

***Chmp5* Cas9-KO Strategy**

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Project Overview

Project Name

Chmp5

Project type

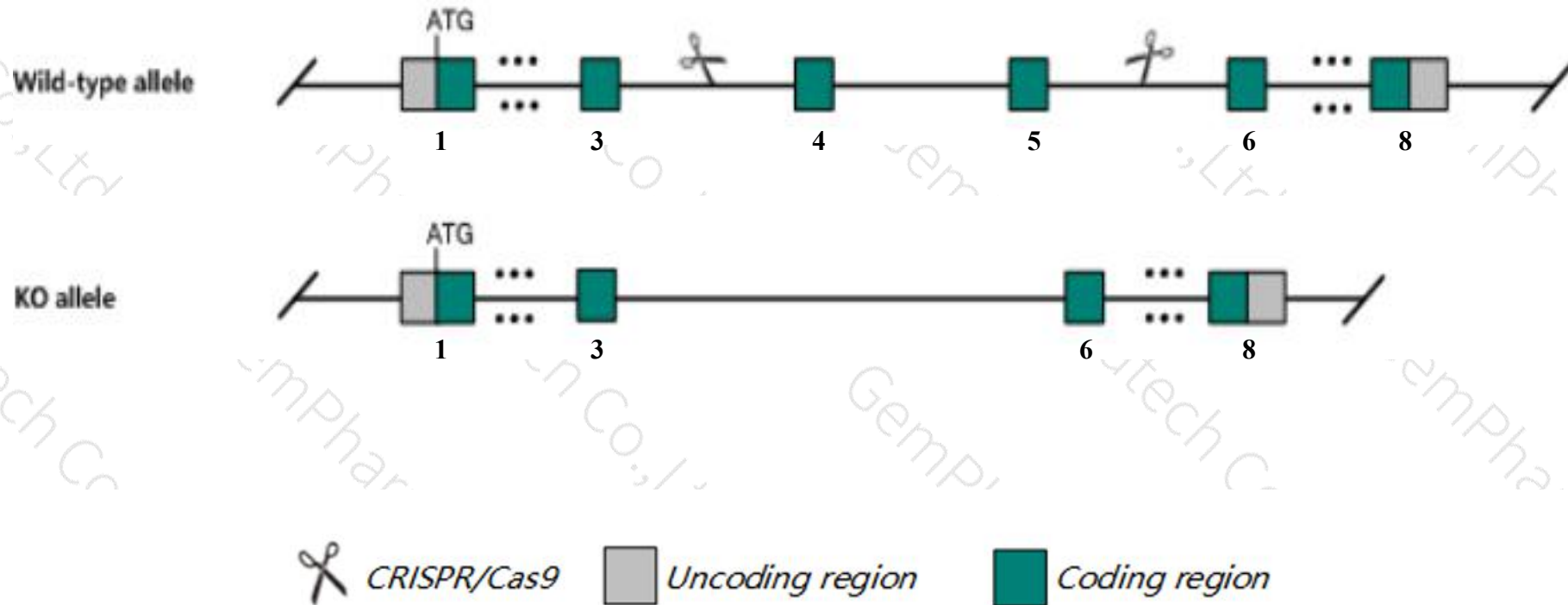
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chmp5* gene. The schematic diagram is as follows:



Technical routes

- The *Chmp5* gene has 1 transcript. According to the structure of *Chmp5* gene, exon4-exon5 of *Chmp5*-201(ENSMUST00000030128.5) transcript is recommended as the knockout region. The region contains 166bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Chmp5* 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, homozygous null mice display embryonic lethality during organogenesis, cardiac bifida, impaired chorioallantoic fusion, abnormal somite and neural plate development, accumulation of multivesicular bodies, and impaired endocytosis.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The flox region is about 3 kb away from the 5' end of the *Bag1* gene, which may affect the regulation of this gene.
- The *Chmp5* gene is located on the Chr4. 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)

Chmp5 charged multivesicular body protein 5 [Mus musculus (house mouse)]

Gene ID: 76959, updated on 13-Mar-2020

Summary



Official Symbol	Chmp5 provided by MGI
Official Full Name	charged multivesicular body protein 5 provided by MGI
Primary source	MGI:MGI:1924209
See related	Ensembl:ENSMUSG00000028419
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	2210412K09Rik, AW545668
Expression	Broad expression in CNS E11.5 (RPKM 44.1), bladder adult (RPKM 43.3) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

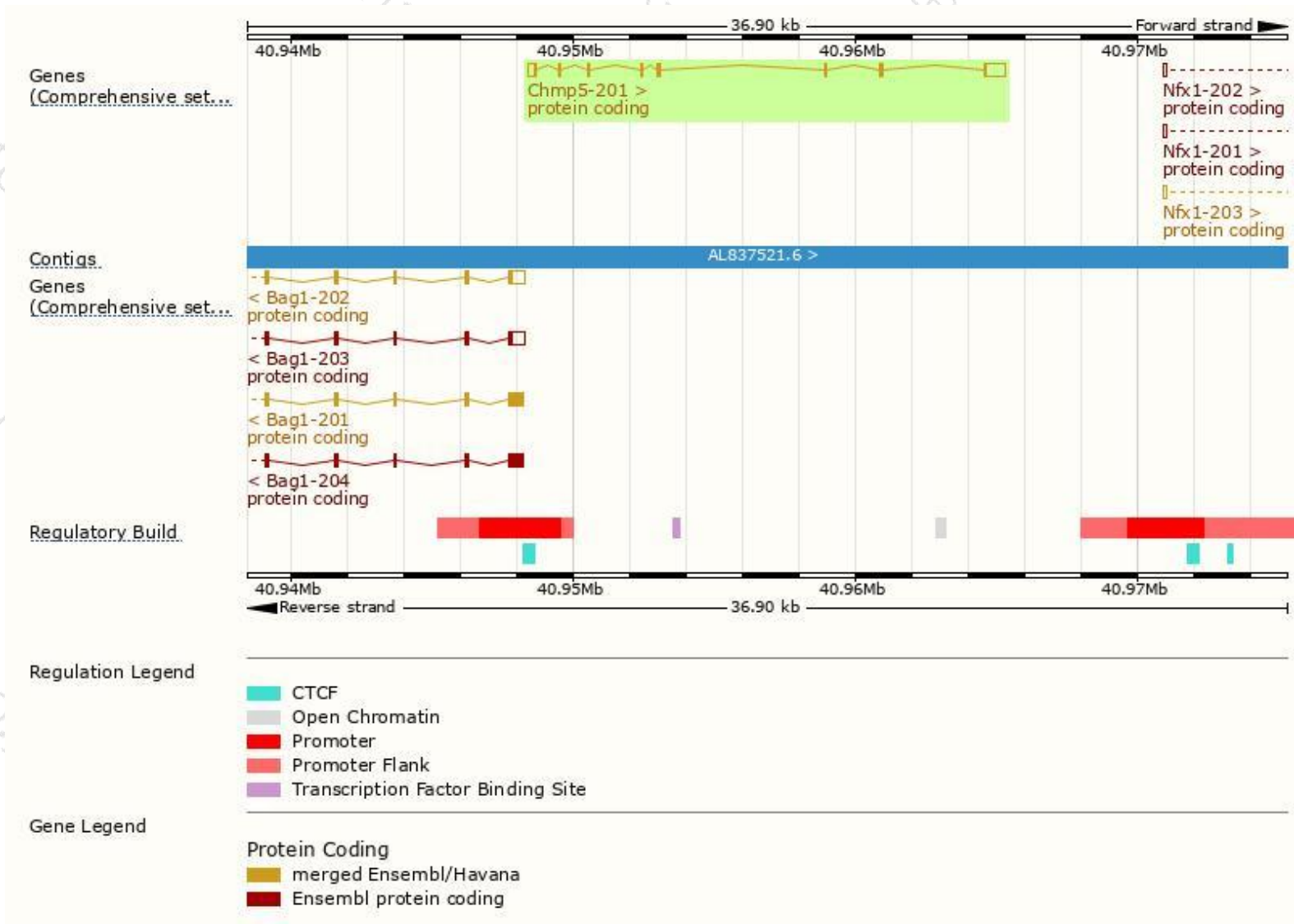
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chmp5-201	ENSMUST00000030128.5	1519	219aa	Protein coding	CCDS18053	Q9D759	TSL:1 GENCODE basic APPRIS P1

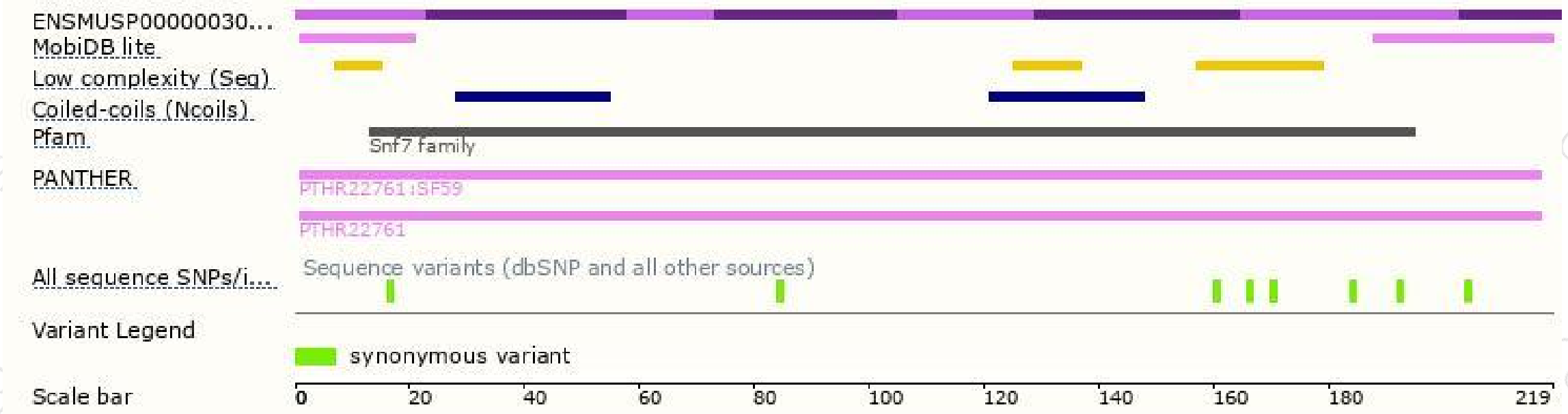
The strategy is based on the design of *Chmp5-201* transcript, the transcription is shown below:



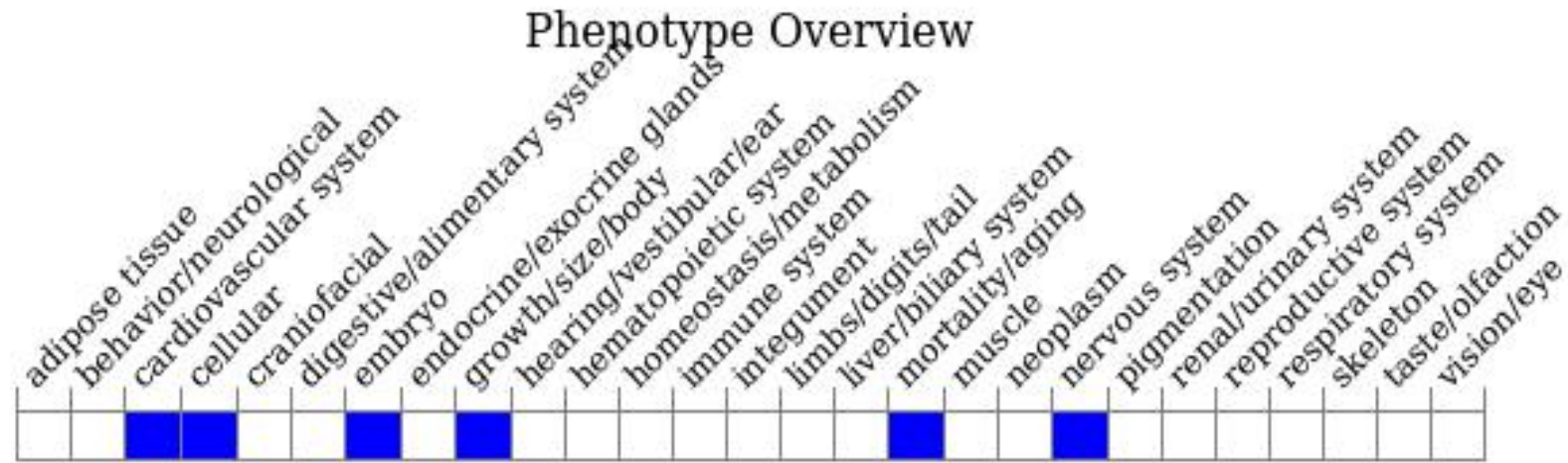
Genomic location distribution



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, homozygous null mice display embryonic lethality during organogenesis, cardiac bifida, impaired chorioallantoic fusion, abnormal somite and neural plate development, accumulation of multivesicular bodies, and impaired endocytosis.

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

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