

***Fam13a* Cas9-CKO Strategy**

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Date: 2020-03-05

Project Overview

Project Name

Fam13a

Project type

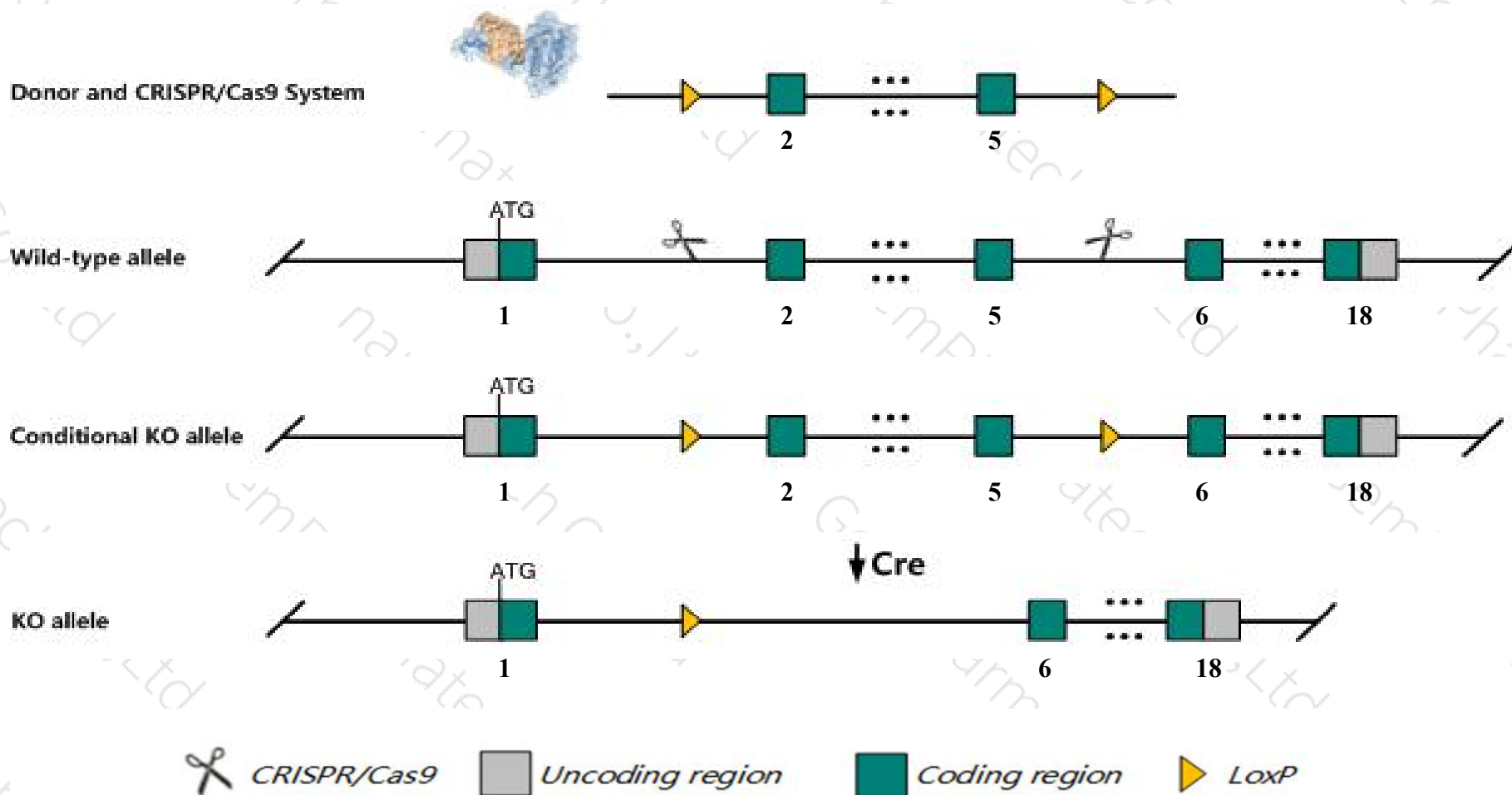
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fam13a* gene. The schematic diagram is as follows:



- The *Fam13a* gene has 5 transcripts. According to the structure of *Fam13a* gene, exon2-exon5 of *Fam13a-201* (ENSMUST00000089860.11) transcript is recommended as the knockout region. The region contains 448bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fam13a* 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.

Notice

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit resistance to cigarette-induced emphysema.
- Transcript *Fam13a*-205 may not be affected.
- *BB365896* gene will be deleted.
- The *Fam13a* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Fam13a family with sequence similarity 13, member A [*Mus musculus* (house mouse)]

Gene ID: 58909, updated on 12-Aug-2019

Summary

- Official Symbol

Fam13a provided by [MGI](#)
- Official Full Name

family with sequence similarity 13, member A provided by [MGI](#)
- Primary source

[MGI:MGI:1889842](#)
- See related

[Ensembl:ENSMUSG00000037709](#)
- 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

Precm1; FAM13A1; AI462012; D430015B01Rik
- Expression

Broad expression in mammary gland adult (RPKM 11.1), kidney adult (RPKM 10.9) and 24 other tissues [See more](#)
- Orthologs

[human](#) [all](#)

Genomic context

Location: 6; 6 B3

See Fam13a in [Genome Data Viewer](#)

Exon count: 18

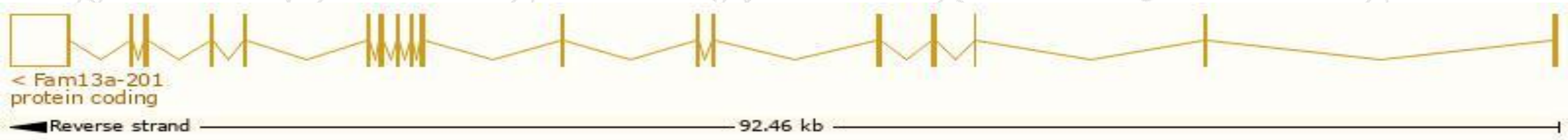
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	6	NC_000072.6 (58933536..59024502, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	6	NC_000072.5 (58883530..58974496, complement)

Transcript information (Ensembl)

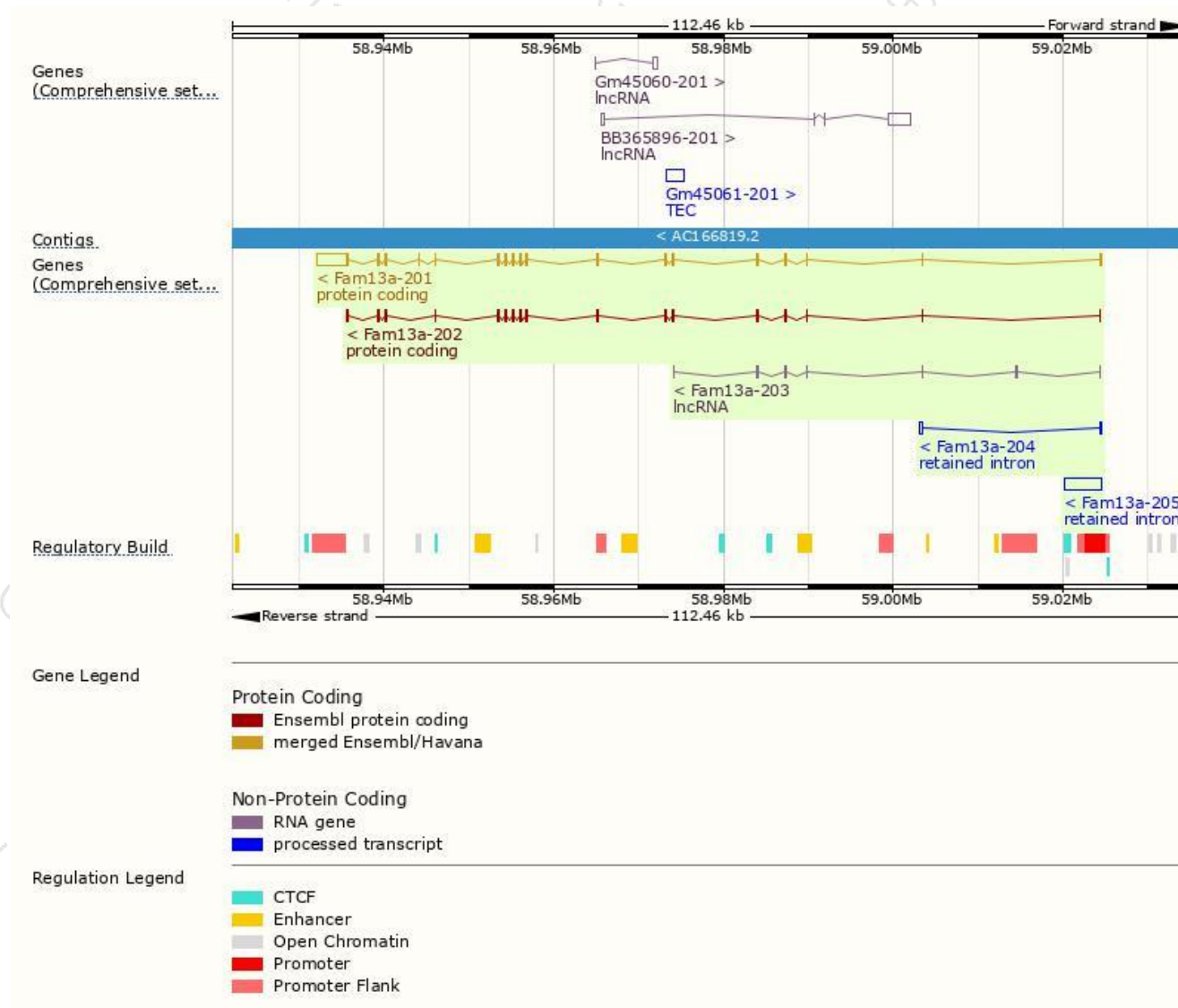
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fam13a-201	ENSMUST00000089860.11	5786	693aa	Protein coding	CCDS39499	Q8BGI4	TSL:1 GENCODE basic APPRIS P2
Fam13a-202	ENSMUST00000173193.1	1998	665aa	Protein coding	-	G3UYL7	TSL:5 GENCODE basic APPRIS ALT2
Fam13a-205	ENSMUST00000204616.1	4309	No protein	Retained intron	-	-	TSL:NA
Fam13a-204	ENSMUST00000174307.1	586	No protein	Retained intron	-	-	TSL:2
Fam13a-203	ENSMUST00000173712.2	759	No protein	lncRNA	-	-	TSL:5

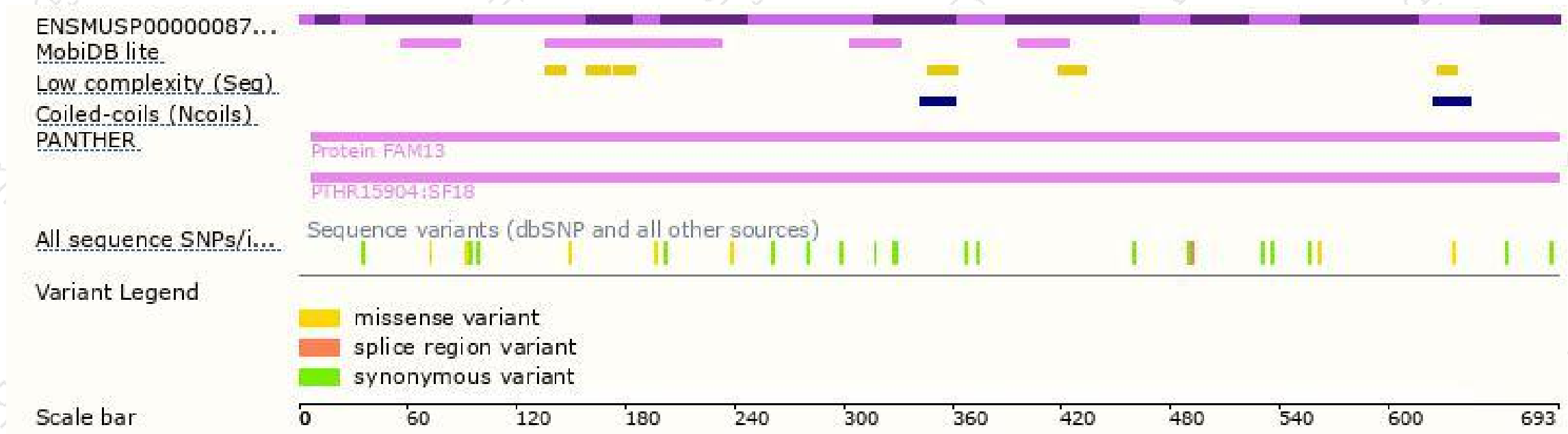
The strategy is based on the design of *Fam13a-201* transcript,The transcription is shown below



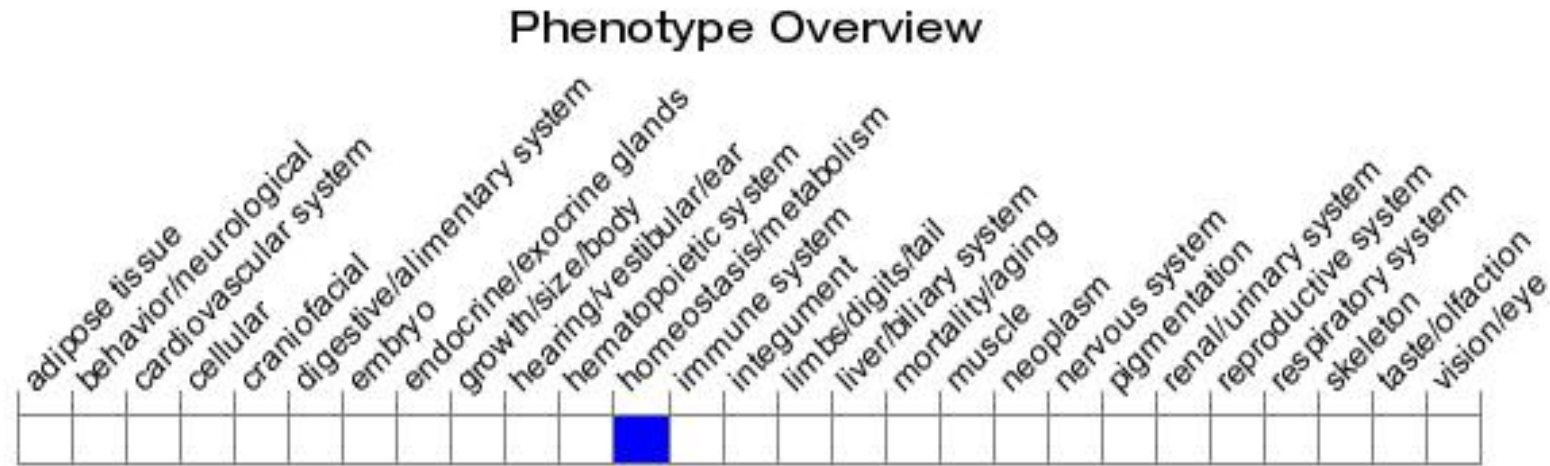
Genomic location distribution



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 exhibit resistance to cigarette-induced emphysema.

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

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