

***Krt18* Cas9-KO Strategy**

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2019-11-11

Project Overview

Project Name

Krt18

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Krt18* gene. The schematic diagram is as follows:



- The *Krt18* gene has transcript. According to the structure of *Krt18* gene, exon1-exon7 of *Krt18-201* (ENSMUST00000023803.7) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Krt18* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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 disruptions in this gene are viable, fertile, and live normal life spans. They do, however, develop hepatomegaly by 18 months of age.
- The *Krt18* 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)

Krt18 keratin 18 [*Mus musculus* (house mouse)]

Gene ID: 16668, updated on 12-Aug-2019

Summary

Official Symbol	Krt18 provided by MGI
Official Full Name	keratin 18 provided by MGI
Primary source	MGI:MGI:96692
See related	Ensembl:ENSMUSG00000023043
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	K18; CK18; Krt1-18
Expression	Biased expression in placenta adult (RPKM 472.2), bladder adult (RPKM 233.5) and 12 other tissues See more
Orthologs	human all

Genomic context

Location: 15 F2; 15 57.22 cM

See Krt18 in [Genome Data Viewer](#)

Exon count: 7

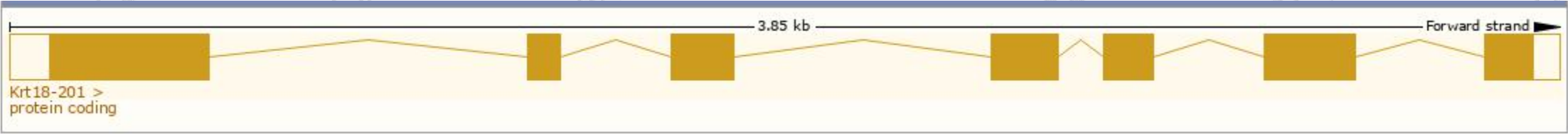
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (102028216..102032026)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (101858647..101862457)

Transcript information (Ensembl)

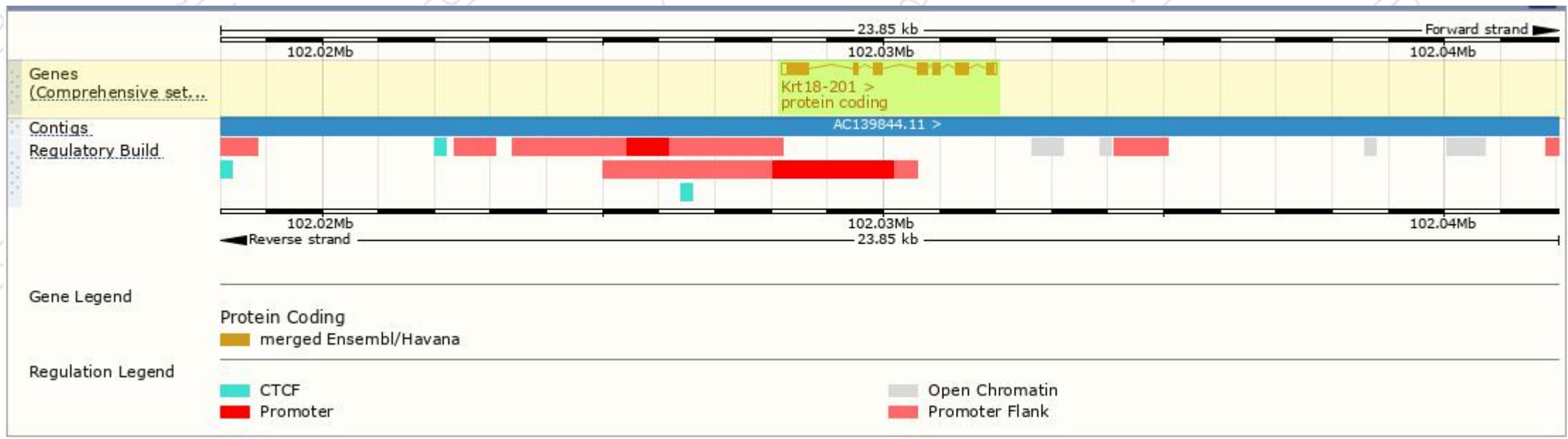
The gene has 1 transcript,the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Krt18-201	ENSMUST00000023803.7	1437	423aa	Protein coding	CCDS27869	P05784	TSL:1 Gencode basic APPRIS P1

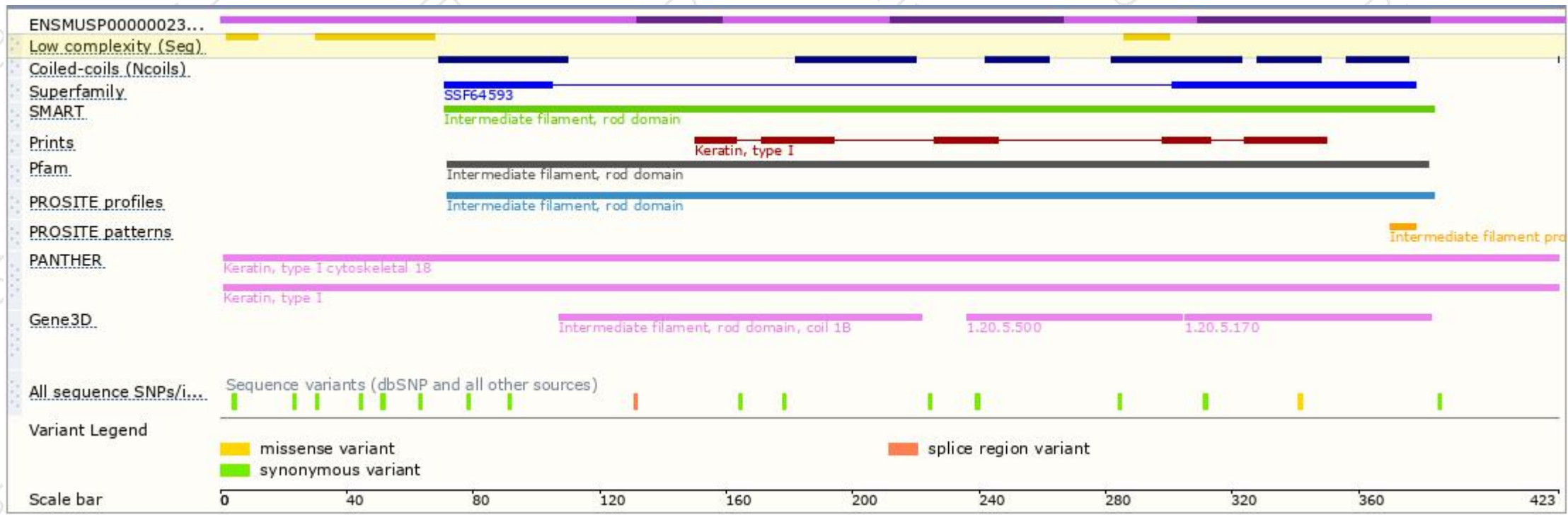
The strategy is based on the design of *Krt18-201* transcript,The transcription is shown below



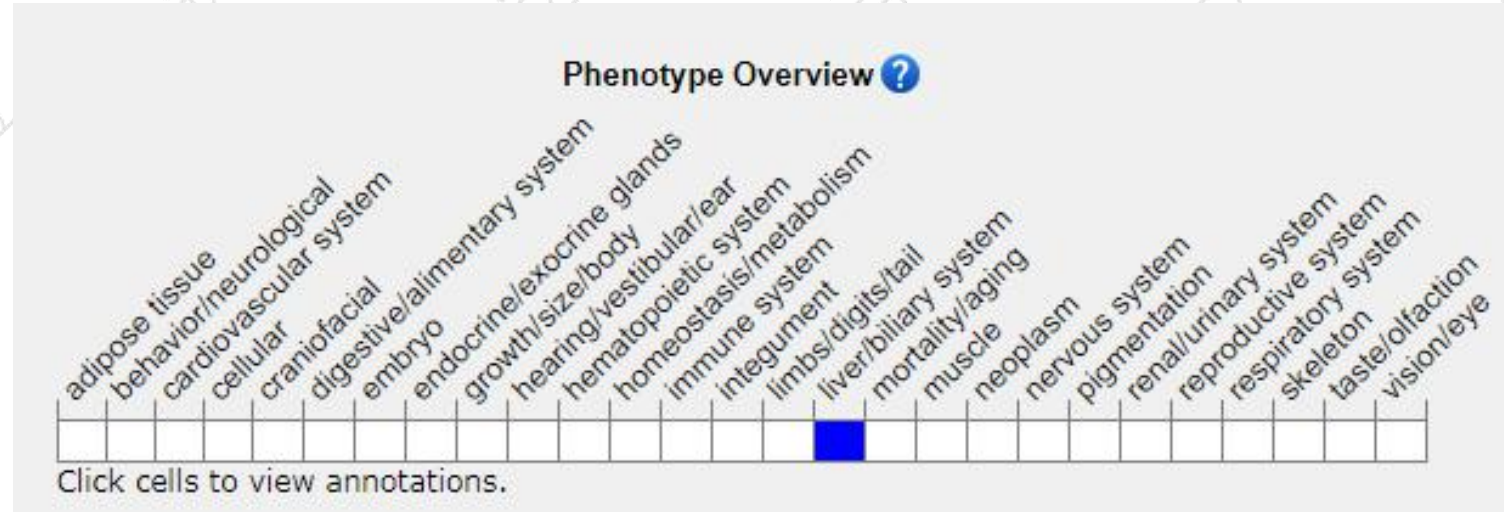
Genomic location distribution



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 disruptions in this gene are viable, fertile, and live normal life spans. They do, however, develop hepatomegaly by 18 months of age.

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

Tel: 400-9660890

