

Fcγr1a Cas9-KO Strategy

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Project Overview

Project Name

Fcer1a

Project type

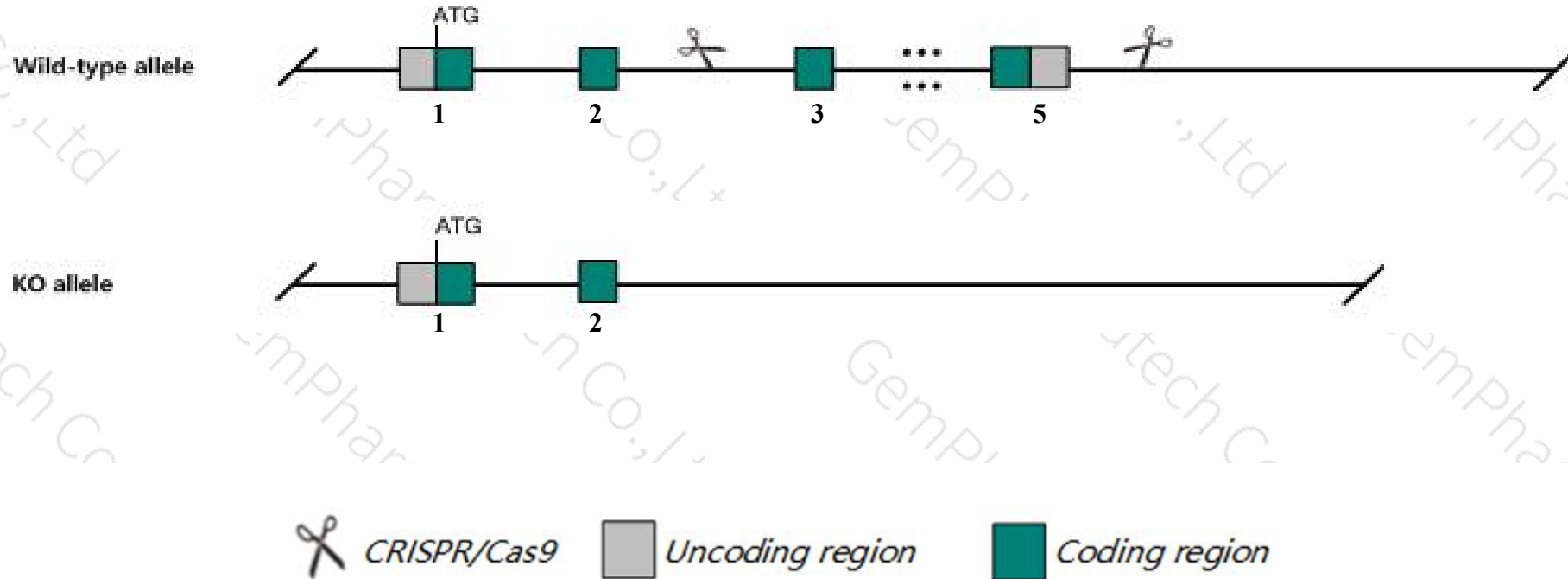
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fcer1a* gene. The schematic diagram is as follows:



- The *Fcer1a* gene has 2 transcripts. According to the structure of *Fcer1a* gene, exon3-exon5 of *Fcer1a-201* (ENSMUST00000049706.10) transcript is recommended as the knockout region. The region contains 683bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fcer1a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit abnormal mast cell physiology and altered susceptibility to type I hypersensitivity reaction. Mice homozygous for another knock-out allele display altered development of allergic airway inflammation and airway hyperresponsiveness.
- The *Fcer1a* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Fcer1a Fc receptor, IgE, high affinity I, alpha polypeptide [Mus musculus (house mouse)]

Gene ID: 14125, updated on 5-Feb-2019

Summary



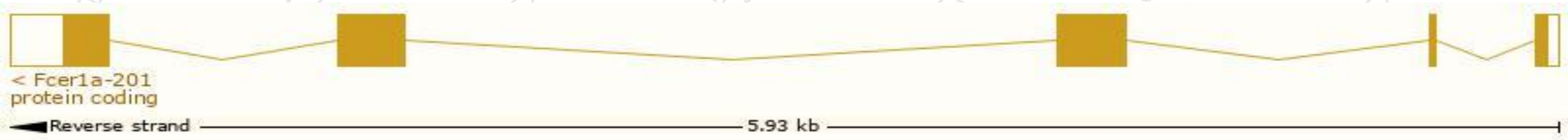
Official Symbol	Fcer1a provided by MGI
Official Full Name	Fc receptor, IgE, high affinity I, alpha polypeptide provided by MGI
Primary source	MGI:MGI:95494
See related	Ensembl:ENSMUSG00000005339
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	FcERI, Fce1a, Fcr-5, fcepsilonri
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

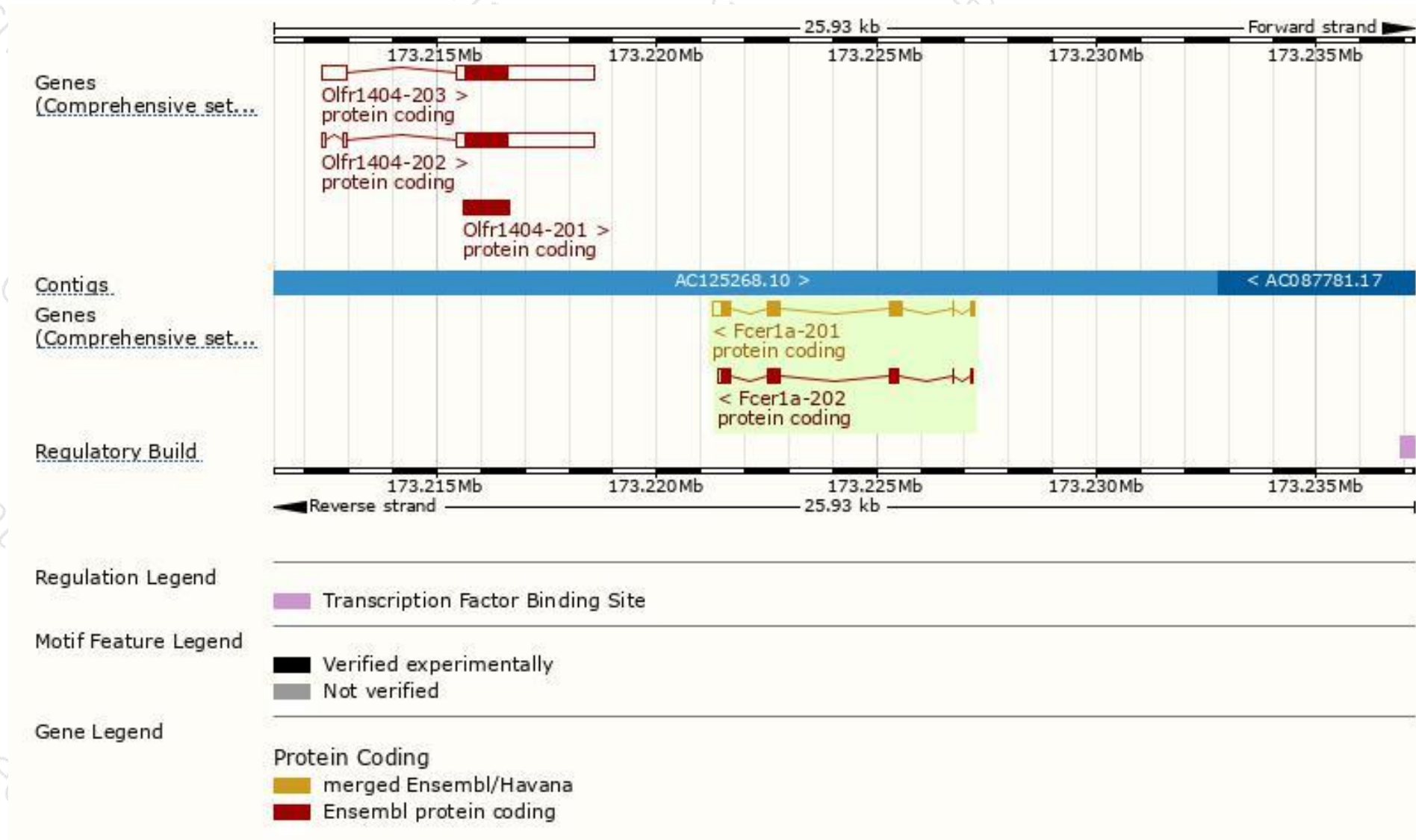
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fcer1a-201	ENSMUST00000049706.10	998	250aa	Protein coding	CCDS35788	P20489	TSL:1 GENCODE basic APPRIS P1
Fcer1a-202	ENSMUST00000193017.1	826	194aa	Protein coding	-	A0A0A6YXC5	TSL:1 GENCODE basic

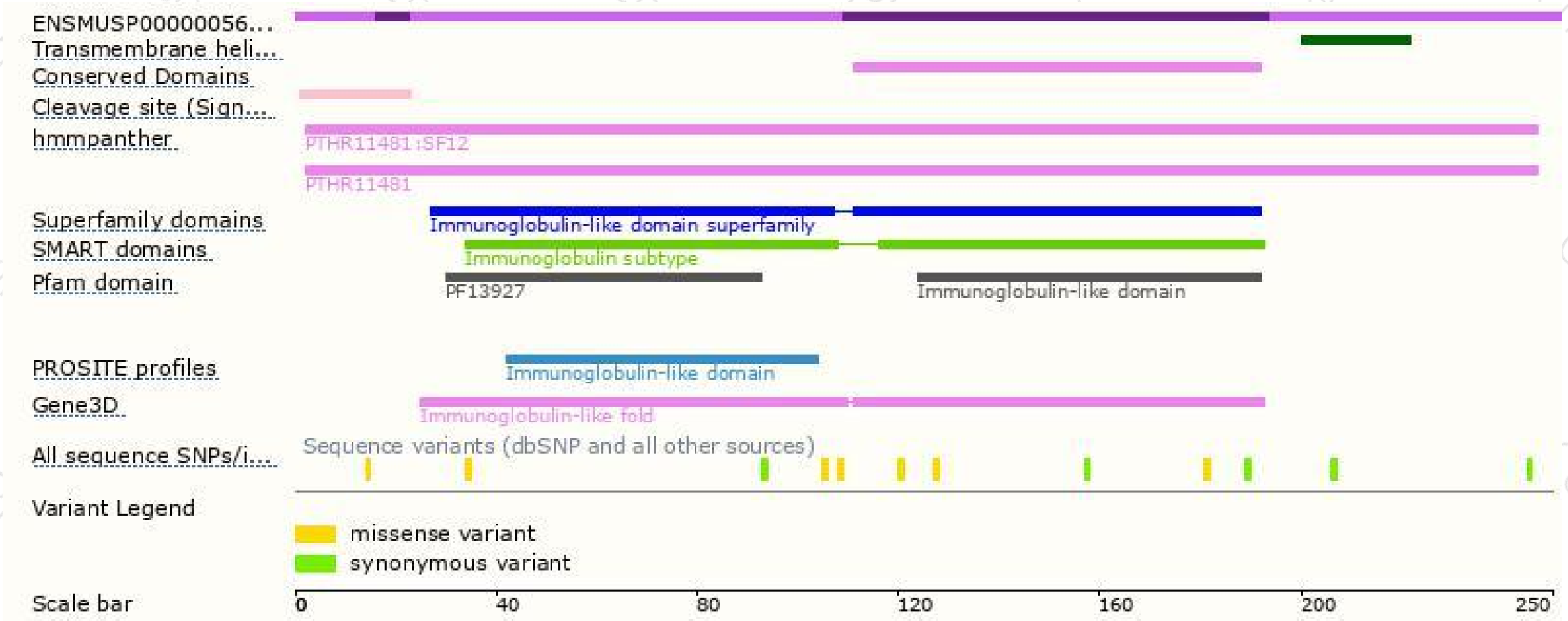
The strategy is based on the design of *Fcer1a-201* transcript,The transcription is shown below



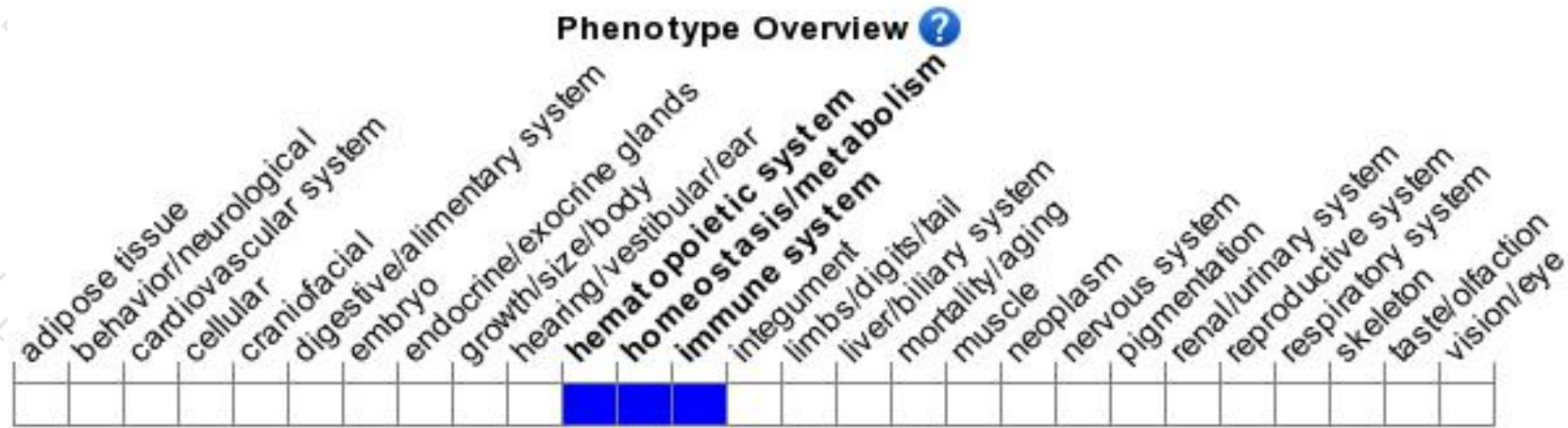
Genomic location distribution



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 abnormal mast cell physiology and altered susceptibility to type I hypersensitivity reaction. Mice homozygous for another knock-out allele display altered development of allergic airway inflammation and airway hyperresponsiveness.

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

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