Ffar1 Cas9-CKO Strategy

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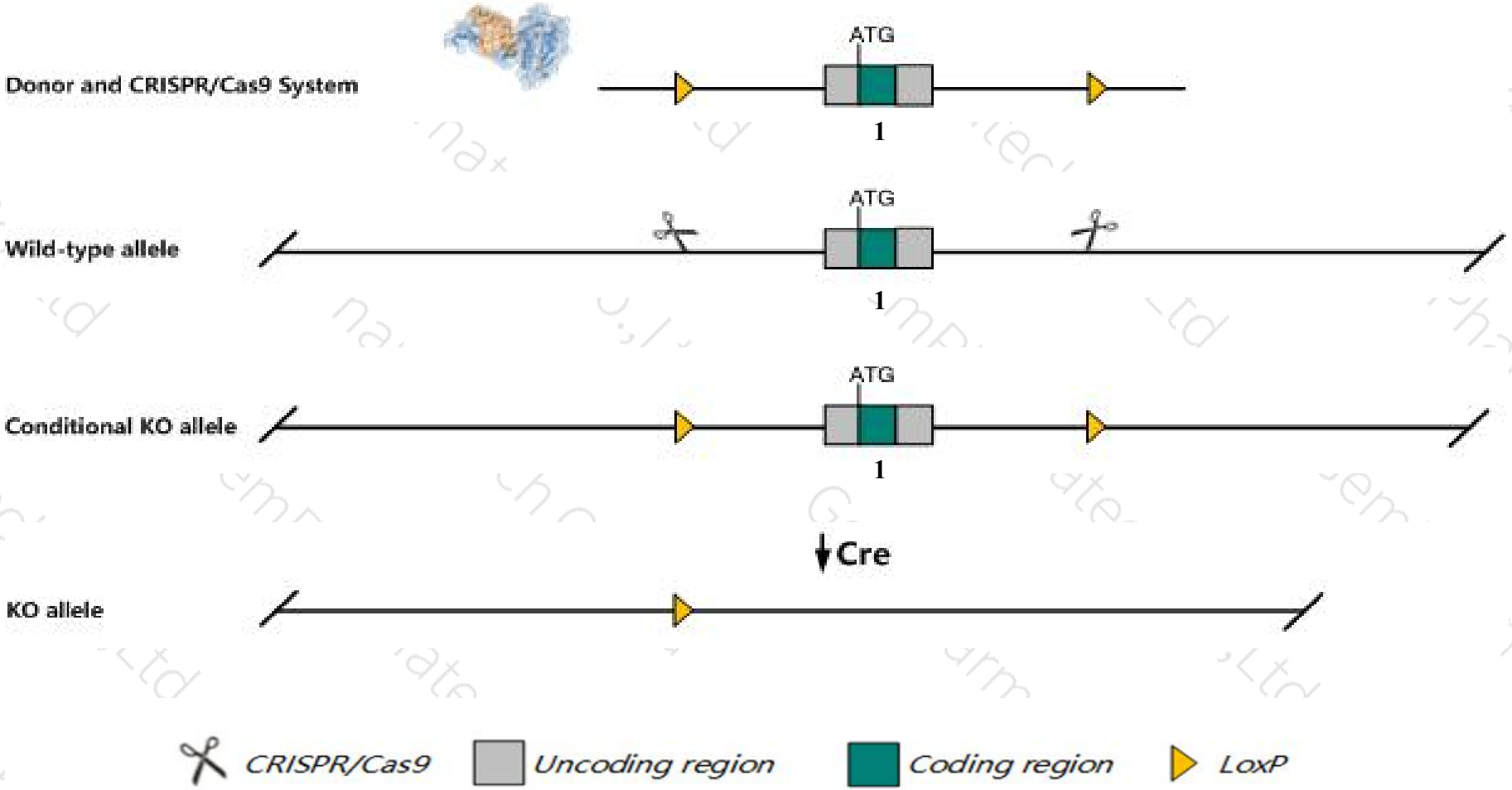
Project Overview

Project Name	***Ffar1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ffar1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ffar1* gene has 1 transcript. According to the structure of *Ffar1* gene, exon1 of *Ffar1-201*(ENSMUST00000052700.5) 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 *Ffar1* 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.

Notice

➢ According to the existing MGI data,there are conflicting reports on the metabolic affects of disrupting this gene. Glucose metabolism lipid levels have been studied.

➢ The KO region contains functional region of the Ffar3 gene and CD22 gene.Knockout the region may affect the function of Ffar3 gene and CD22 gene.

➢ The *Ffar1* gene is located on the Chr7. 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）

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Ffar1 free fatty acid receptor 1 [Mus musculus (house mouse)]

Gene ID: 233081, updated on 5-Mar-2019

Summary

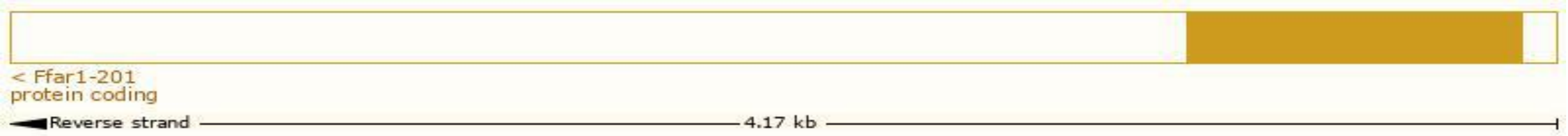
Official Symbol	Ffar1 provided by MGI
Official Full Name	free fatty acid receptor 1 provided by MGI
Primary source	MGI:MGI:2684079
See related	Ensembl:ENSMUSG00000044453
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gpr40
Orthologs	human all

Transcript information（Ensembl）

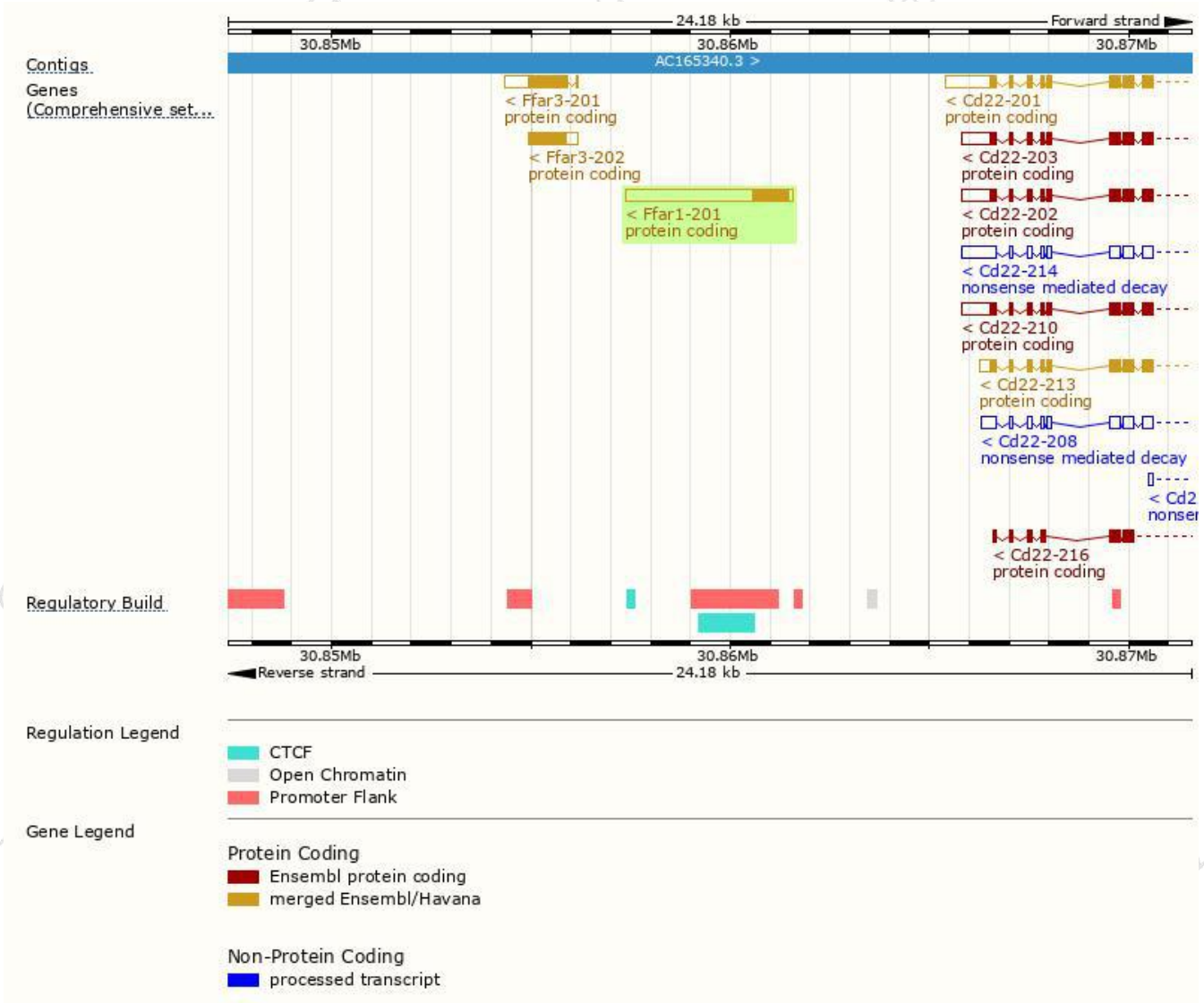
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ffar1-201	ENSMUST00000052700.5	4175	300aa	Protein coding	CCDS21113	Q76JU9	TSL:NA GENCODE basic APPRIS P1

The strategy is based on the design of *Ffar1-201* transcript,the transcription is shown below:

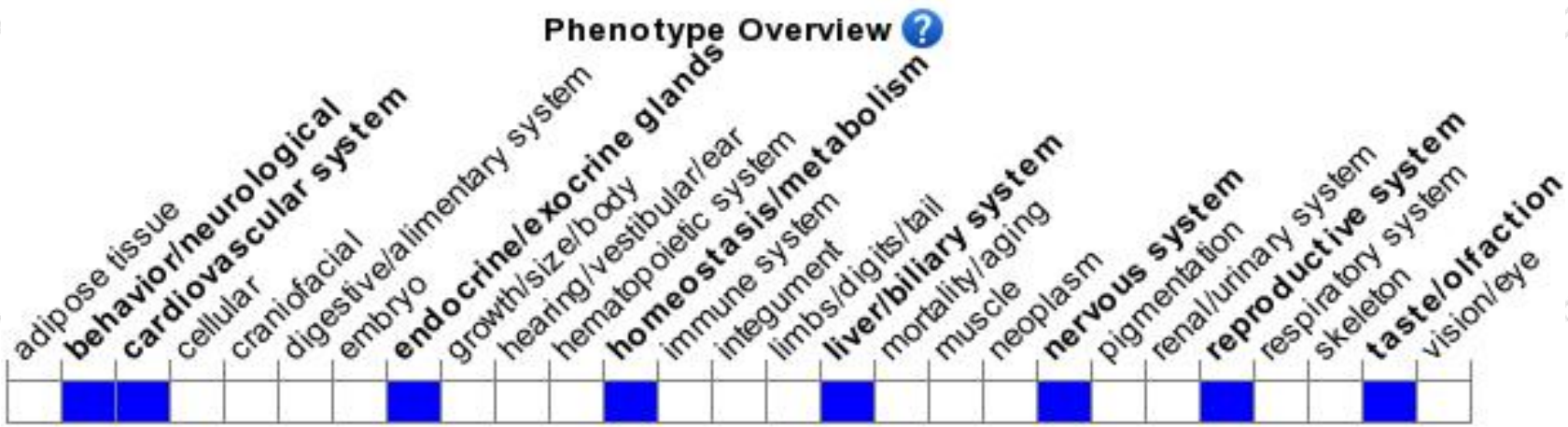


Genomic location distribution



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,there are conflicting reports on the metabolic affects of disrupting this gene. Glucose metabolism lipid levels have been studied.

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

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