Adipoq Cas9-KO Strategy

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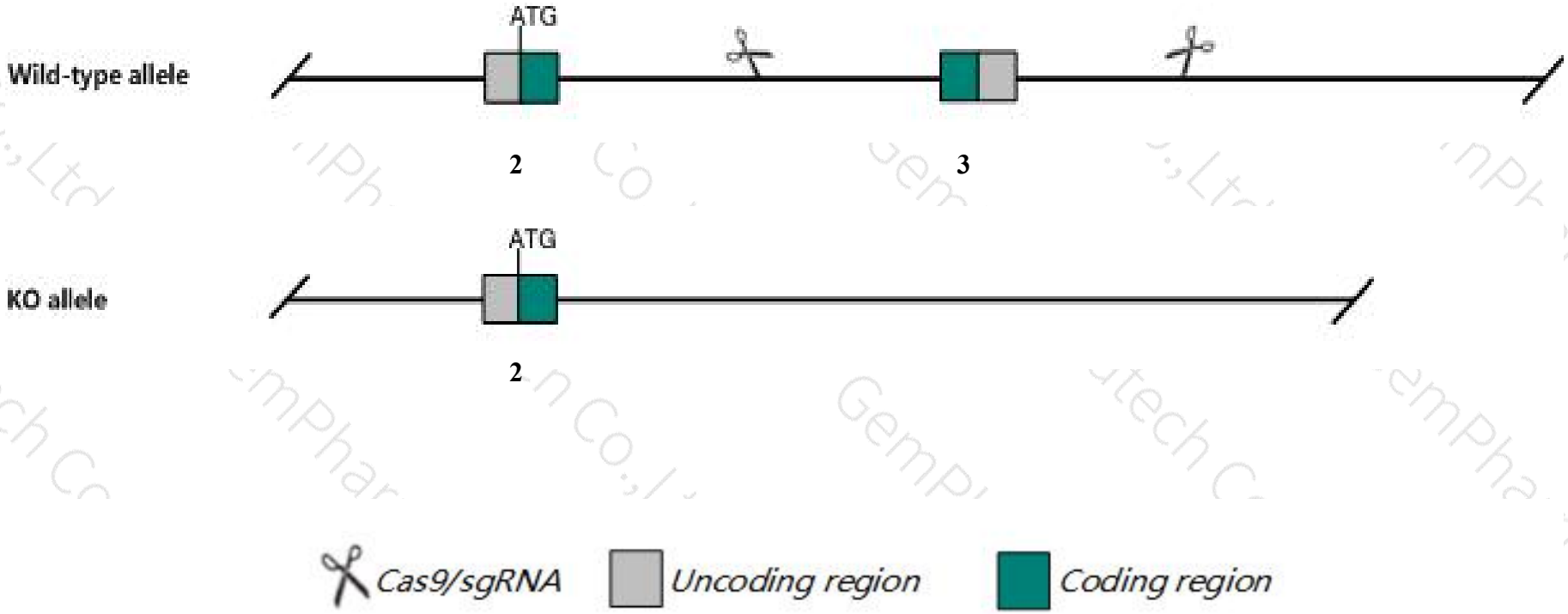
Project Overview

Project Name	***Adipoq***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

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



Technical routes

- The *Adipoq* gene has 2 transcripts. According to the structure of *Adipoq* gene, exon3 of *Adipoq-201* (ENSMUST00000023593.5) transcript is recommended as the knockout region.The region contains 521bp 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: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information（NCBI）

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

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

Summary

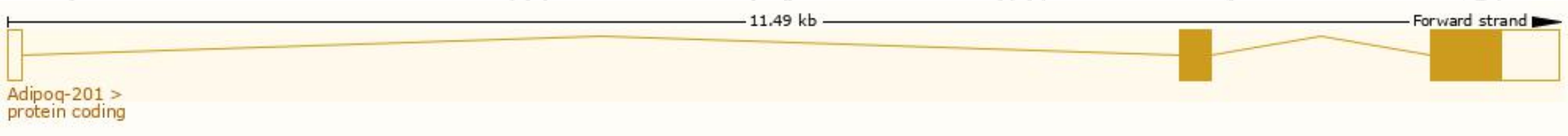
Official Symbol	Adipoq provided by MGI
Official Full Name	adiponectin, C1Q and collagen domain containing provided by MGI
Primary source	MGI:MGI:106675
See related	Ensembl:ENSMUSG00000022878
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; 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）

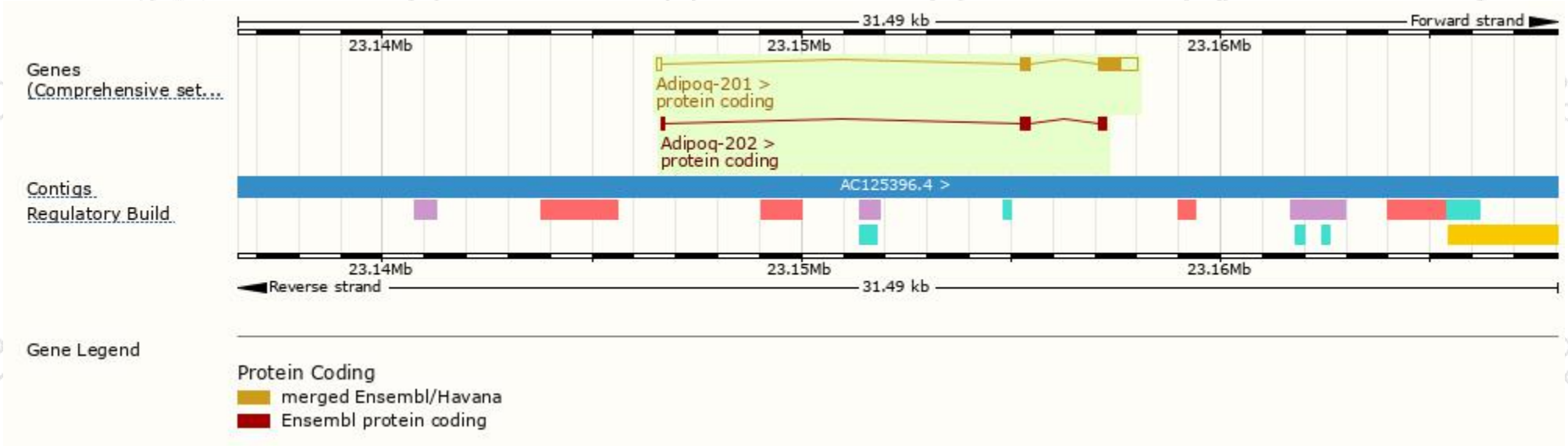
The gene has 2 transcripts,all transcripts are shown below:

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

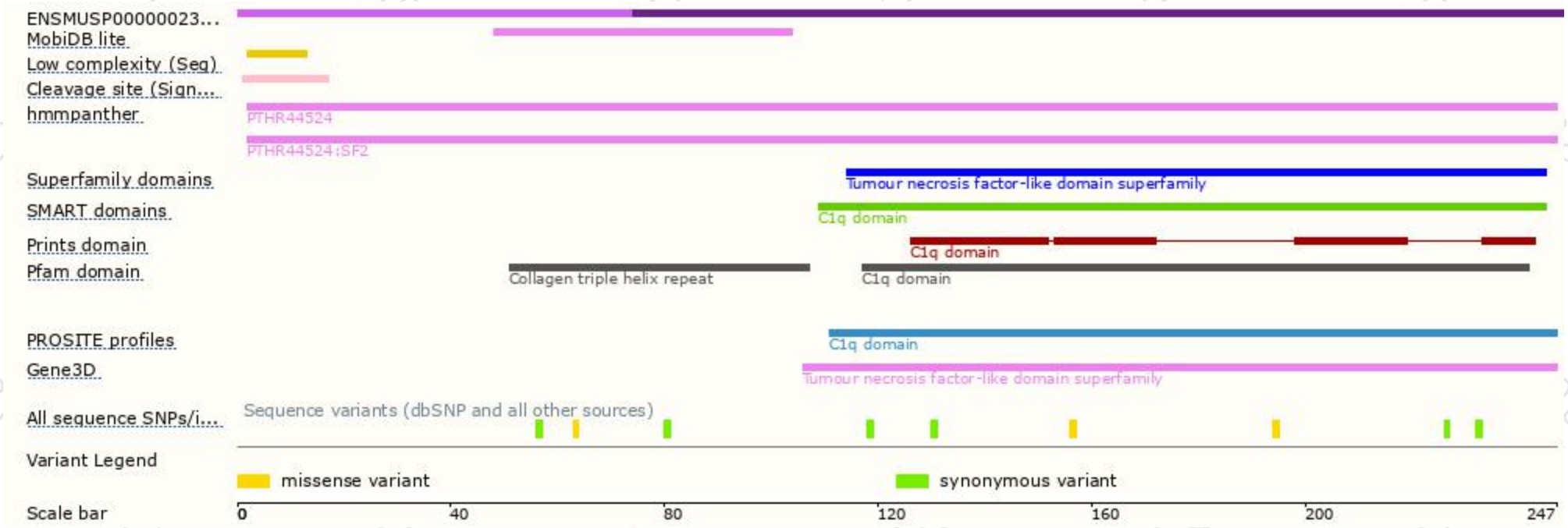
The strategy is based on the design of *Adipoq-201* transcript, the transcription is shown below



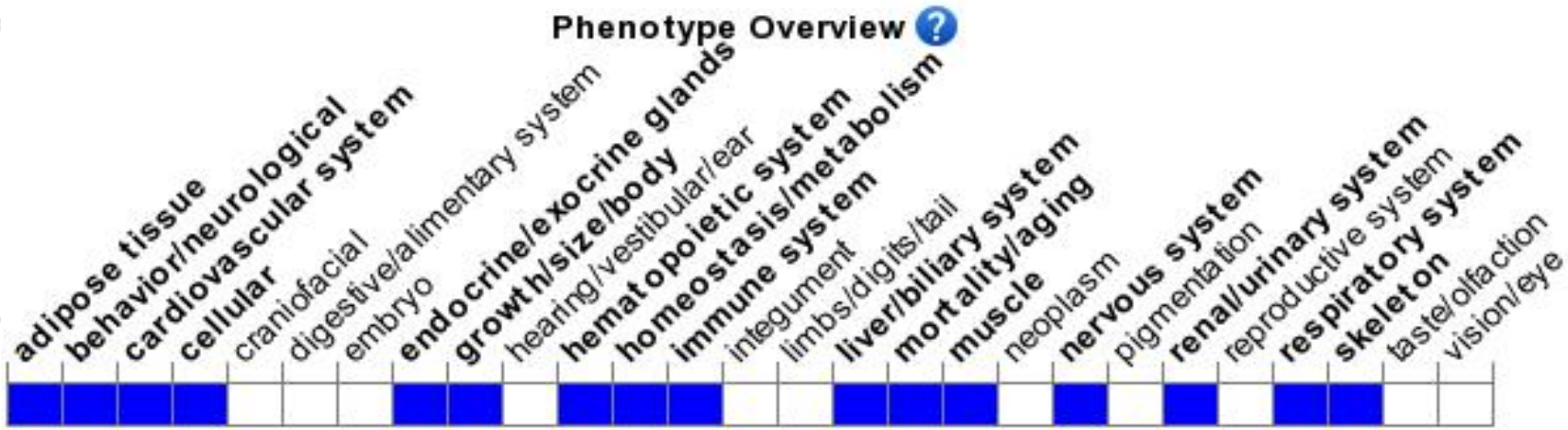
Genomic location distribution



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/).

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

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