Cdk17 Cas9-CKO Strategy

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Design Date: 2021-7-19

Project Overview

Project Name	***Cdk17***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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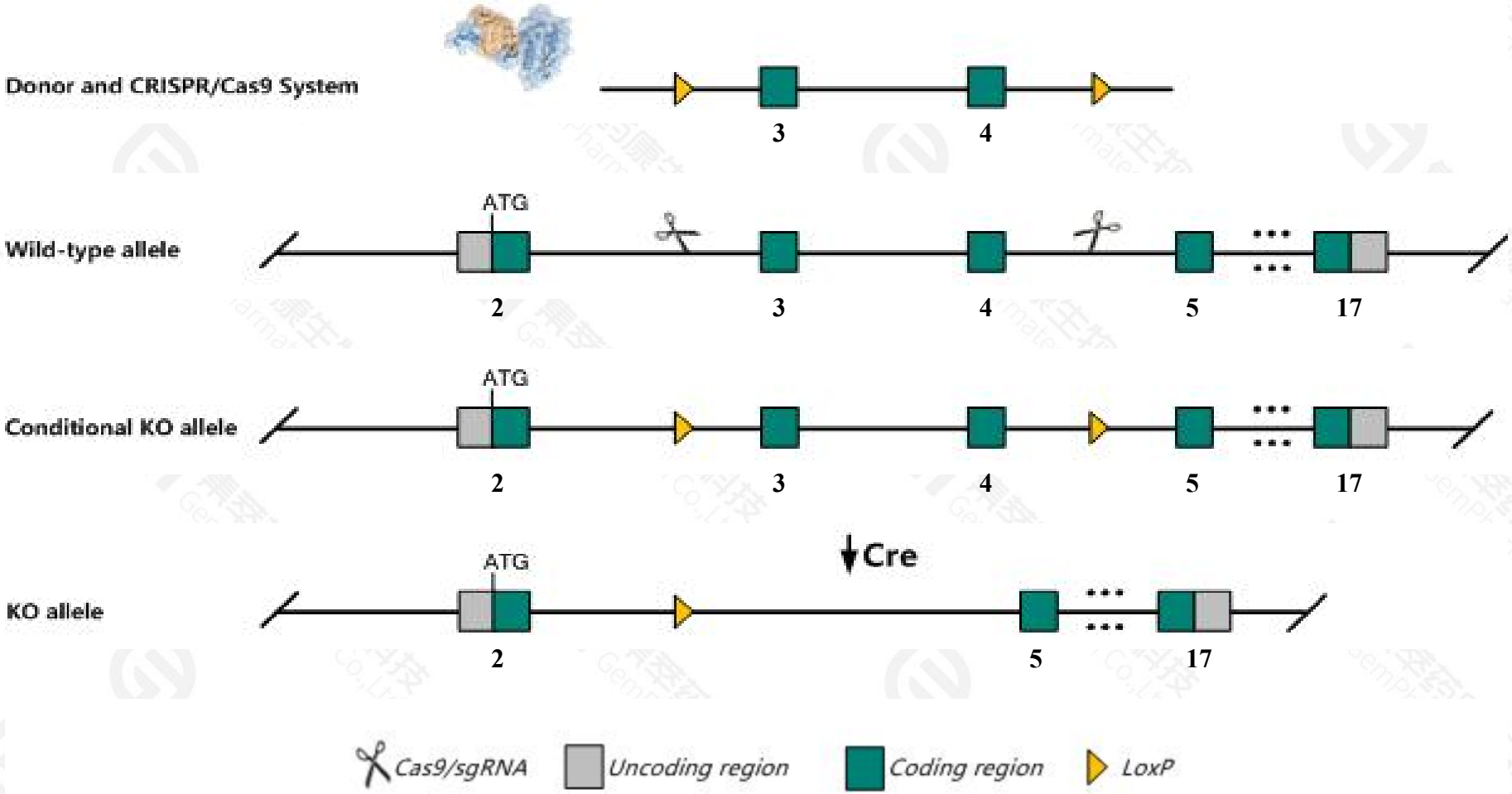
This model will use CRISPR/Cas9 technology to edit the *Cdk17* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cdk17* gene has 6 transcripts. According to the structure of *Cdk17* gene, exon3-exon4 of *Cdk17-201*(ENSMUST00000069965.9) transcript is recommended as the knockout region.The region contains 299bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cdk17* 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 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

➢ Transcript *Cdk17-203* may not be affected.

➢ The *Cdk17* gene is located on the Chr10. 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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Cdk17 cyclin-dependent kinase 17 [Mus musculus (house mouse)]

Gene ID: 237459, updated on 17-Feb-2021

Summary

Official Symbol	Cdk17 provided by MGI
Official Full Name	cyclin-dependent kinase 17 provided byMGI
Primary source	MGI:MGI:97517
See related	Ensembl:ENSMUSG00000020015
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	6430598J10Rik, Pctk, Pctk2
Expression	Broad expression in frontal lobe adult (RPKM 15.4), cortex adult (RPKM 13.0) and 27 other tissuesSee more
Orthologs	human all

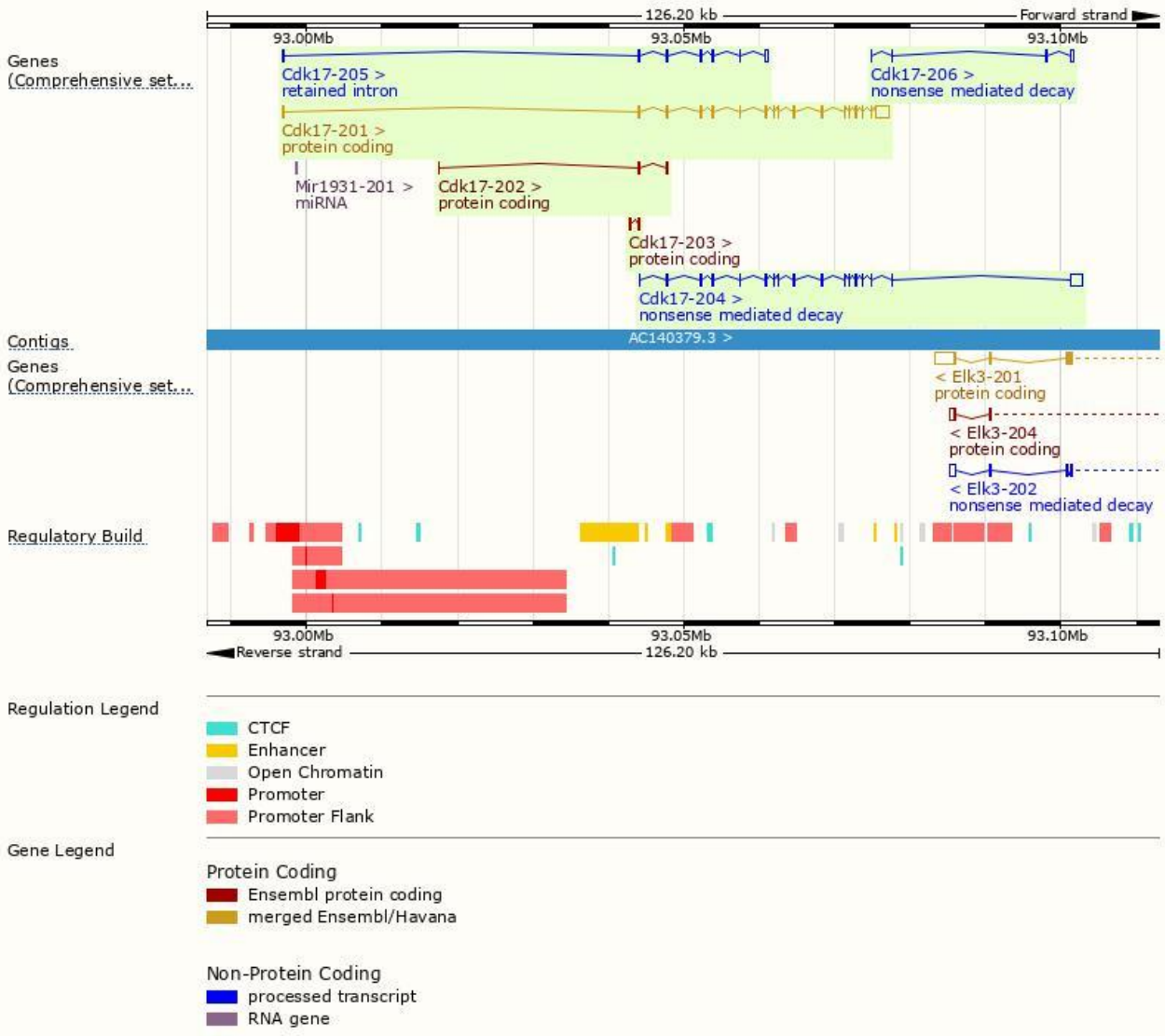
Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

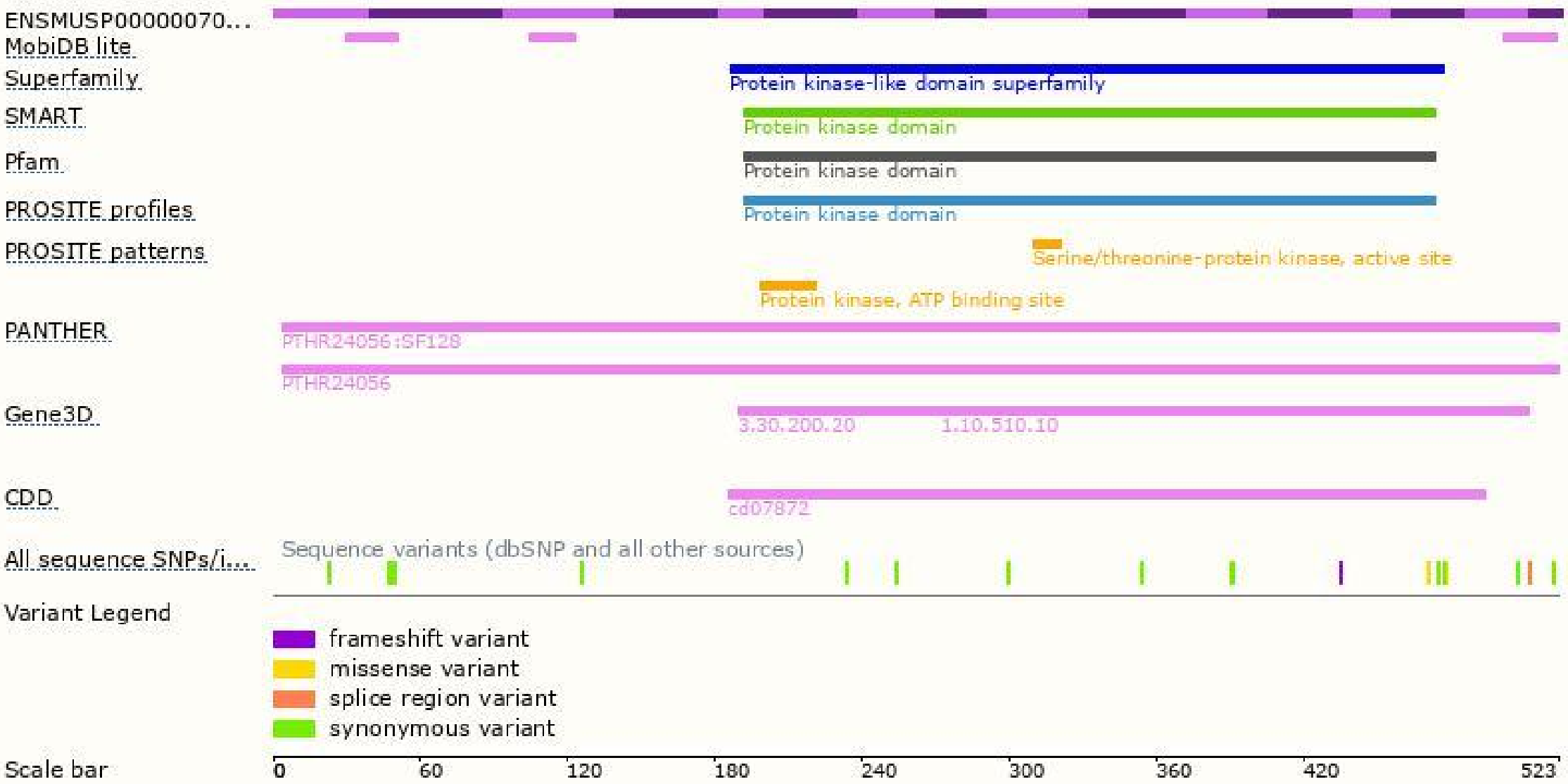
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdk17-201	ENSMUST00000069965.9	3615	523aa	Protein coding	CCDS48670		TSL:1 , GENCODE basic , APPRIS P1 ,
Cdk17-202	ENSMUST00000213378.2	307	71aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Cdk17-203	ENSMUST00000214445.2	232	39aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Cdk17-204	ENSMUST00000215286.2	3242	481aa	Nonsense mediated decay	-		CDS 5' incomplete , TSL:2 ,
Cdk17-206	ENSMUST00000216729.2	698	10aa	Nonsense mediated decay	-		CDS 5' incomplete , TSL:5 ,
Cdk17-205	ENSMUST00000215495.2	1388	No protein	Retained intron	-		TSL:1 ,

The strategy is based on the design of *Cdk17-201* transcript,the transcription is shown below:

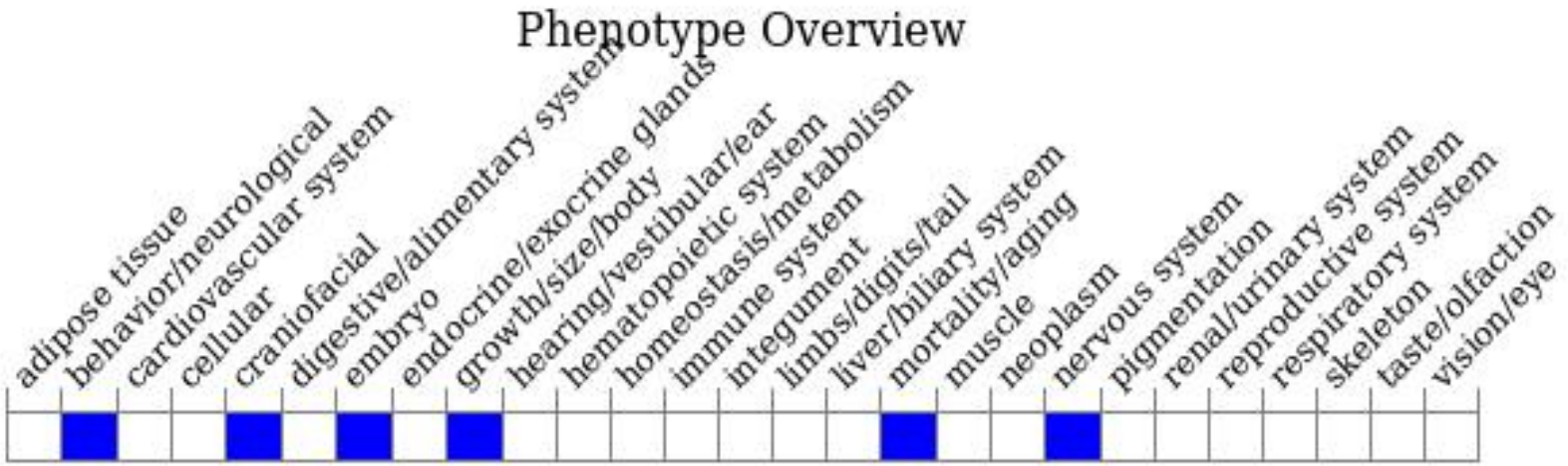
Genomic location distribution



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/).

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

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