

# ***Fam13a* Cas9-KO Strategy**

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# Project Overview

**Project Name**

***Fam13a***

**Project type**

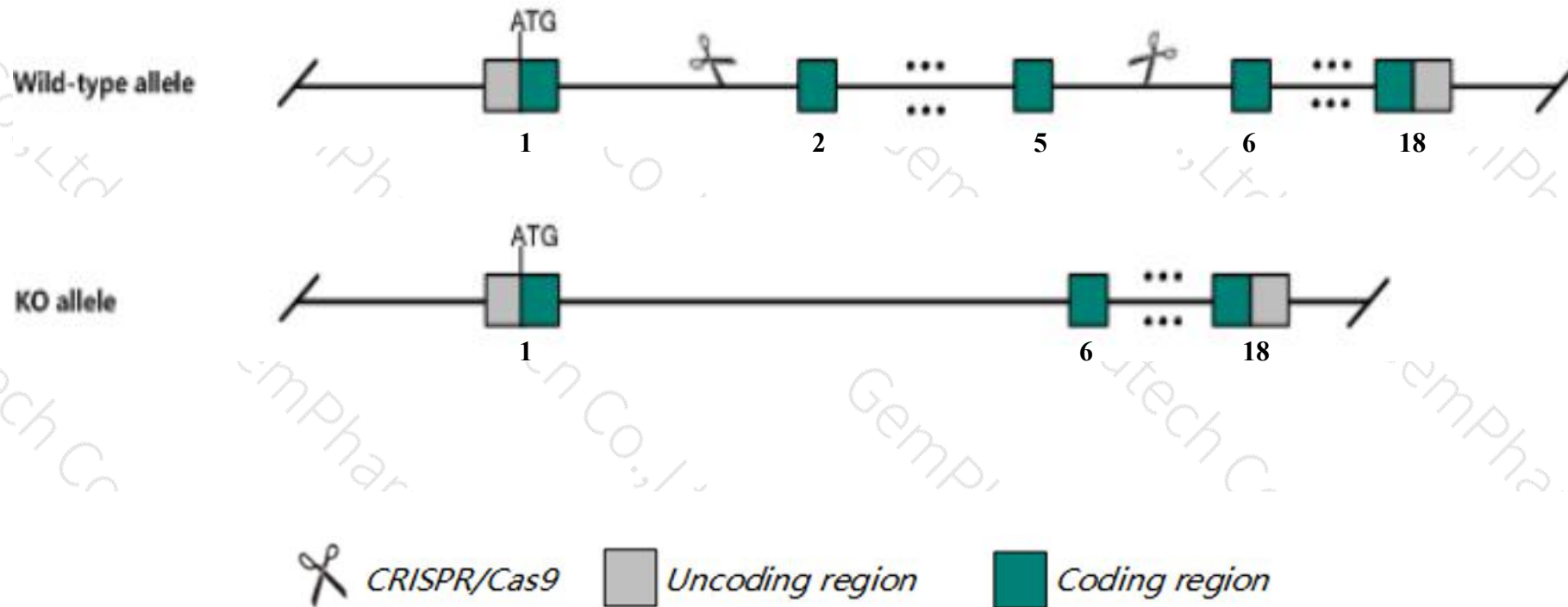
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# 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

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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 <a href="#">MGI</a>
Official Full Name	family with sequence similarity 13, member A provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1889842</a>
See related	<a href="#">Ensembl:ENSMUSG00000037709</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
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 <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

### Genomic context

Location: 6; 6 B3

See Fam13a in [Genome Data Viewer](#)

Exon count: 18

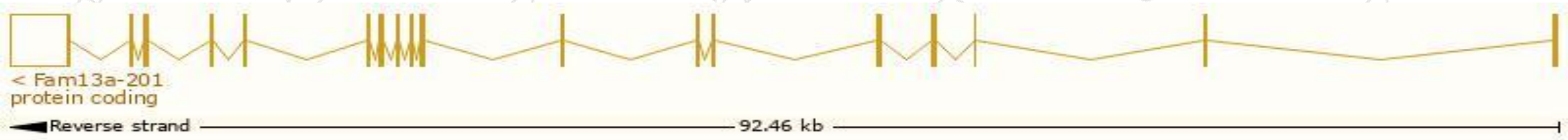
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	6	NC_000072.6 (58933536..59024502, complement)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	6	NC_000072.5 (58883530..58974496, complement)

# Transcript information (Ensembl)

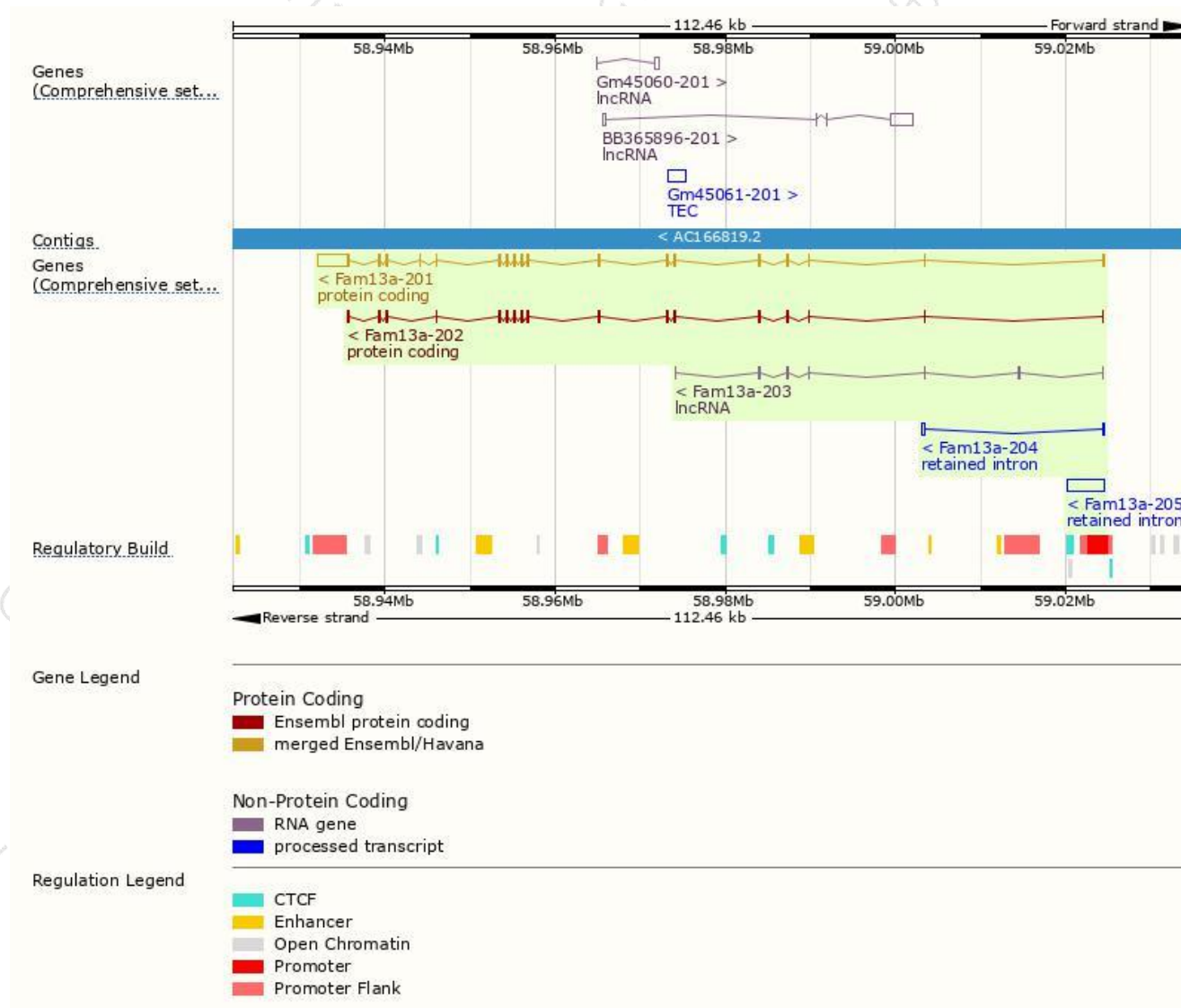
The gene has 5 transcripts,all transcripts are shown below:

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

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

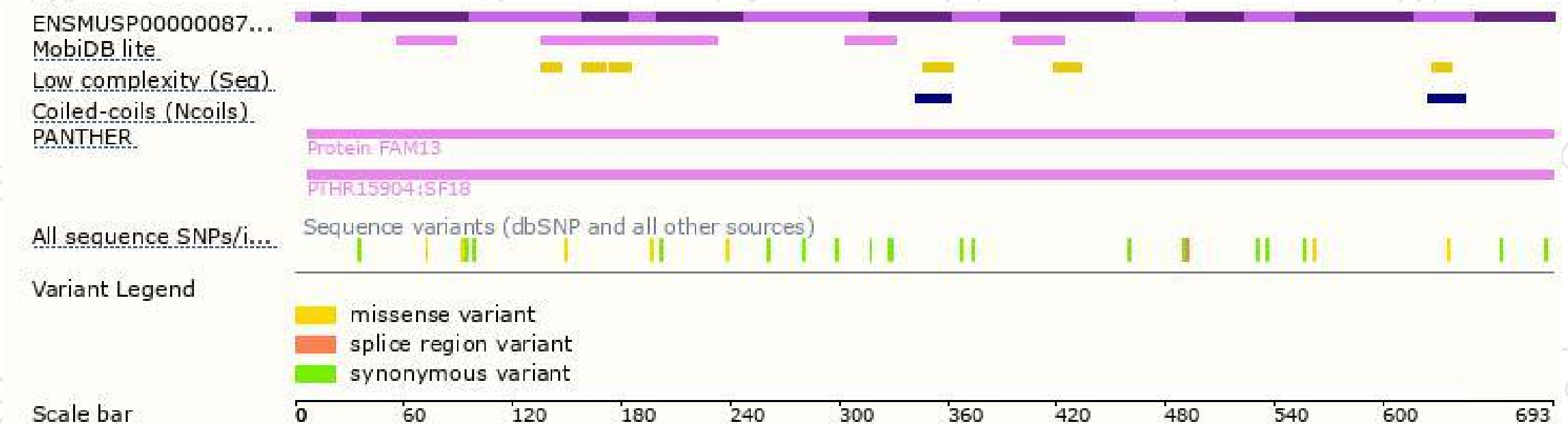


# Genomic location distribution

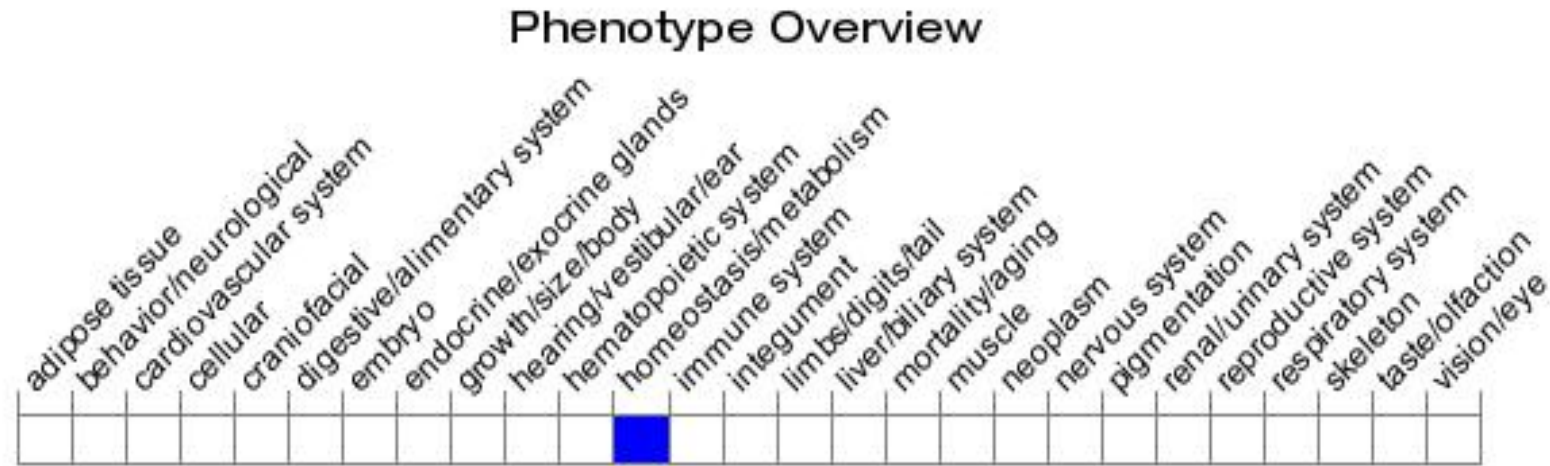




# Protein domain



# 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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