Xkr4 Cas9-KO Strategy

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Project Overview

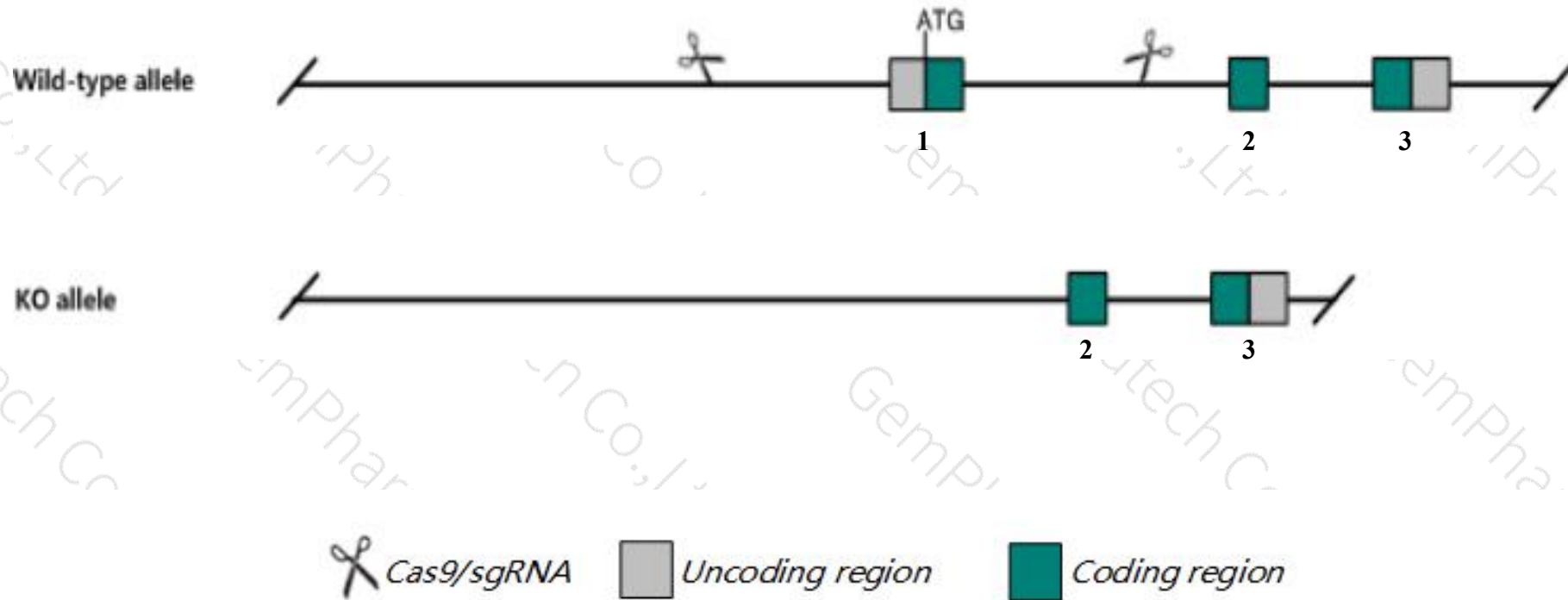|	
Project Name	*Xkr4*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Xkr4* gene. The schematic diagram is as follows:

Technical routes

➢ The *Xkr4* gene has 3 transcripts. According to the structure of *Xkr4* gene, exon1 of *Xkr4-201*(ENSMUST00000070533.4) transcript is recommended as the knockout region.The region contains start codon ATG.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Xkr4* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

➢ The *Xkr4* gene is located on the Chr1. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

Xkr4 X-linked Kx blood group related 4 [Mus musculus (house mouse)]
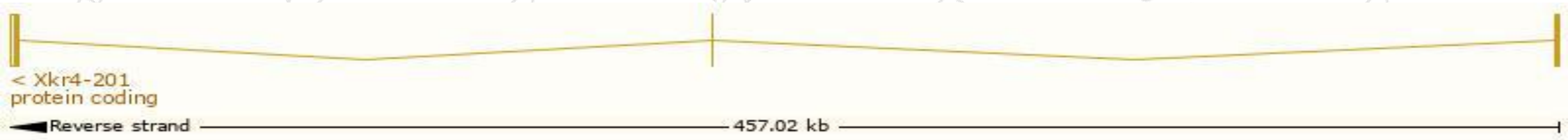
Gene ID: 497097, updated on 13-Mar-2020

▲ Summary

Official Symbol	Xkr4 provided by MGI
Official Full Name	X-linked Kx blood group related 4 provided by MGI
Primary source	MGI:MGI:3528744
See related	Ensembl:ENSMUSG00000051951
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AY534250, Gm210, XRG4, mKIAA1889
Expression	Biased expression in CNS E18 (RPKM 4.4), frontal lobe adult (RPKM 2.6) and 5 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Xkr4-201	ENSMUST00000070533.4	3634	647aa	Protein coding	CCDS14803	Q5GH67	TSL:1 GENCODE basic APPRIS P1
Xkr4-203	ENSMUST00000162897.1	4153	No protein	Processed transcript	-	-	TSL:1
Xkr4-202	ENSMUST00000159265.1	2989	No protein	Processed transcript	-	-	TSL:1

The strategy is based on the design of *Xkr4-201* transcript,the transcription is shown below:
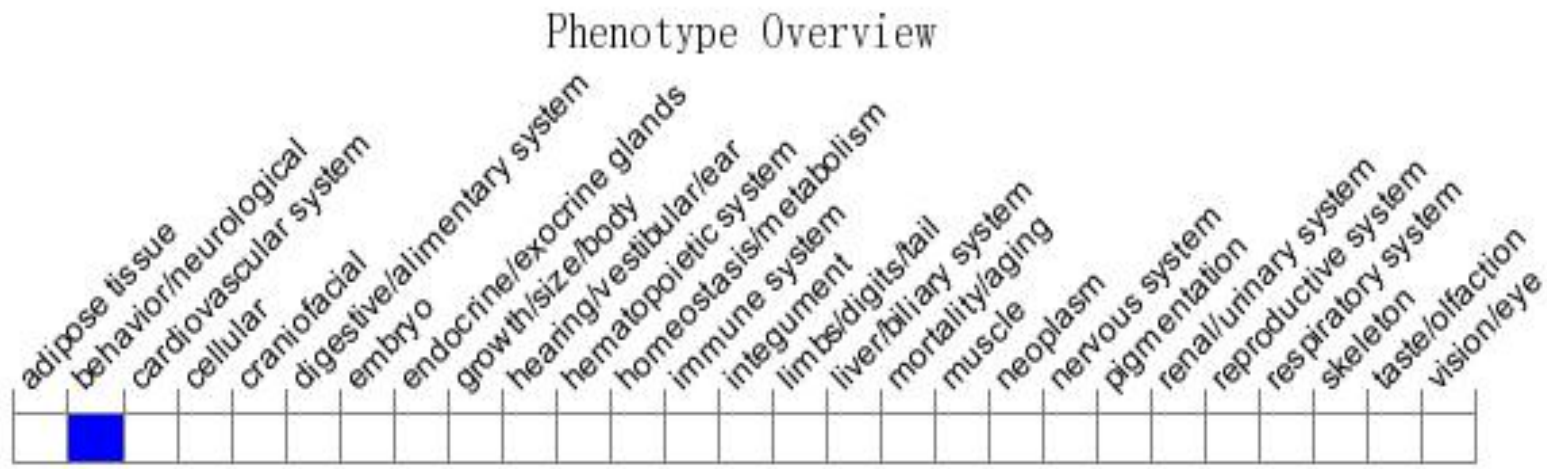

< Xkr4-201
protein coding

◄ Reverse strand

457.02 kb

Genomic location distribution

Protein domain

ENSMUSP00000070...										
Transmembrane heli...										
MobiDB lite										
Low complexity (Seg)										
Pfam		XK-related protein								
PANTHER		PTHR16024								
		PTHR16024:SF16								
All sequence SNPs/i...		Sequence variants (dbSNP and all other sources)								

Variant Legend

- inframe insertion
- inframe deletion
- missense variant
- synonymous variant

Scale bar 0 60 120 180 240 300 360 420 480 540 647
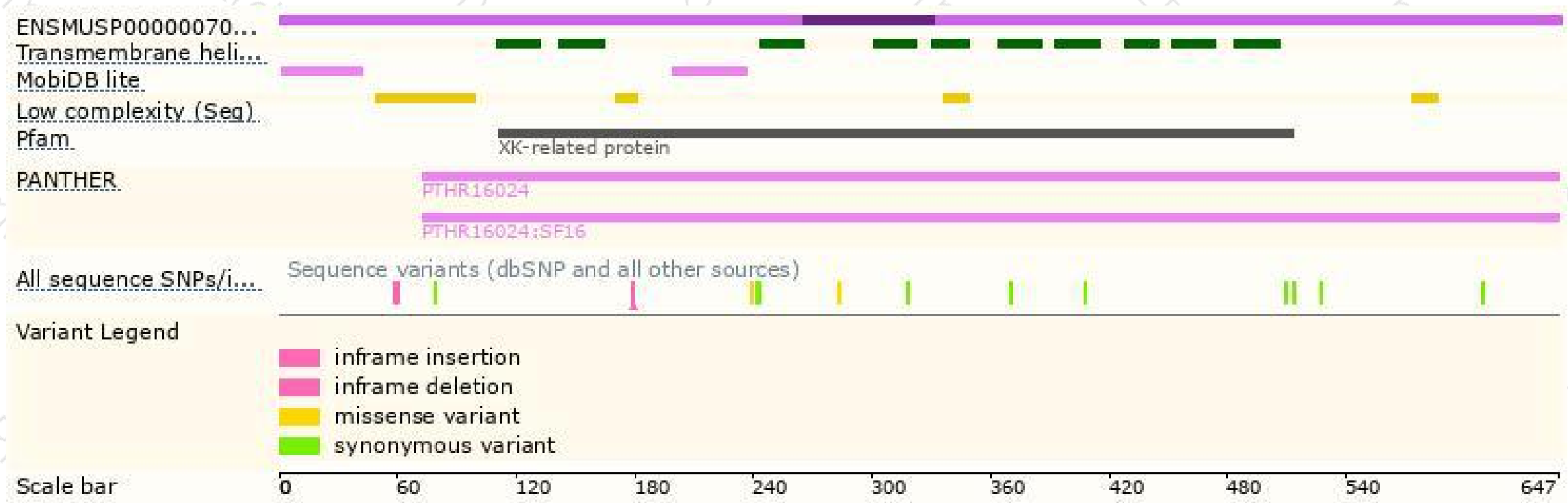
Mouse phenotype description(MGI)

Phenotype Overview

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).

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