Cav3 Cas9-KO Strategy

Designer: Daohua Xu
Reviewer: Huimin Su

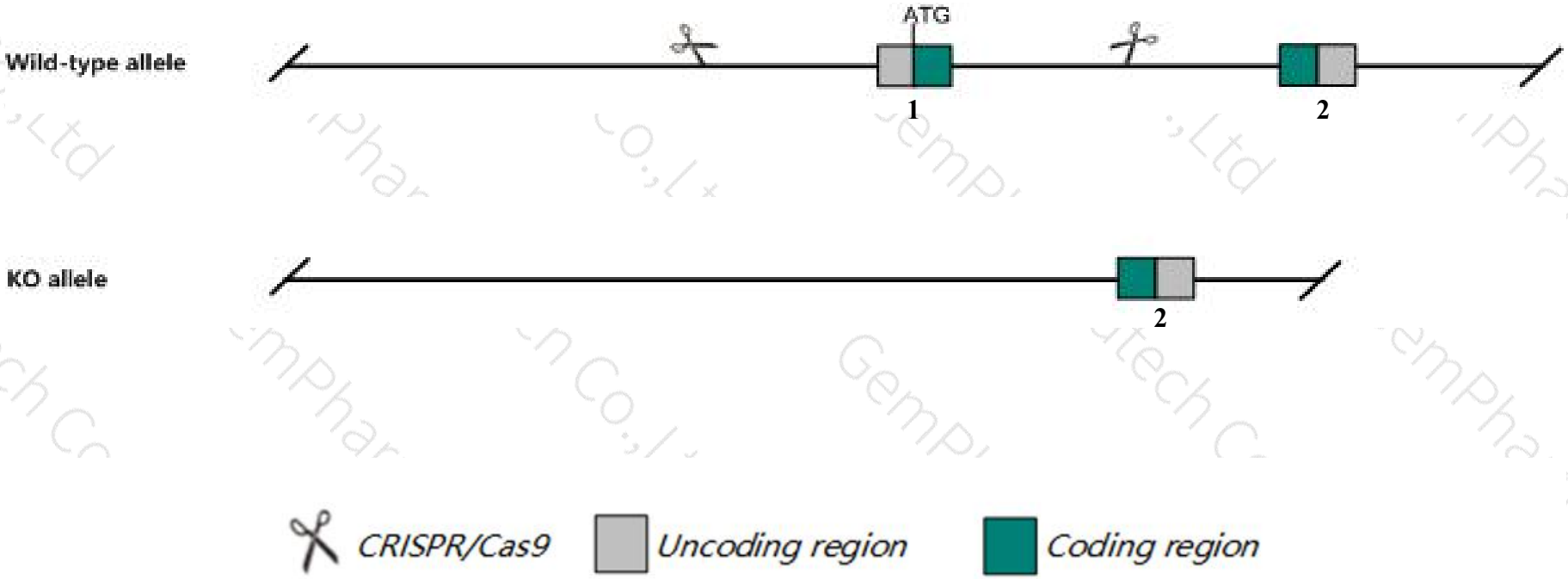
Design Date: 2019-10-12

Project Overview

Project Name	***Cav3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cav3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cav3* gene has 1 transcript. According to the structure of *Cav3* gene, exon1 of *Cav3-201* (ENSMUST00000075477.7) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cav3* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous targeted mutant animals display mild myopathic changes in muscle.

- The *Cav3* gene is located on the Chr6. 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）

集萃药康 GemPharmatech

Cav3 caveolin 3 [Mus musculus (house mouse)]

Gene ID: 12391, updated on 9-Apr-2019

Summary

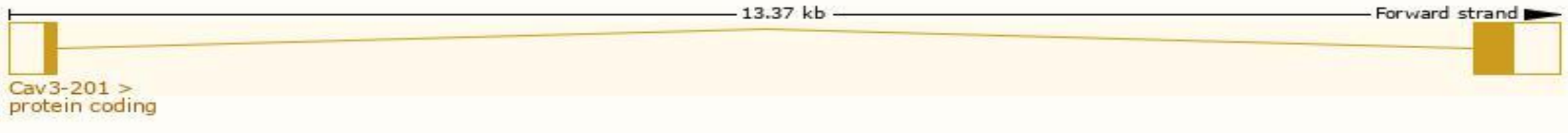
Official Symbol	Cav3 provided by MGI
Official Full Name	caveolin 3 provided by MGI
Primary source	MGI:MGI:107570
See related	Ensembl:ENSMUSG00000062694
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI385751, Cav-3, M-cav
Summary	This gene belongs to the caveolin family whose members encode the major protein components of caveolae, which are invaginations of plasma membrane. The encoded protein is muscle-specific and forms homooligomers in muscle cells. The protein binds and regulates phosphofructokinase M and neuronal nitric oxide synthase. It also associates with dystrophin in muscle cells. Mutations in this gene are associated with muscular dystrophy. [provided by RefSeq, Apr 2013]
Expression	Biased expression in heart adult (RPKM 48.7), limb E14.5 (RPKM 10.8) and 6 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

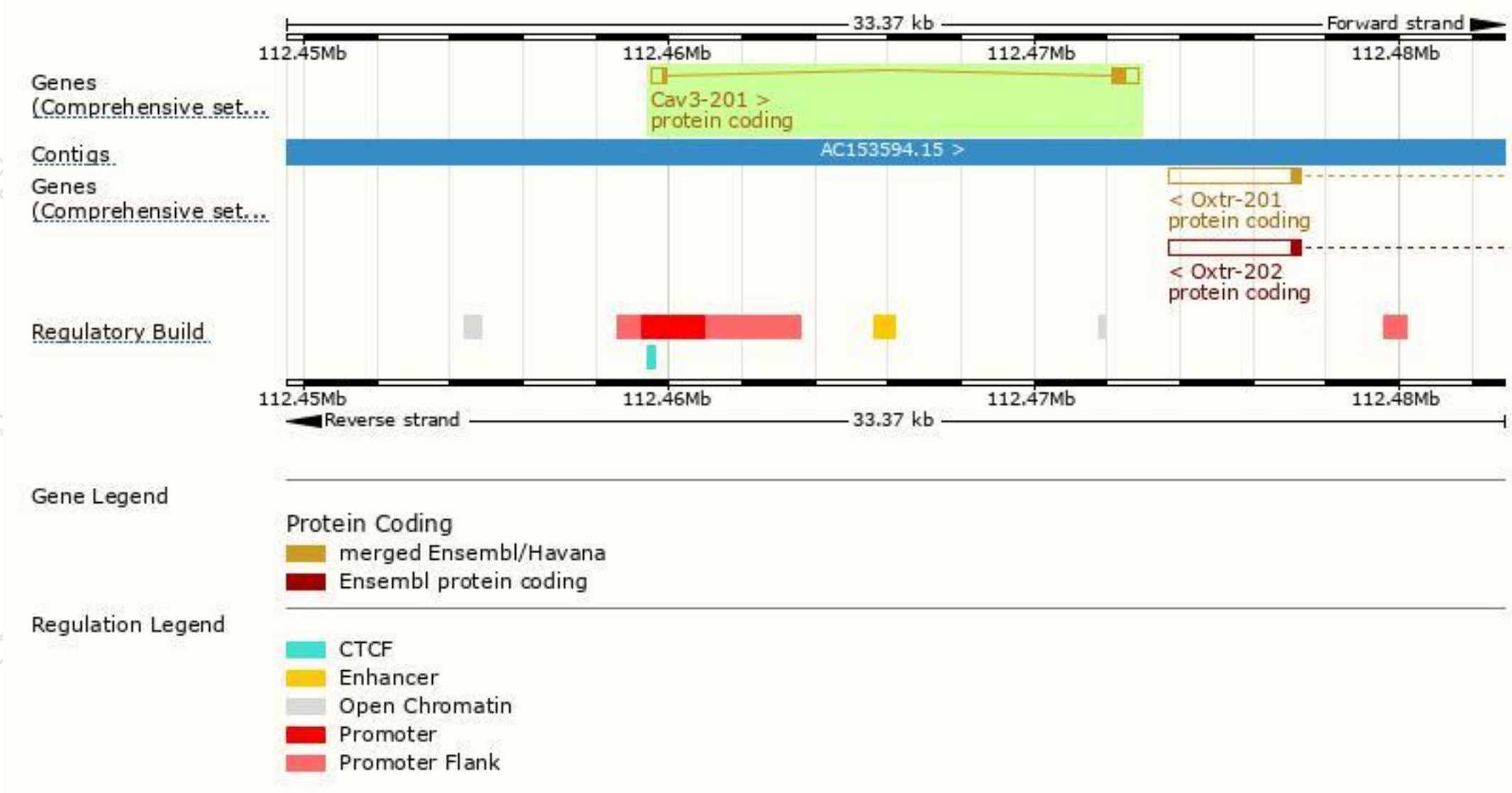
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cav3-201	ENSMUST00000075477.7	1157	151aa	Protein coding	CCDS20406	P51637	TSL:1 GENCODE basic APPRIS P1

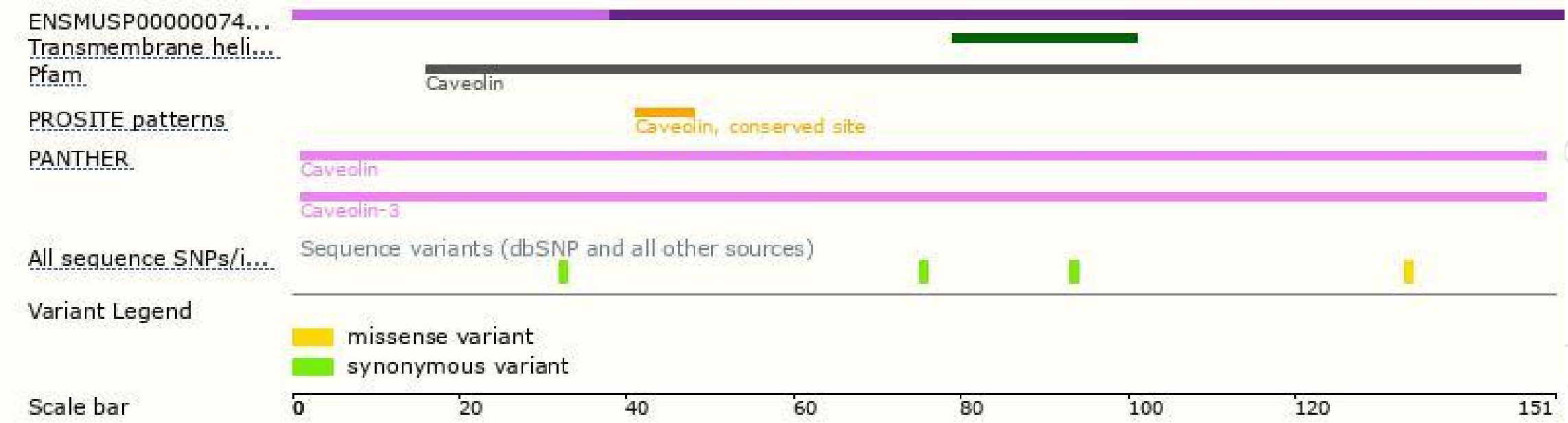
The strategy is based on the design of *Cav3-201* transcript,The transcription is shown below



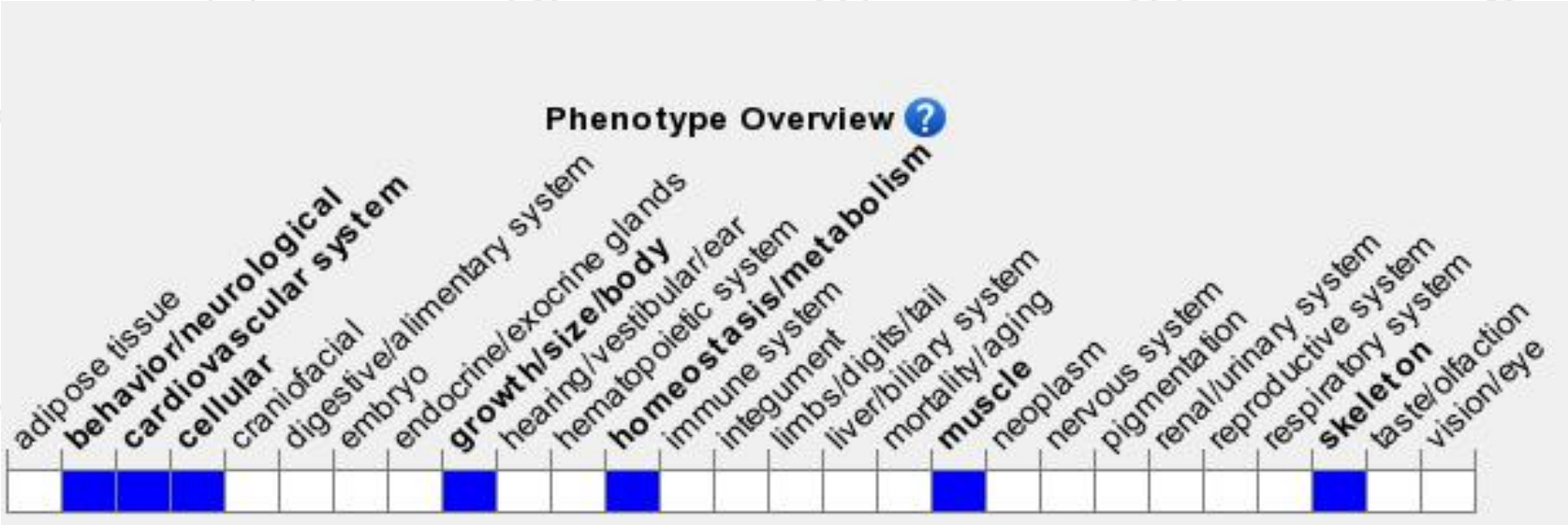
Genomic location distribution



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 targeted mutant animals display mild myopathic changes in muscle.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd