

Otulin Cas9-KO Strategy

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Project Overview

Project Name

Otulin

Project type

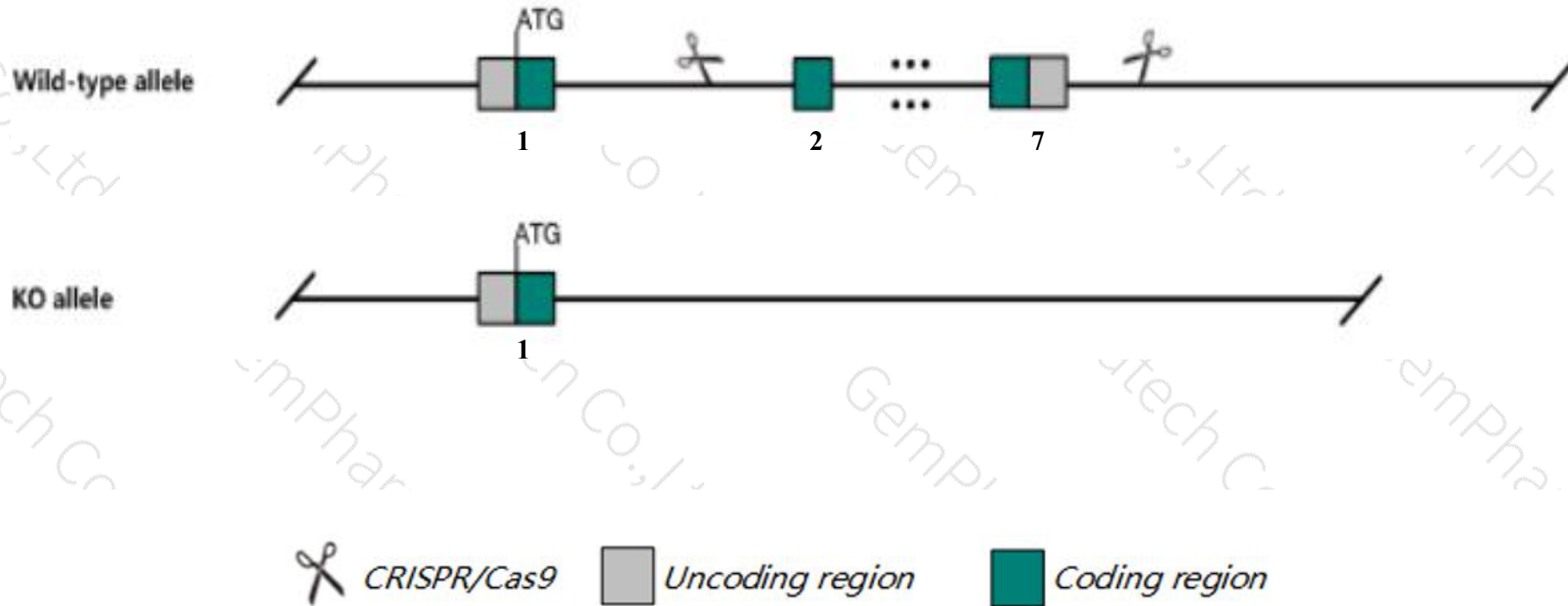
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Otulin* gene has 3 transcripts. According to the structure of *Otulin* gene, exon2-exon7 of *Otulin-201*(ENSMUST00000059662.7) transcript is recommended as the knockout region. The region contains 907bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Otulin* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, embryos homozygous for an ENU-induced mutation exhibit micrognathia, microcephaly, paucity of blood, and abnormal facial and vestibulocochlear nerve morphology.
- The *Otulin* gene is located on the Chr15. 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)

Otulin OTU deubiquitinase with linear linkage specificity [Mus musculus (house mouse)]

Gene ID: 432940, updated on 13-Mar-2020

Summary



Official Symbol	Otulin provided by MGI
Official Full Name	OTU deubiquitinase with linear linkage specificity provided by MGI
Primary source	MGI:MGI:3577015
See related	Ensembl:ENSMUSG00000046034
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C79097, Fam105b, m3Sapc, m7-1Sapc
Expression	Ubiquitous expression in spleen adult (RPKM 20.9), ovary adult (RPKM 16.5) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

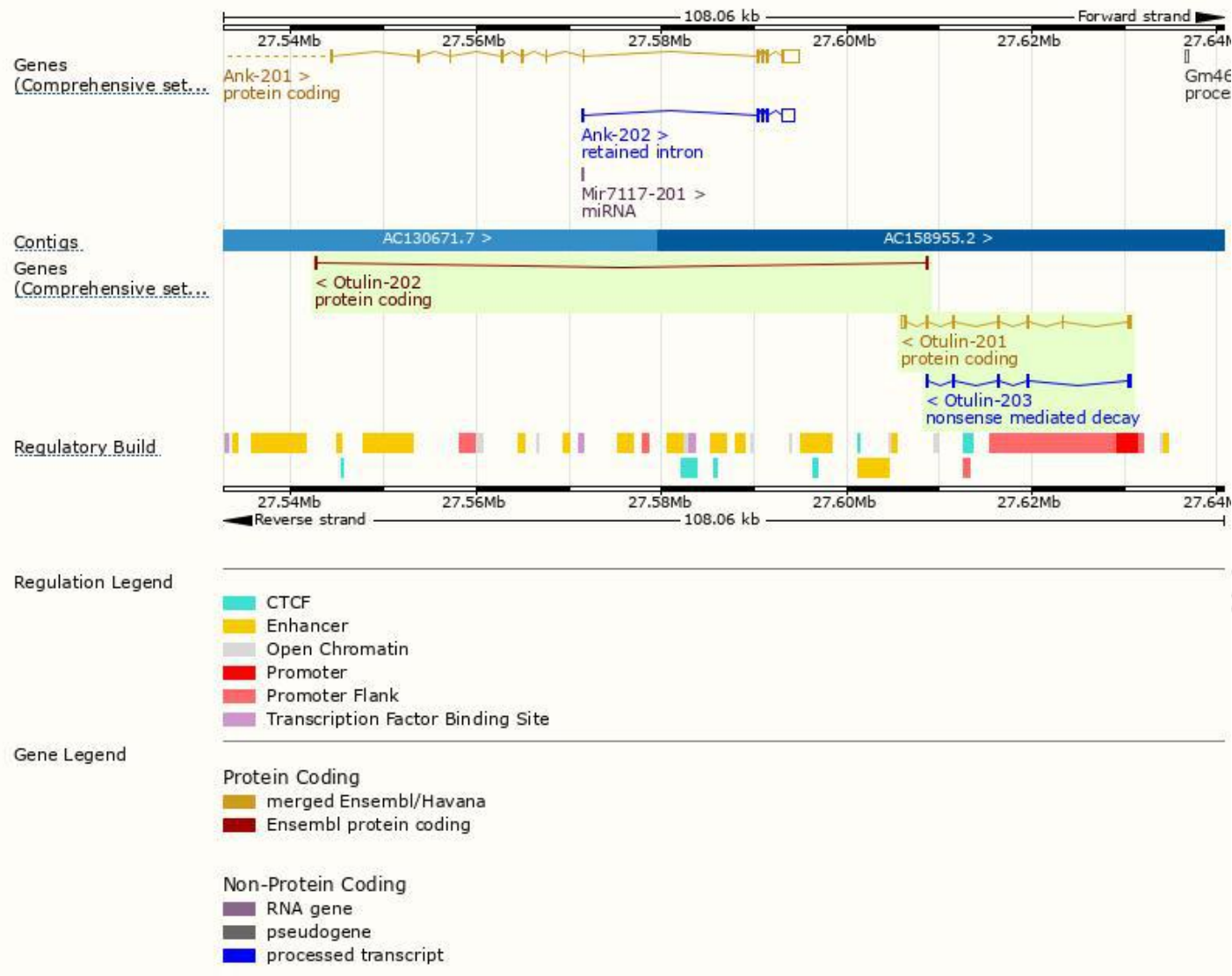
The gene has 3 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Otulin-201	ENSMUST00000059662.7	1491	352aa	Protein coding	CCDS49586	Q3UCV8	TSL:1 GENCODE basic APPRIS P1
Otulin-202	ENSMUST00000228179.1	472	154aa	Protein coding	-	A0A2I3BRS5	CDS 5' incomplete
Otulin-203	ENSMUST00000228439.1	811	58aa	Nonsense mediated decay	-	A0A2I3BQB7	

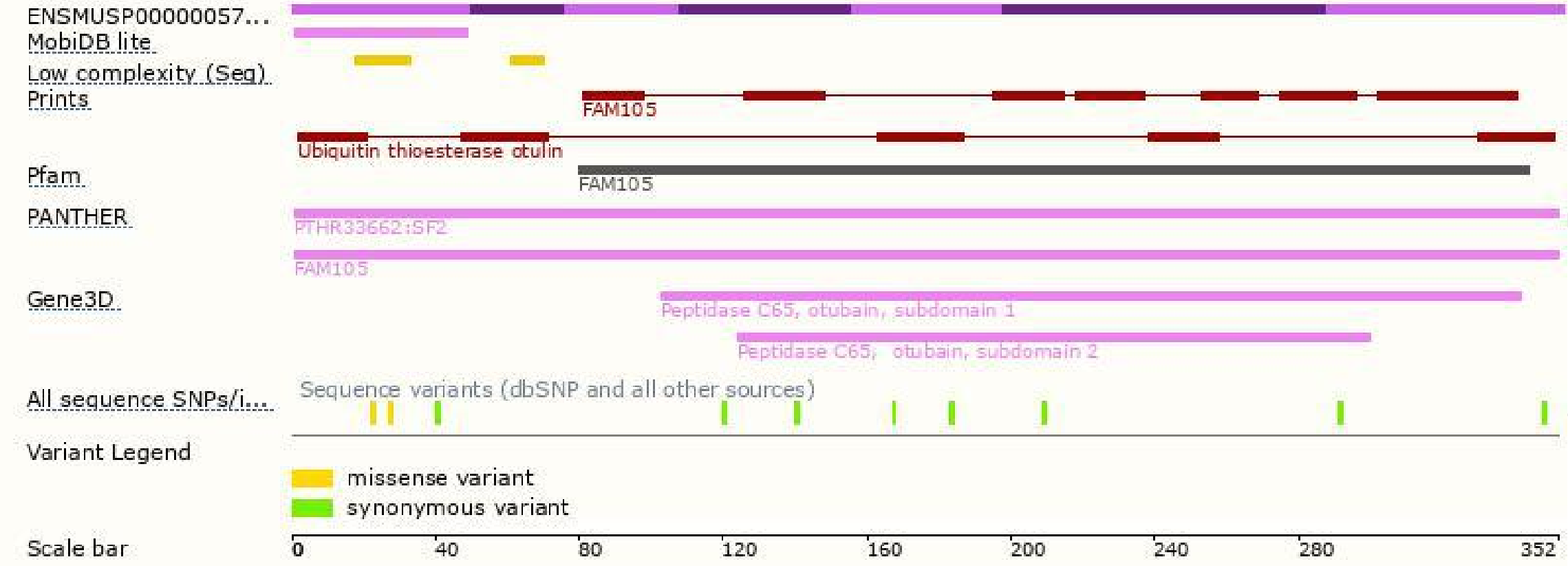
The strategy is based on the design of *Otulin-201* transcript, the transcription is shown below:



Genomic location distribution

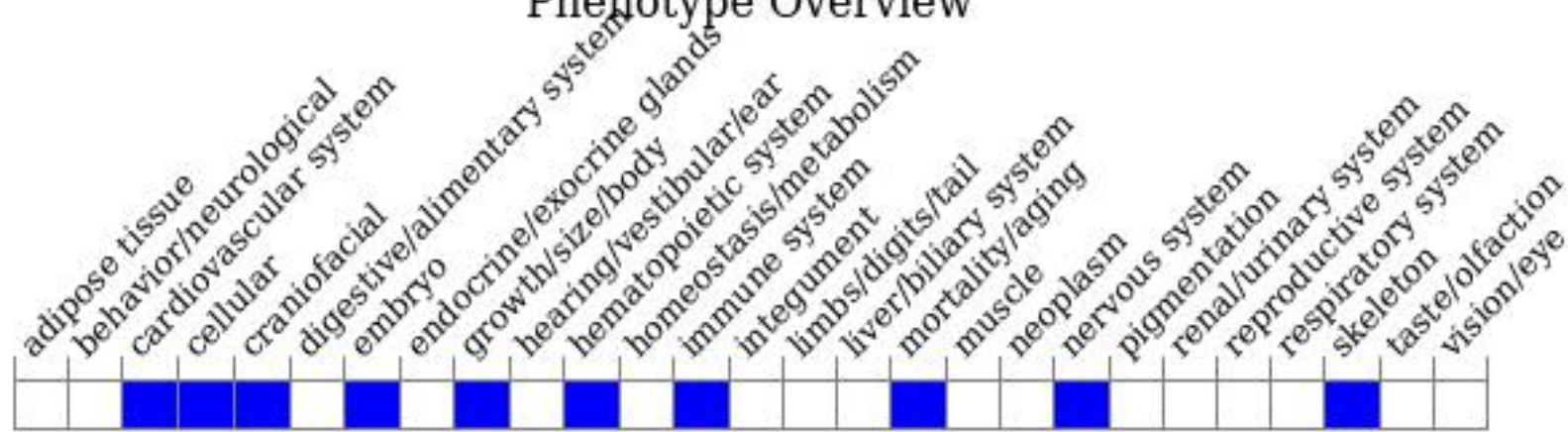


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview



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, embryos homozygous for an ENU-induced mutation exhibit micrognathia, microcephaly, paucity of blood, and abnormal facial and vestibulocochlear nerve morphology.

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

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