Kxd1 Cas9-CKO Strategy

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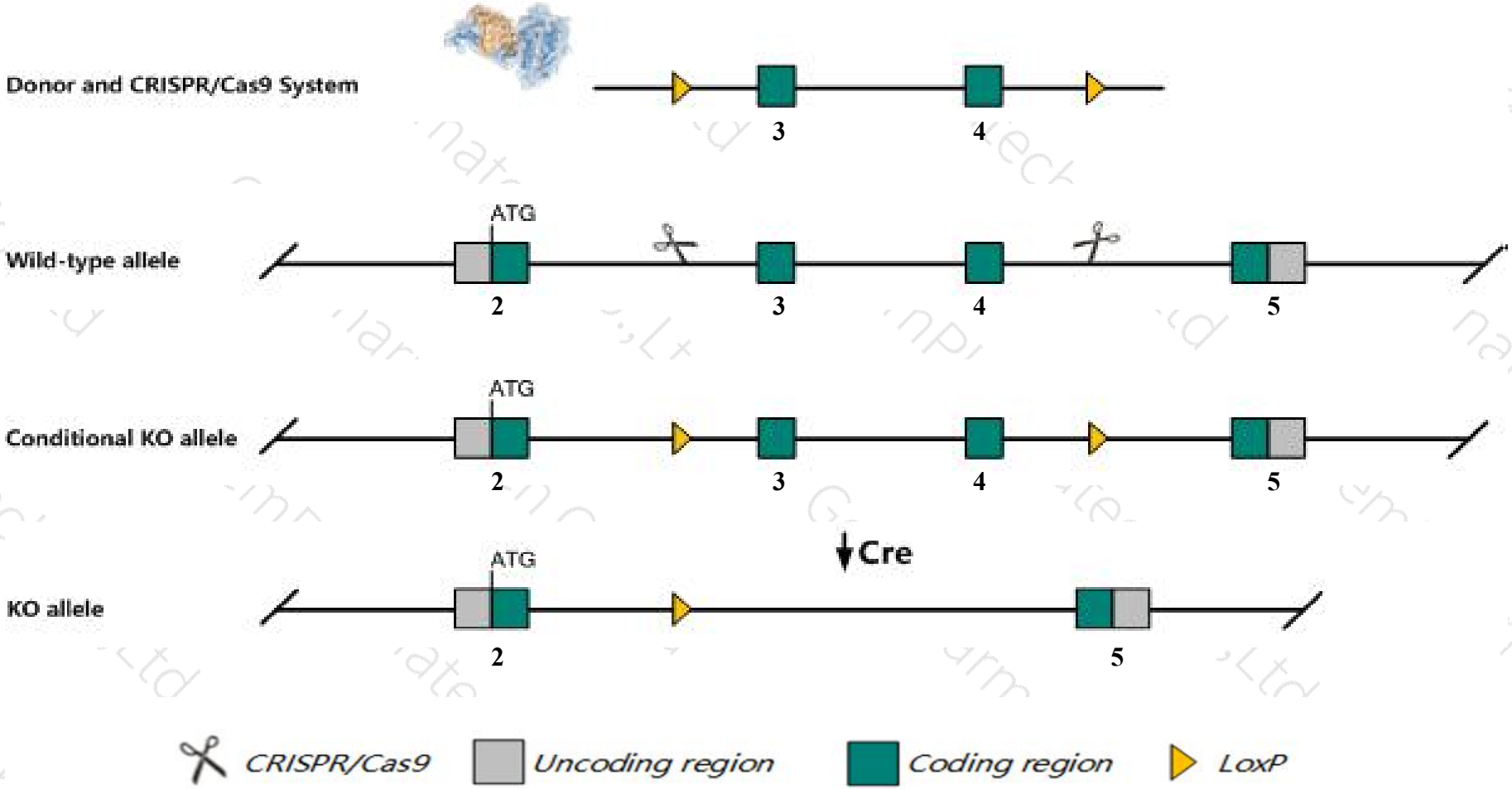
Project Overview

Project Name	***Kxd1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kxd1* gene. The schematic diagram is as follows:



Technical routes

- The *Kxd1* gene has 9 transcripts. According to the structure of *Kxd1* gene, exon3-exon4 of *Kxd1-201* (ENSMUST00000093456.11) transcript is recommended as the knockout region.The region contains 200bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Kxd1* 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

- The floxed region is near to the N-terminal of *Uba52* and *Fkbp8* gene,this strategy may influence the regulatory function of the N-terminal of *Uba52* and *Fkbp8* gene.

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit reduced melanosomes in the choroid and retinal pigment epithelium and decreased platelet dense granule number.

- The *Kxd1* gene is located on the Chr8. 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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Kxd1 KxDL motif containing 1 [Mus musculus (house mouse)]

Gene ID: 75620, updated on 31-Jan-2019

Summary

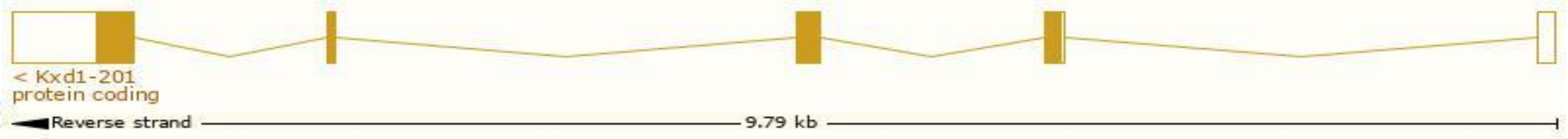
Official Symbol	Kxd1 provided by MGI
Official Full Name	KxDL motif containing 1 provided byMGI
Primary source	MGI:MGI:1922870
See related	Ensembl:ENSMUSG00000055553
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	0610030B01Rik, 2810422J05Rik, C78305
Expression	Ubiquitous expression in kidney adult (RPKM 49.4), heart adult (RPKM 35.3) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

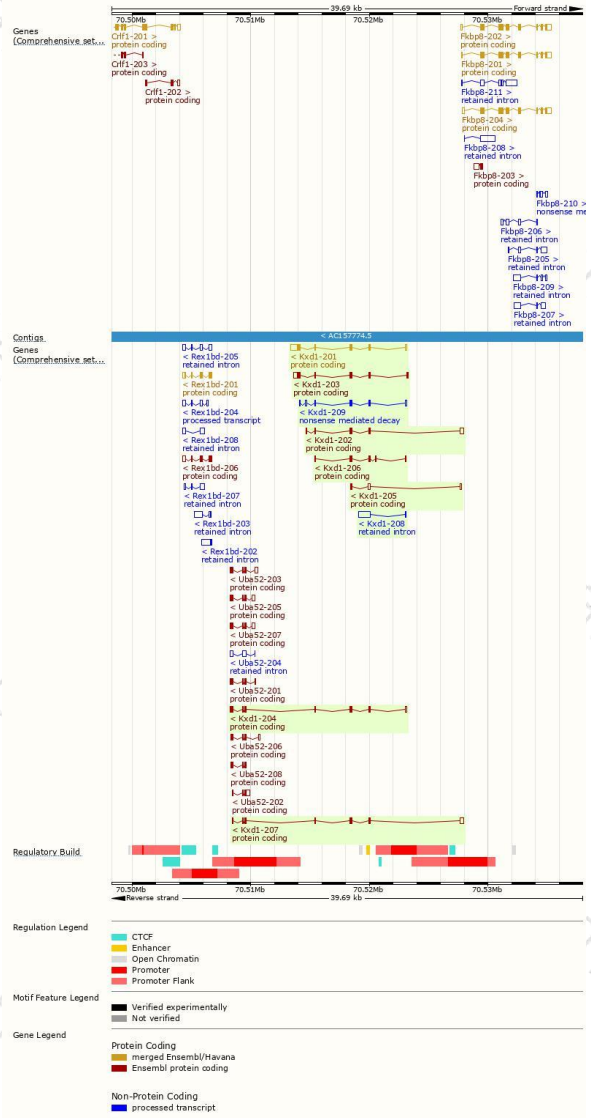
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kxd1-201	ENSMUST00000093456.11	1216	177aa	Protein coding	CCDS52574	Q80XH1	TSL:1 GENCODE basic
Kxd1-203	ENSMUST00000118850.7	992	219aa	Protein coding	-	G3X9Z9	TSL:2 GENCODE basic
Kxd1-207	ENSMUST00000138260.7	917	193aa	Protein coding	-	E9Q4P0	CDS 3' incomplete TSL:5
Kxd1-204	ENSMUST00000121623.7	884	232aa	Protein coding	-	E9QNP0	TSL:5 GENCODE basic APPRIS P1
Kxd1-202	ENSMUST00000117580.7	696	114aa	Protein coding	-	D3YWA5	TSL:5 GENCODE basic
Kxd1-205	ENSMUST00000132867.1	436	37aa	Protein coding	-	D3YXX6	CDS 3' incomplete TSL:3
Kxd1-206	ENSMUST00000137610.2	424	100aa	Protein coding	-	D3Z2M8	CDS 3' incomplete TSL:5
Kxd1-209	ENSMUST00000155677.7	639	114aa	Nonsense mediated decay	-	D3YWA5	TSL:3
Kxd1-208	ENSMUST00000138586.1	1033	No protein	Retained intron	-	-	TSL:1

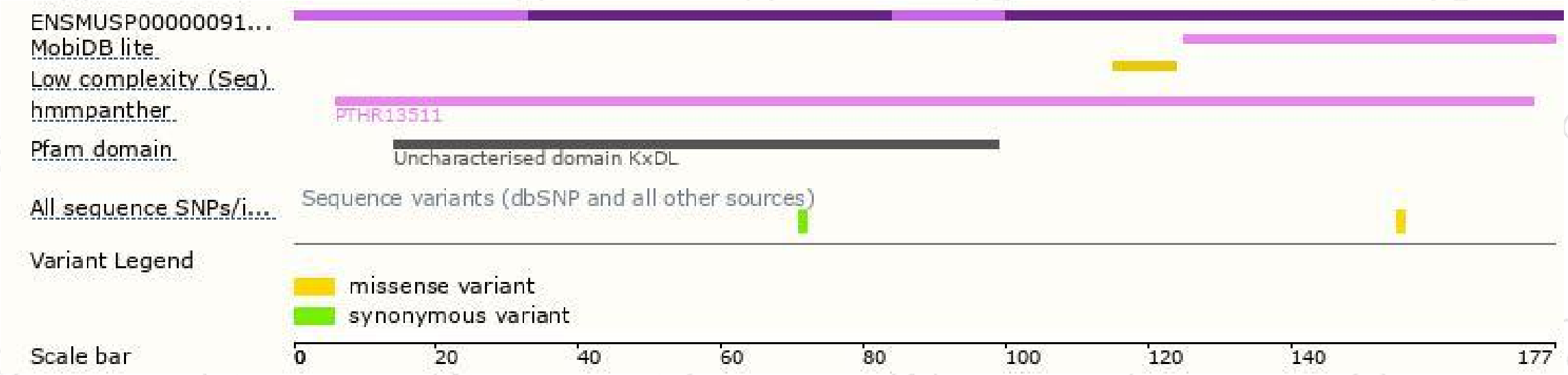
The strategy is based on the design of *Kxd1-201* transcript,The transcription is shown below



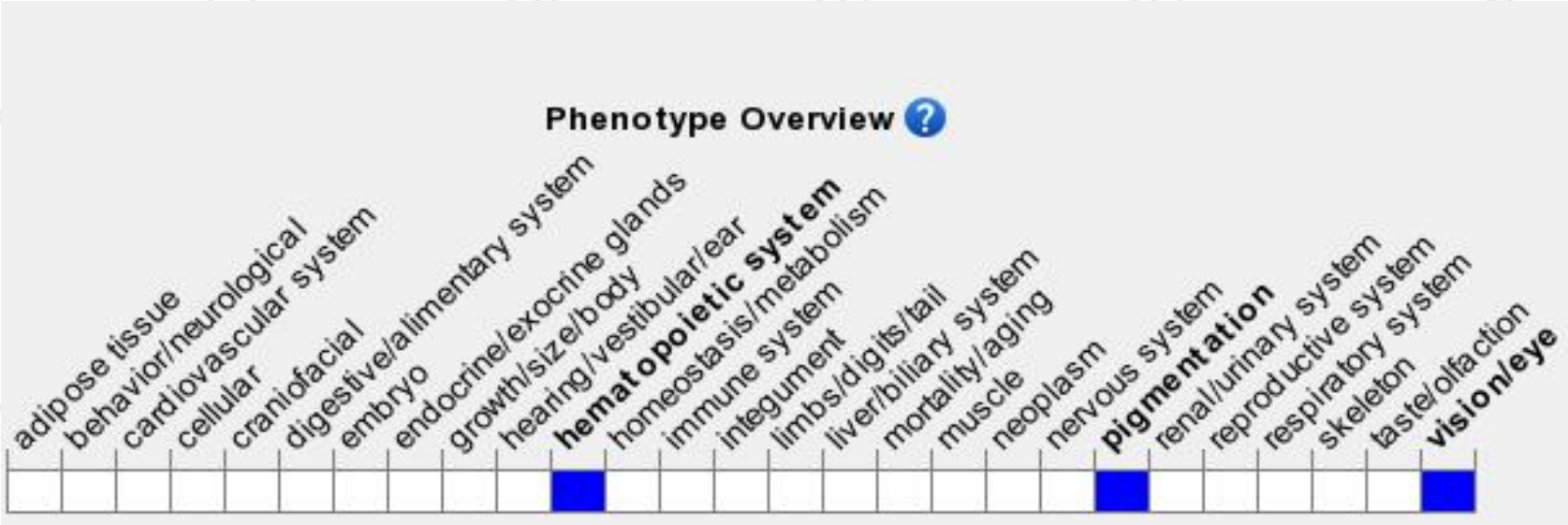
Genomic location distribution



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 reduced melanosomes in the choroid and retinal pigment epithelium and decreased platelet dense granule number.

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

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