

Chaf1a Cas9-KO Strategy

Designer: Qiong Zhou

Project Overview

Project Name

Chaf1a

Project type

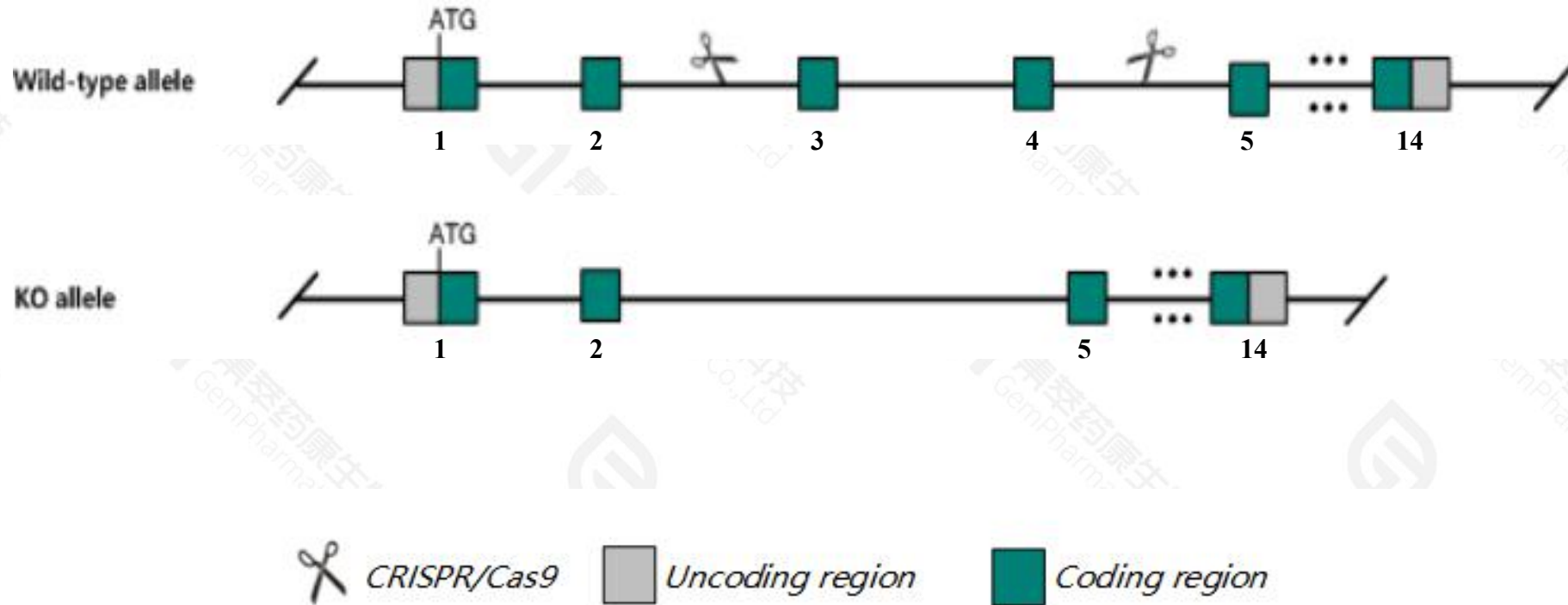
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chaf1a* gene. The schematic diagram is as follows:



- The *Chaf1a* gene has 3 transcripts. According to the structure of *Chaf1a* gene, exon3-exon4 of *Chaf1a-201*(ENSMUST00000002914.10) transcript is recommended as the knockout region. The region contains 869bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Chaf1a* 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, mice homozygous for a null mutation in this gene display lethality before implantation, embryonic growth arrest, and abnormal heterochromatin morphology.
- The impact on Transcript *Chaf1a-202* is unknown.
- The *Chaf1a* 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.

Chaf1a chromatin assembly factor 1, subunit A (p150) [Mus musculus (house mouse)]

Gene ID: 27221, updated on 22-Nov-2020

Summary



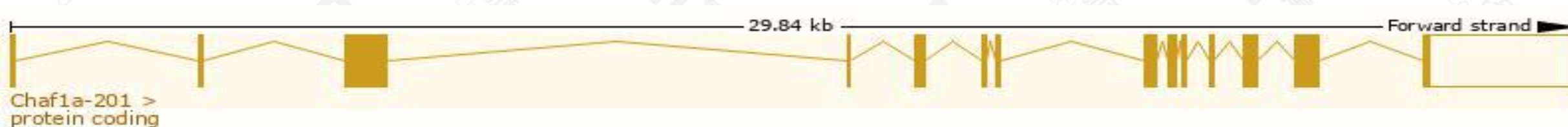
Official Symbol	Chaf1a provided by MGI
Official Full Name	chromatin assembly factor 1, subunit A (p150) provided by MGI
Primary source	MGI:MGI:1351331
See related	Ensembl:ENSMUSG00000002835
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AL023013, AL024058, CAF-, CAF-1, Cac1p
Expression	Biased expression in testis adult (RPKM 51.8), CNS E11.5 (RPKM 23.9) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

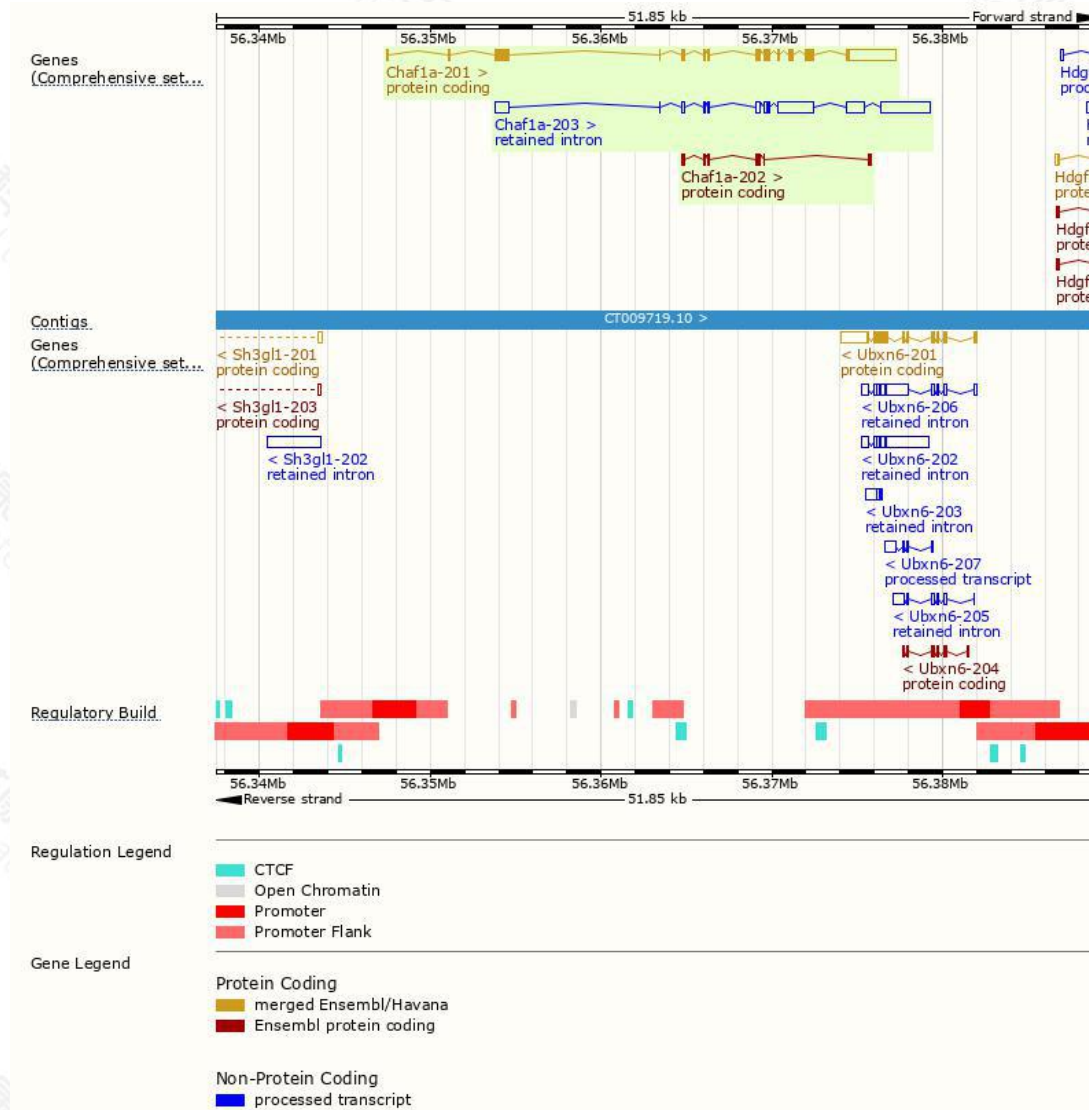
The gene has 3 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chaf1a-201	ENSMUST0000002914.10	5535	911aa	Protein coding	CCDS28892		TSL:1 , GENCODE basic , APPRIS P1 ,
Chaf1a-202	ENSMUST00000232828.2	726	226aa	Protein coding	-		CDS 5' incomplete ,
Chaf1a-203	ENSMUST00000233325.2	7698	No protein	Retained intron	-		

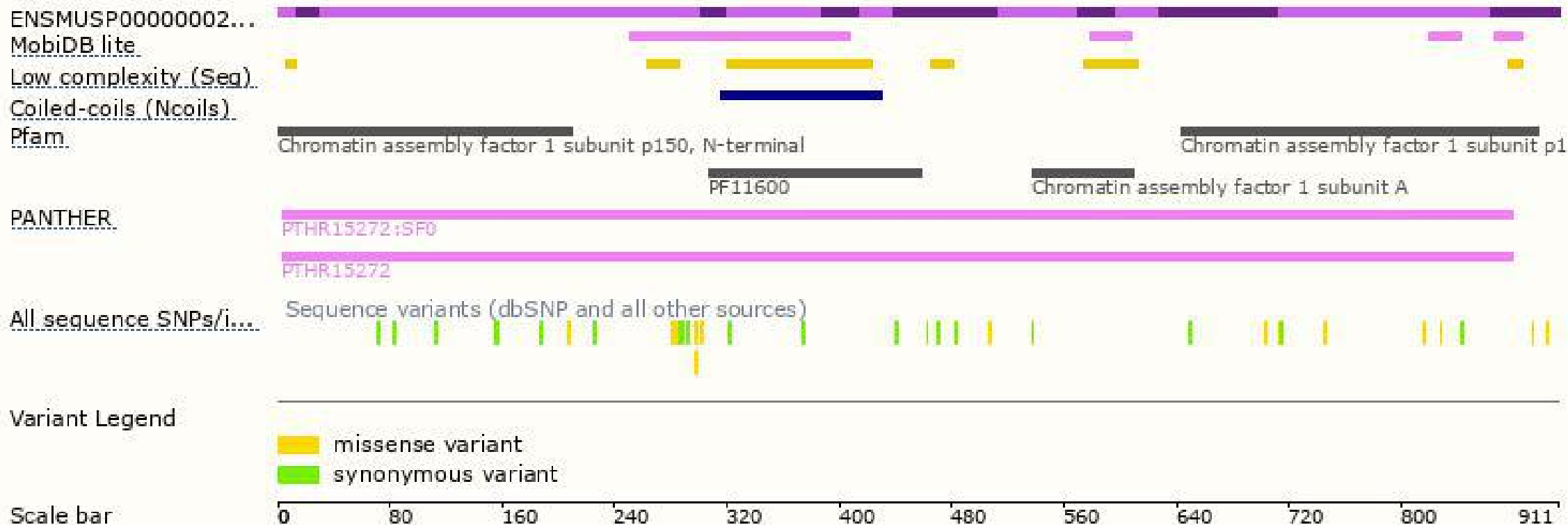
The strategy is based on the design of *Chaf1a-201* transcript, the transcription is shown below:



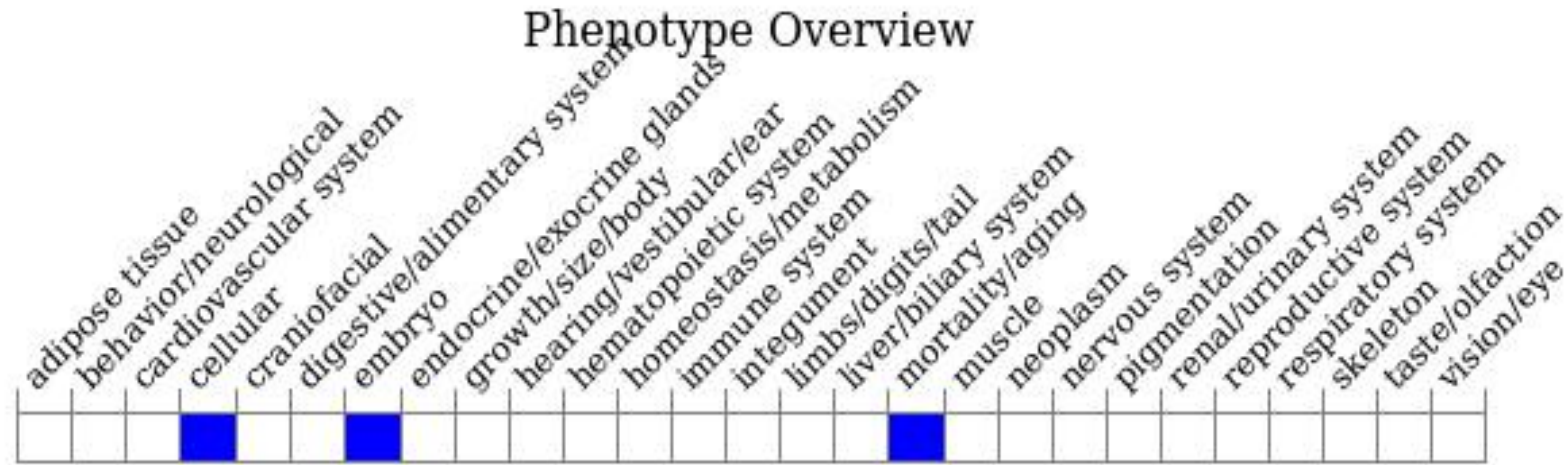
Genomic location distribution



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 null mutation in this gene display lethality before implantation, embryonic growth arrest, and abnormal heterochromatin morphology.

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

Tel: 400-9660890

