

Mkx Cas9-KO Strategy

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Project Overview

Project Name

Mkx

Project type

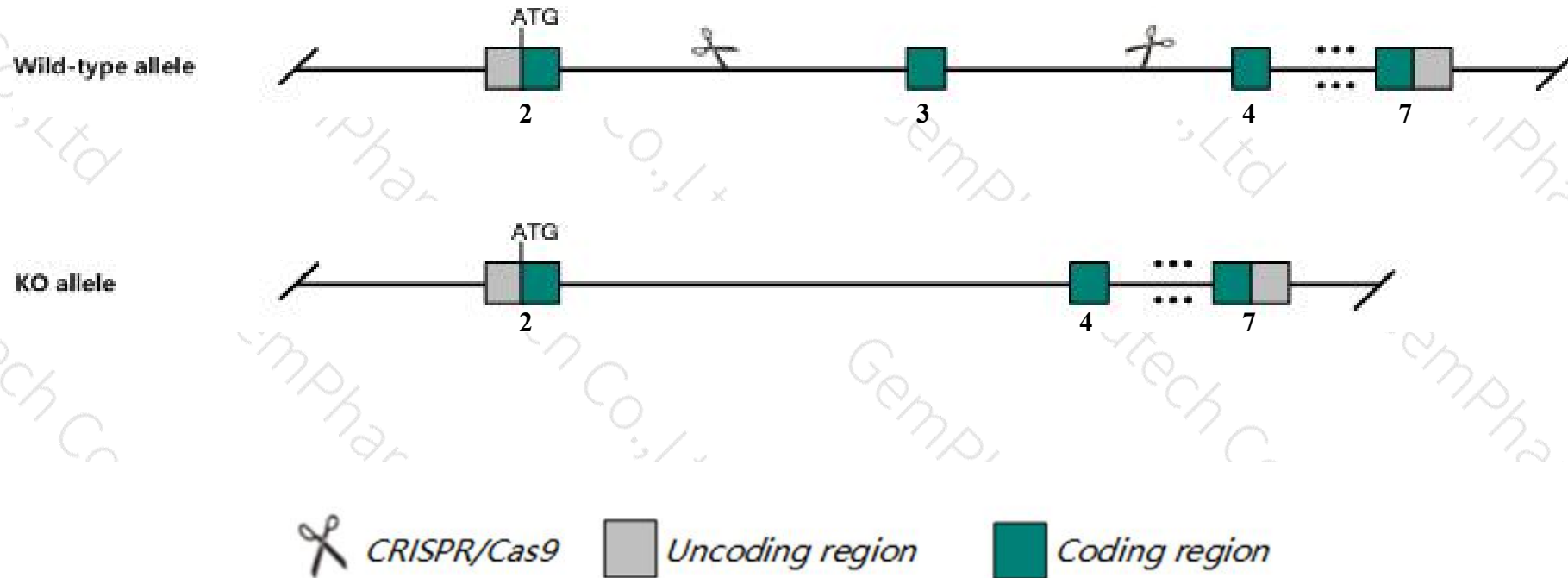
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Mkx* gene has 4 transcripts. According to the structure of *Mkx* gene, exon3 of *Mkx-201* (ENSMUST00000079788.6) transcript is recommended as the knockout region. The region contains 160bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mkx* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit thin, hypoplastic tendons with reduced tensile strength.
- The *Mkx* gene is located on the Chr18. 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)

Mkx mohawk homeobox [Mus musculus (house mouse)]

Gene ID: 210719, updated on 31-Jan-2019

Summary



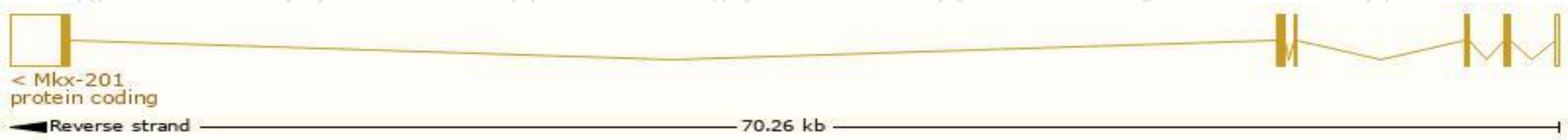
Official Symbol	Mkx provided by MGI
Official Full Name	mohawk homeobox provided by MGI
Primary source	MGI:MGI:2687286
See related	Ensembl:ENSMUSG00000061013
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9430023B20Rik, Irx11
Expression	Biased expression in limb E14.5 (RPKM 9.5), cortex adult (RPKM 5.3) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

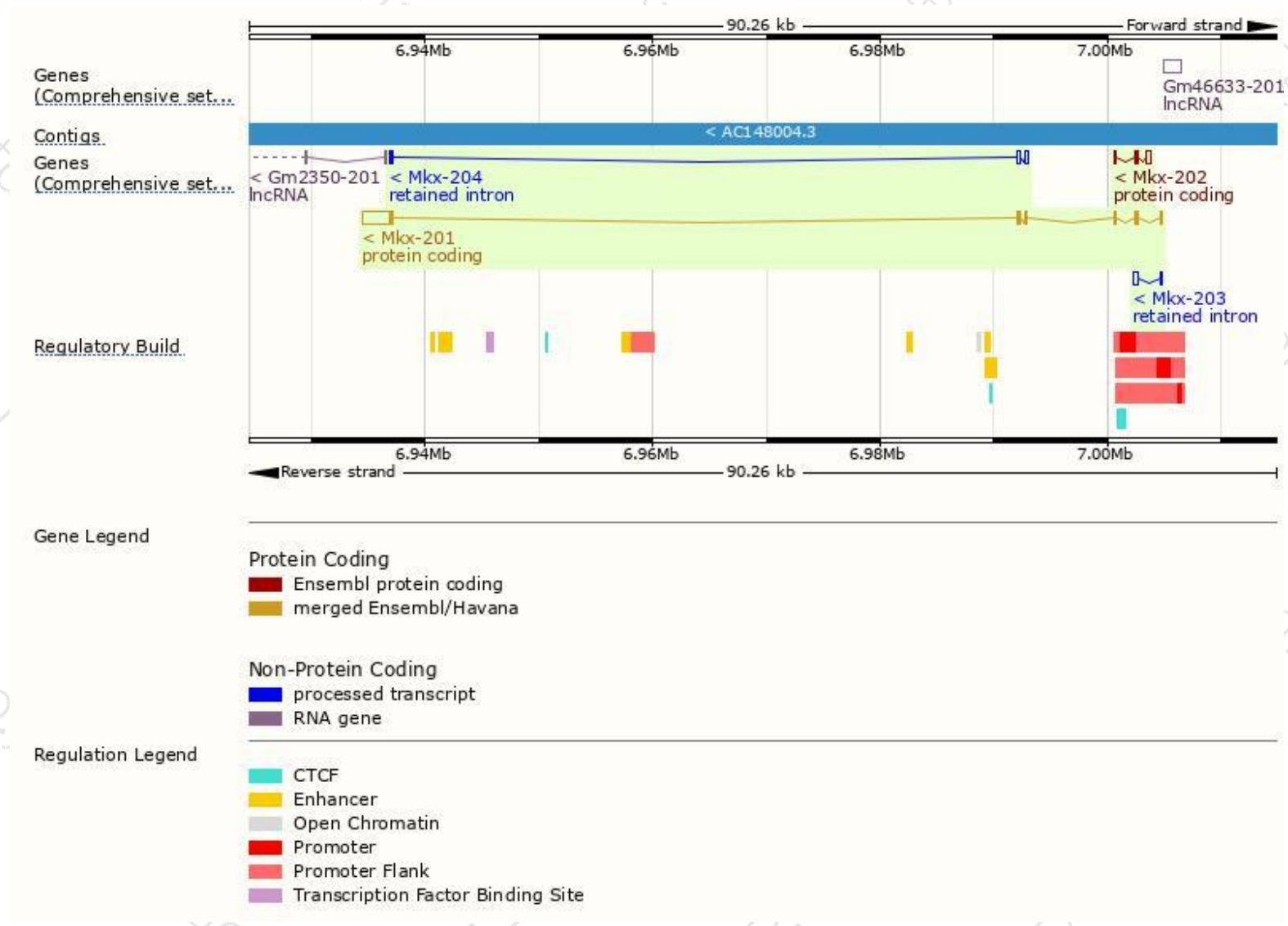
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mkx-201	ENSMUST00000079788.6	3650	354aa	Protein coding	CCDS37728	B2RQ30	TSL:1 GENCODE basic APPRIS P1
Mkx-202	ENSMUST00000176608.1	722	101aa	Protein coding	-	-	CDS 3' incomplete TSL:3
Mkx-204	ENSMUST00000188926.1	684	No protein	Retained intron	-	-	TSL:3
Mkx-203	ENSMUST00000176757.1	425	No protein	Retained intron	-	-	TSL:2

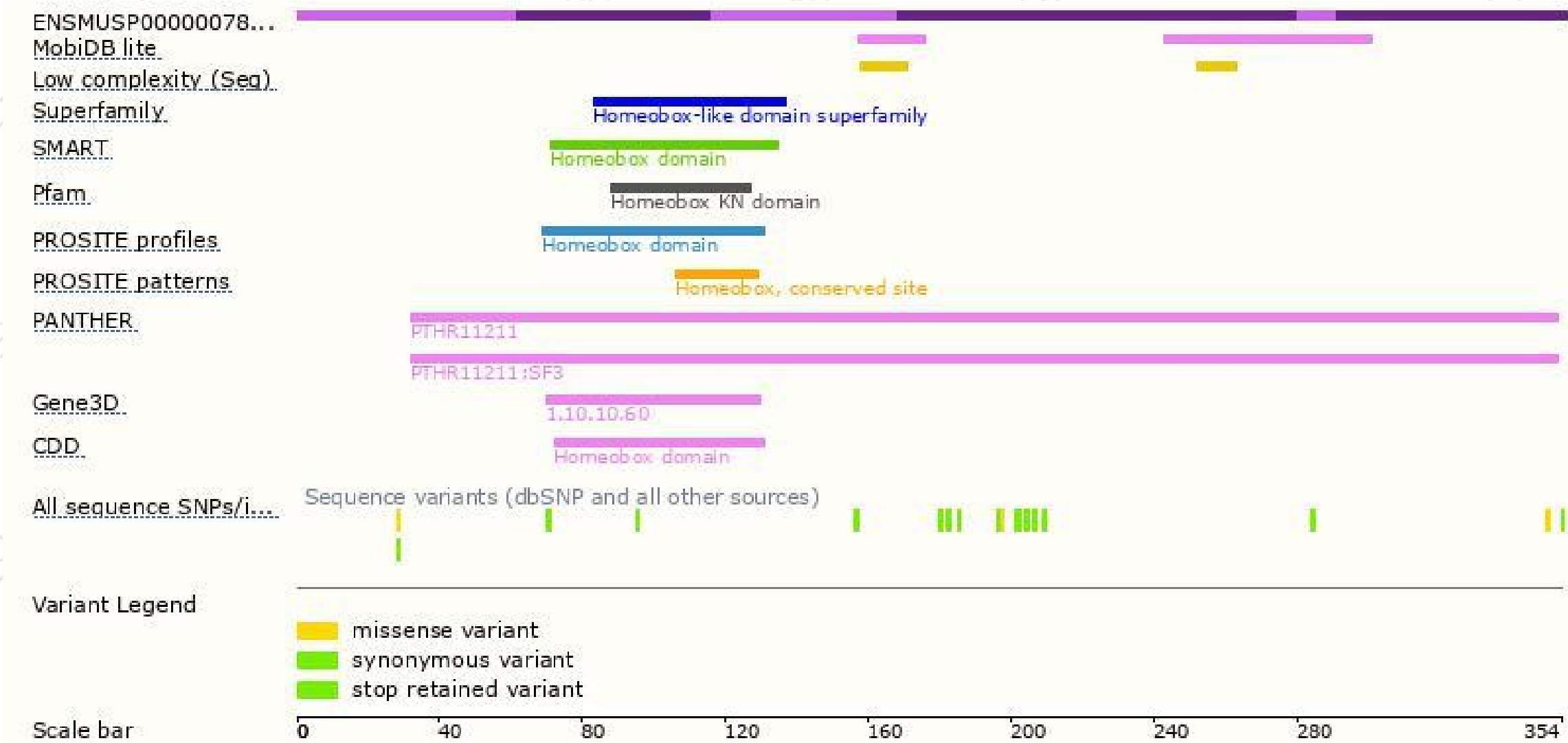
The strategy is based on the design of *Mkx-201* transcript,The transcription is shown below



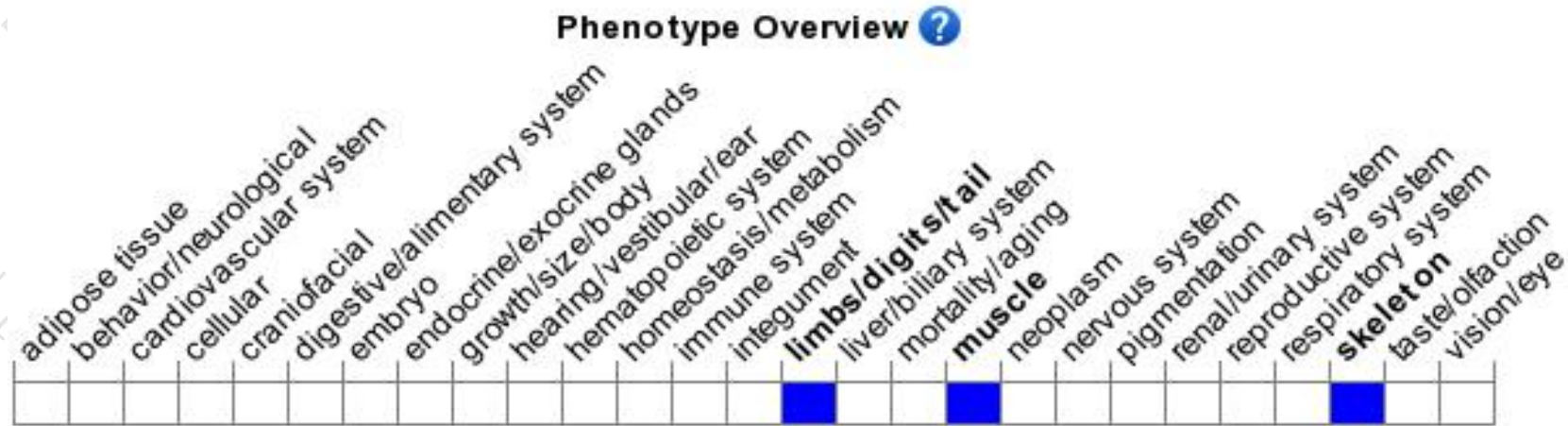
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit thin, hypoplastic tendons with reduced tensile strength.

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

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