Tgfbr3 Cas9-CKO Strategy

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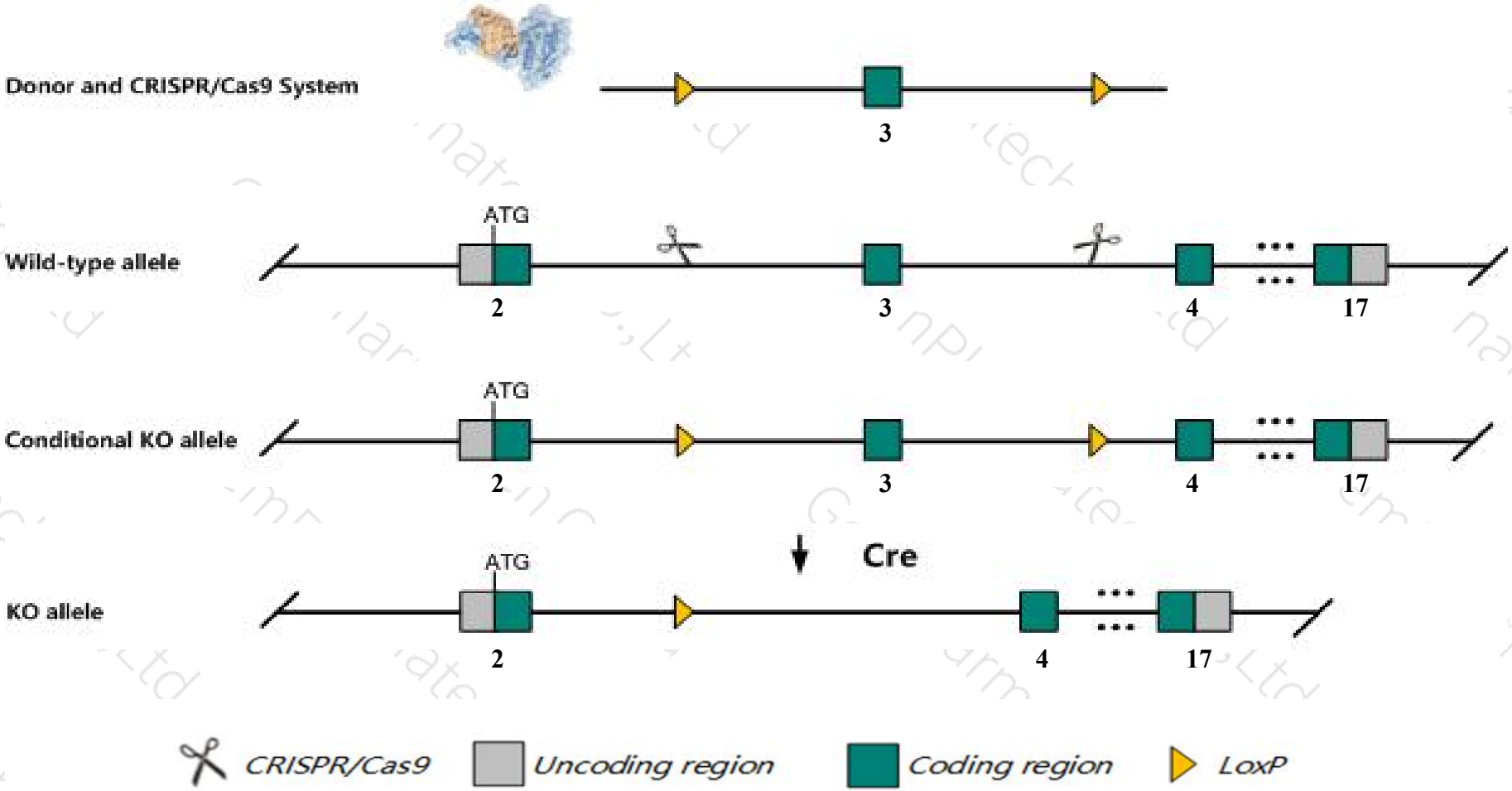
Project Overview

Project Name	***Tgfbr3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tgfbr3* gene. The schematic diagram is as follows:



Technical routes

- The *Tgfbr3* gene has 4 transcripts. According to the structure of *Tgfbr3* gene, exon3 of *Tgfbr3-201* (ENSMUST00000031224.14) transcript is recommended as the knockout region.The region contains 185bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tgfbr3* 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,Mice homozygous for disruptions in this gene usually die as embryos. The very few individuals that survive are poorly fertile with abnormalities of the spleen, liver, heart, and skeletal system.

➢ The *Tgfbr3* gene is located on the Chr5. 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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Tgfbr3 transforming growth factor, beta receptor III [*Mus musculus* (house mouse)]

Gene ID: 21814, updated on 12-Aug-2019

Summary

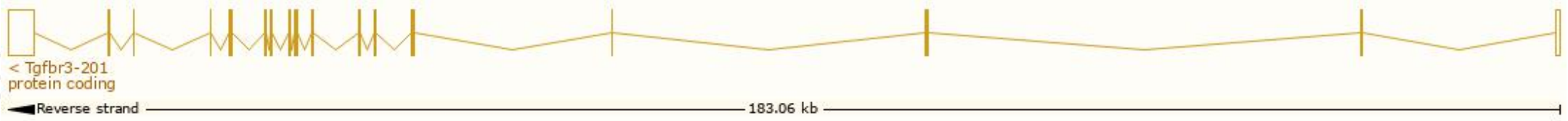
Official Symbol	Tgfbr3 provided by MGI
Official Full Name	transforming growth factor, beta receptor III provided by MGI
Primary source	MGI:MGI:104637
See related	Ensembl:ENSMUSG00000029287
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TBRIII; AU015626; AW215636; 1110036H20Rik
Expression	Broad expression in adrenal adult (RPKM 38.6), bladder adult (RPKM 20.1) and 20 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

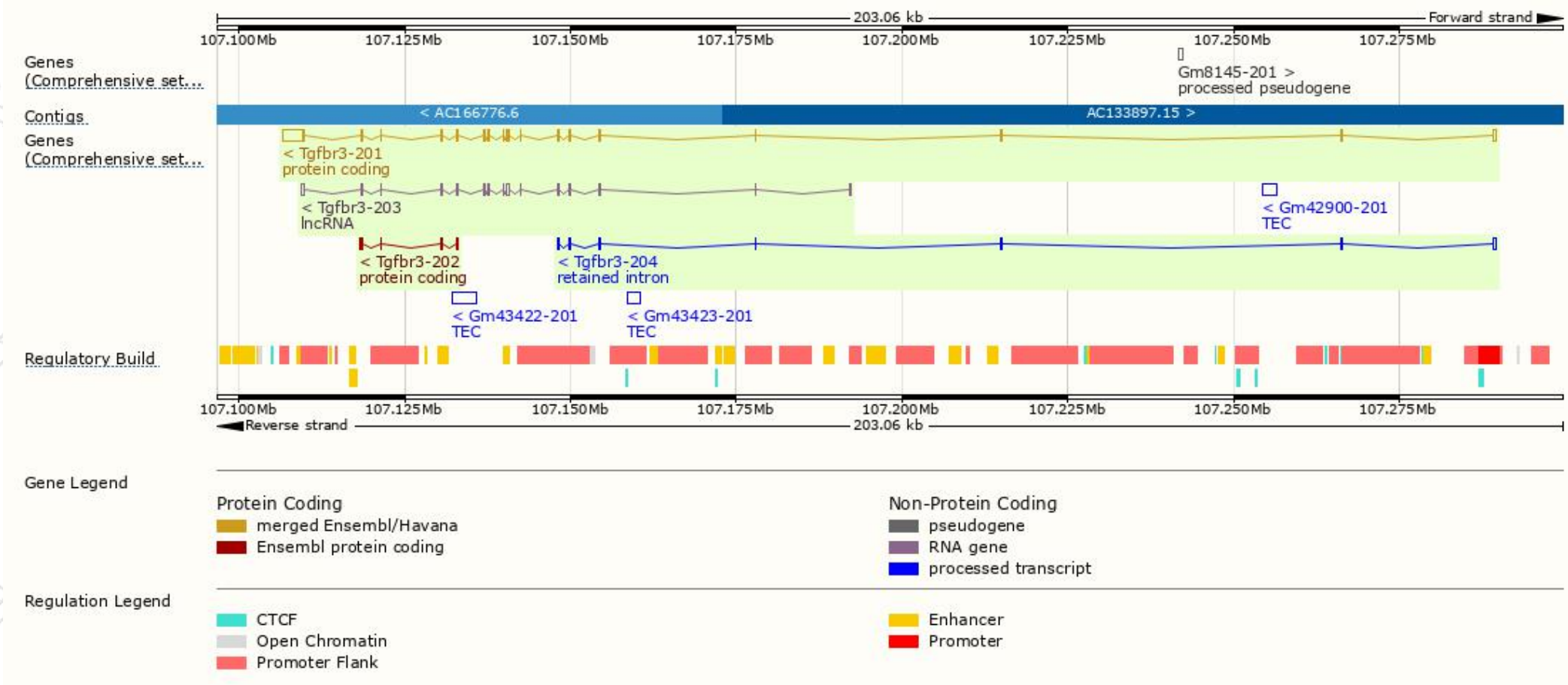
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tgfbr3-201	ENSMUST00000031224.14	6087	850aa	Protein coding	CCDS19499	A0A0R4J097	TSL:1 GENCODE basic APPRIS P1
Tgfbr3-202	ENSMUST00000136882.1	687	156aa	Protein coding	-	F6VPT9	CDS 5' incomplete TSL:2
Tgfbr3-204	ENSMUST00000146591.1	1368	No protein	Retained intron	-	-	TSL:1
Tgfbr3-203	ENSMUST00000138469.7	2849	No protein	lncRNA	-	-	TSL:1

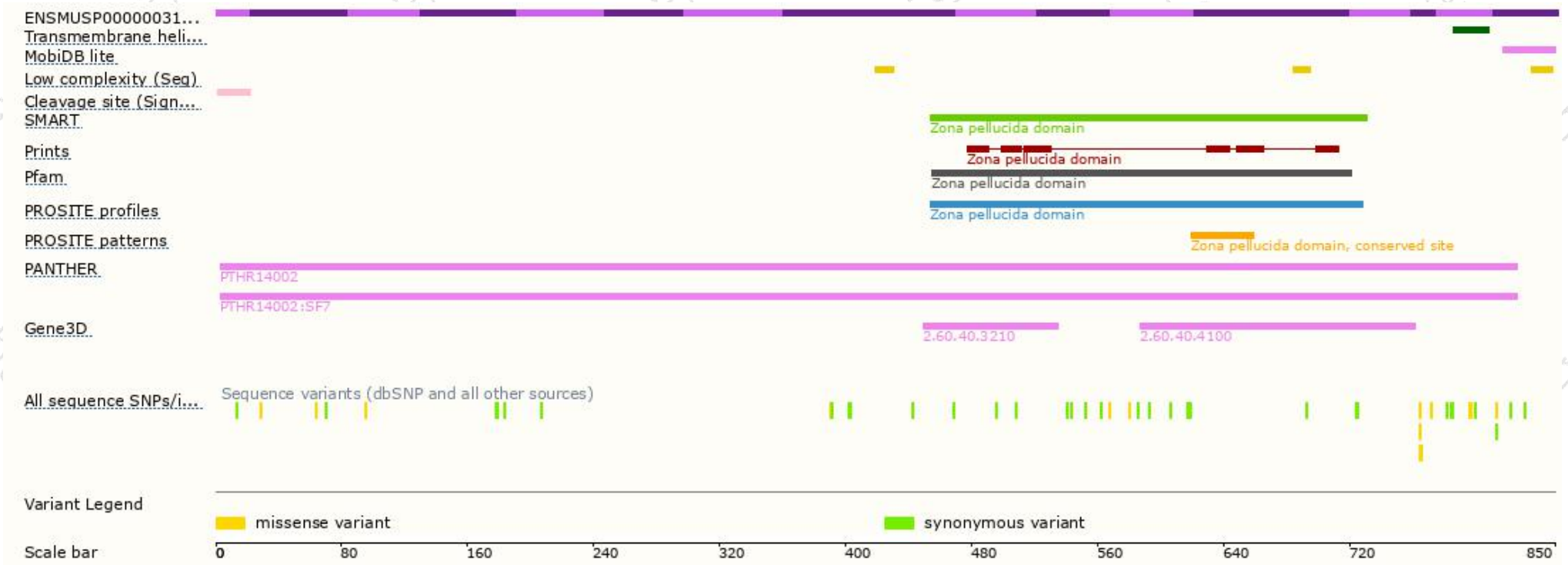
The strategy is based on the design of *Tgfbr3-201* transcript,The transcription is shown below



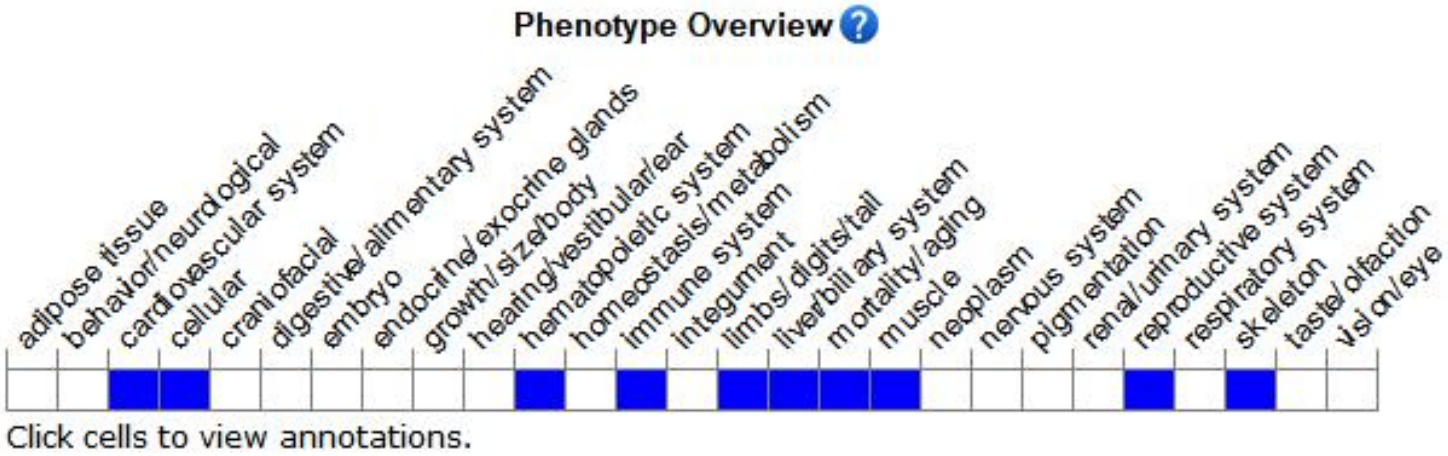
Genomic location distribution



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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