

***Fam20b* Cas9-CKO Strategy**

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Project Overview

Project Name

Fam20b

Project type

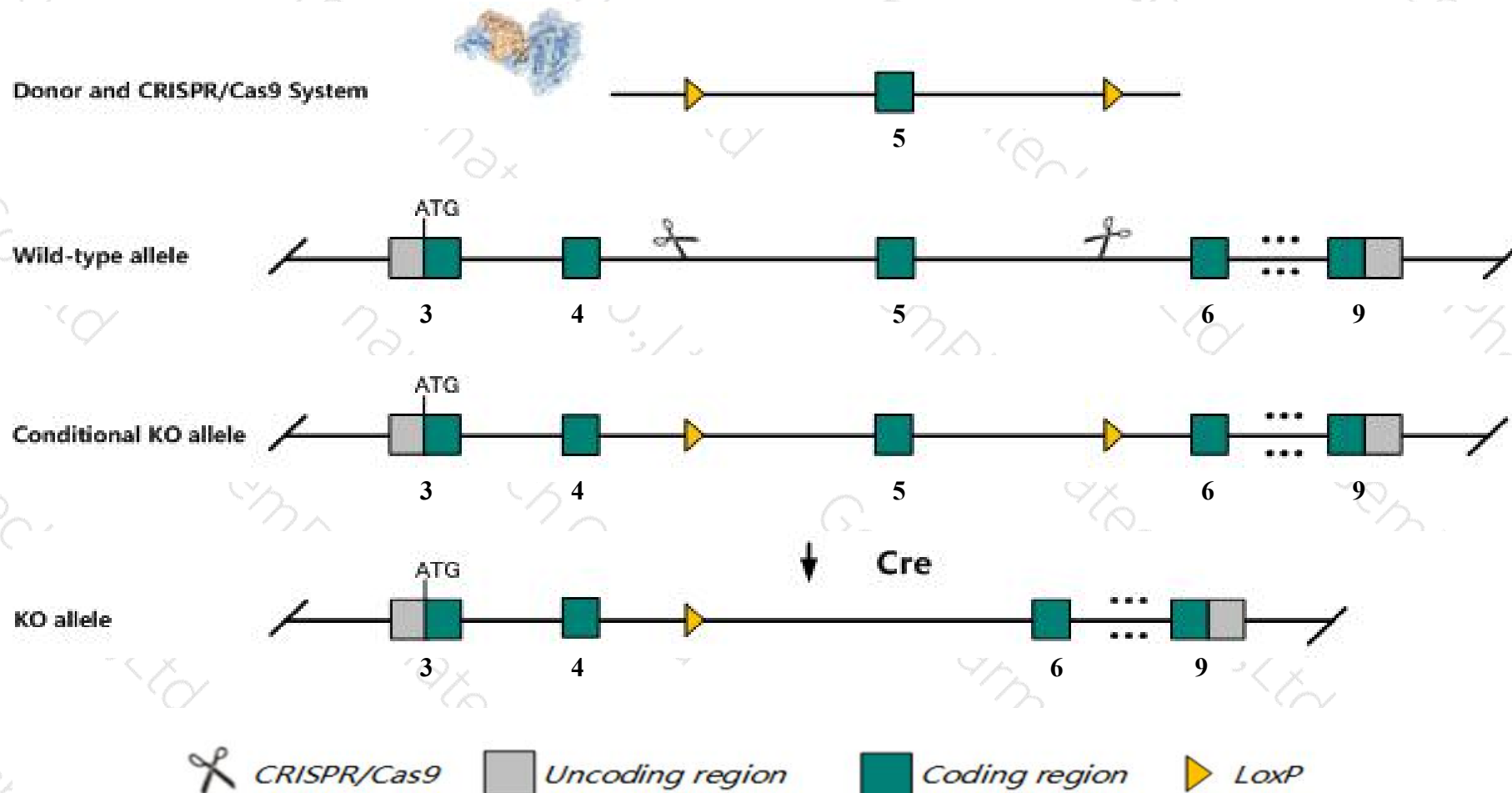
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fam20b* gene. The schematic diagram is as follows:



- The *Fam20b* gene has 5 transcripts. According to the structure of *Fam20b* gene, exon5 of *Fam20b-202* (ENSMUST00000122424.7) transcript is recommended as the knockout region. The region contains 110bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fam20b* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice homozygous for a gene trapped allele exhibit complete embryonic lethality associated with decreased embryo size, multisystem organ hypoplasia, and delayed skeleton, digestive system, eye, liver, and lung development.
- The *Fam20b* gene is located on the Chr1. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Fam20b family with sequence similarity 20, member B [Mus musculus (house mouse)]

Gene ID: 215015, updated on 13-Mar-2020

Summary



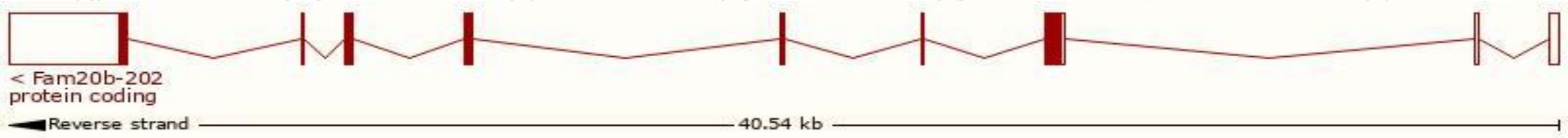
Official Symbol	Fam20b provided by MGI
Official Full Name	family with sequence similarity 20, member B provided by MGI
Primary source	MGI:MGI:2443990
See related	Ensembl:ENSMUSG00000033557
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C530043G21Rik, mKIAA0475
Expression	Ubiquitous expression in genital fat pad adult (RPKM 20.4), kidney adult (RPKM 16.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

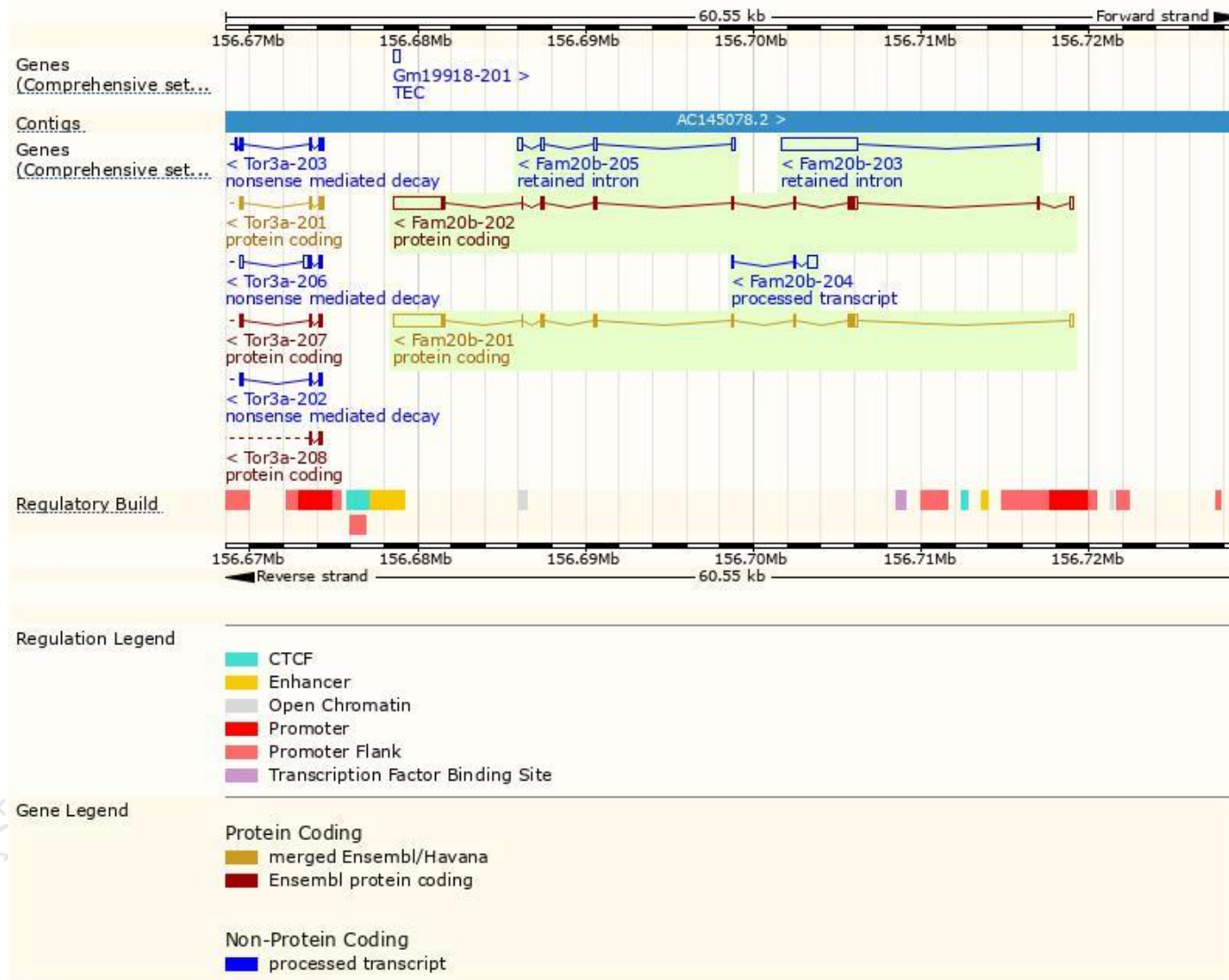
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fam20b-202	ENSMUST00000122424.7	4532	409aa	Protein coding	CCDS15395	Q8VCS3	TSL:5 GENCODE basic APPRIS P1
Fam20b-201	ENSMUST00000086153.7	4414	409aa	Protein coding	CCDS15395	Q8VCS3	TSL:1 GENCODE basic APPRIS P1
Fam20b-204	ENSMUST00000188941.1	752	No protein	Processed transcript	-	-	TSL:5
Fam20b-203	ENSMUST00000147931.1	4621	No protein	Retained intron	-	-	TSL:1
Fam20b-205	ENSMUST00000190878.1	817	No protein	Retained intron	-	-	TSL:3

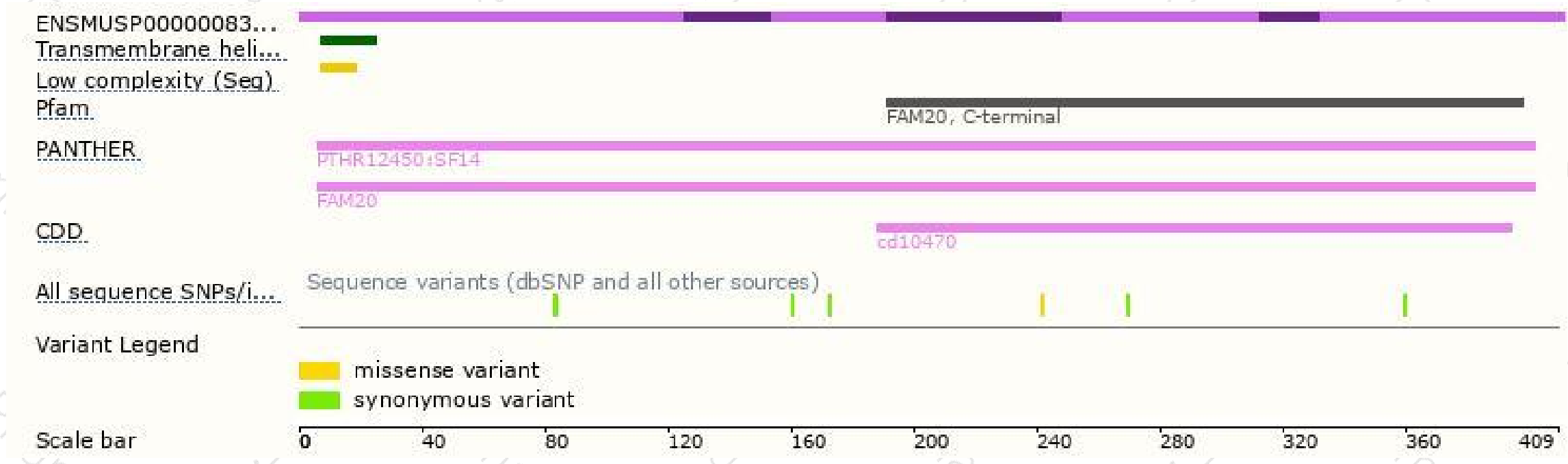
The strategy is based on the design of *Fam20b-202* transcript,the transcription is shown below:



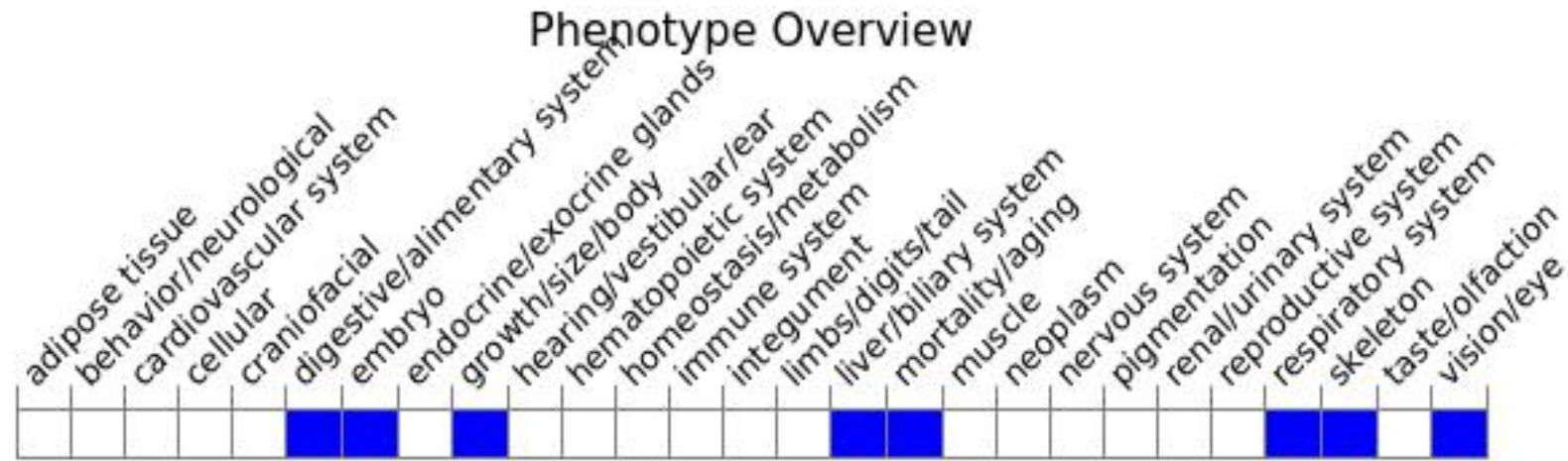
Genomic location distribution



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 gene trapped allele exhibit complete embryonic lethality associated with decreased embryo size, multisystem organ hypoplasia, and delayed skeleton, digestive system, eye, liver, and lung development.

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

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