

Pank2 Cas9-CKO Strategy

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Project Overview

Project Name

Pank2

Project type

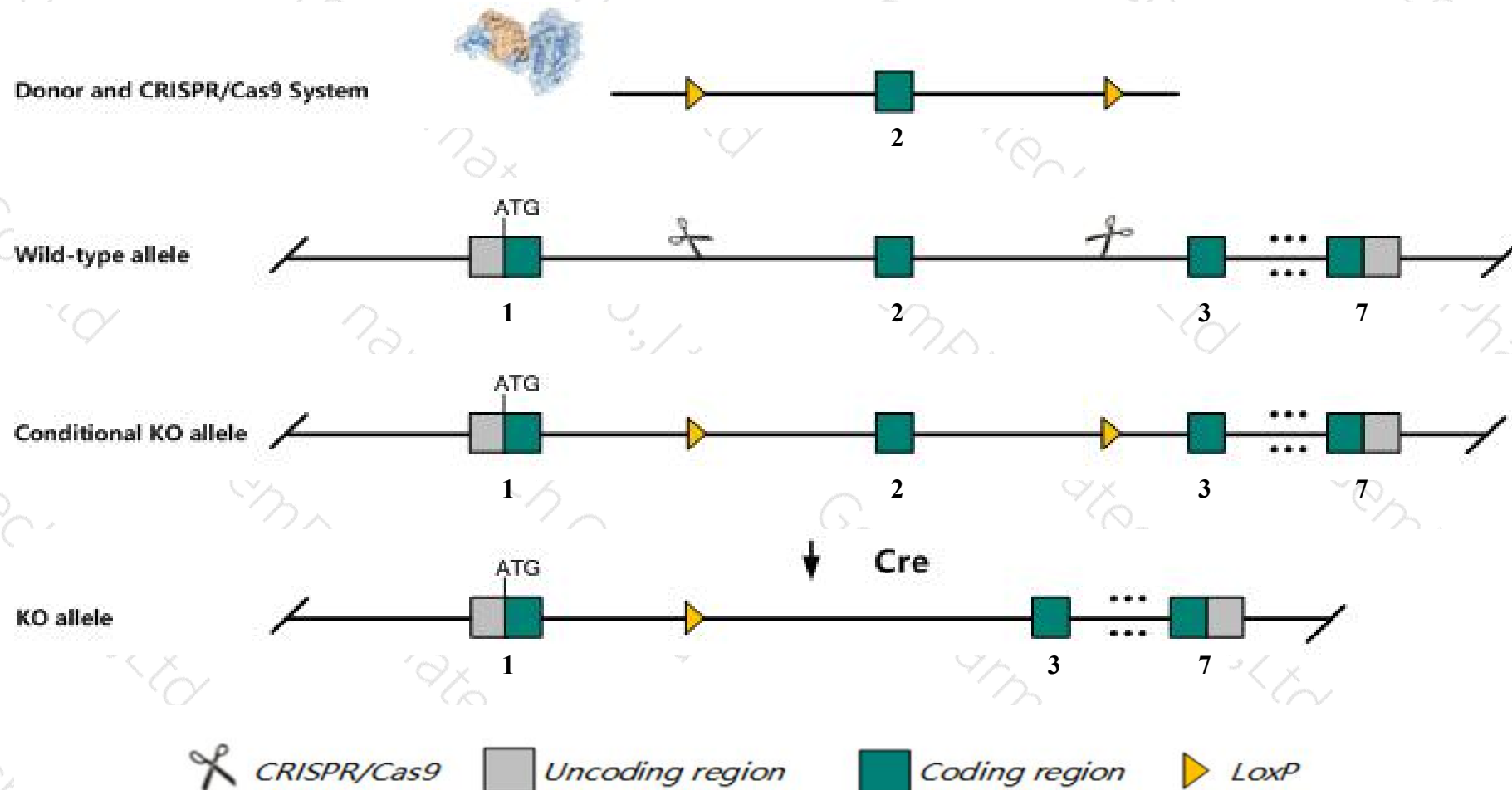
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pank2* gene. The schematic diagram is as follows:



Technical routes

- The *Pank2* gene has 8 transcripts. According to the structure of *Pank2* gene, exon2 of *Pank2*-204(ENSMUST00000150843.7) transcript is recommended as the knockout region. The region contains 353bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pank2* 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.

- According to the existing MGI data, homozygous null mice display male infertility, arrested spermatogenesis, azoospermia, reduced female fertility, and retinal degeneration.
- The *Pank2* 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)

Pank2 pantothenate kinase 2 [Mus musculus (house mouse)]

Gene ID: 74450, updated on 20-Mar-2020

Summary



Official Symbol	Pank2 provided by MGI
Official Full Name	pantothenate kinase 2 provided by MGI
Primary source	MGI:MGI:1921700
See related	Ensembl:ENSMUSG00000037514
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	4933409I19Rik, AI642621
Expression	Ubiquitous expression in CNS E11.5 (RPKM 13.4), limb E14.5 (RPKM 11.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

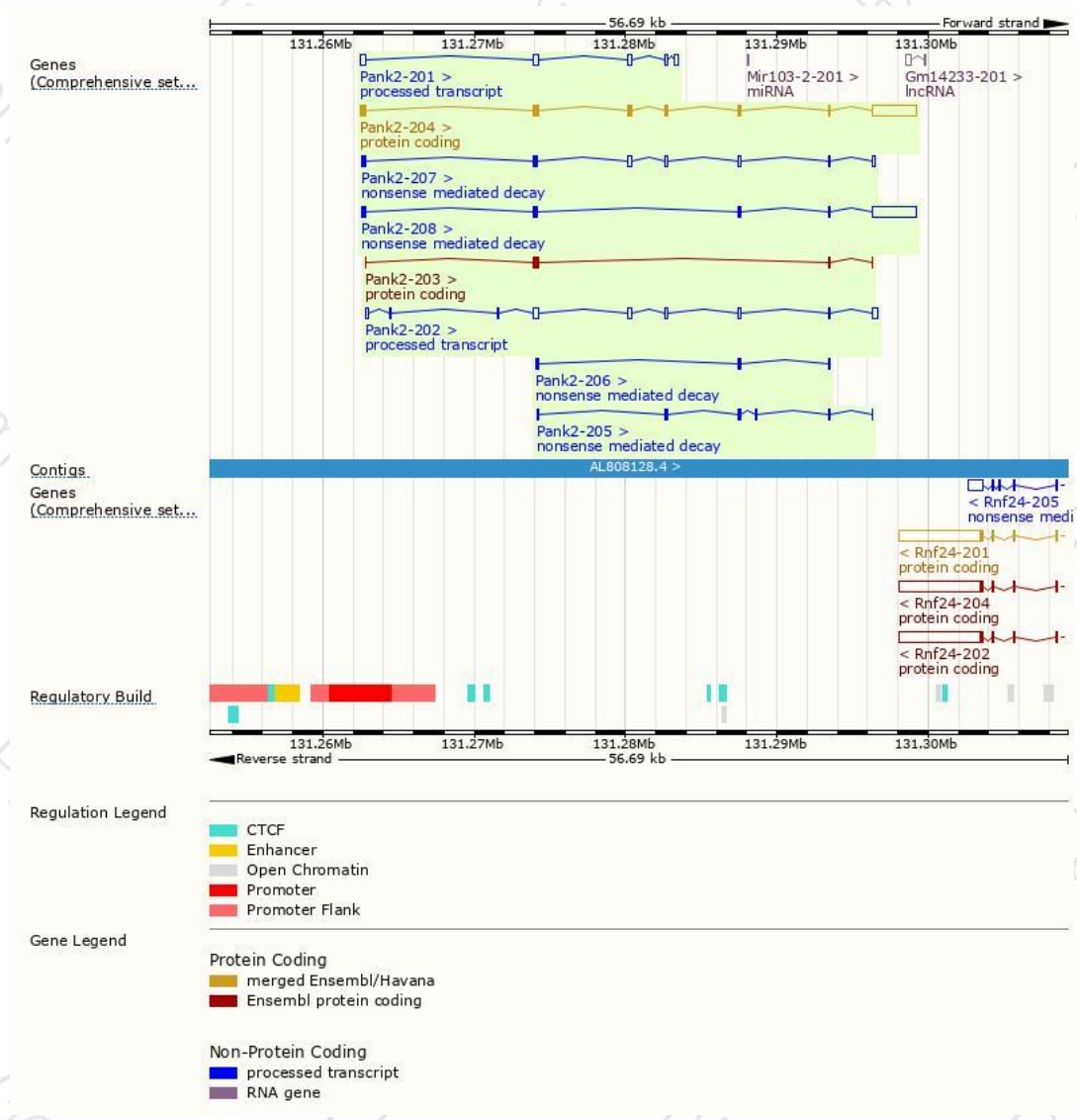
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pank2-204	ENSMUST00000150843.7	4266	443aa	Protein coding	CCDS16761	Q3U450	TSL:1 GENCODE basic APPRIS P1
Pank2-203	ENSMUST00000145904.1	558	183aa	Protein coding	-	F6VV40	CDS 5' incomplete TSL:5
Pank2-208	ENSMUST00000184932.7	3622	156aa	Nonsense mediated decay	-	V9GXP9	TSL:2
Pank2-207	ENSMUST00000184105.7	1398	154aa	Nonsense mediated decay	-	V9GX56	TSL:5
Pank2-205	ENSMUST00000183349.1	646	131aa	Nonsense mediated decay	-	V9GXL0	CDS 5' incomplete TSL:3
Pank2-206	ENSMUST00000183388.1	370	77aa	Nonsense mediated decay	-	V9G XK8	CDS 5' incomplete TSL:1
Pank2-202	ENSMUST00000138509.7	1791	No protein	Processed transcript	-	-	TSL:5
Pank2-201	ENSMUST00000131779.7	1304	No protein	Processed transcript	-	-	TSL:1

The strategy is based on the design of *Pank2-204* transcript,the transcription is shown below:



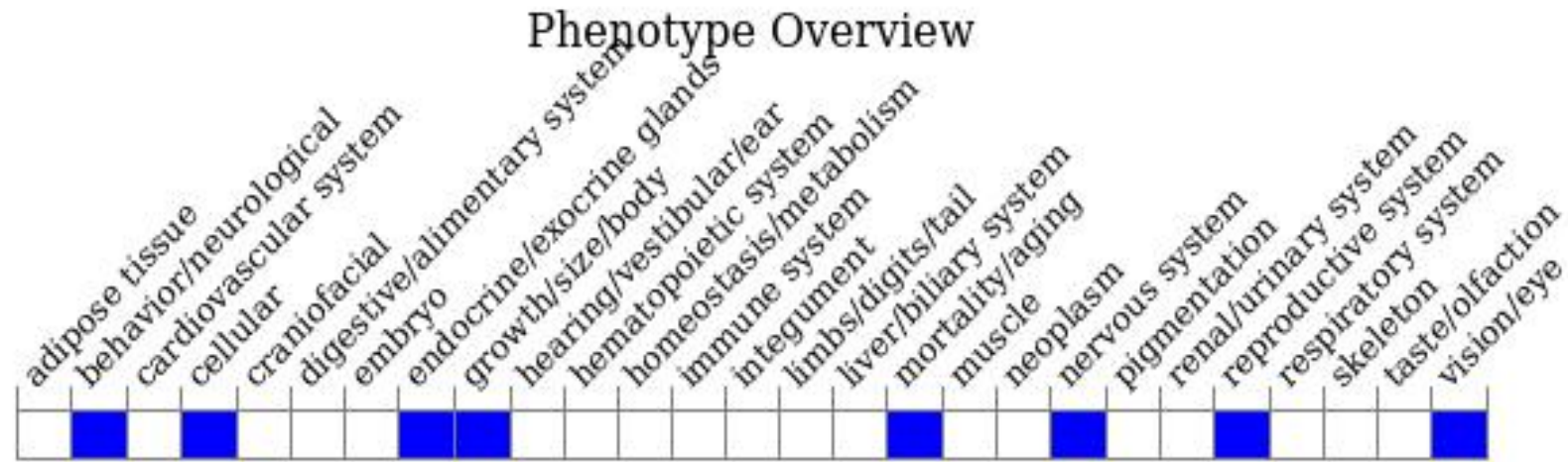
Genomic location distribution



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, homozygous null mice display male infertility, arrested spermatogenesis, azoospermia, reduced female fertility, and retinal degeneration.

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

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