

# ***Limk2 Cas9-KO Strategy***

**Designer:**

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**Design Date:**

**2019-8-30**

# Project Overview

**Project Name**

***Limk2***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Limk2* gene. The schematic diagram is as follows:



- The *Limk2* gene has 13 transcripts. According to the structure of *Limk2* gene, exon2-exon8 of *Limk2-203* (ENSMUST00000101642.9) transcript is recommended as the knockout region. The region contains 1012bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Limk2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Male homozygotes for targeted null mutations exhibit small testes but are fertile. Mutant kidneys have fewer glomeruli and dilated renal tubules, but function normally. Mice homozygous for a gene trap allele or spontaneous mutation have open eyelids at birth, corneal abnormalities and inflammation.
- The *Limk2* 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.
- 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)

## Limk2 LIM motif-containing protein kinase 2 [Mus musculus (house mouse)]

Gene ID: 16886, updated on 31-Jan-2019

### Summary



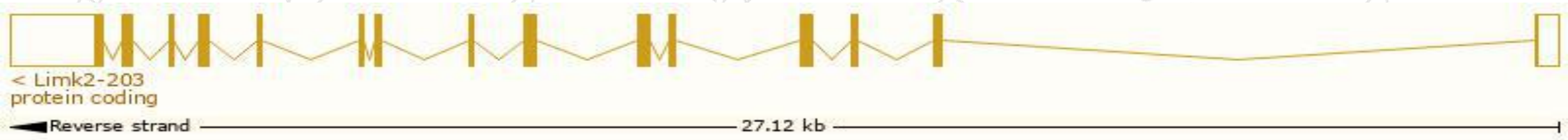
<b>Official Symbol</b>	Limk2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	LIM motif-containing protein kinase 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1197517</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000020451</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Limk-2, whe
<b>Expression</b>	Ubiquitous expression in placenta adult (RPKM 23.2), colon adult (RPKM 19.9) and 27 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

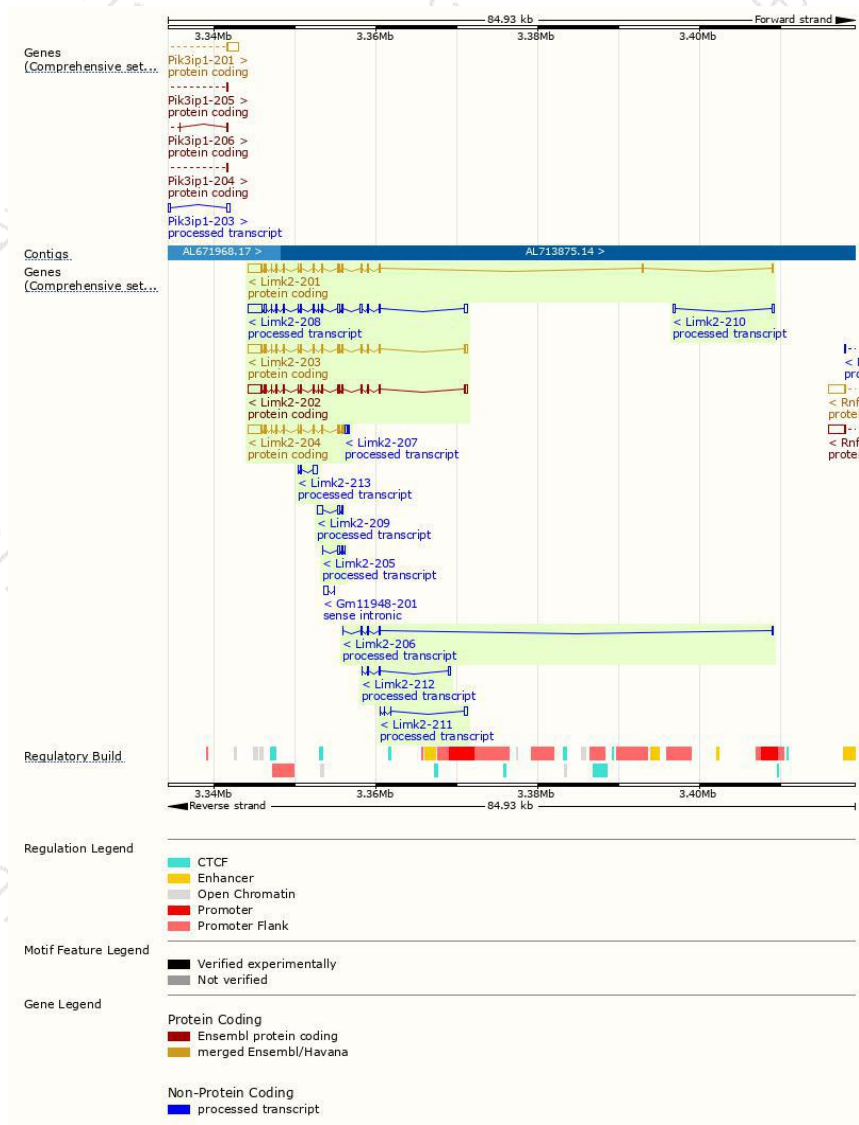
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Limk2-203	<a href="#">ENSMUST00000101642.9</a>	3693	<a href="#">617aa</a>	Protein coding	<a href="#">CCDS24359</a>	<a href="#">Q54785</a>	TSL:1 GENCODE basic APPRIS ALT 1
Limk2-201	<a href="#">ENSMUST00000101638.3</a>	3514	<a href="#">638aa</a>	Protein coding	<a href="#">CCDS24358</a>	<a href="#">Q54785</a>	TSL:1 GENCODE basic APPRIS P4
Limk2-204	<a href="#">ENSMUST00000110029.8</a>	2939	<a href="#">451aa</a>	Protein coding	<a href="#">CCDS24360</a>	<a href="#">Q54785</a>	TSL:1 GENCODE basic
Limk2-202	<a href="#">ENSMUST00000101640.9</a>	3711	<a href="#">623aa</a>	Protein coding	-	<a href="#">Q5NC03</a>	TSL:5 GENCODE basic
Limk2-208	<a href="#">ENSMUST00000134576.7</a>	3849	No protein	Processed transcript	-	-	TSL:5
Limk2-209	<a href="#">ENSMUST00000142926.7</a>	949	No protein	Processed transcript	-	-	TSL:3
Limk2-213	<a href="#">ENSMUST00000148771.1</a>	716	No protein	Processed transcript	-	-	TSL:5
Limk2-206	<a href="#">ENSMUST00000125832.7</a>	613	No protein	Processed transcript	-	-	TSL:3
Limk2-211	<a href="#">ENSMUST00000147344.1</a>	550	No protein	Processed transcript	-	-	TSL:5
Limk2-212	<a href="#">ENSMUST00000148091.1</a>	473	No protein	Processed transcript	-	-	TSL:5
Limk2-207	<a href="#">ENSMUST00000132479.1</a>	465	No protein	Processed transcript	-	-	TSL:5
Limk2-210	<a href="#">ENSMUST00000145223.1</a>	400	No protein	Processed transcript	-	-	TSL:2
Limk2-205	<a href="#">ENSMUST00000123689.1</a>	382	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Limk2-203* transcript,The transcription is shown below

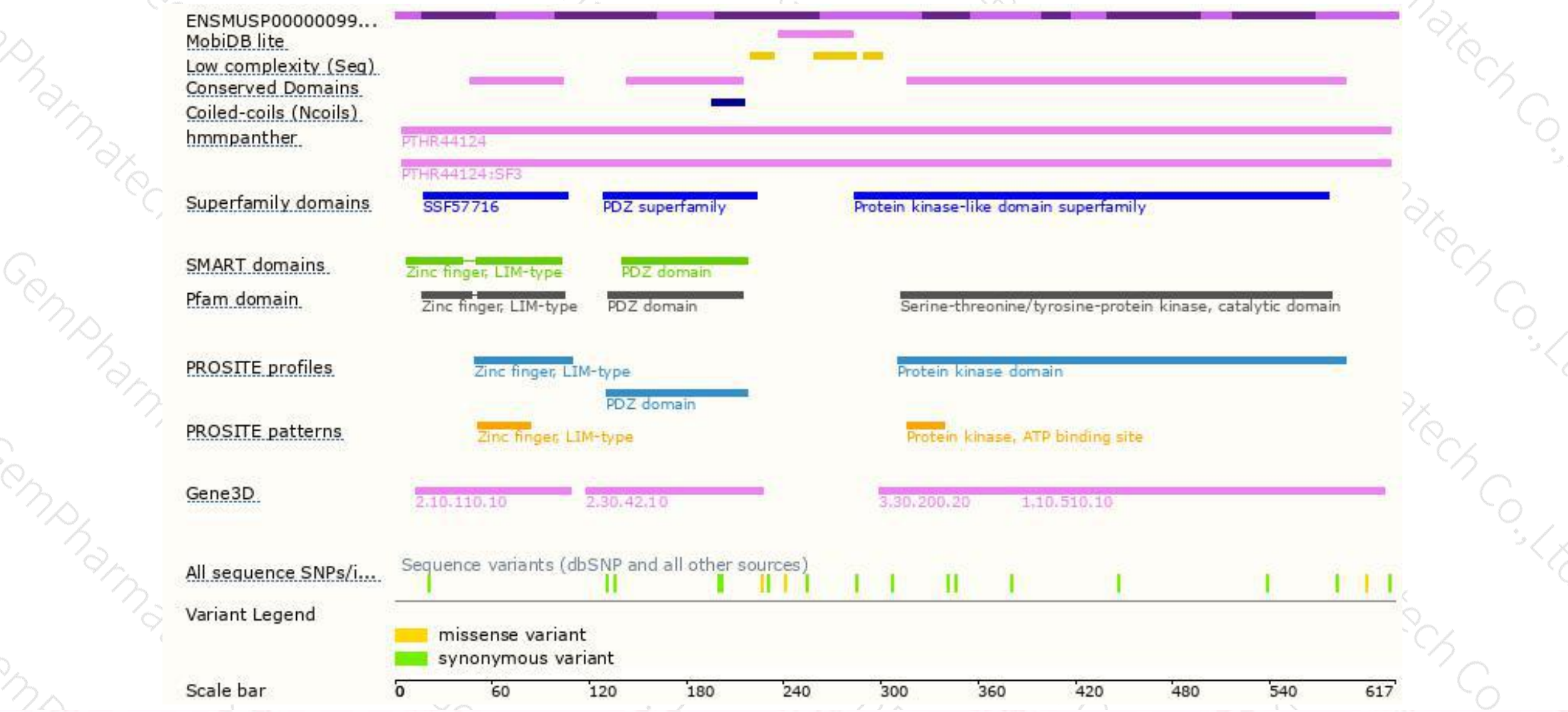


# Genomic location distribution





# 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, Male homozygotes for targeted null mutations exhibit small testes but are fertile.

Mutant kidneys have fewer glomeruli and dilated renal tubules, but function normally. Mice homozygous for a gene trap allele or spontaneous mutation have open eyelids at birth, corneal abnormalities and inflammation.

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

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