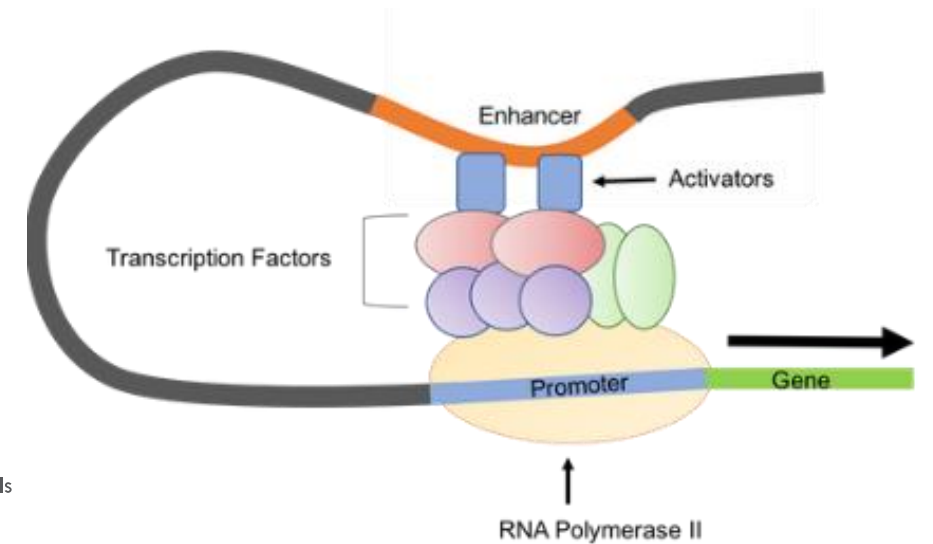
Differentiated Approach to Hair Cell Regeneration



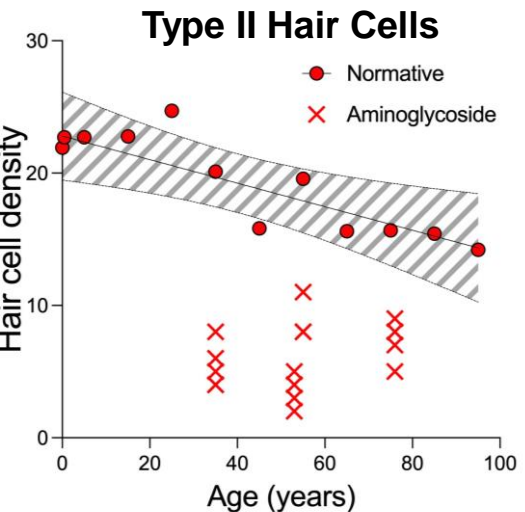
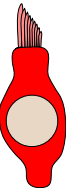
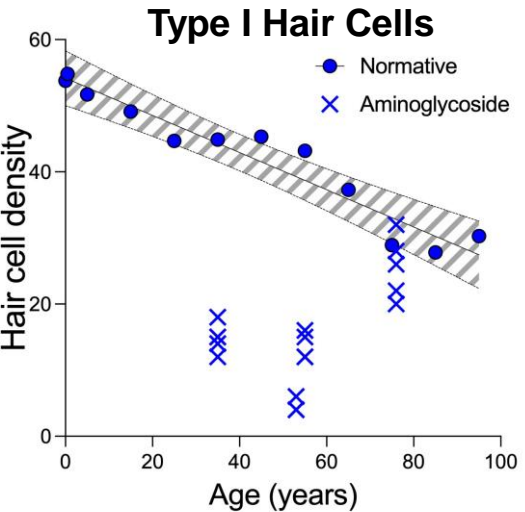
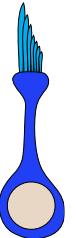
Identify reprogramming factors that control cochlear and vestibular hair cell fate via single-cell genomics



Precise targeting and control via AAVs with proprietary promoters



Regeneration of Vestibular Hair Cells for Treatment of BVP



Biology Type I and Type II hair cells are essential for vestibular function. Ototoxins and ageing result in selective loss of Type I and II hair cells.

Indications Profound loss of vestibular function in both ears (bilateral vestibulopathy; BVP) and age-related decline (presbyvestibulopathy)

Patient Phenotype Imbalance, gait disturbance, oscillopsia

Epidemiology 130,000 patients with BVP estimated in US & major EU markets; ~8M individuals in US report chronic balance problems

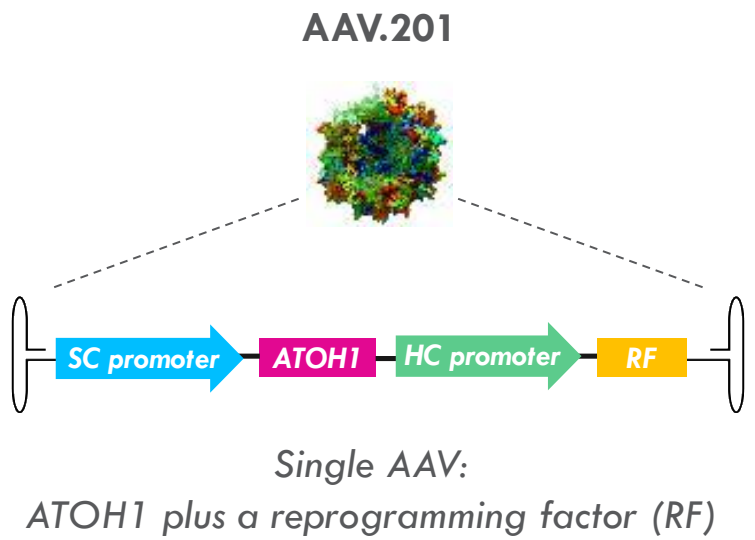
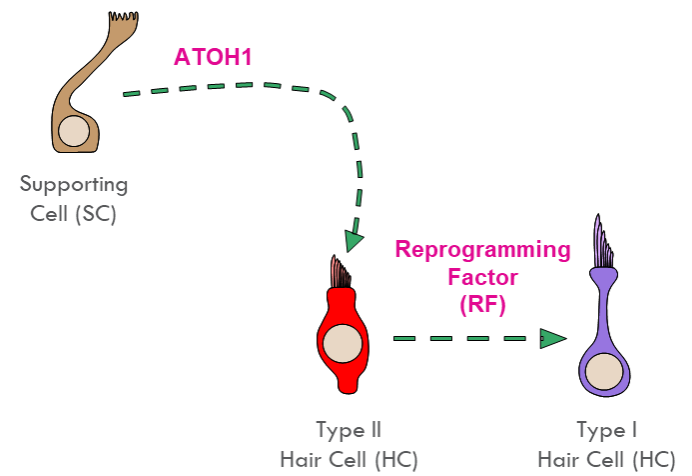
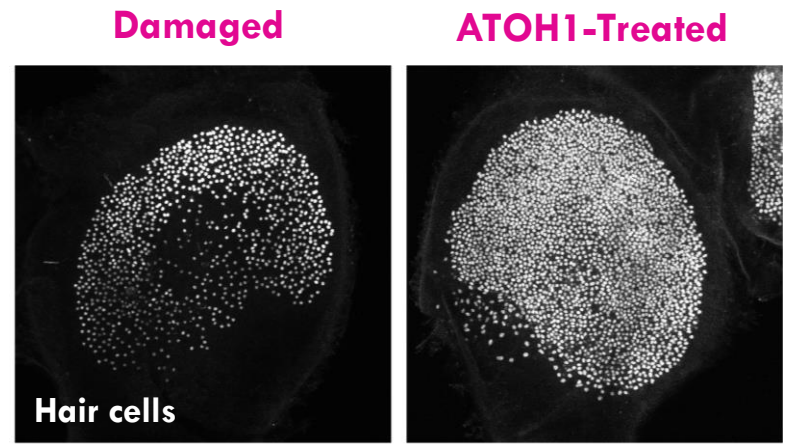
Our Approach

- AAV capsid that transduces vestibular supporting cells and proprietary, cell-selective promoter
- Express reprogramming factor(s) that convert supporting cells into Type I and II vestibular hair cells to restore function

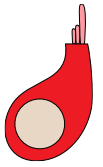
Integrating ATOH1 with the Right Factors to Drive Hair Cell Regeneration and Recovery of Vestibular Function

Developing a Gene Therapy for BVP Patients

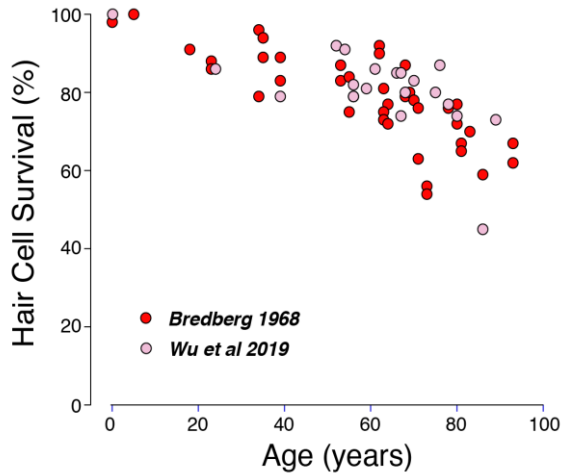
- ATOH1 is a transcription factor required for hair cell differentiation during development
- Selective expression of ATOH1 in supporting cells regenerates Type II hair cells in vivo
- Modulation of other reprogramming factor(s) required to regenerate Type I hair cells in vivo
- Currently testing ability of ATOH1 in combination with additional factors to regenerate Type I and Type II hair cells and restore vestibular function



Regeneration of Cochlear Hair Cells for Treatment of Hearing Loss



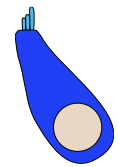
Inner Hair Cells



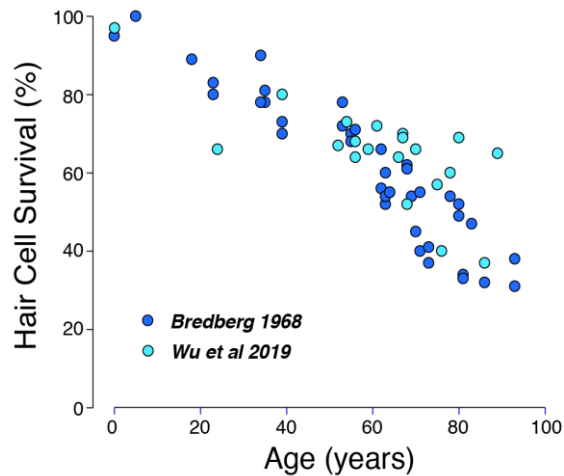
Biology Inner hair cells detect and transmit sound information to the brain. Outer hair cells locally amplify incoming sound. Common environmental stressors (e.g., noise, infection, age) damage or kill both hair cell types.

Indications Noise-induced hearing loss and age-related hearing loss

Patient Phenotype Impaired auditory thresholds and recognition of complex sounds like speech in background noise or in quiet; tinnitus



Outer Hair Cells



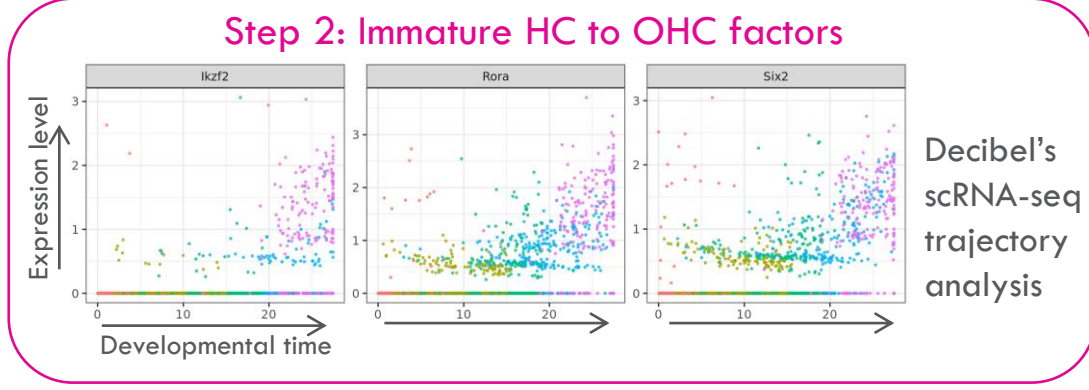
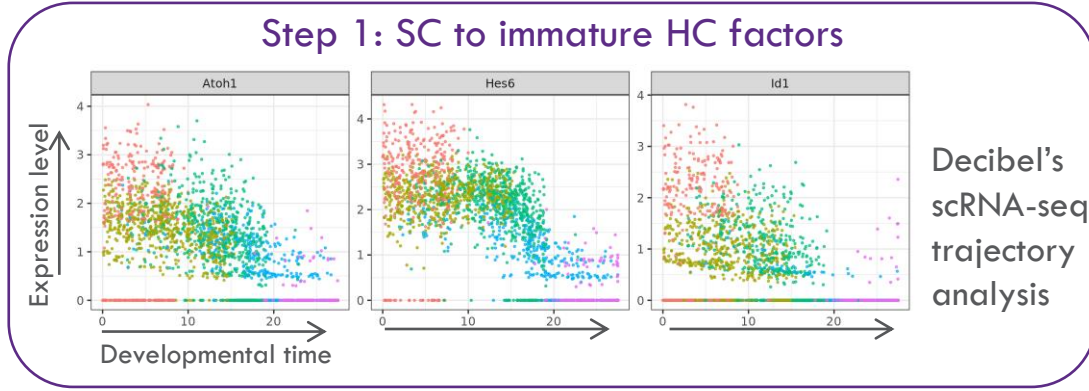
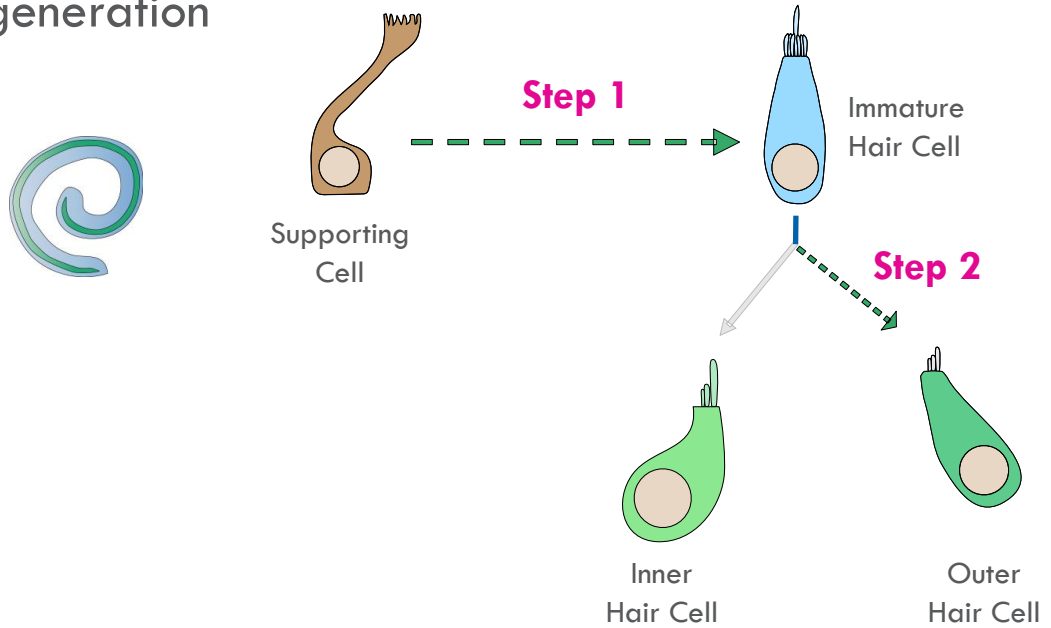
Our Approach

- Combine AAV capsid capable of transducing cochlear supporting cells with proprietary, cell-selective promoter
- Express reprogramming factor(s) that convert supporting cells to cochlear hair cells to restore function

Cochlear Hair Cell Regeneration Program

AAV Capsid, Cell-Selective Promoter, Reprogramming Factors

Cochlear
Regeneration



Currently evaluating reprogramming factors that drive outer hair cell fate

The background features several thick, flowing lines in shades of light blue and teal. These lines originate from the top and left edges, curving and overlapping in a dynamic, organic pattern that suggests movement and interconnectedness. The lines vary in thickness and color intensity, creating a sense of depth and fluidity.

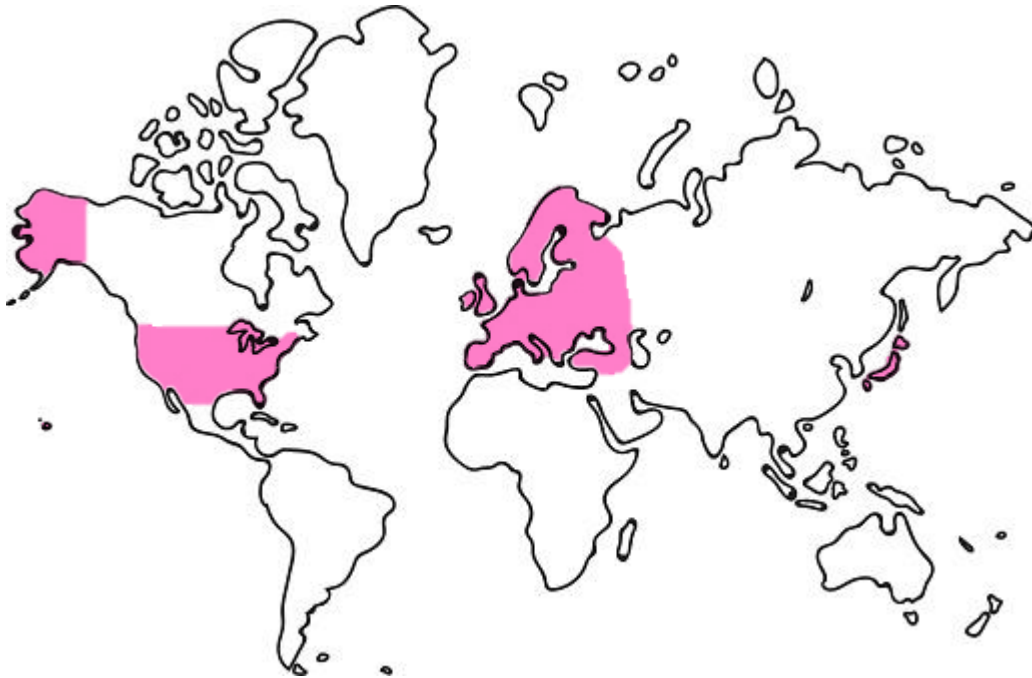
Otoprotective Therapeutic: DB-020

Cisplatin is a Backbone of Chemotherapy in Major Markets

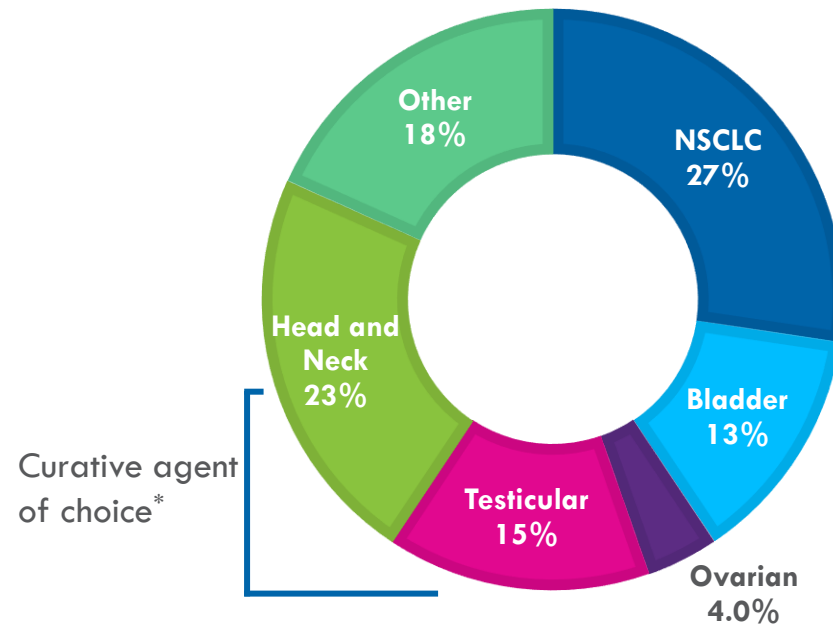
Robust efficacy data support widespread utilization across tumor types

- Cisplatin utilization backed by NCCN and ESMO
 - Use has remained consistent; not expected to change

~270,000 Patients in US, EU5, JP



US Cisplatin Utilization by Tumor Type

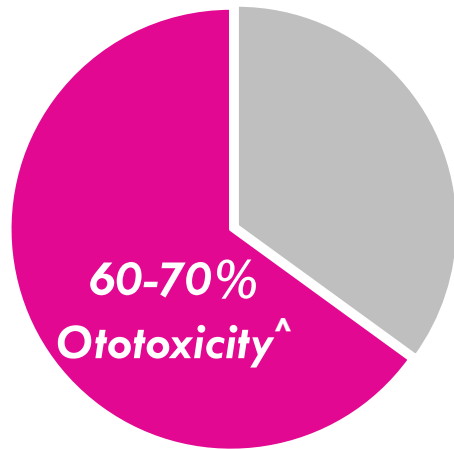


Ototoxicity is a Frequent and Debilitating Side Effect of Cisplatin

No approved preventative or disease-modifying treatments

“Hearing loss and this constant tinnitus is life-changing... I’m wondering if I’ll ever have another day where I can hear clearly and be a productive member of society”

– User Z, musician*



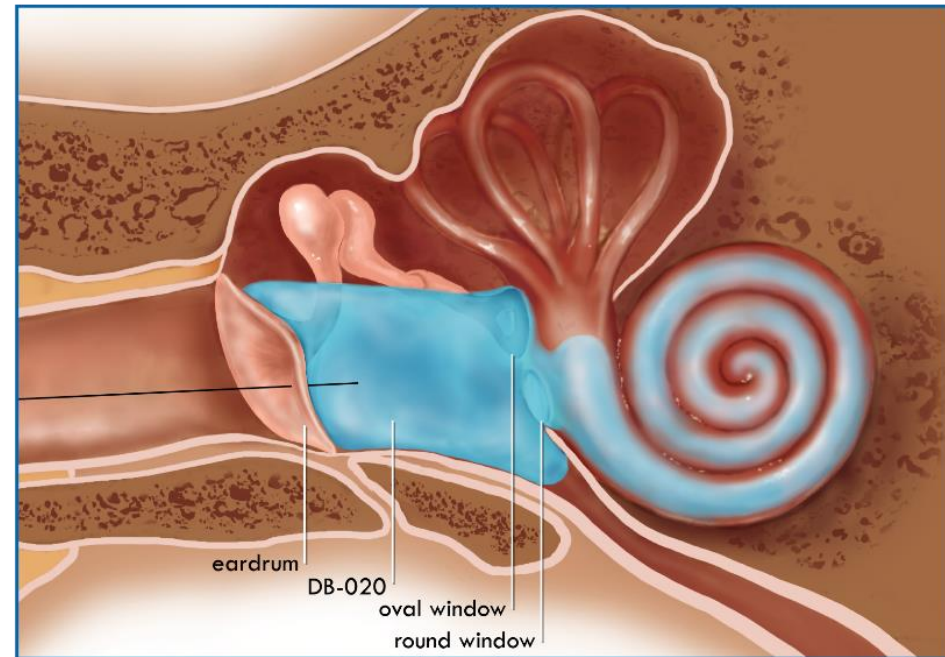
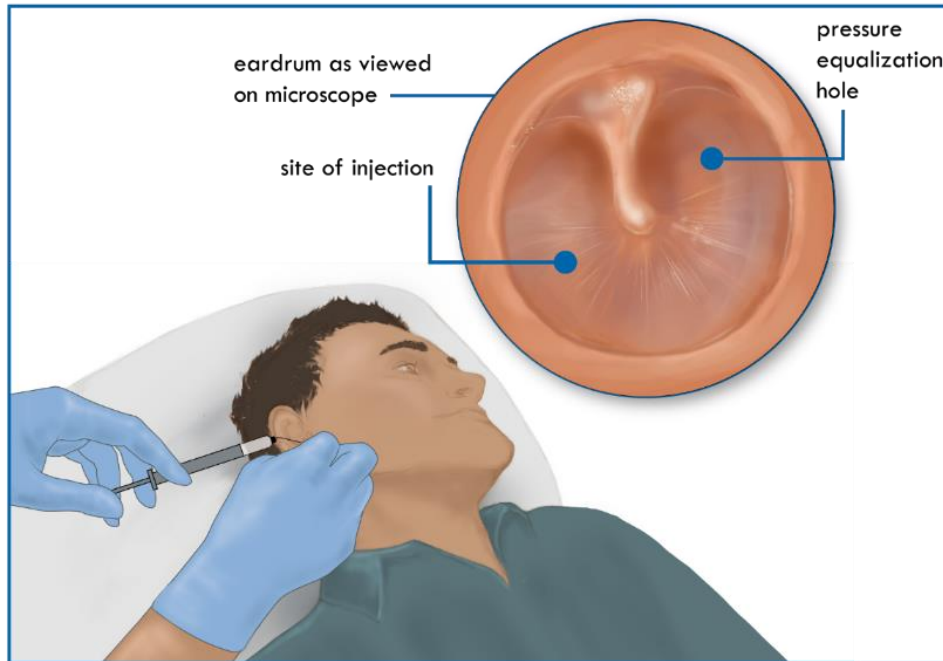
of patients on high dose cisplatin experience ototoxicity



DB-020: Designed to Prevent Cisplatin-Induced Hearing Loss Before it Occurs

Proprietary formulation of STS optimized for local delivery

Mechanism of Action	Inactivation of cisplatin through irreversible covalent binding
ROA & Dosing	Brief, office-based transtympanic injection Optimized to enable flexible timing in typical chemotherapy patient workflow



DB-020 Well Tolerated in Completed Phase 1 Clinical Trial in Healthy Volunteers

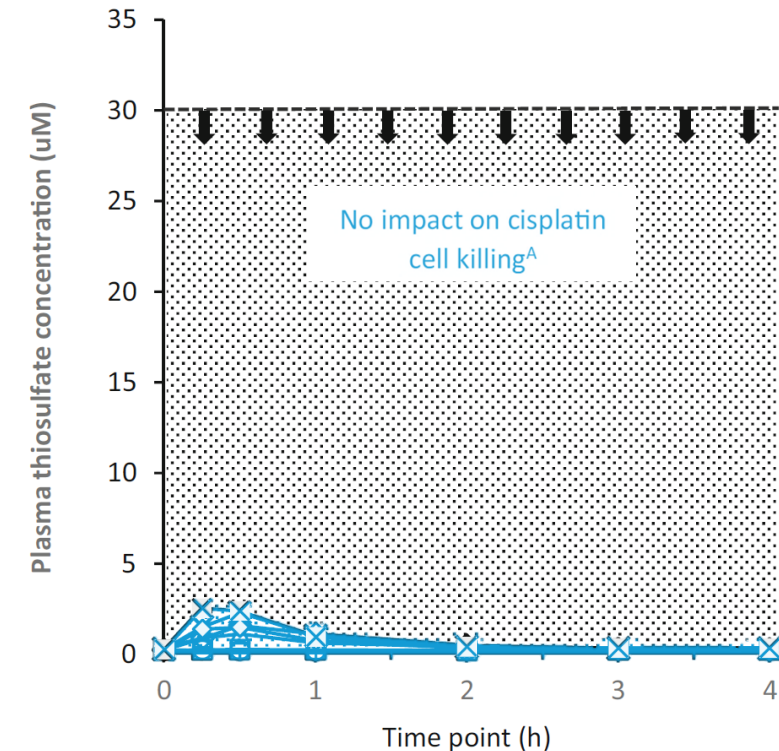
Study Design

- Randomized, double-blind, placebo-controlled
- Single ascending dose study (N=42)
 - Patients received one of four doses of DB-020 or placebo administered transtympanically unilaterally (N=32) or bilaterally (N=10)

Results

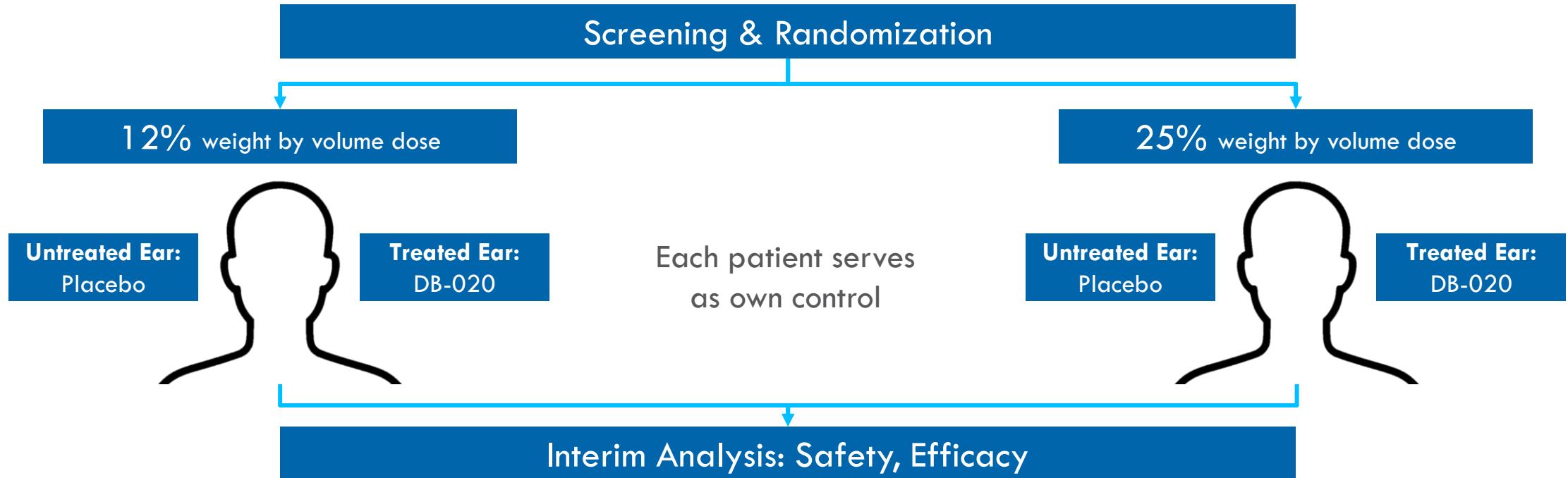
DB-020 was well tolerated across dose levels

- AEs generally mild to moderate, short in duration
- Administration resulted in only nominal, short-lived systemic increases in STS



Maximum STS plasma concentration observed was approximately **10-fold lower** than STS levels expected to impact cisplatin activity

DB-020-002: A Randomized, Double-Blind, Placebo-Controlled, Multicenter Phase 1b Clinical Trial of DB-020 in Patients Being Treated with Cisplatin



Select Key Inclusion Criteria

- Regimen: IV cisplatin once every 21 to 28 days, agnostic to tumor type or stage
- Prescribed dosing of ≥ 280 mg/m² cumulative cisplatin dose over ≥ 3 cycles up to 6 cycles
- ≤ 45 dB baseline hearing loss averaged at 6 and 8 kHz in either ear

Primary Endpoints

- Safety and tolerability (TEAEs)

Key Secondary Efficacy Endpoints

- Pure tone audio, speech audibility, DPOAE
- Patient reported outcomes: TFI, HHIA

Patient Characteristics

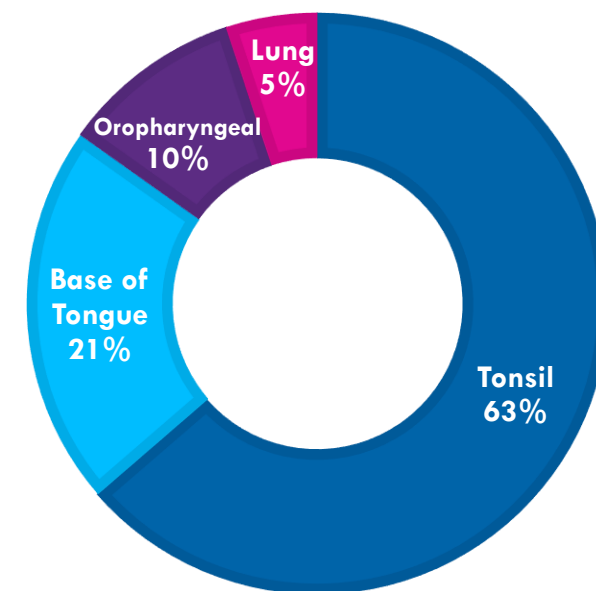
19 cisplatin-naïve oncology patients with baseline hearing ability generally normal for age

Gender	Male	N=16 (84%)
	Female	N=3 (16%)
Age	Median	56 years of age
	Range	37 to 71 years of age
Patients	Treated patients	N=19
	Patients with evaluable pre-post audiograms	N=17 (89%)
Baseline High Frequency Hearing*	Placebo-treated ears	20.2 dB HL average (6.7, 40.0)
	DB-020-treated ears	19.1 dB HL average (1.7, 41.7)
Cumulative Cisplatin Dosage	Mean	248 (100, 570) mg/m ²
	Patients with ≥280 mg/m ² cumulative dose	N=9 (47%)

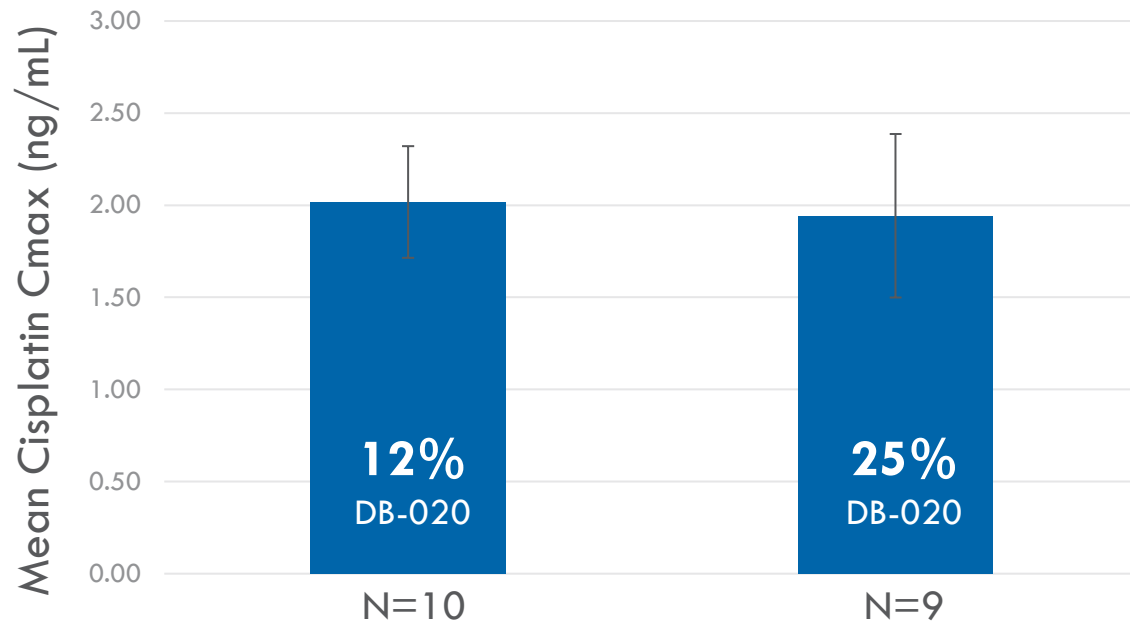
Interim analysis includes data collected as of February 4, 2022

* Average of 4000, 6000, and 8000 Hz frequencies

Cancer Diagnosis



No difference in Free Systemic Cisplatin with Either DB-020 Dose



- Cisplatin delivered via systemic IV infusion within 3 hours following DB-020 administration
- After DB-020 administration, thiosulfate levels 15 minutes prior to cisplatin infusion were comparable to levels previously reported in DB-020-001 Phase 1 clinical trial in healthy volunteers
- No apparent effect on systemic cisplatin PK following either dose level of DB-020 (12% or 25%)
- Cisplatin Cmax and AUC were similar to reference free cisplatin PK values*

Select TEAEs & Otic Tolerability

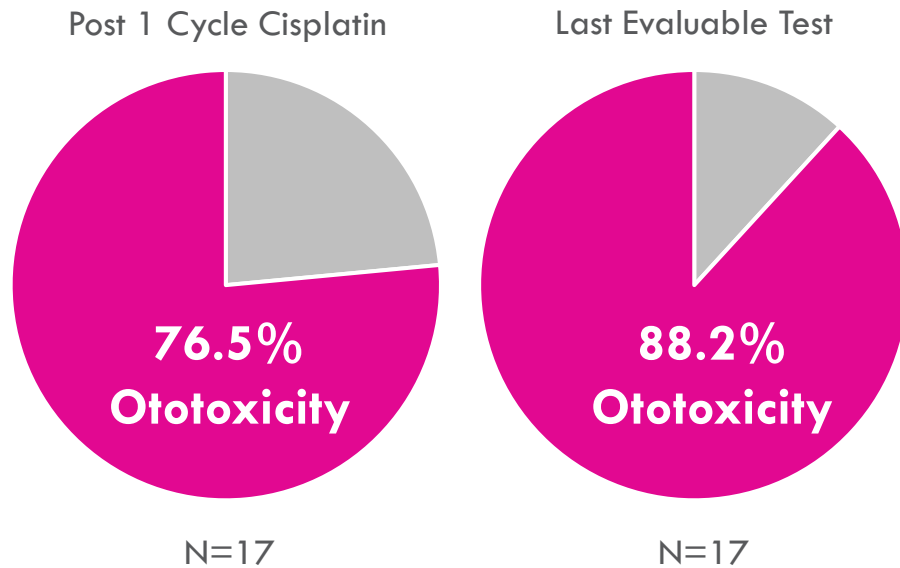
Event / Patient [^] (Ears)	12% DB-020 (N=10)	25% DB-020 (N=9)	Placebo (N=18)
Persistent Tympanic Membrane Perforation	0	0	0
Tympanosclerosis (Scarring of the tympanic membrane)	0	0	0
Change in Tympanometry (Objective test of middle ear function)	0	0	0
Conductive Hearing Loss	0	0	0
Ear Pain	7 (70%)	7 (78%)	2 (11%)
Tinnitus	0	2* (22%)	8* (44%)

[^]N=19 patients. 18 patients received DB-020 in one ear and placebo in the contralateral ear; 1 patient received DB-020 in one ear then discontinued before receiving placebo

*One patient reported bilateral tinnitus case and another patient reported worsening with unspecified laterality. These two patients are included in both the 25% DB-020 and Placebo columns

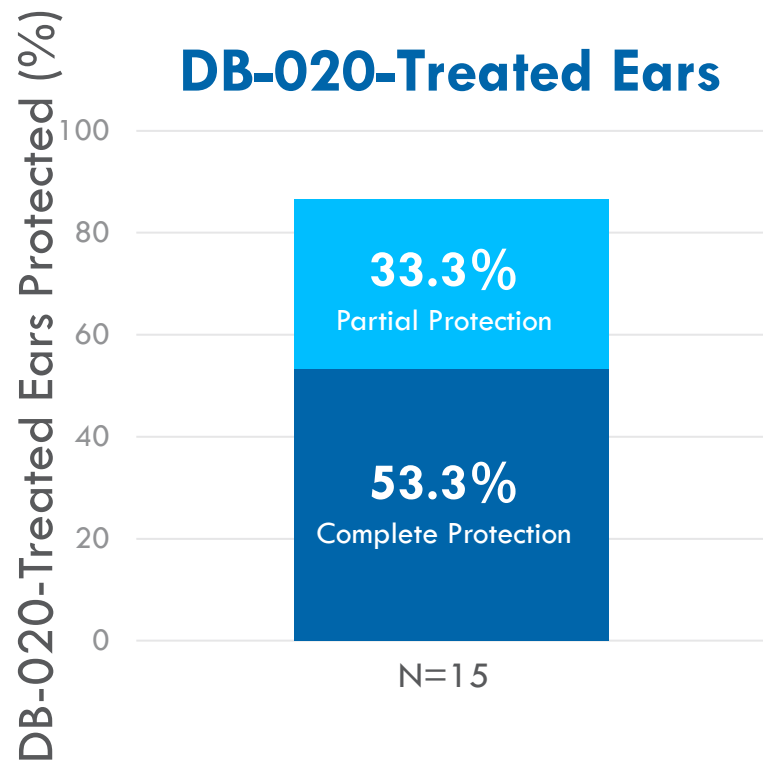
76.5% Ototoxicity in Placebo-Treated Ears After First Cisplatin Cycle

Placebo-Treated Ears



- **17 patients** had evaluable audiograms at baseline and after cisplatin administration
- Ototoxicity* observed in **significant majority** of placebo-treated ears
- Supports previously published data demonstrating **high prevalence of cisplatin ototoxicity**. Suggests prevalence and extent of hearing loss may be more than previously appreciated

DB-020 Protected Hearing in 87% of Patients with Ototoxicity in Placebo-Treated Ear

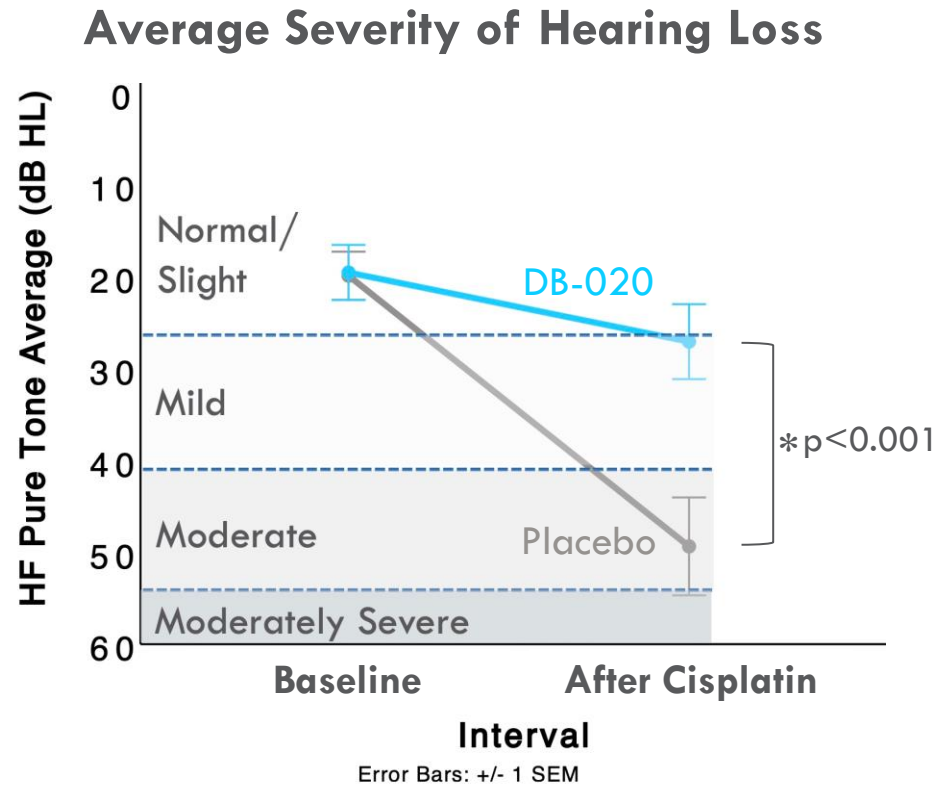


- **Significant reduction** in overall ototoxicity incidence with DB-020 (7/17 vs 15/17 for placebo; $p=0.005^{\wedge}$)
- Protection* of hearing with DB-020 was further analyzed in patients with ototoxicity in their placebo-treated ears
- Over half of these patients were **completely protected**, meaning that their DB-020-treated ears did not change from baseline despite ototoxicity in their placebo-treated ears
- In patients who experienced ototoxicity, **87% of ears treated with DB-020 showed protection**

[^]Statistical testing performed for overall ototoxicity endpoint for 250-8000 Hz frequency range using data from all 17 evaluable patients using McNemar’s test

*Complete protection defined using the absence of ASHA Ototoxicity Criteria for DB-020-treated ear; partial protection defined using ASHA Ototoxicity Criteria being applied to between ear changes.

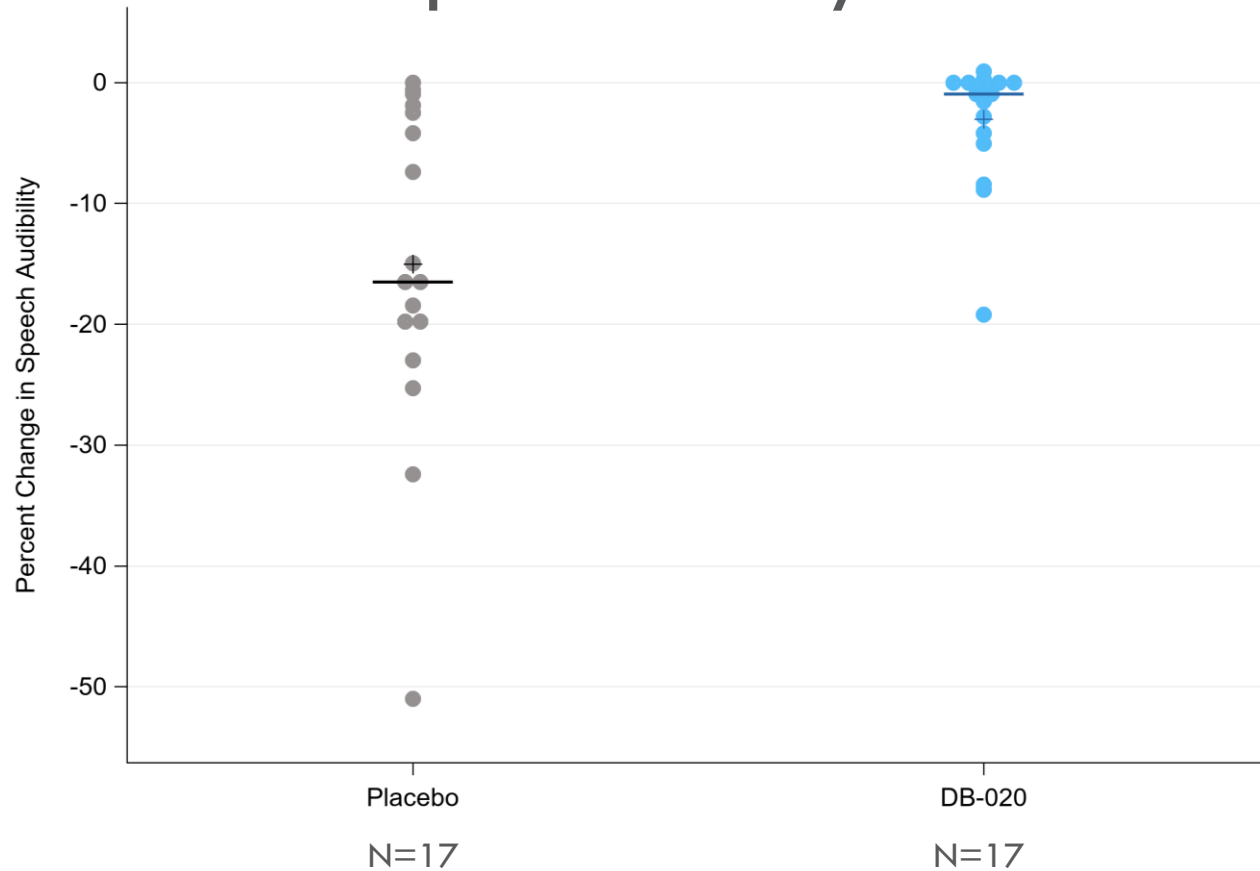
DB-020 Prevented Categorical Losses in Hearing Observed in Placebo-Treated Ears



- **Placebo-treated ears lost approximately 30 dB** on average, shifting patients across 2 hearing loss categories
- Placebo-treated ears had an average “hearing age” of 58 years at the baseline. Less than ~3 months later, at their final assessment after cisplatin therapy, the average “hearing age” of placebo-treated ears matched a 76-year-old[^]
- In patients who experienced ototoxicity, DB-020 protected hearing in contralateral ears (average change = 8 dB)
- Objective measurement of sensory hair cell function (DPOAE) was consistent with behavioral DB-020 protective effects (p<0.05)

DB-020 Reduced Cisplatin-Induced Loss of Speech Audibility by 80%

Speech Audibility Loss



Speech Audibility:

- Speech intelligibility index describes proportion of average English speech signal that is audible to listener based on audiometric testing

Placebo-Treated Ears:

- 10 (59%) lost >10% of speech audibility
- 4 (24%) lost >20% of speech audibility
- Maximal speech audibility loss was 51%

DB-020-Treated Ears:

- In the same patients, ears treated with DB-020 were protected and speech audibility was unchanged from baseline in all but one case

Summary of Interim Analysis

Positive data supports continued development of DB-020 as a potential therapy to protect against hearing loss in patients receiving cisplatin chemotherapy

DB-020

Proprietary formulation of sodium thiosulfate (STS) optimized for delivery to the ear

Trial Design

Enrolled patients randomized to receive one of two doses of DB-020 in one ear and placebo in contralateral ear

Interim Analysis Cohort

19 cisplatin-naïve cancer patients being treated with high dose cisplatin

Safety and Tolerability

DB-020 was generally well tolerated with no significant safety issues observed

Ototoxicity

88% of patients experienced ototoxicity in placebo-treated ears

Efficacy

87% of patients who experienced ototoxicity in the placebo ear were partially (33%) or completely (53%) protected from ototoxicity



Corporate Summary and Value Creation

Innovative Discovery Partnership with Regeneron

- **Integrated collaboration on research established in 2017; extended in 2021**
 - Shared discovery teams; Decibel leadership
 - Access to Regeneron’s world-class mouse and human genetics research platforms; gene therapy capabilities
 - Principal focus area: monogenic hearing loss, gene therapy
 - Target-focused collaboration; currently focused on DB-OTO, AAV.103, AAV.104
- **Regeneron co-funds research and development**
 - \$25M upfront plus \$25M in Series B equity
 - For each collaboration product, eligible for up to \$35.5M in milestones through initiation of Phase 2
 - Development and regulatory costs from initiation of registration trial are shared 50/50
- **Decibel retains worldwide development and commercial rights**
 - Regeneron eligible to receive tiered royalties



2021 Milestones

- **Financial:** Upsized IPO in February 2021; raising ~ **\$125.0M** in net proceeds
- **Collaborations:** Extension of Research Term under Strategic Collaboration with Regeneron
- **Manufacturing:** New development and manufacturing agreement for DB-OTO with Calalent
- **Genetic Testing:** Launched Amplify™ genetic testing program with Invitae
- **Regulatory:** Received Orphan Drug and Rare Pediatric Disease Designations for DB-OTO; Scientific Advice meetings with multiple European regulatory agencies
- **Scientific:**
 - Presented data from DB-OTO, DB-ATO and gene therapy platform at ARO and ASGCT.
 - Foundational study of noise-related inner ear damage published in *Cell Reports*

2022 Milestones

Achieved

- **Otoprotection:**
 - **Clinical:** Reported positive data from interim analysis of ongoing phase 1b clinical trial of DB-020 in patients receiving cisplatin chemotherapy

Anticipated

- **Gene Therapy:**
 - **Clinical:** Submit IND and/or CTA for DB-OTO in 2022
 - **Pipeline:** Select a product candidate for AAV.103 program for patients with GJB2-mediated hearing loss in 2022

Strong Cash Balance

- \$125.6M in cash and investment as of 06.30.22



Hearing & Balance: Significant Unmet Needs, No Approved Therapies

Otic Gene Therapy: Many Opportunities, Deploy GT Field Knowledge

Integrated Platform: Single-Cell Genomics, Precision Gene Therapy

Focused Pipeline: Monogenic Hearing Loss, Hair Cell Regeneration

Experienced Team; Leading Biotech Investors