Fermt1 Cas9-KO Strategy

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Project Overview

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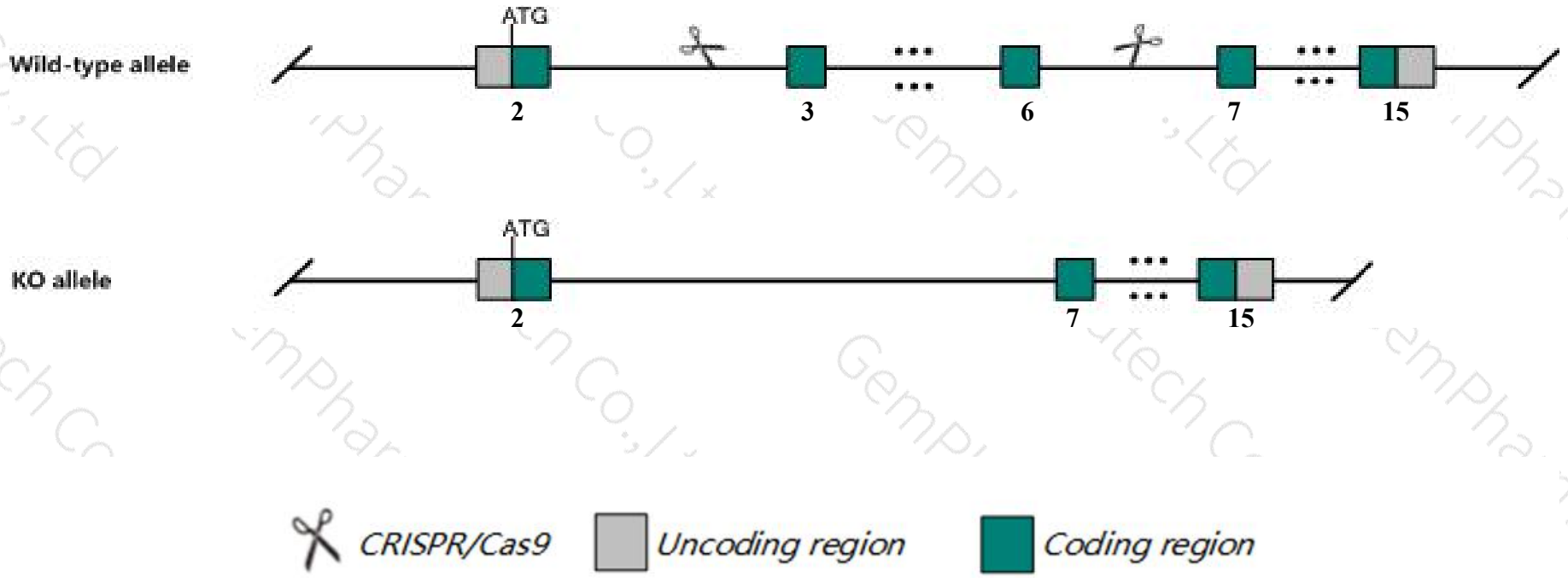
Project Name	***Fermt1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fermt1* gene. The schematic diagram is as follows:



Technical routes

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- The *Fermt1* gene has 4 transcripts. According to the structure of *Fermt1* gene, exon3-exon6 of *Fermt1-201* (ENSMUST00000038280.4) transcript is recommended as the knockout region.The region contains 698bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fermt1* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Mice homozygous for a null allele exhibit postnatal lethality within 5 days of birth, dehydration, detachment of colonic epithelial cells, and colonic inflammation.

- The *Fermt1* gene is located on the Chr2. 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）

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Fermt1 fermitin family member 1 [*Mus musculus* (house mouse)]

Gene ID: 241639, updated on 11-Sep-2019

Summary

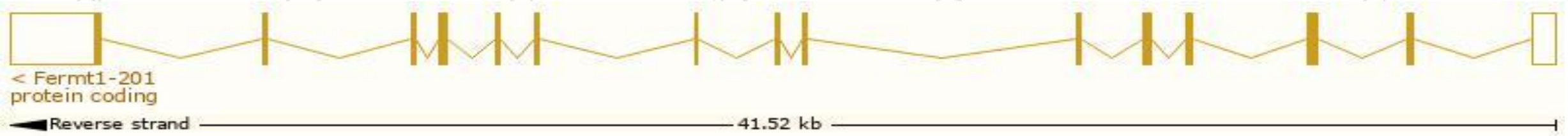
Official Symbol	Fermt1 provided by MGI
Official Full Name	fermitin family member 1 provided by MGI
Primary source	MGI:MGI:2443583
See related	Ensembl:ENSMUSG00000027356
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Kindlin-1; 5830467P10Rik
Expression	Biased expression in colon adult (RPKM 15.9), large intestine adult (RPKM 8.3) and 11 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

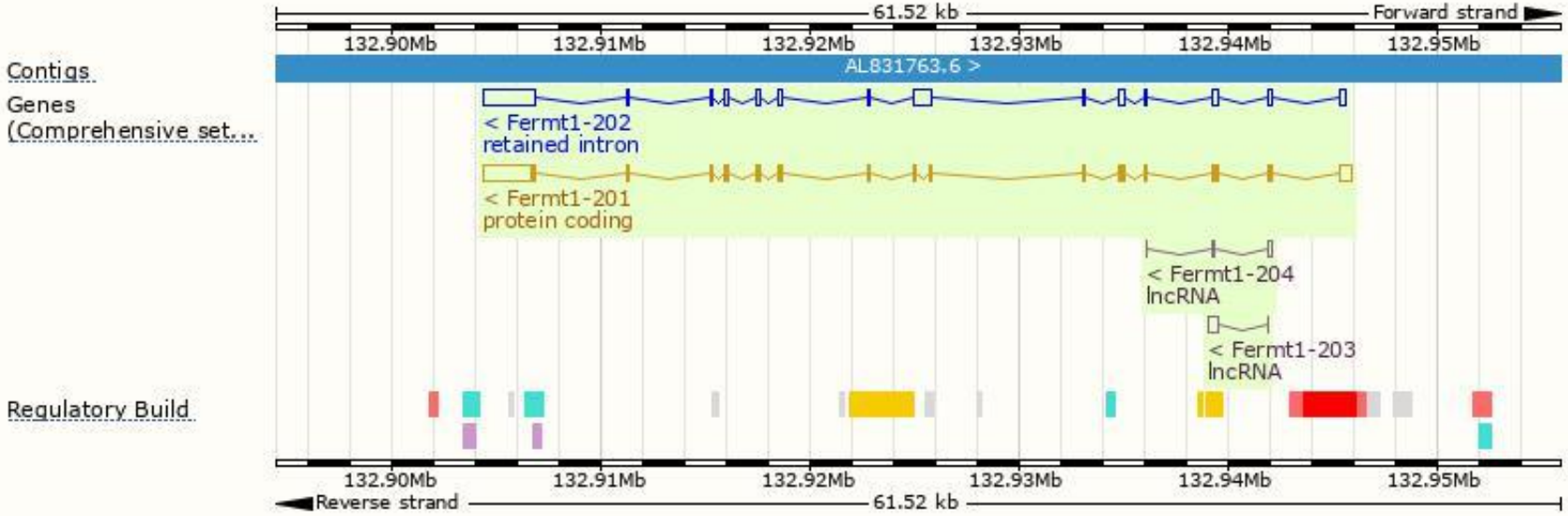
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fermt1-201	ENSMUST00000038280.4	4915	677aa	Protein coding	CCDS38248	P59113	TSL:5 GENCODE basic APPRIS P1
Fermt1-202	ENSMUST00000134937.1	5236	No protein	Retained intron	-	-	TSL:1
Fermt1-203	ENSMUST00000143981.1	447	No protein	lncRNA	-	-	TSL:5
Fermt1-204	ENSMUST00000144342.1	317	No protein	lncRNA	-	-	TSL:2

The strategy is based on the design of *Fermt1-201* transcript,The transcription is shown below



Genomic location distribution



Gene Legend

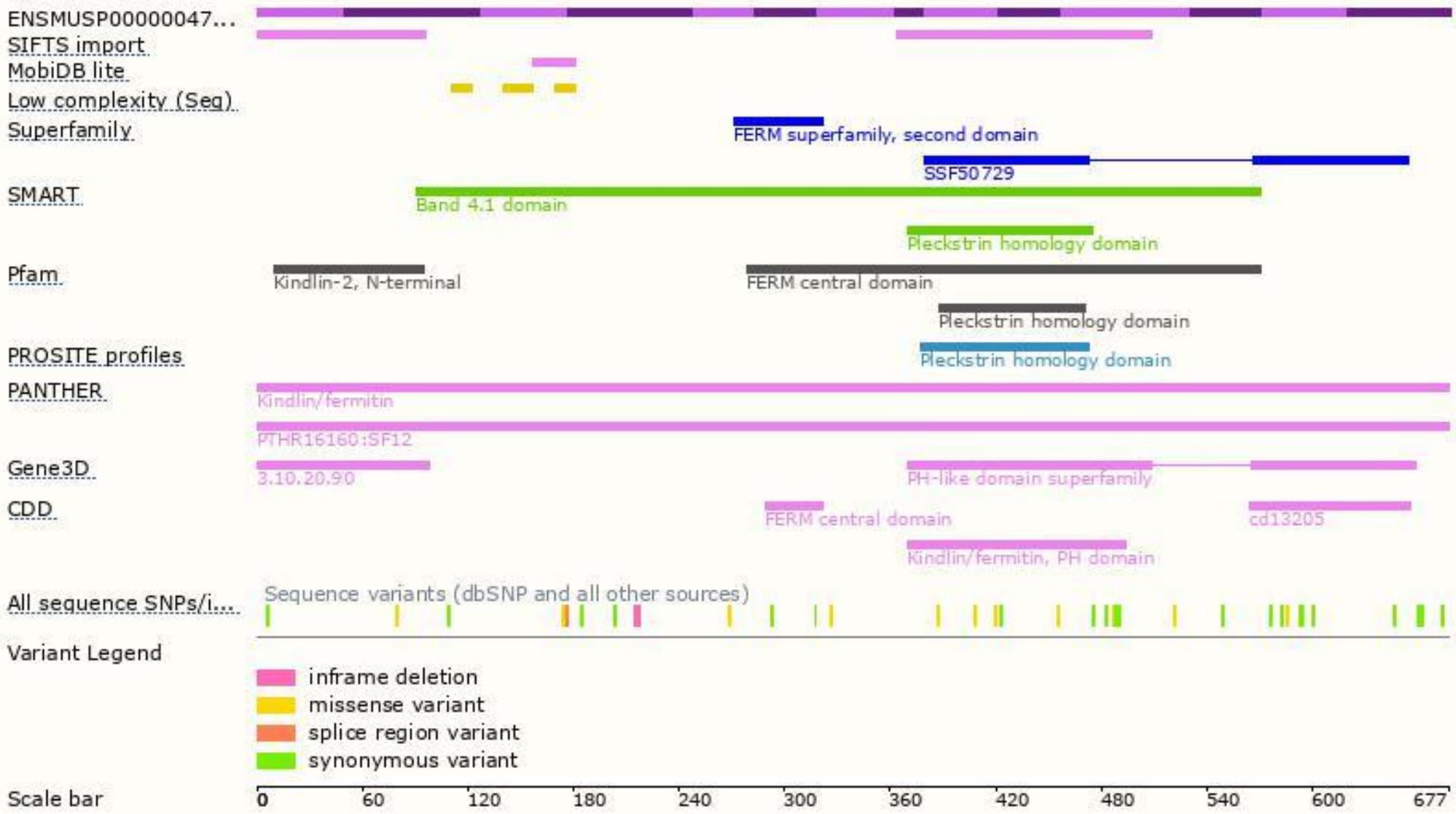
Protein Coding
- merged Ensembl/Havana

Non-Protein Coding
- RNA gene
- processed transcript

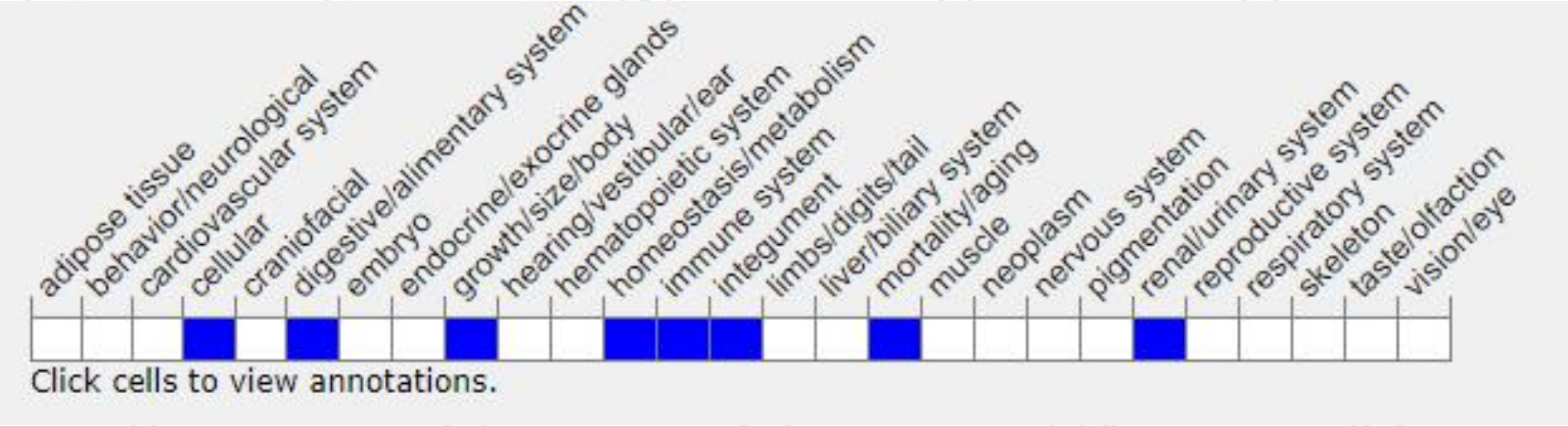
Regulation Legend

- CTCF
- Enhancer
- Open Chromatin
- Promoter
- Promoter Flank
- Transcription Factor Binding Site

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 null allele exhibit postnatal lethality within 5 days of birth, dehydration, detachment of colonic epithelial cells, and colonic inflammation.

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