

Muc5b Cas9-KO Strategy

Designer: Qiong Zhou

Project Overview

Project Name

Muc5b

Project type

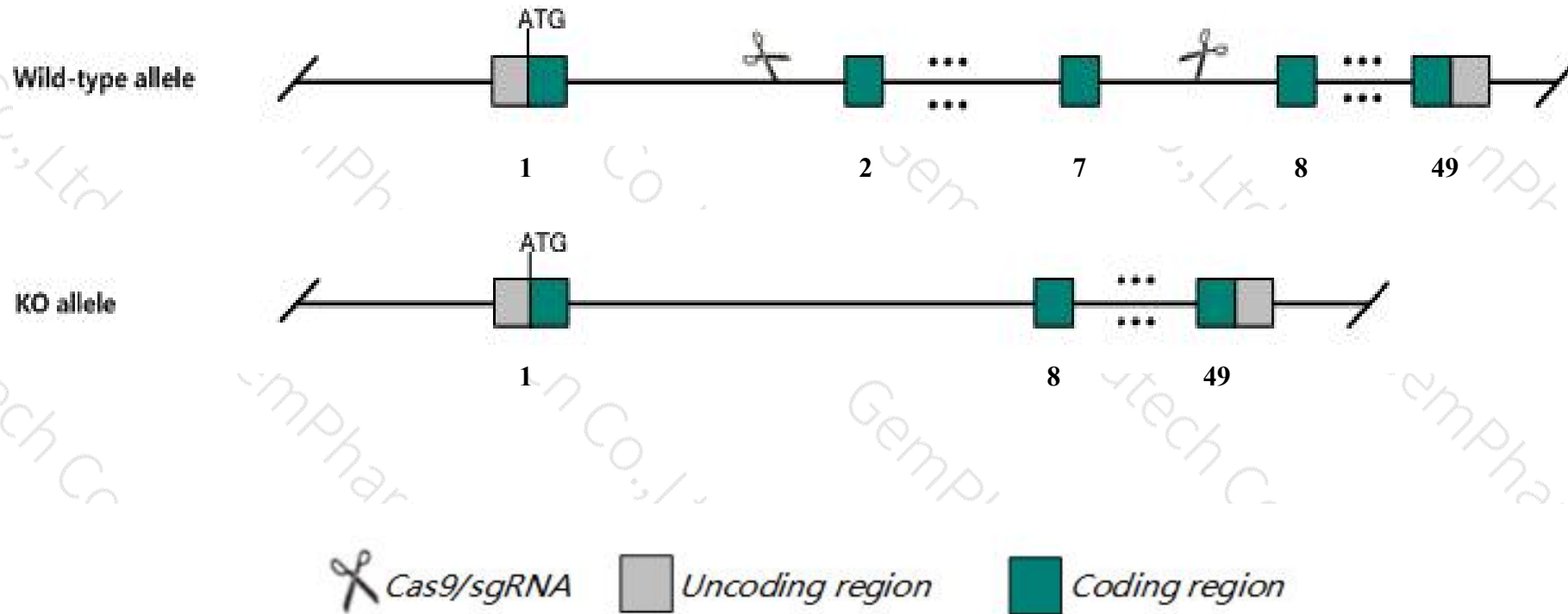
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Muc5b* gene. The schematic diagram is as follows:



- The *Muc5b* gene has 1 transcript. According to the structure of *Muc5b* gene, exon2-exon7 of *Muc5b-201* (ENSMUST00000165147.2) transcript is recommended as the knockout region. The region contains 716bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Muc5b* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Mice homozygous for a knock-out allele accumulate materials in the upper and lower airways leading to chronic infection and inflammation that does not resolve and results in premature death. Macrophage function is impaired.
- The *Muc5b* gene is located on the Chr7. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Muc5b mucin 5, subtype B, tracheobronchial [Mus musculus (house mouse)]

Gene ID: 74180, updated on 31-Jan-2019

Summary



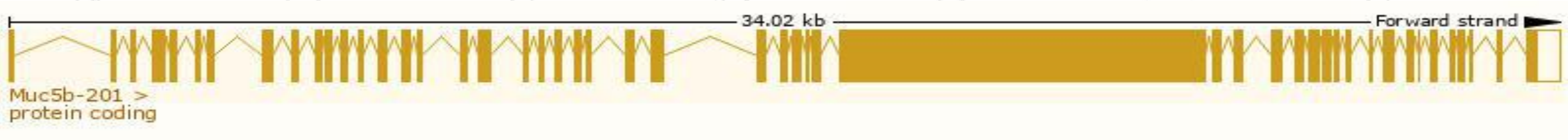
Official Symbol	Muc5b provided by MGI
Official Full Name	mucin 5, subtype B, tracheobronchial provided by MGI
Primary source	MGI:MGI:1921430
See related	Ensembl:ENSMUSG00000066108
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2300002I04Rik, A130042M24, AV085033, MUC5, MUC9, mucin 5b
Expression	Biased expression in genital fat pad adult (RPKM 37.9) and lung adult (RPKM 11.8) See more
Orthologs	human all

Transcript information (Ensembl)

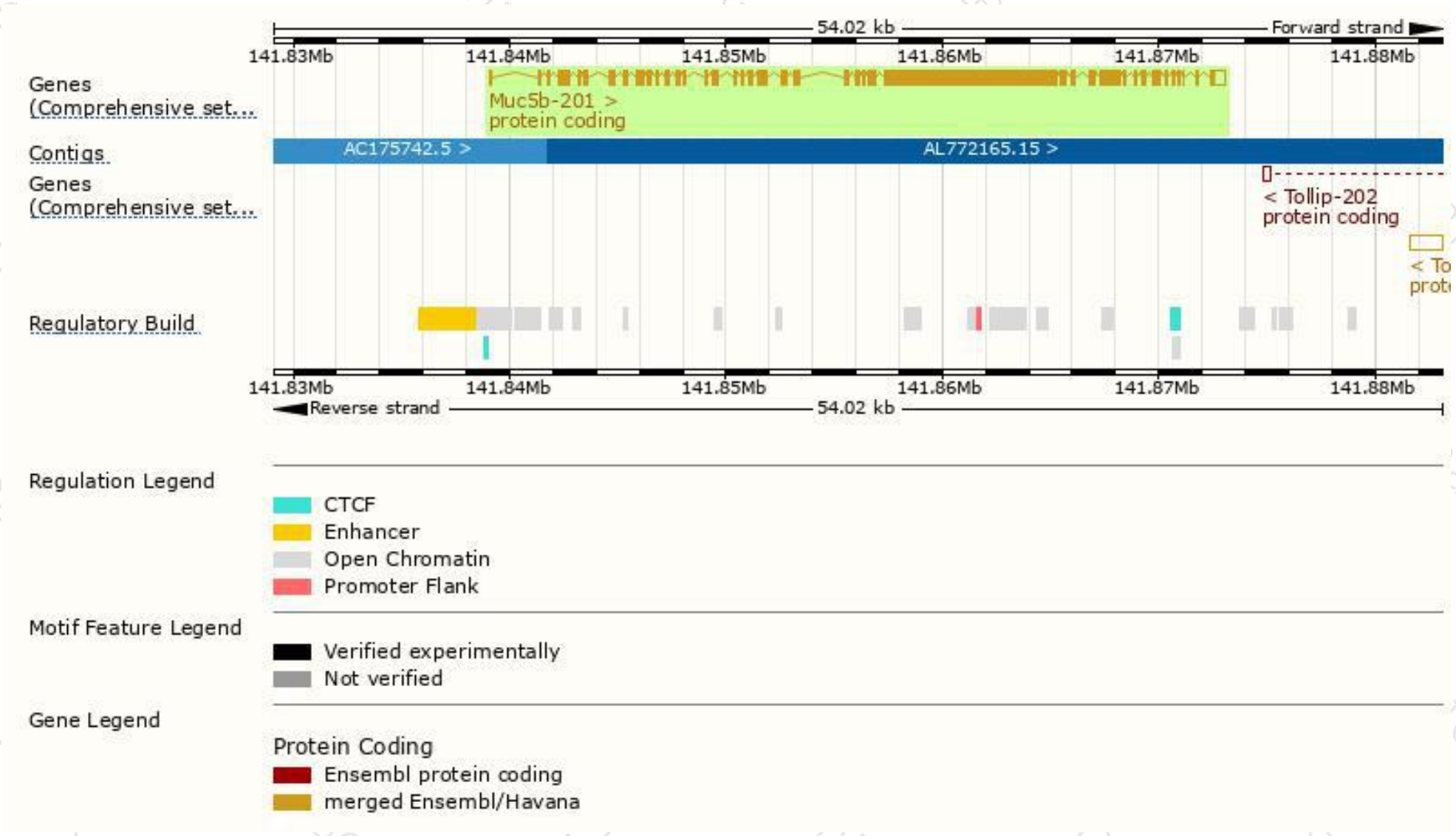
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Muc5b-201	ENSMUST00000165147.2	14964	4800aa	Protein coding	CCDS52448	E9Q5I3	TSL:5 GENCODE basic APPRIS P1

The strategy is based on the design of *Muc5b-201* transcript, The transcription is shown below



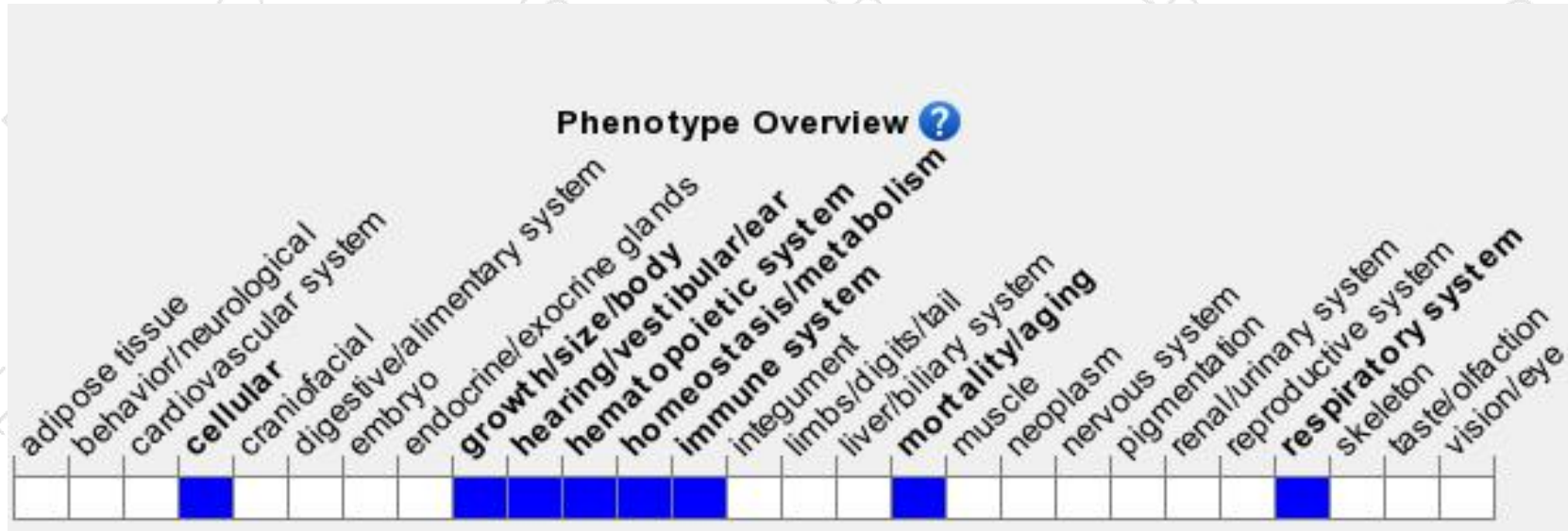
Genomic location distribution



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 knock-out allele accumulate materials in the upper and lower airways leading to chronic infection and inflammation that does not resolve and results in premature death. Macrophage function is impaired.

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

Tel: 025-5864 1534

