Cdk19 Cas9-KO Strategy

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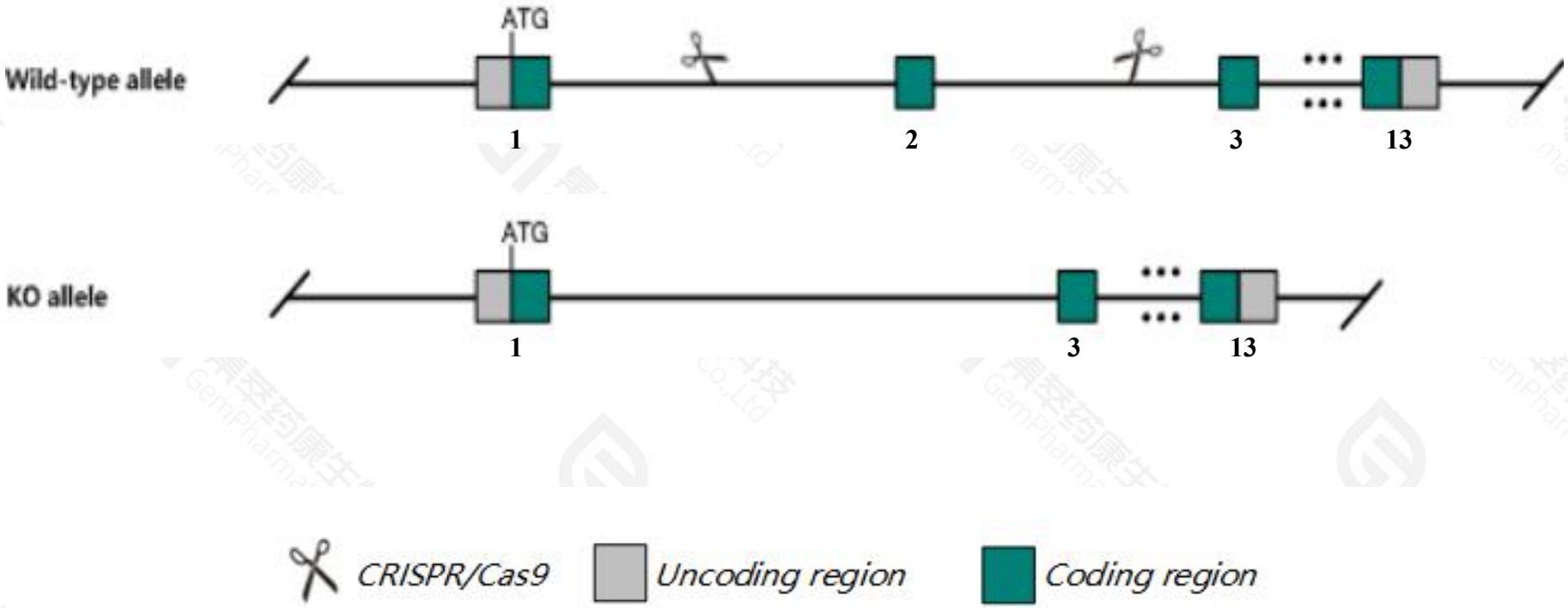
Design Date: 2021-10-25

Project Overview

Project Name	***Cdk19***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdk19* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cdk19* gene has 5 transcripts. According to the structure of *Cdk19* gene, exon2 of *Cdk19-201*(ENSMUST00000044672.11) transcript is recommended as the knockout region.The region contains 76bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cdk19* gene. The brief process is as follows: CRISPR/Cas9 system 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 *Cdk19* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

Cdk19 cyclin-dependent kinase 19 [Mus musculus (house mouse)]

Gene ID: 78334, updated on 17-Dec-2020

Summary

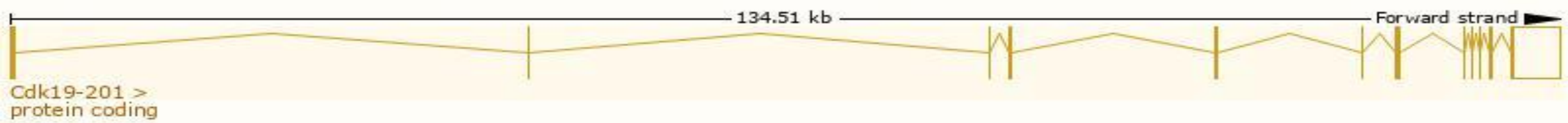
Official Symbol	Cdk19 provided by MGI
Official Full Name	cyclin-dependent kinase 19 provided byMGI
Primary source	MGI:MGI:1925584
See related	Ensembl:ENSMUSG00000038481
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2700084L06Rik, AI845279, AW228747, CDK11, Cdc2l, Cdc2l6, mKIAA1028
Expression	Ubiquitous expression in cerebellum adult (RPKM 11.6), cortex adult (RPKM 9.7) and 25 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

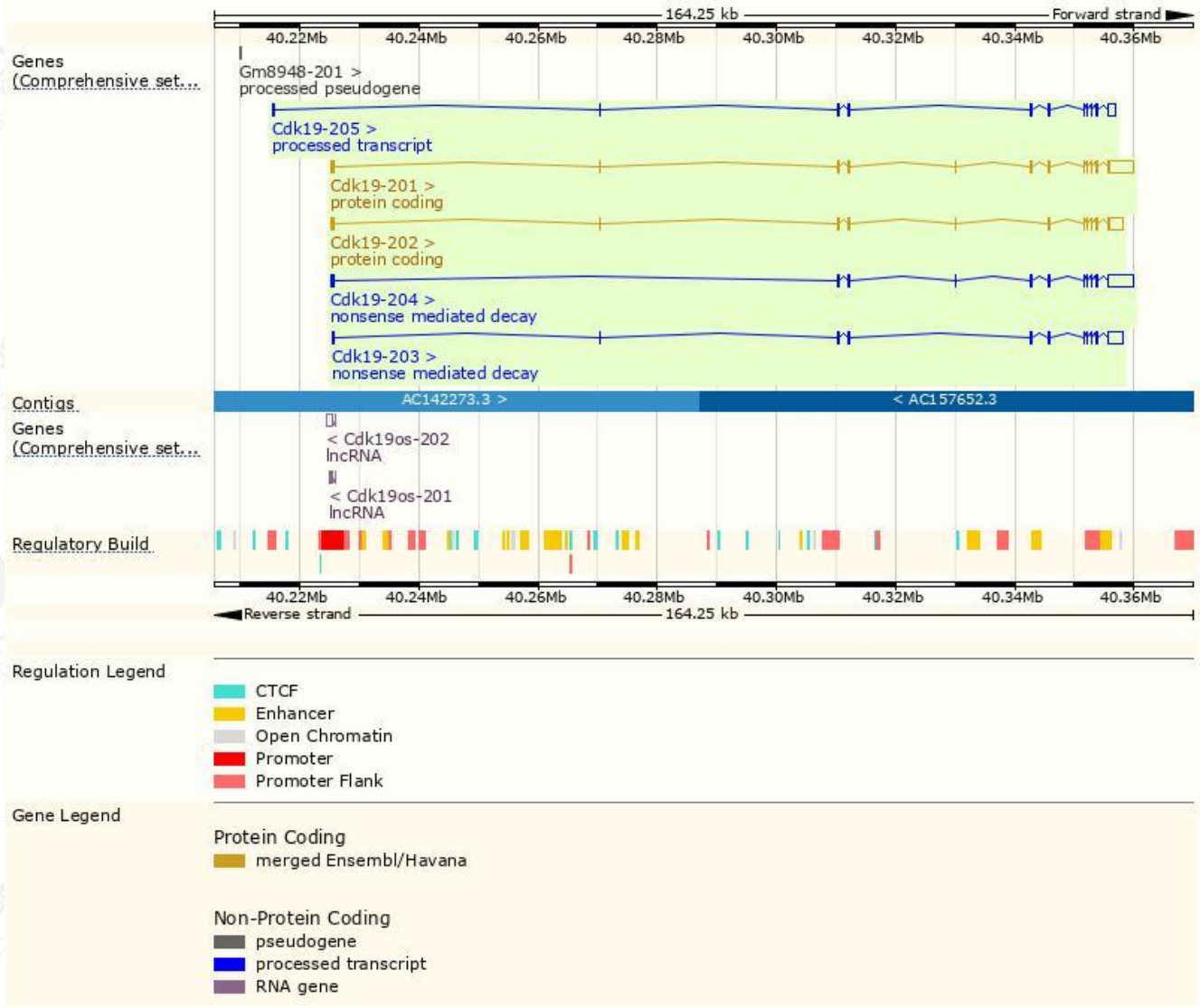
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdk19-201	ENSMUST00000044672.11	5807	501aa	Protein coding	CCDS48545		TSL:1 , GENCODE basic , APPRIS P1 ,
Cdk19-202	ENSMUST00000095743.4	3973	457aa	Protein coding	CCDS23795		TSL:1 , GENCODE basic ,
Cdk19-204	ENSMUST00000215000.2	5681	44aa	Nonsense mediated decay	-		TSL:1 ,
Cdk19-203	ENSMUST00000214659.2	3814	164aa	Nonsense mediated decay	-		TSL:1 ,
Cdk19-205	ENSMUST00000216736.2	2424	No protein	Processed transcript	-		TSL:1 ,

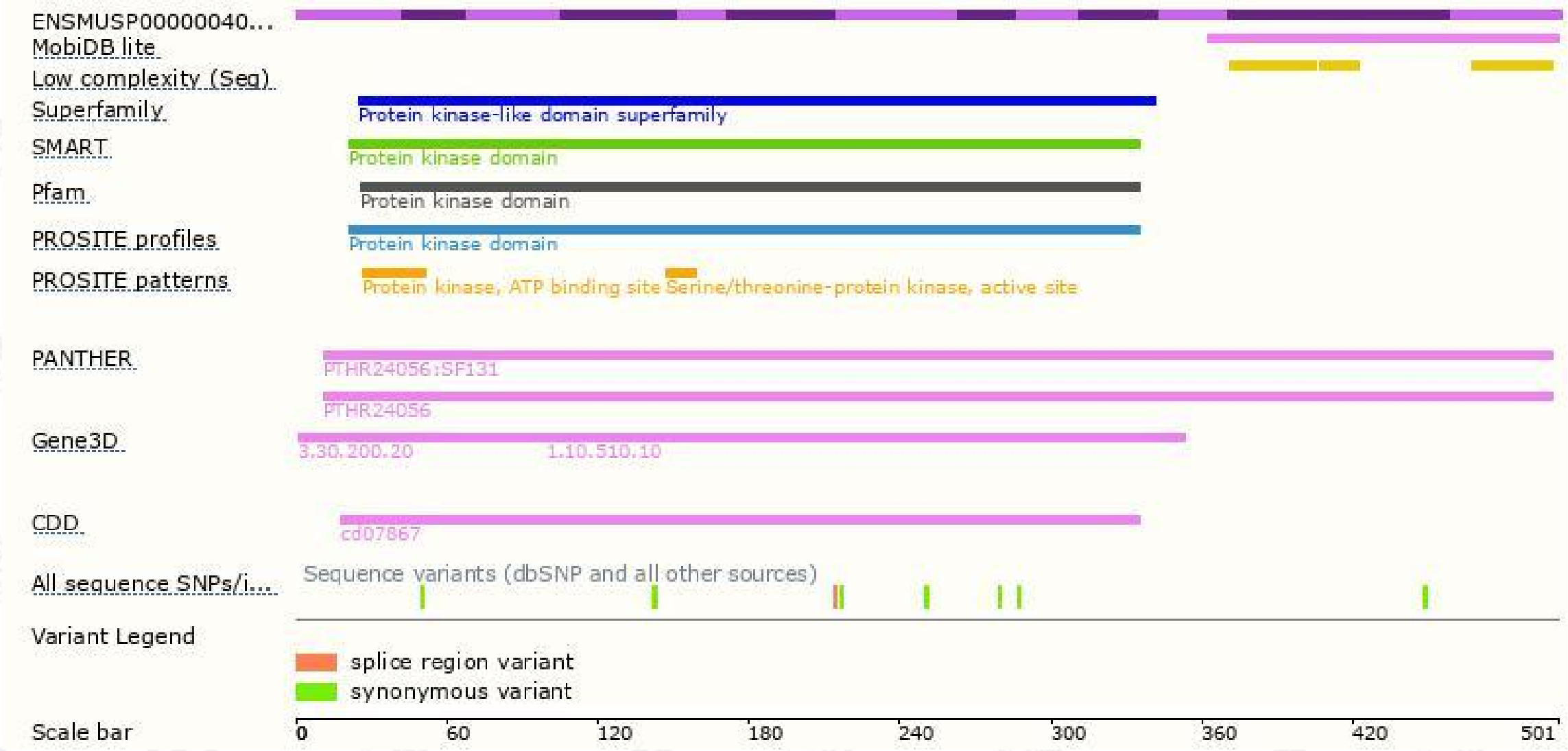
The strategy is based on the design of *Cdk19-201* transcript,the transcription is shown below:



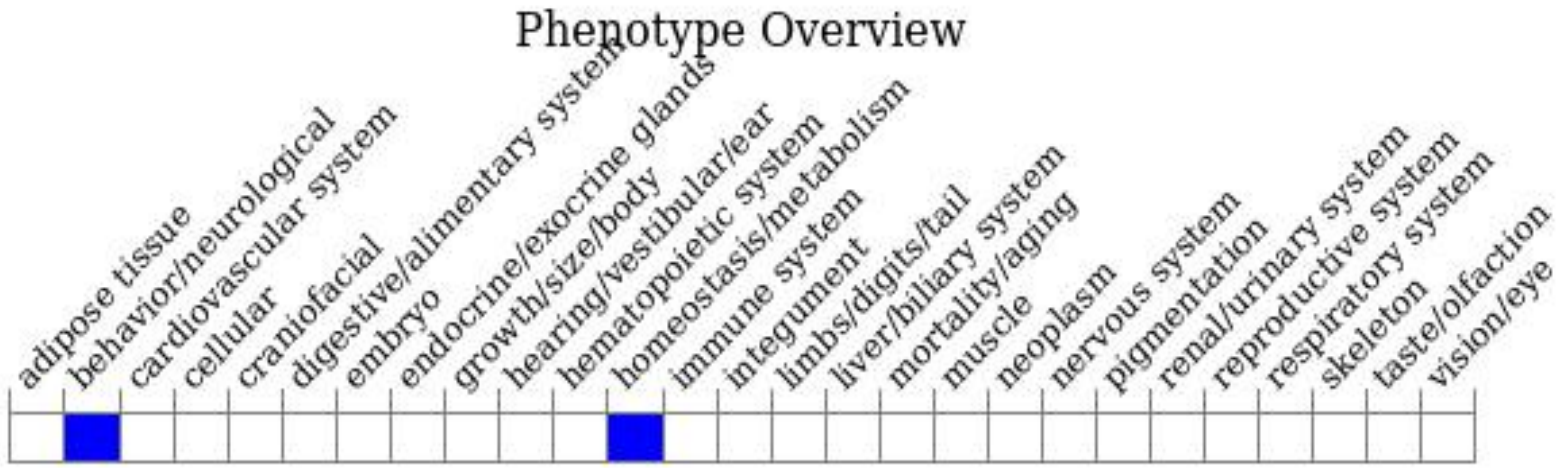
Genomic location distribution



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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