

Fbp2 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Fbp2

Project type

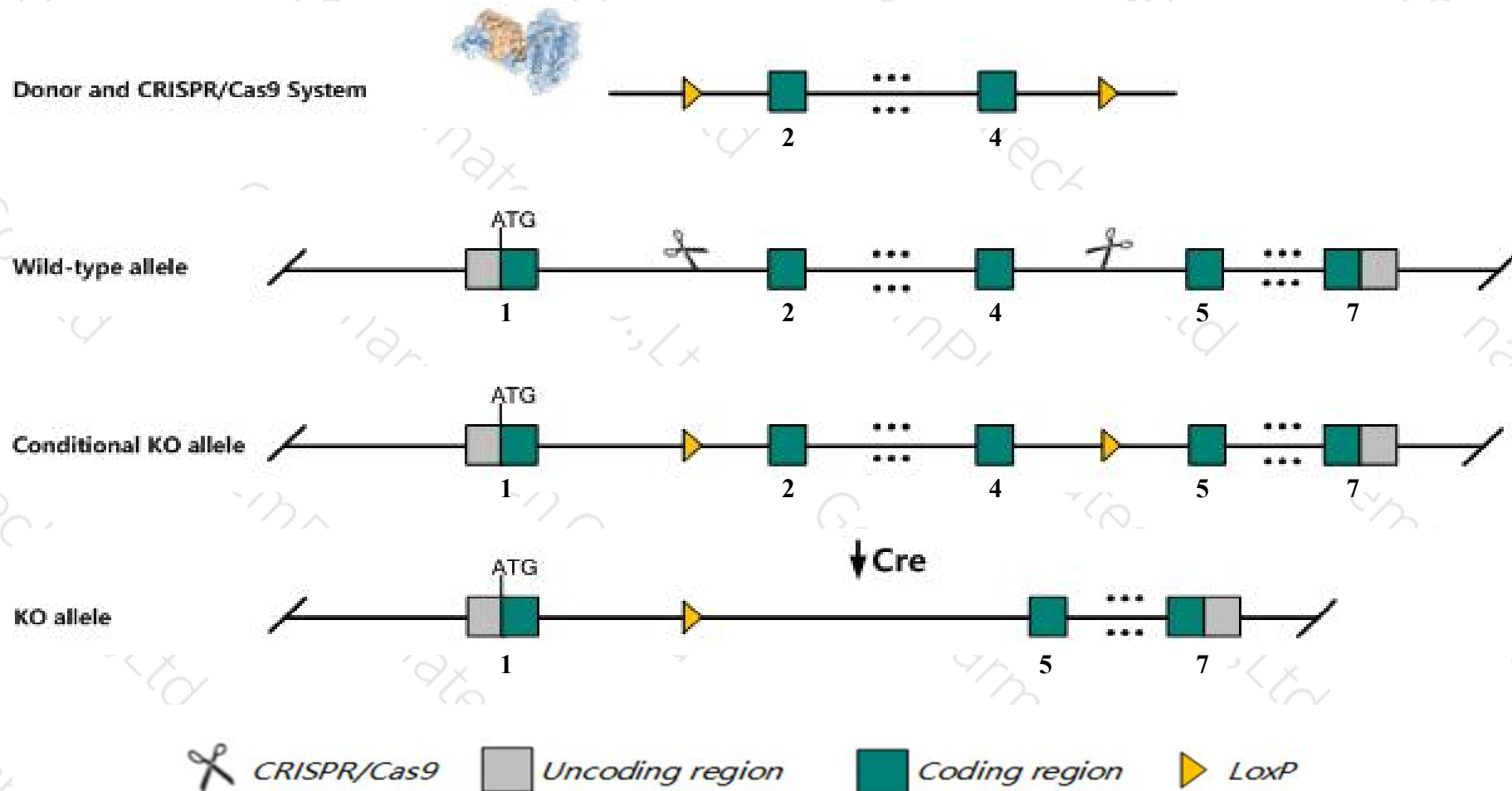
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fbp2* gene. The schematic diagram is as follows:



- The *Fbp2* gene has 2 transcripts. According to the structure of *Fbp2* gene, exon2-exon4 of *Fbp2-201* (ENSMUST00000021907.8) transcript is recommended as the knockout region. The region contains 397bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fbp2* 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, This locus controls electrophoretic variation of fructose biphosphatase isozymes in muscle. Isozymes of kidney, liver and testis are not affected. P, SEA, SWR and Peru-Coppock have a slow migrating band; SM, C3H/He, C57BL/Go, CE and DBA/2 have a fast migrating band. Heterozygotes are intermediate.
- The *Fbp2* gene is located on the Chr13. 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)

Fbp2 fructose biphosphatase 2 [*Mus musculus* (house mouse)]

Gene ID: 14120, updated on 12-Aug-2019

Summary

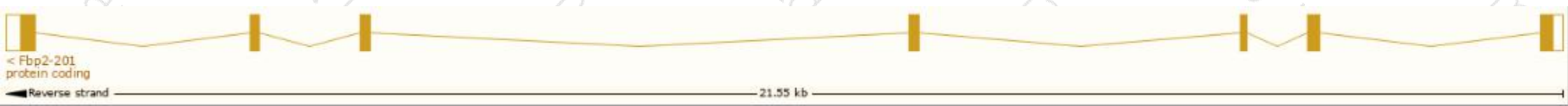
Official Symbol	Fbp2 provided by MGI
Official Full Name	fructose biphosphatase 2 provided by MGI
Primary source	MGI:MGI:95491
See related	Ensembl:ENSMUSG000000021456
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Fbp1; Fbp-1; Rae-30
Expression	Biased expression in large intestine adult (RPKM 74.4), placenta adult (RPKM 60.2) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

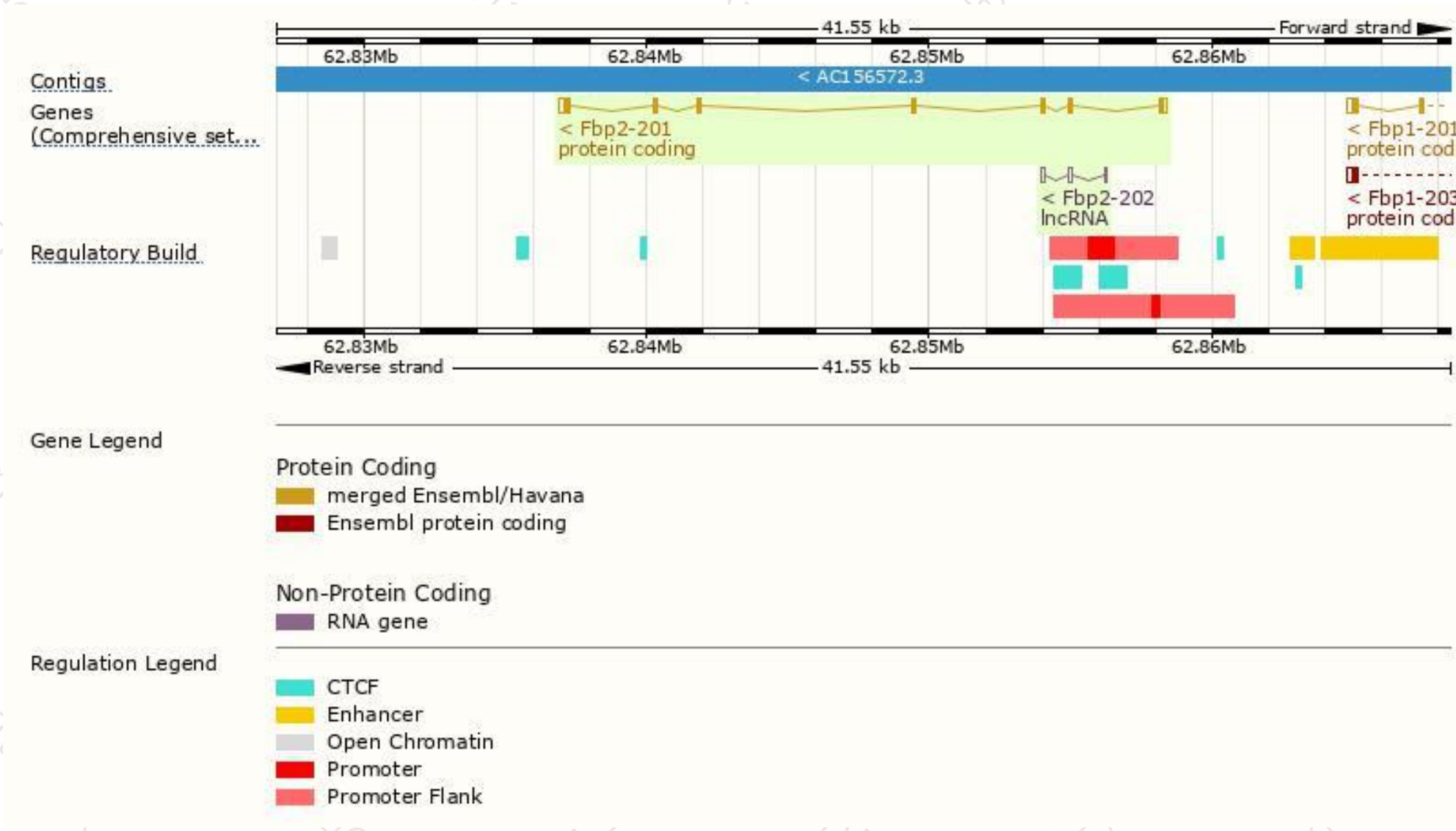
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fbp2-201	ENSMUST00000021907.8	1354	339aa	Protein coding	CCDS36698	P70695 Q3TKP4	TSL:1 GENCODE basic APPRIS P1
Fbp2-202	ENSMUST000000222000.1	371	No protein	lncRNA	-	-	TSL:3

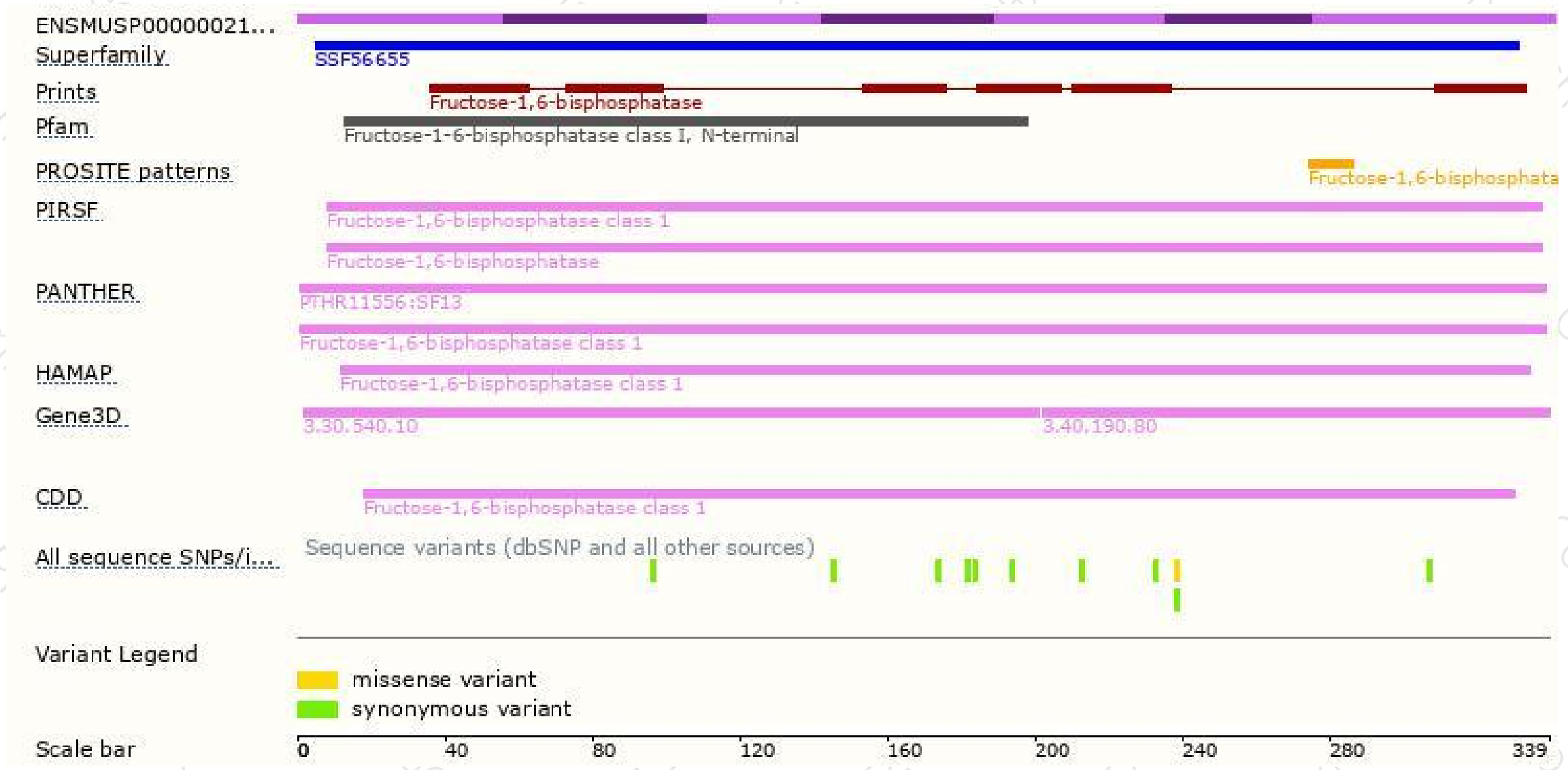
The strategy is based on the design of *Fbp2-201* transcript,The transcription is shown below



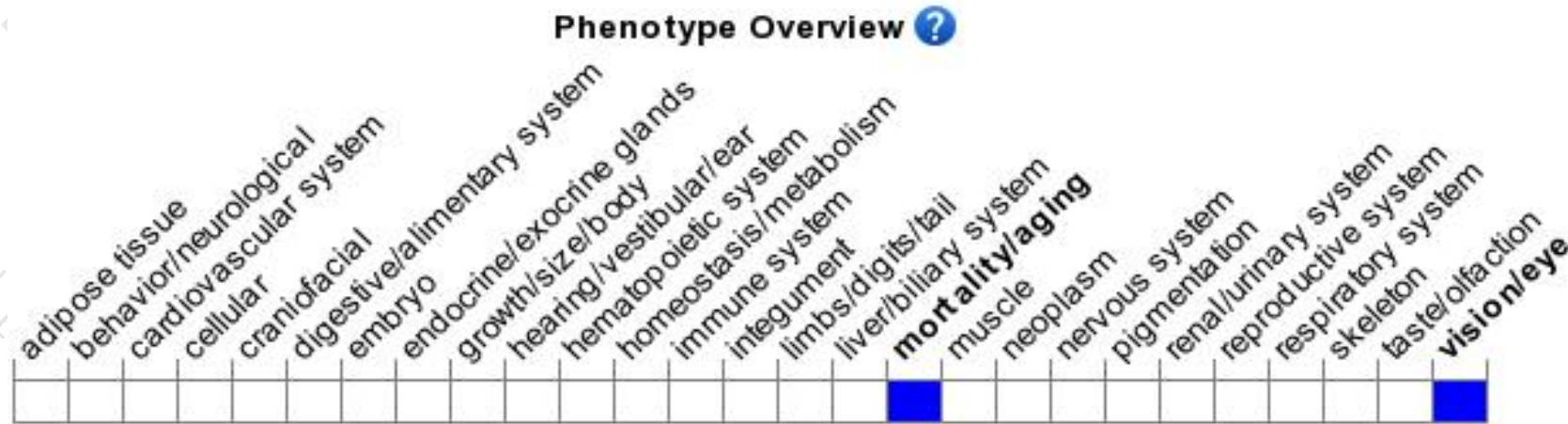
Genomic location distribution



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, This locus controls electrophoretic variation of fructose biphosphatase isozymes in muscle. Isozymes of kidney, liver and testis are not affected. P, SEA, SWR and Peru-Coppock have a slow migrating band; SM, C3H/He, C57BL/Go, CE and DBA/2 have a fast migrating band. Heterozygotes are intermediate.

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

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