

***Elmod1* Cas9-CKO Strategy**

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Project Overview

Project Name

Elmod1

Project type

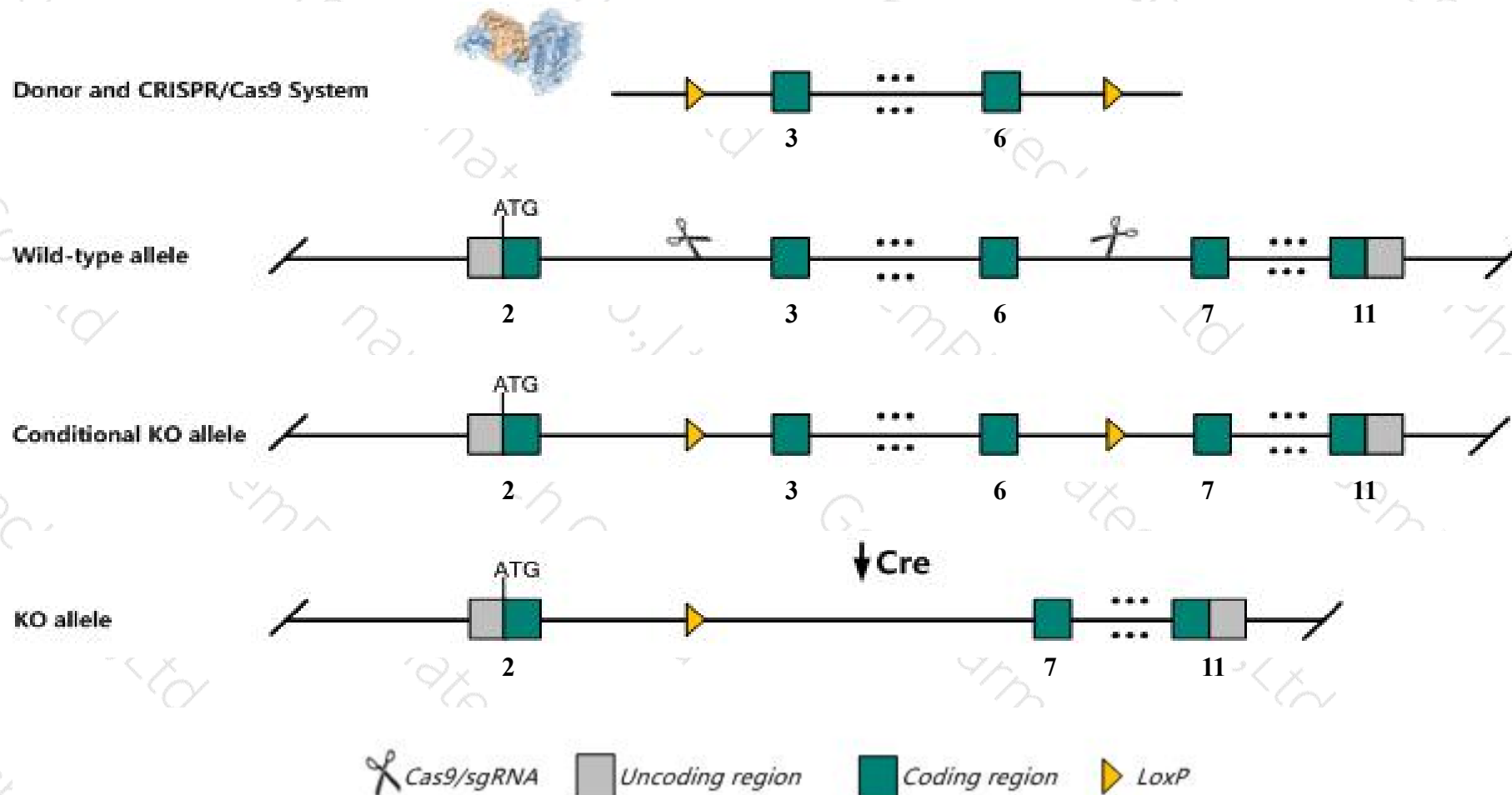
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Elmod1* gene. The schematic diagram is as follows:



Technical routes

- The *Elmod1* gene has 5 transcripts. According to the structure of *Elmod1* gene, exon3-exon6 of *Elmod1-201*(ENSMUST00000048409.13) transcript is recommended as the knockout region. The region contains 403bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Elmod1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice homozygous for a spontaneous allele exhibit circling, absent startle reflex, deafness, organ of Corti degeneration and abnormal cochlear hair stereociliary bundle.
- Transcript *Elmod1*-203 may not be affected.
- The *Elmod1* gene is located on the Chr9. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Elmod1 ELMO/CED-12 domain containing 1 [Mus musculus (house mouse)]

Gene ID: 270162, updated on 20-Mar-2020

Summary



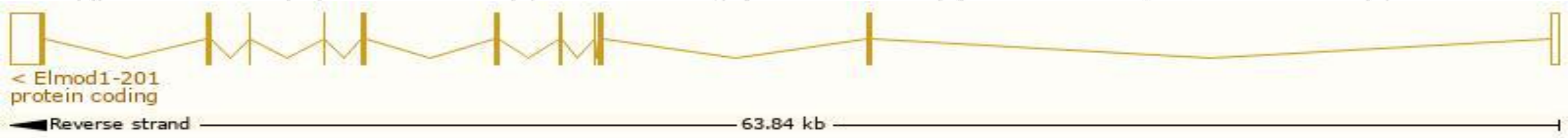
Official Symbol	Elmod1 provided by MGI
Official Full Name	ELMO/CED-12 domain containing 1 provided by MGI
Primary source	MGI:MGI:3583900
See related	Ensembl:ENSMUSG000000041986
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4831417L10, AI428506, AI834991
Expression	Biased expression in cerebellum adult (RPKM 36.5), cortex adult (RPKM 35.3) and 4 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

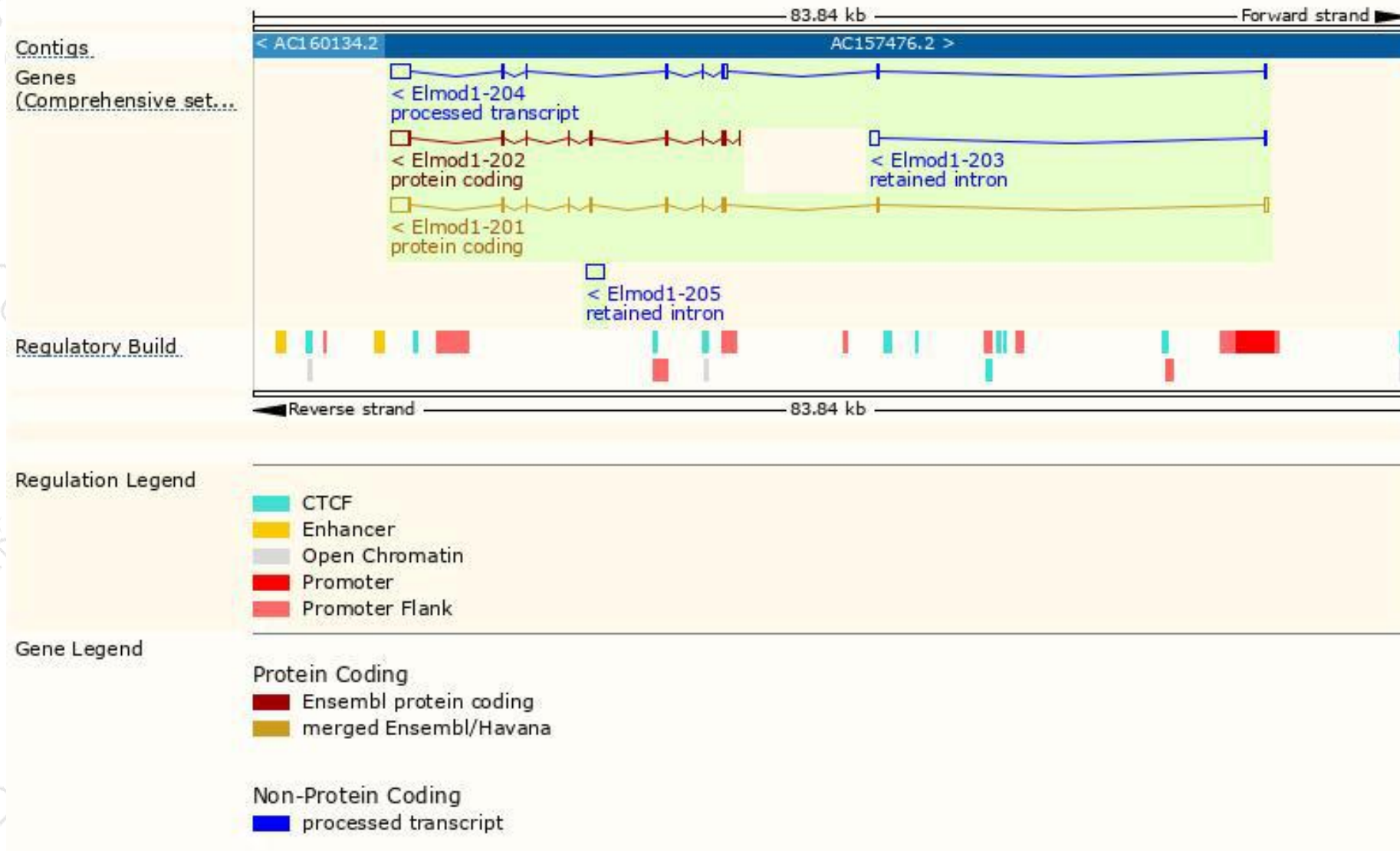
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Elmod1-201	ENSMUST00000048409.13	2605	326aa	Protein coding	CCDS57678	Q3V1U8	TSL:1 GENCODE basic APPRIS P2
Elmod1-202	ENSMUST00000166580.1	2243	326aa	Protein coding	-	E9Q0K9	TSL:5 GENCODE basic APPRIS ALT1
Elmod1-204	ENSMUST00000215313.1	2268	No protein	Processed transcript	-	-	TSL:1
Elmod1-205	ENSMUST00000216880.1	1319	No protein	Retained intron	-	-	TSL:NA
Elmod1-203	ENSMUST00000213111.1	729	No protein	Retained intron	-	-	TSL:2

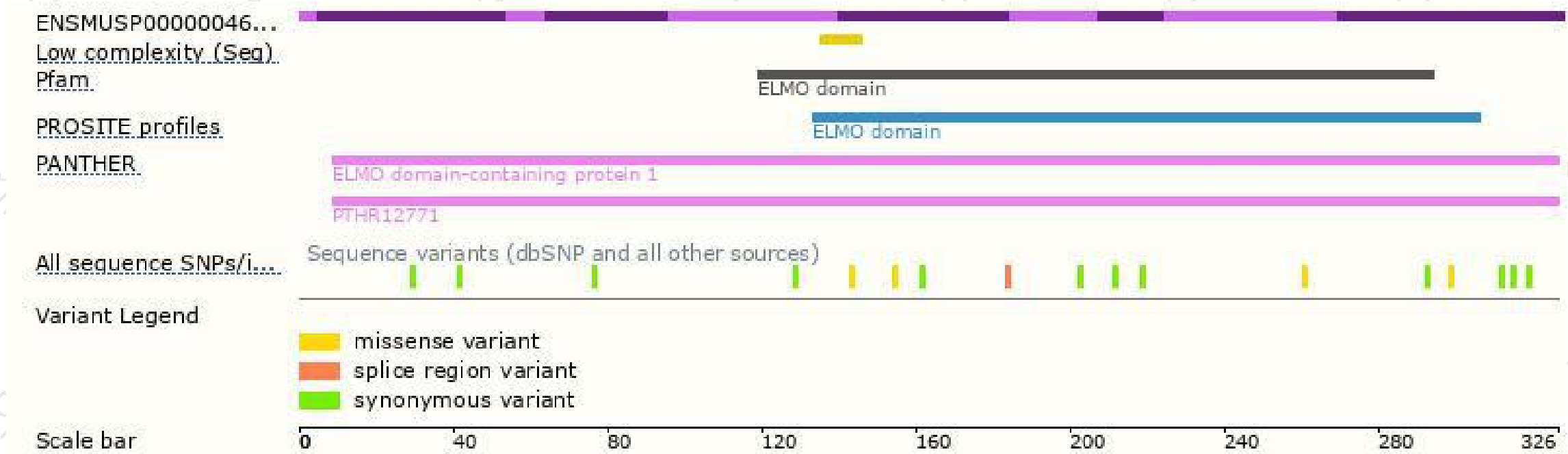
The strategy is based on the design of *Elmod1-201* transcript,the transcription is shown below:



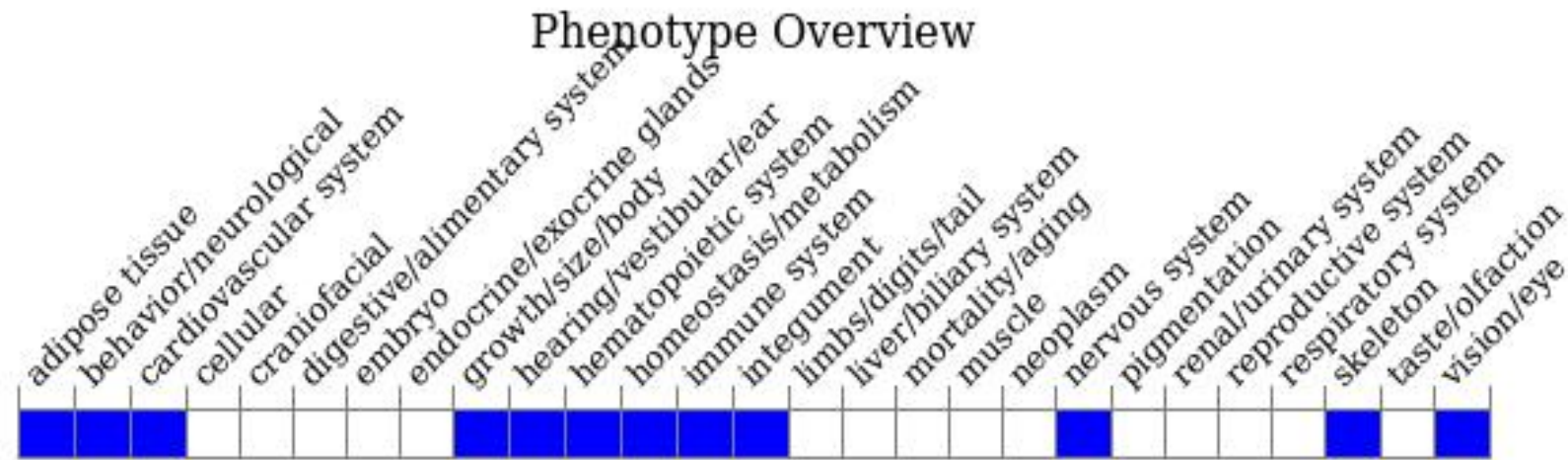
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, mice homozygous for a spontaneous allele exhibit circling, absent startle reflex, deafness, organ of Corti degeneration and abnormal cochlear hair stereociliary bundle.

If you have any questions, you are welcome to inquire.

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