

Adipoq Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

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Project Overview

Project Name

Adipoq

Project type

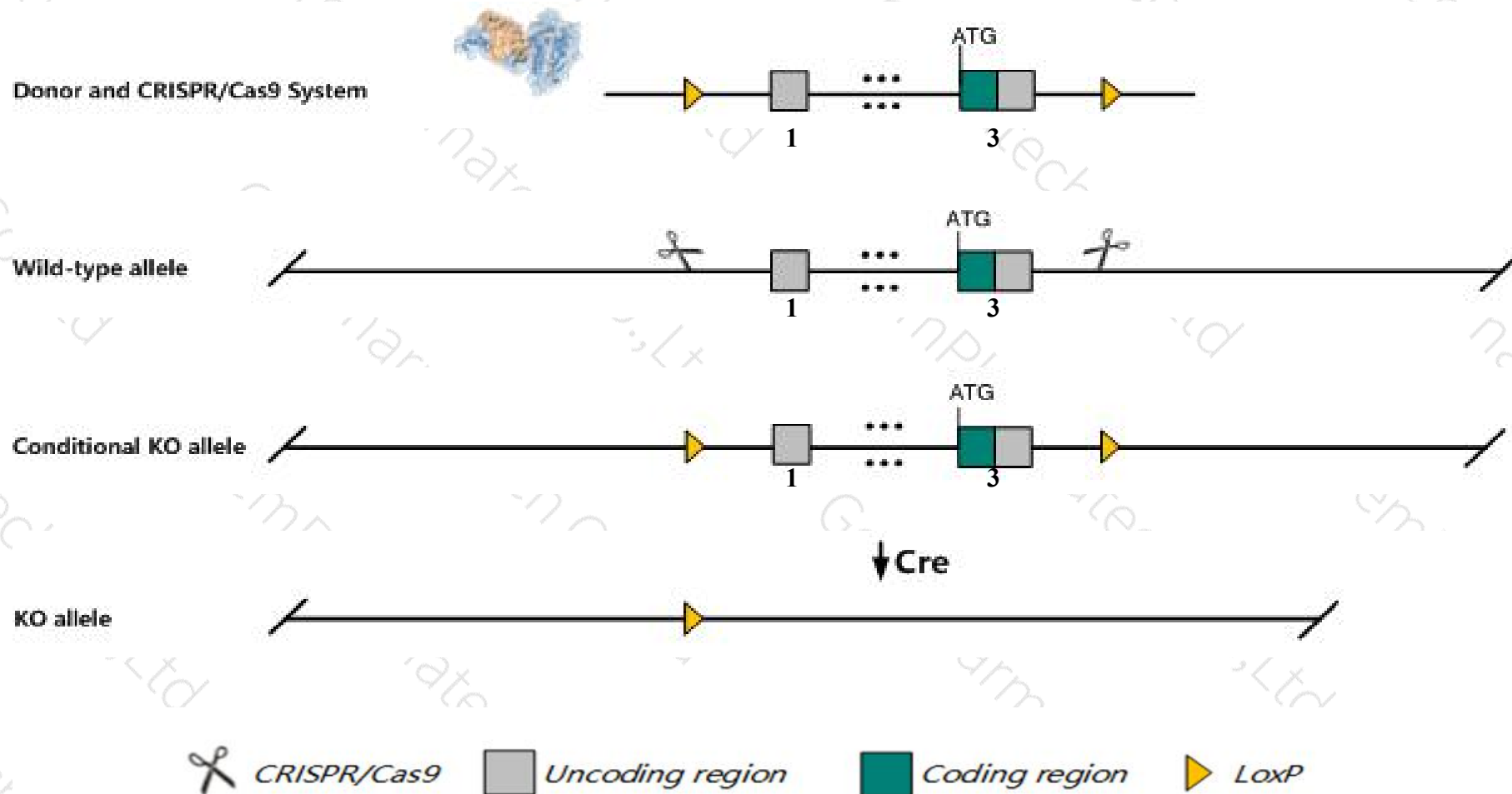
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Adipoq* gene has 2 transcripts. According to the structure of *Adipoq* gene, exon1-exon3 of *Adipoq-201* (ENSMUST00000023593.5) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adipoq* 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, Homozygotes for targeted null mutations exhibit increased beta-oxidation in muscle and liver, impaired free fatty acid clearance, and moderate insulin resistance. Heterozygotes show mild insulin resistance.
- The *Adipoq* gene is located on the Chr16. 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)

Adipoq adiponectin, C1Q and collagen domain containing [Mus musculus (house mouse)]

Gene ID: 11450, updated on 12-Mar-2019

Summary



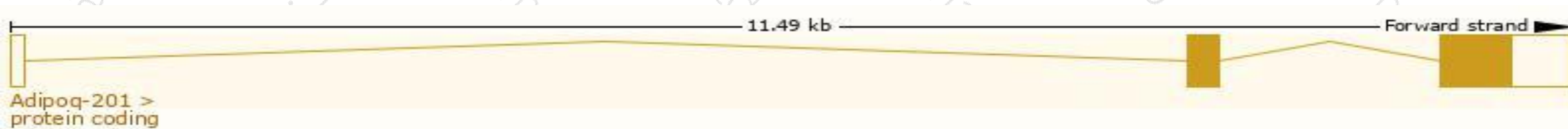
Official Symbol	Adipoq provided by MGI
Official Full Name	adiponectin, C1Q and collagen domain containing provided by MGI
Primary source	MGI:MGI:106675
See related	Ensembl:ENSMUSG00000022878
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	30kDa, APN, Acdc, Acrp30, Ad, Adid, GBP28, adipo, apM1
Expression	Biased expression in subcutaneous fat pad adult (RPKM 1033.0), mammary gland adult (RPKM 560.0) and 3 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

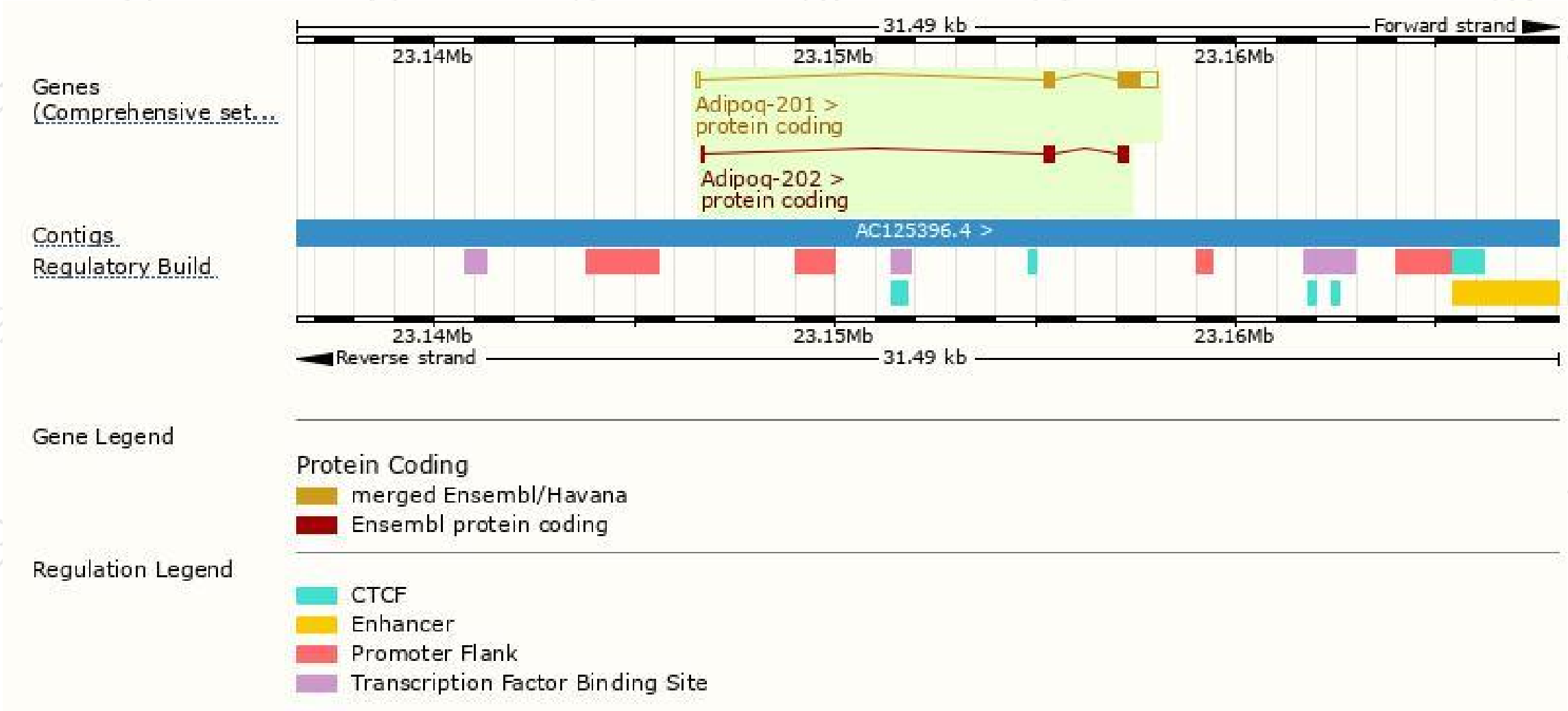
The gene has 2 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adipoq-201	ENSMUST00000023593.5	1292	247aa	Protein coding	CCDS28075	Q60994	TSL:1 GENCODE basic APPRIS P1
Adipoq-202	ENSMUST00000171309.1	539	168aa	Protein coding	-	E9PWU4	CDS 3' incomplete TSL:3

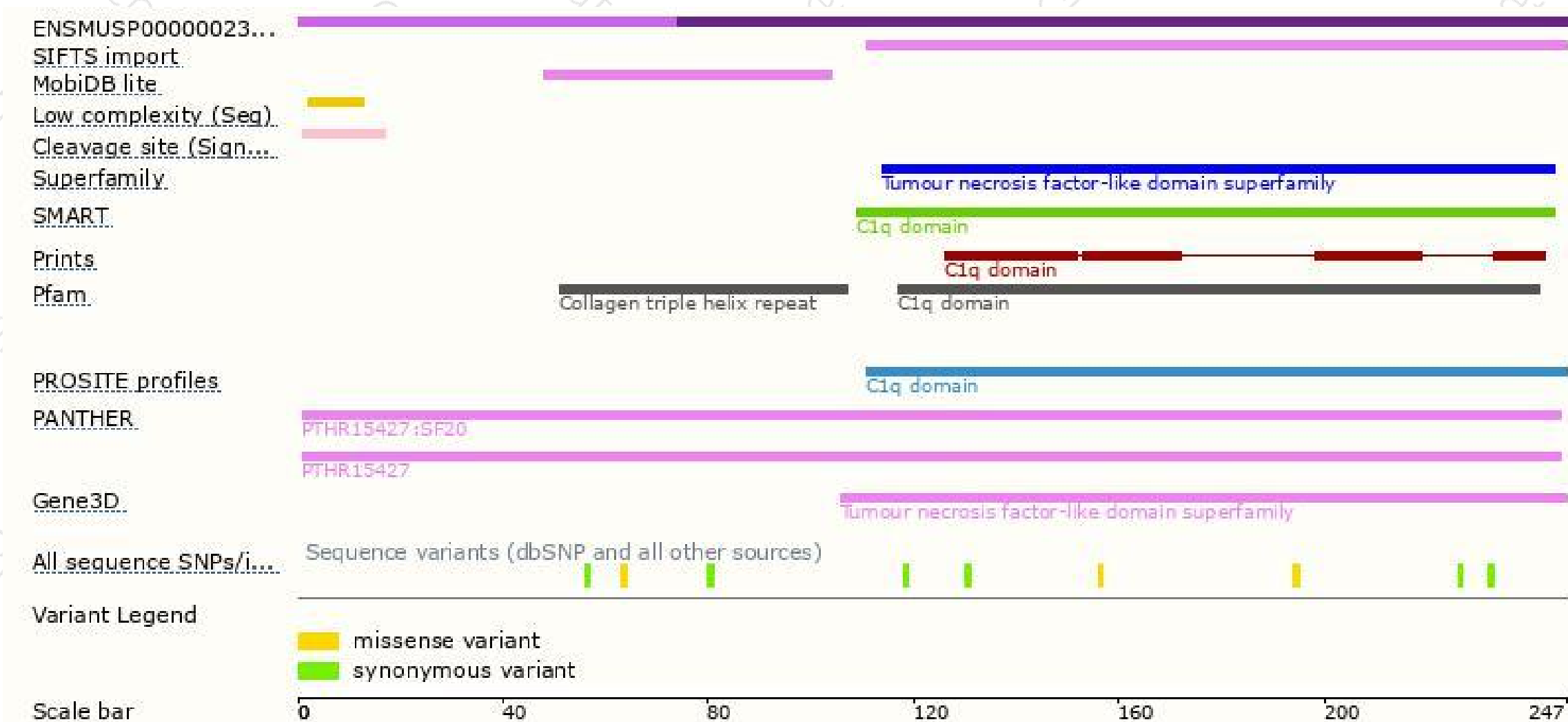
The strategy is based on the design of *Adipoq-201* transcript, The transcription is shown below



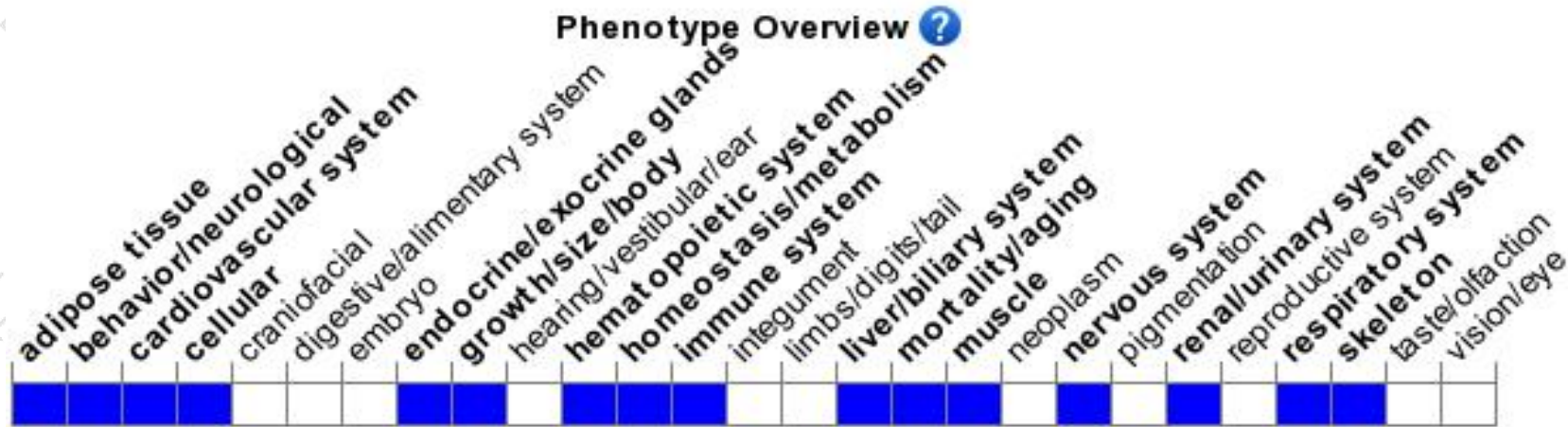
Genomic location distribution



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, Homozygotes for targeted null mutations exhibit increased beta-oxidation in muscle and liver, impaired free fatty acid clearance, and moderate insulin resistance. Heterozygotes show mild insulin resistance.

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

Tel: 400-9660890

