Tnks1bp1 Cas9-CKO Strategy

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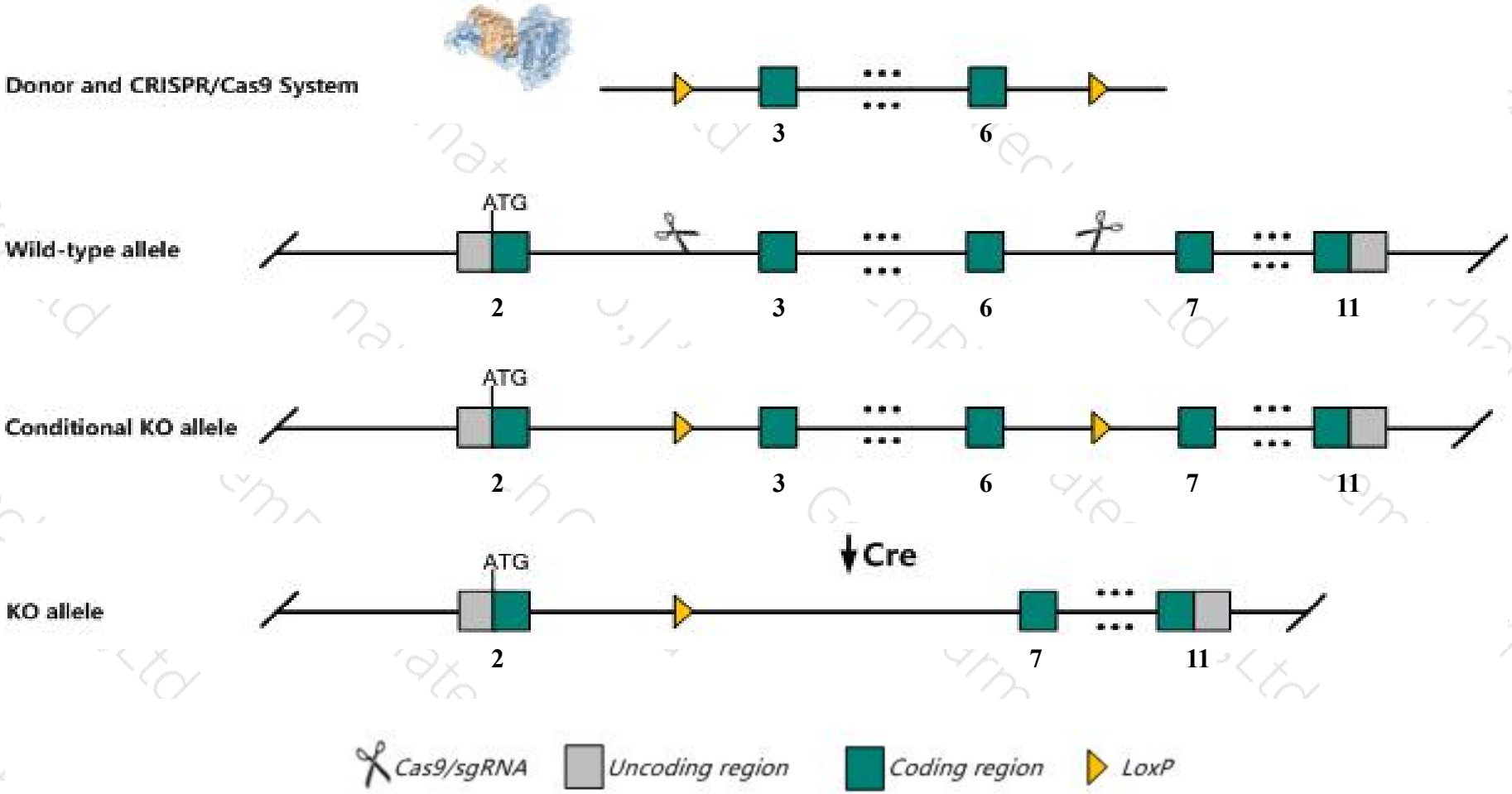
Project Overview

Project Name	***Tnks1bp1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tnks1bp1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Tnks1bp1* gene has 8 transcripts. According to the structure of *Tnks1bp1* gene, exon3-exon6 of *Tnks1bp1-202*(ENSMUST00000111605.8) transcript is recommended as the knockout region.The region contains 4192bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Tnks1bp1* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was 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

➢ The *Tnks1bp1* gene is located on the Chr2. 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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Tnks1bp1 tankyrase 1 binding protein 1 [*Mus musculus* (house mouse)]

Gene ID: 228140, updated on 25-Sep-2020

Summary

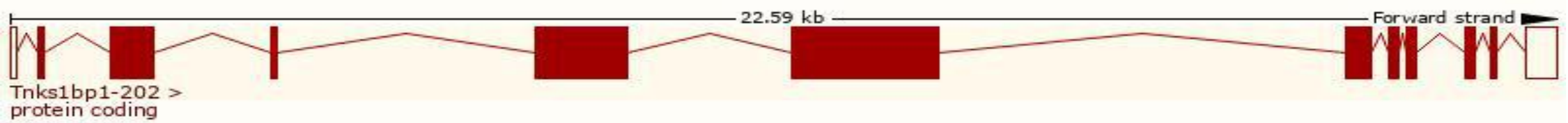
Official Symbol	Tnks1bp1 provided by MGI
Official Full Name	tankyrase 1 binding protein 1 provided by MGI
Primary source	MGI:MGI:2446193
See related	Ensembl:ENSMUSG00000033955
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TAB18; Tab182; mKIAA1741
Expression	Ubiquitous expression in lung adult (RPKM 19.5), colon adult (RPKM 15.5) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

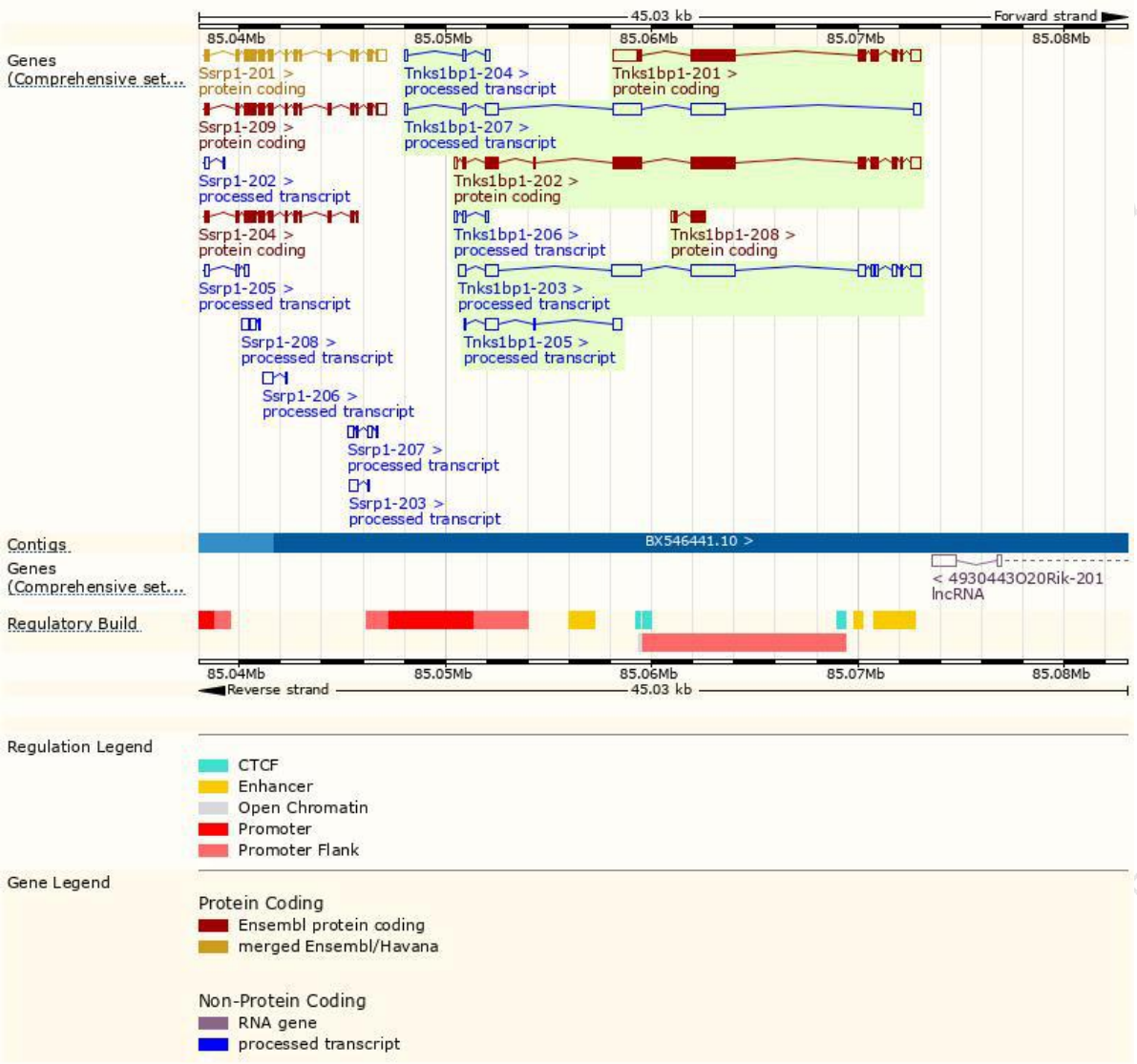
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tnks1bp1-202	ENSMUST00000111605.8	5747	1720aa	Protein coding	CCDS38166	P58871	TSL:1 GENCODE basic APPRIS P2
Tnks1bp1-201	ENSMUST00000048400.3	4799	1058aa	Protein coding	-	Z4YJL4	TSL:1 GENCODE basic APPRIS ALT2
Tnks1bp1-208	ENSMUST00000238769.1	939	276aa	Protein coding	-	-	CDS 3' incomplete
Tnks1bp1-203	ENSMUST00000126309.7	5885	No protein	Processed transcript	-	-	TSL:5
Tnks1bp1-207	ENSMUST00000151092.7	4199	No protein	Processed transcript	-	-	TSL:5
Tnks1bp1-205	ENSMUST00000148682.1	1214	No protein	Processed transcript	-	-	TSL:5
Tnks1bp1-204	ENSMUST00000139915.1	433	No protein	Processed transcript	-	-	TSL:2
Tnks1bp1-206	ENSMUST00000150200.7	342	No protein	Processed transcript	-	-	TSL:2

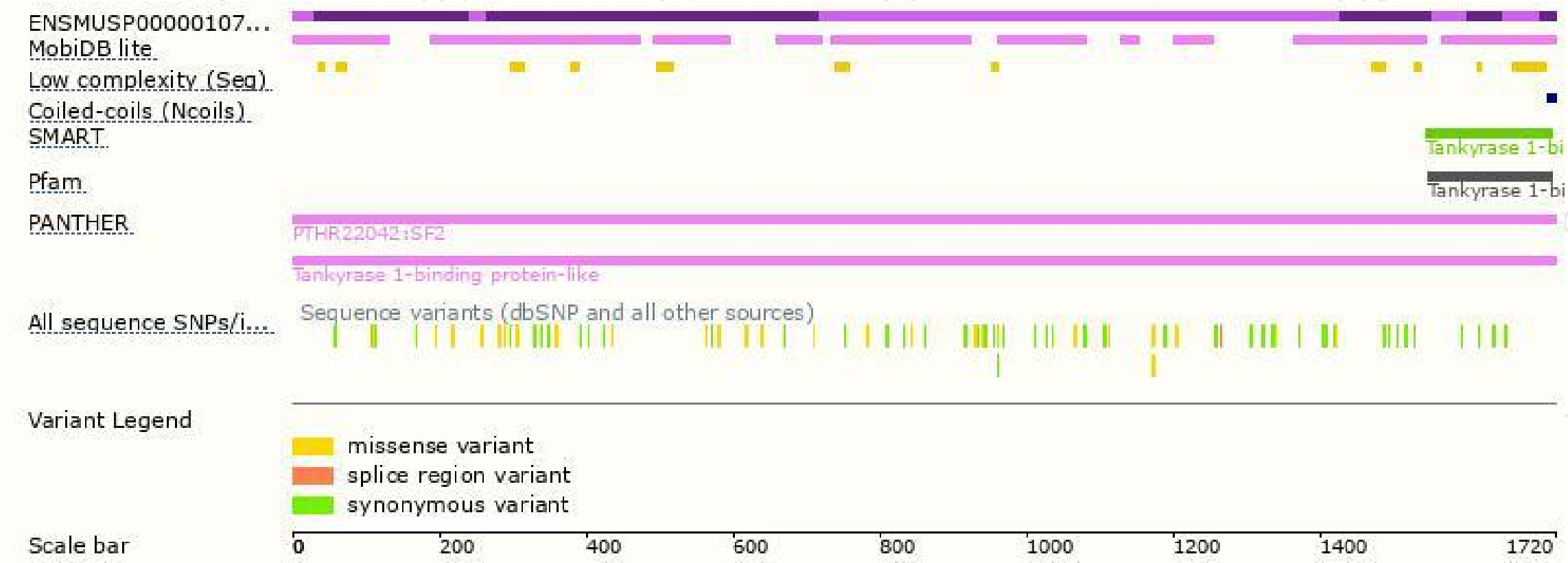
The strategy is based on the design of *Tnks1bp1-202* transcript,the transcription is shown below:



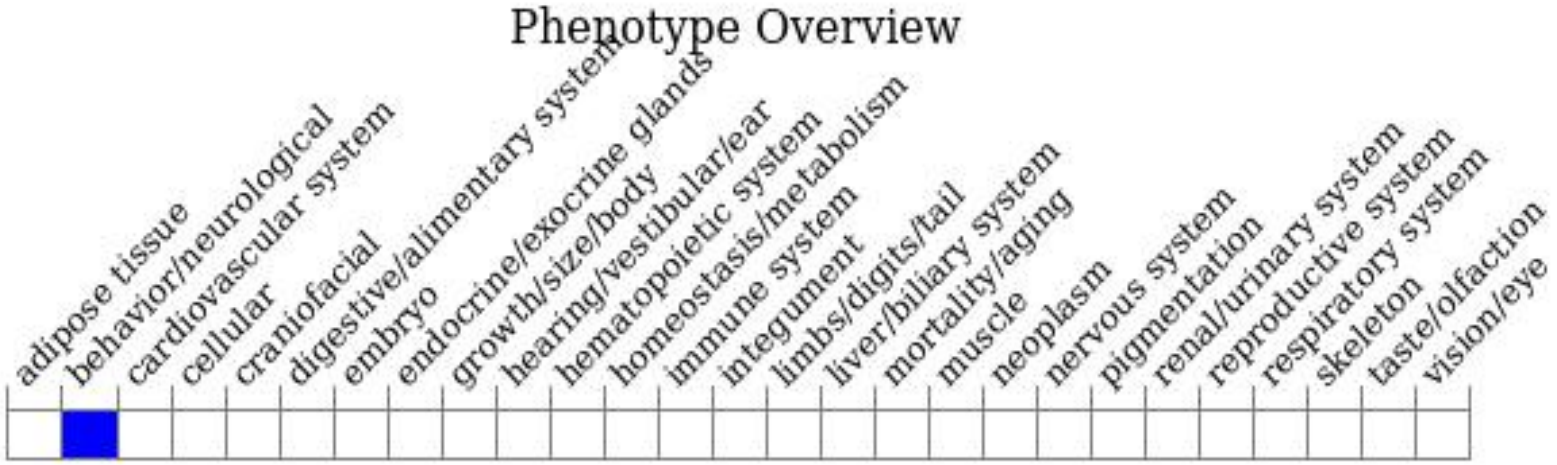
Genomic location distribution



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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