

Cdkl3 Cas9-CKO Strategy

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Project Overview

Project Name

Cdkl3

Project type

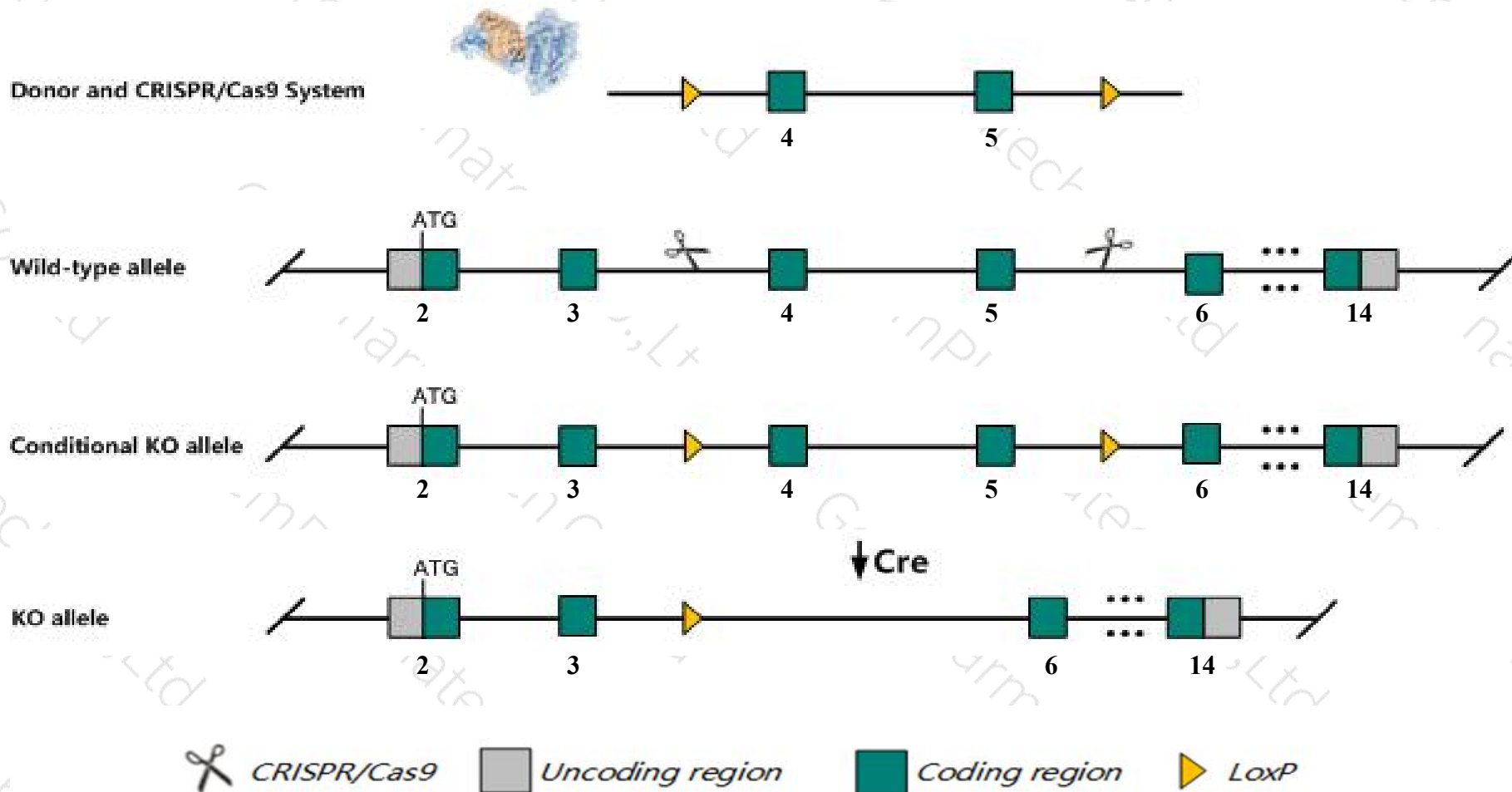
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdkl3* gene. The schematic diagram is as follows:



- The *Cdkl3* gene has 18 transcripts. According to the structure of *Cdkl3* gene, exon4-exon5 of *Cdkl3*-209 (ENSMUST00000120374.7) transcript is recommended as the knockout region. The region contains 292bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdkl3* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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 *Cdkl3* gene is located on the Chr11. 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.
- Transcript *Cdkl3* -213,215 may not be affected.
- 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)

Cdkl3 cyclin-dependent kinase-like 3 [Mus musculus (house mouse)]

Gene ID: 213084, updated on 31-Jan-2019

Summary



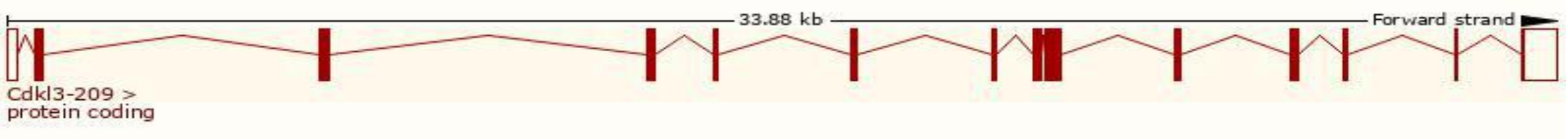
Official Symbol	Cdkl3 provided by MGI
Official Full Name	cyclin-dependent kinase-like 3 provided by MGI
Primary source	MGI:MGI:2388268
See related	Ensembl:ENSMUSG00000020389
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI852479, B230379H01Rik
Expression	Biased expression in testis adult (RPKM 12.9), CNS E18 (RPKM 1.4) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

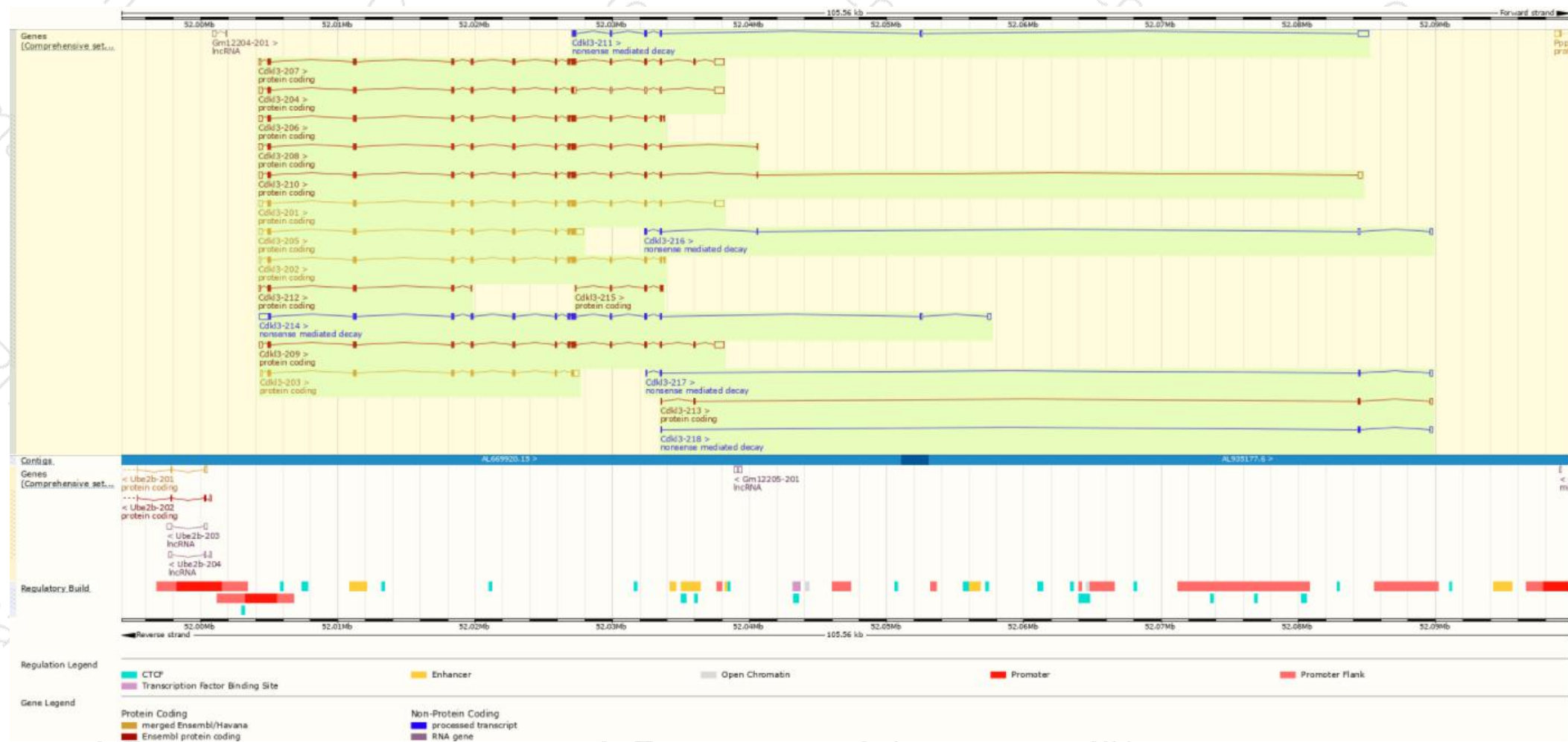
The gene has 18 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdkl3-209	ENSMUST00000120374.7	2770	610aa	Protein coding	CCDS48789	B1AU43	TSL:5 GENCODE basic APPRIS ALT2
Cdkl3-201	ENSMUST00000063303.10	2765	595aa	Protein coding	CCDS24665	Q8BLF2	TSL:1 GENCODE basic APPRIS P3
Cdkl3-207	ENSMUST00000109080.8	2749	610aa	Protein coding	CCDS48789	B1AU43	TSL:1 GENCODE basic APPRIS ALT2
Cdkl3-204	ENSMUST00000109077.8	2605	353aa	Protein coding	CCDS48792	Q8BLF2	TSL:5 GENCODE basic APPRIS ALT2
Cdkl3-210	ENSMUST00000121591.7	2387	585aa	Protein coding	CCDS48790	Q8BLF2	TSL:1 GENCODE basic APPRIS ALT2
Cdkl3-205	ENSMUST00000109078.7	2216	457aa	Protein coding	CCDS48791	Q8BLF2	TSL:1 GENCODE basic APPRIS ALT2
Cdkl3-208	ENSMUST00000109081.8	2063	585aa	Protein coding	CCDS48790	Q8BLF2	TSL:5 GENCODE basic APPRIS ALT2
Cdkl3-206	ENSMUST00000109079.8	2051	581aa	Protein coding	CCDS48788	Q8BLF2	TSL:5 GENCODE basic APPRIS ALT2
Cdkl3-202	ENSMUST00000063321.12	2008	581aa	Protein coding	CCDS48788	Q8BLF2	TSL:1 GENCODE basic APPRIS ALT2
Cdkl3-203	ENSMUST00000109076.1	1610	353aa	Protein coding	CCDS48792	Q8BLF2	TSL:1 GENCODE basic APPRIS ALT2
Cdkl3-212	ENSMUST00000135076.7	665	192aa	Protein coding	-	B1AU42	CDS 3' incomplete TSL:3
Cdkl3-215	ENSMUST00000147874.7	513	138aa	Protein coding	-	F6RUB4	CDS 5' incomplete TSL:2
Cdkl3-213	ENSMUST00000136021.1	467	92aa	Protein coding	-	F6Y3R0	CDS 5' incomplete TSL:3
Cdkl3-214	ENSMUST00000143228.7	2769	591aa	Nonsense mediated decay	-	F2Z3Z6	TSL:1
Cdkl3-211	ENSMUST00000128853.7	1564	224aa	Nonsense mediated decay	-	F6RBI5	CDS 5' incomplete TSL:5
Cdkl3-216	ENSMUST00000150736.7	631	97aa	Nonsense mediated decay	-	F6ULF3	CDS 5' incomplete TSL:3
Cdkl3-217	ENSMUST00000154701.1	489	80aa	Nonsense mediated decay	-	F6RX76	CDS 5' incomplete TSL:2
Cdkl3-218	ENSMUST00000207272.1	392	50aa	Nonsense mediated decay	-	A0A140LJ75	CDS 5' incomplete TSL:3

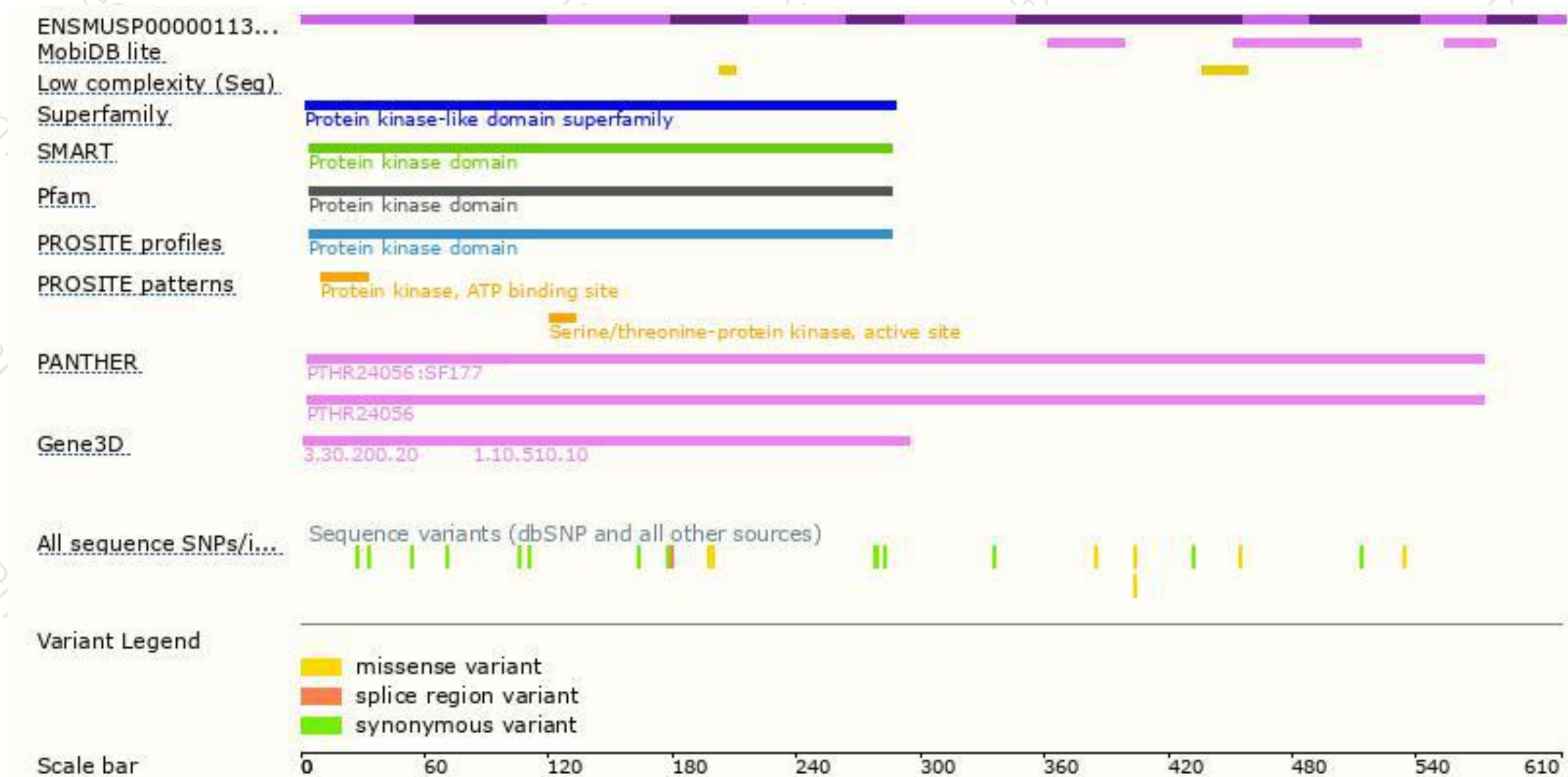
The strategy is based on the design of *Cdkl3-209* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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