

# *Tmprss3* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

***Tmprss3***

**Project type**

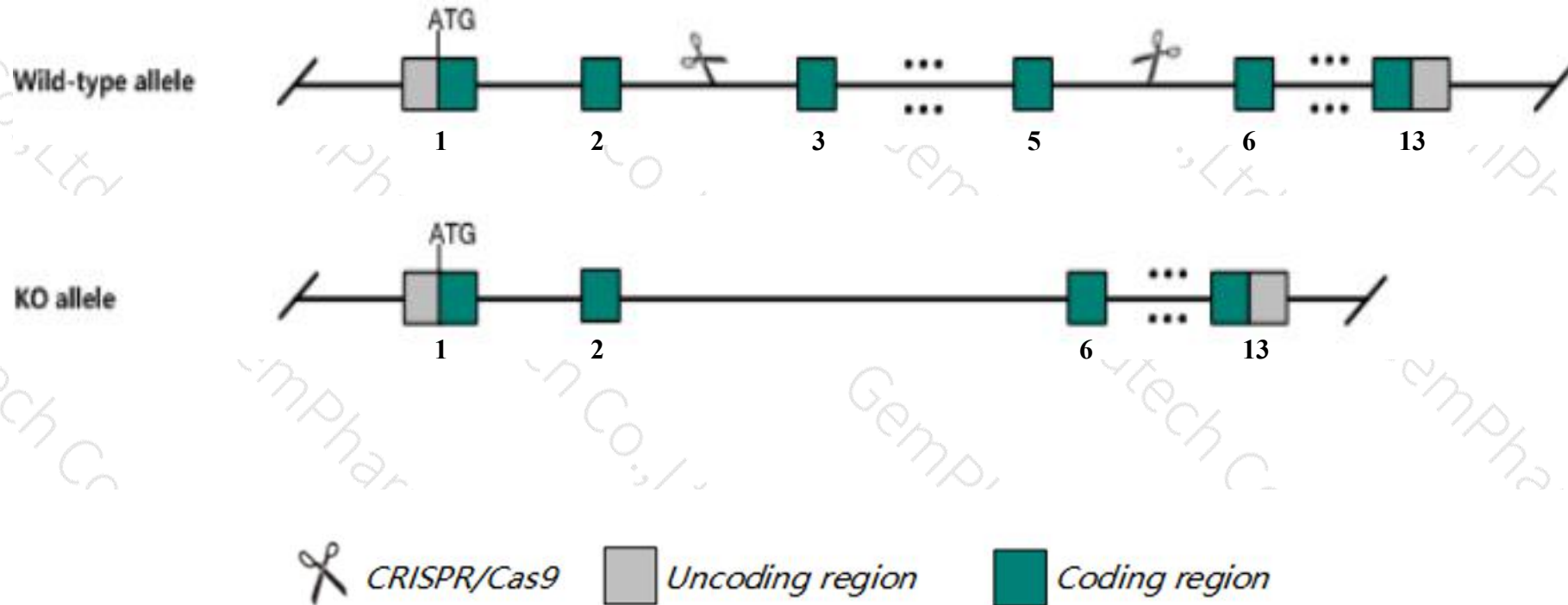
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tmprss3* gene. The schematic diagram is as follows:



- The *Tmprss3* gene has 4 transcripts. According to the structure of *Tmprss3* gene, exon3-exon5 of *Tmprss3-202* (ENSMUST00000114549.3) transcript is recommended as the knockout region. The region contains 352bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tmprss3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for an ENU-induced allele exhibit early onset deafness and disrupted vestibular function associated with hair cell degeneration.
- The *Tmprss3* gene is located on the Chr17. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Tmprss3 transmembrane protease, serine 3 [Mus musculus (house mouse)]

Gene ID: 140765, updated on 31-Jan-2019

### Summary



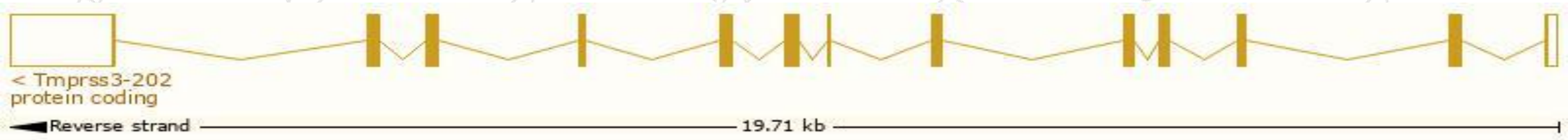
|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Tmprss3 provided by <a href="#">MGI</a>                                                                                                                                   |
| <b>Official Full Name</b> | transmembrane protease, serine 3 provided by <a href="#">MGI</a>                                                                                                          |
| <b>Primary source</b>     | <a href="#">MGI:MGI:2155445</a>                                                                                                                                           |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG000000024034</a>                                                                                                                               |
| <b>Gene type</b>          | protein coding                                                                                                                                                            |
| <b>RefSeq status</b>      | VALIDATED                                                                                                                                                                 |
| <b>Organism</b>           | <a href="#">Mus musculus</a>                                                                                                                                              |
| <b>Lineage</b>            | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| <b>Expression</b>         | Low expression observed in reference dataset <a href="#">See more</a>                                                                                                     |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information (Ensembl)

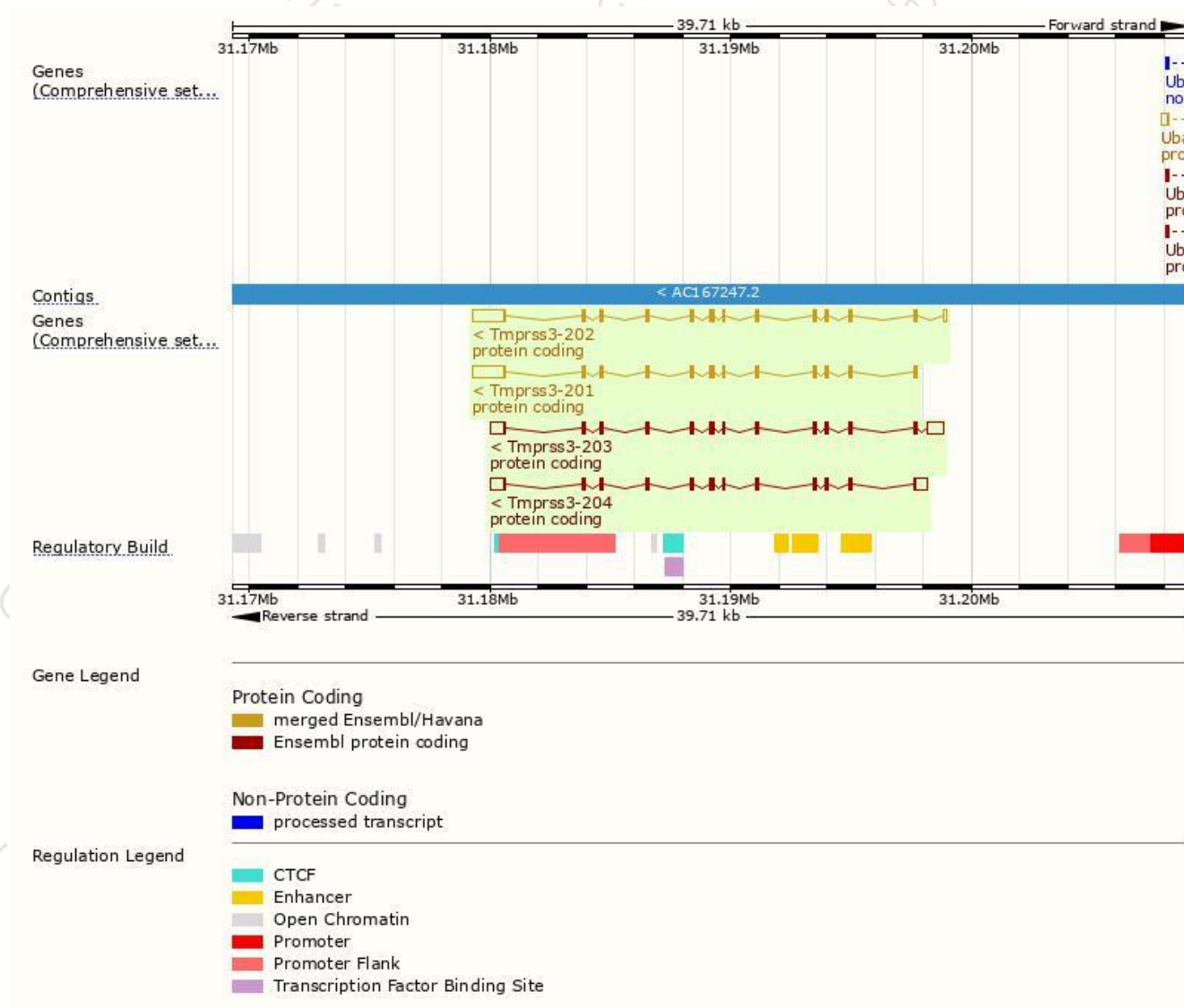
The gene has 4 transcripts,all transcripts are shown below:

| Name        | Transcript ID                         | bp   | Protein               | Biotype        | CCDS                      | UniProt                       | Flags                         |
|-------------|---------------------------------------|------|-----------------------|----------------|---------------------------|-------------------------------|-------------------------------|
| Tmprss3-202 | <a href="#">ENSMUST00000114549.3</a>  | 2881 | <a href="#">475aa</a> | Protein coding | <a href="#">CCDS50053</a> | <a href="#">Q3TZ06 Q8K1T0</a> | TSL:1 GENCODE basic           |
| Tmprss3-201 | <a href="#">ENSMUST00000024833.12</a> | 2738 | <a href="#">453aa</a> | Protein coding | <a href="#">CCDS37547</a> | <a href="#">Q8K1T0</a>        | TSL:1 GENCODE basic APPRIS P2 |
| Tmprss3-203 | <a href="#">ENSMUST00000236793.1</a>  | 2674 | <a href="#">453aa</a> | Protein coding | <a href="#">CCDS37547</a> | -                             | GENCODE basic APPRIS P2       |
| Tmprss3-204 | <a href="#">ENSMUST00000237740.1</a>  | 2403 | <a href="#">451aa</a> | Protein coding | -                         | -                             | GENCODE basic APPRIS ALT1     |

The strategy is based on the design of *Tmprss3-202* transcript,The transcription is shown below



# Genomic location distribution

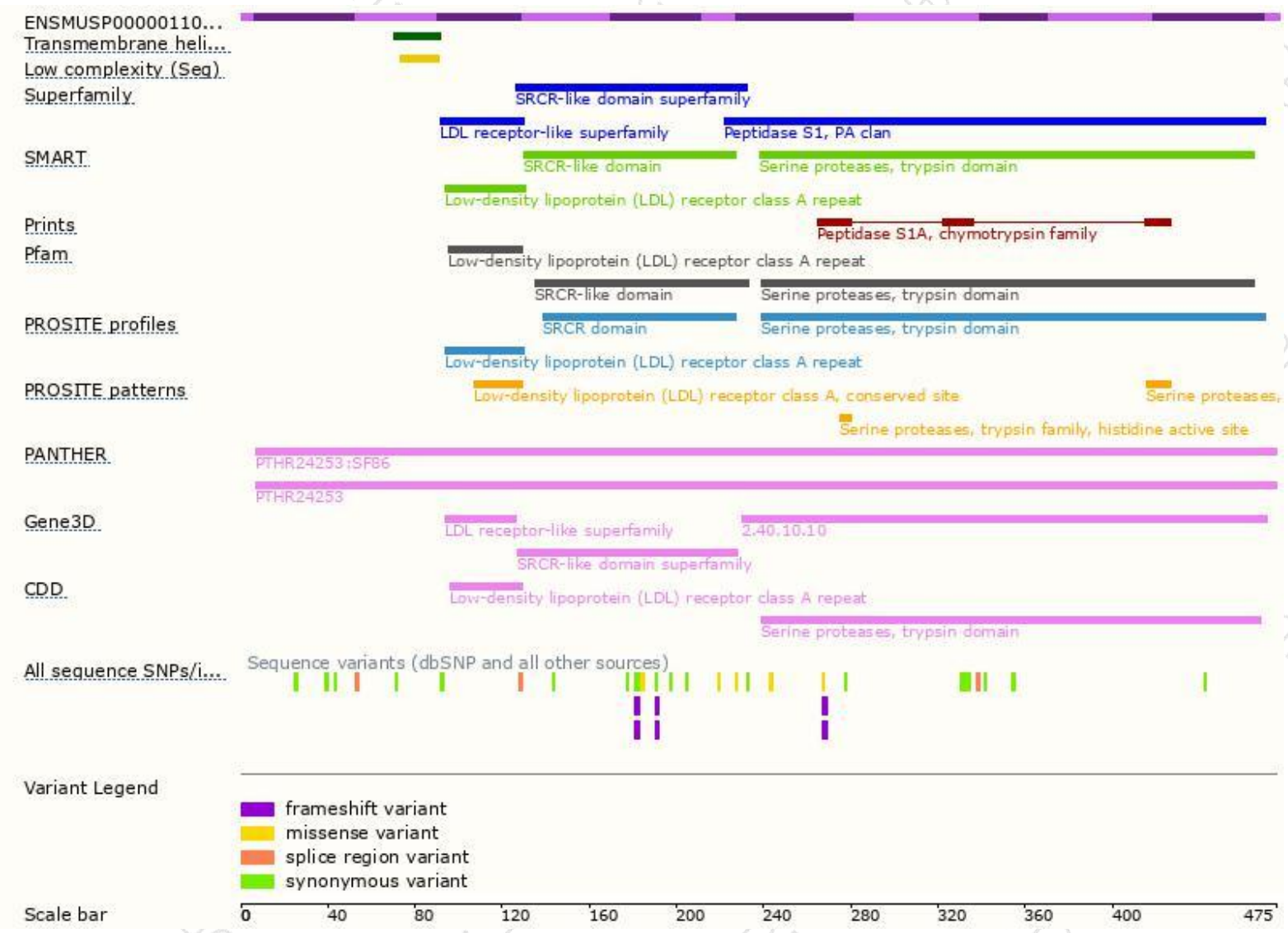




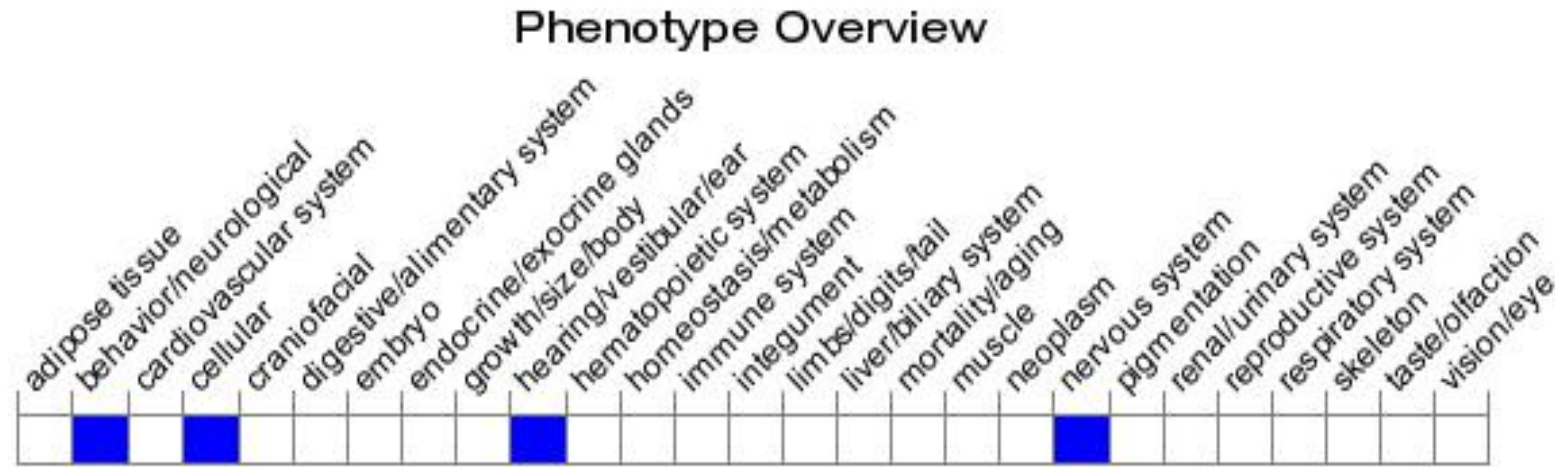
# Protein domain



集萃药康  
GemPharmatech



# 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 an ENU-induced allele exhibit early onset deafness and disrupted vestibular function associated with hair cell degeneration.

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

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