

# *Ptk2* Cas9-KO Strategy

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**Design Date:** 2019-8-3

# Project Overview

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**Project Name**

***Ptk2***

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**Project type**

**Cas9-KO**

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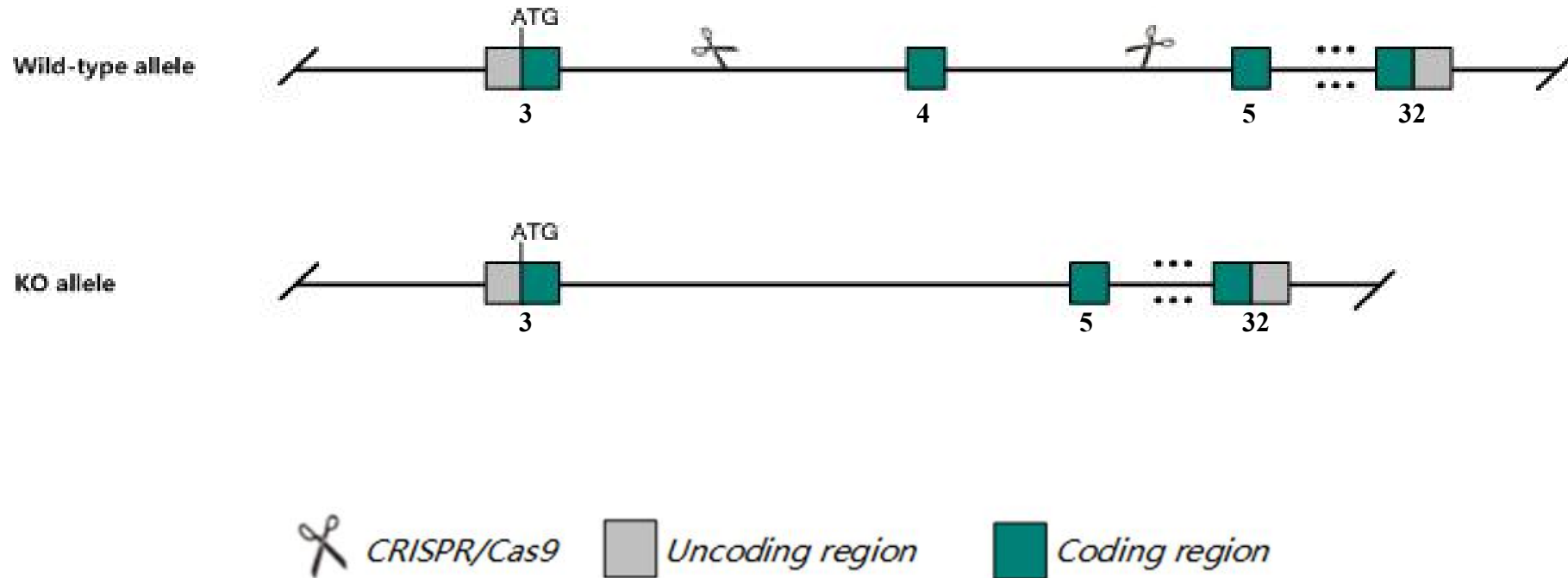
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptk2* gene. The schematic diagram is as follows:



The *Ptk2* gene has 15 transcripts. According to the structure of *Ptk2* gene, exon4 of *Ptk2-201* (ENSMUST00000110036.10) transcript is recommended as the knockout region. The region contains 167bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Ptk2* gene. The brief process is as follows: CRISPR/Cas9 system w

According to the existing MGI data, Mice homozygous for a null allele die before or during organogenesis with growth retardation, abnormal embryonic and extra embryonic tissue development, and abnormal vascular development.

The *Ptk2* gene is located on the Chr15. 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.

## Ptk2 PTK2 protein tyrosine kinase 2 [Mus musculus (house mouse)]

Gene ID: 14083, updated on 2-Apr-2019

### Summary



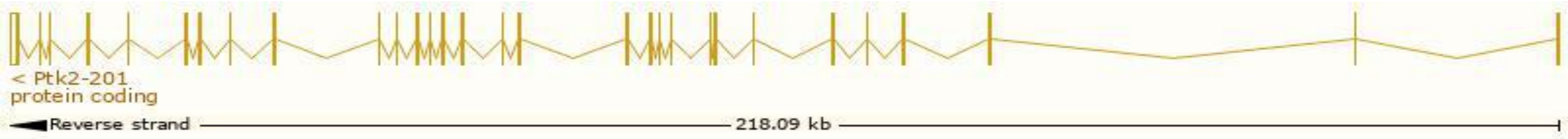
<b>Official Symbol</b>	Ptk2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	PTK2 protein tyrosine kinase 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:95481</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000022607</a>
<b>Gene type</b>	protein coding
<b>RefSeq 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>	FADK 1, FAK, FRNK, Fadk, p125FAK
<b>Expression</b>	Ubiquitous expression in cortex adult (RPKM 12.3), CNS E11.5 (RPKM 11.8) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information      Ensembl

The gene has 15 transcripts,all transcripts are shown below:

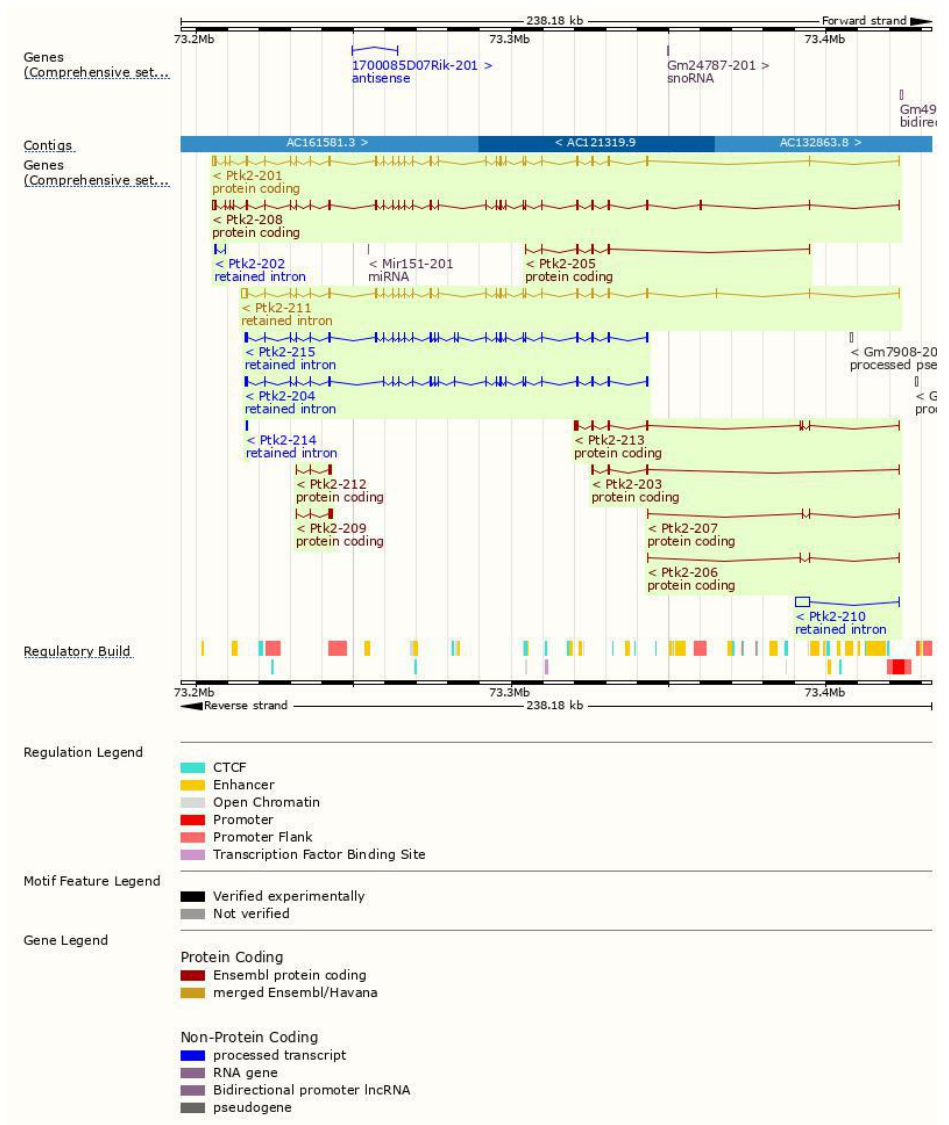
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptk2-201	<a href="#">ENSMUST00000110036.10</a>	4417	<a href="#">1052aa</a>	Protein coding	<a href="#">CCDS37099</a>	<a href="#">P34152</a>	TSL:1 GENCODE basic APPRIS P2
Ptk2-208	<a href="#">ENSMUST00000226988.2</a>	4675	<a href="#">1055aa</a>	Protein coding	-	<a href="#">P34152</a>	GENCODE basic APPRIS ALT2
Ptk2-213	<a href="#">ENSMUST00000228180.2</a>	1333	<a href="#">198aa</a>	Protein coding	-	<a href="#">P34152</a>	GENCODE basic
Ptk2-205	<a href="#">ENSMUST00000226791.1</a>	517	<a href="#">119aa</a>	Protein coding	-	<a href="#">A0A2I3BRG7</a>	CDS 3' incomplete
Ptk2-209	<a href="#">ENSMUST00000227395.1</a>	498	<a href="#">81aa</a>	Protein coding	-	<a href="#">A0A2I3BR46</a>	CDS 3' incomplete
Ptk2-203	<a href="#">ENSMUST00000226466.1</a>	488	<a href="#">126aa</a>	Protein coding	-	<a href="#">A0A2I3BQ85</a>	CDS 3' incomplete
Ptk2-212	<a href="#">ENSMUST00000227686.1</a>	485	<a href="#">114aa</a>	Protein coding	-	<a href="#">A0A2I3BPK4</a>	CDS 3' incomplete
Ptk2-206	<a href="#">ENSMUST00000226848.1</a>	364	<a href="#">14aa</a>	Protein coding	-	<a href="#">Q2VQT9</a>	CDS 3' incomplete
Ptk2-207	<a href="#">ENSMUST00000226893.1</a>	318	<a href="#">14aa</a>	Protein coding	-	<a href="#">Q2VQT9</a>	CDS 3' incomplete
Ptk2-211	<a href="#">ENSMUST00000227569.1</a>	4678	No protein	Retained intron	-	-	
Ptk2-210	<a href="#">ENSMUST00000227435.1</a>	4580	No protein	Retained intron	-	-	
Ptk2-215	<a href="#">ENSMUST00000228628.1</a>	3254	No protein	Retained intron	-	-	
Ptk2-204	<a href="#">ENSMUST00000226742.1</a>	2820	No protein	Retained intron	-	-	
Ptk2-202	<a href="#">ENSMUST00000226454.1</a>	542	No protein	Retained intron	-	-	
Ptk2-214	<a href="#">ENSMUST00000228457.1</a>	259	No protein	Retained intron	-	-	

The strategy is based on the design of *Ptk2-201* transcript,The transcription is shown below



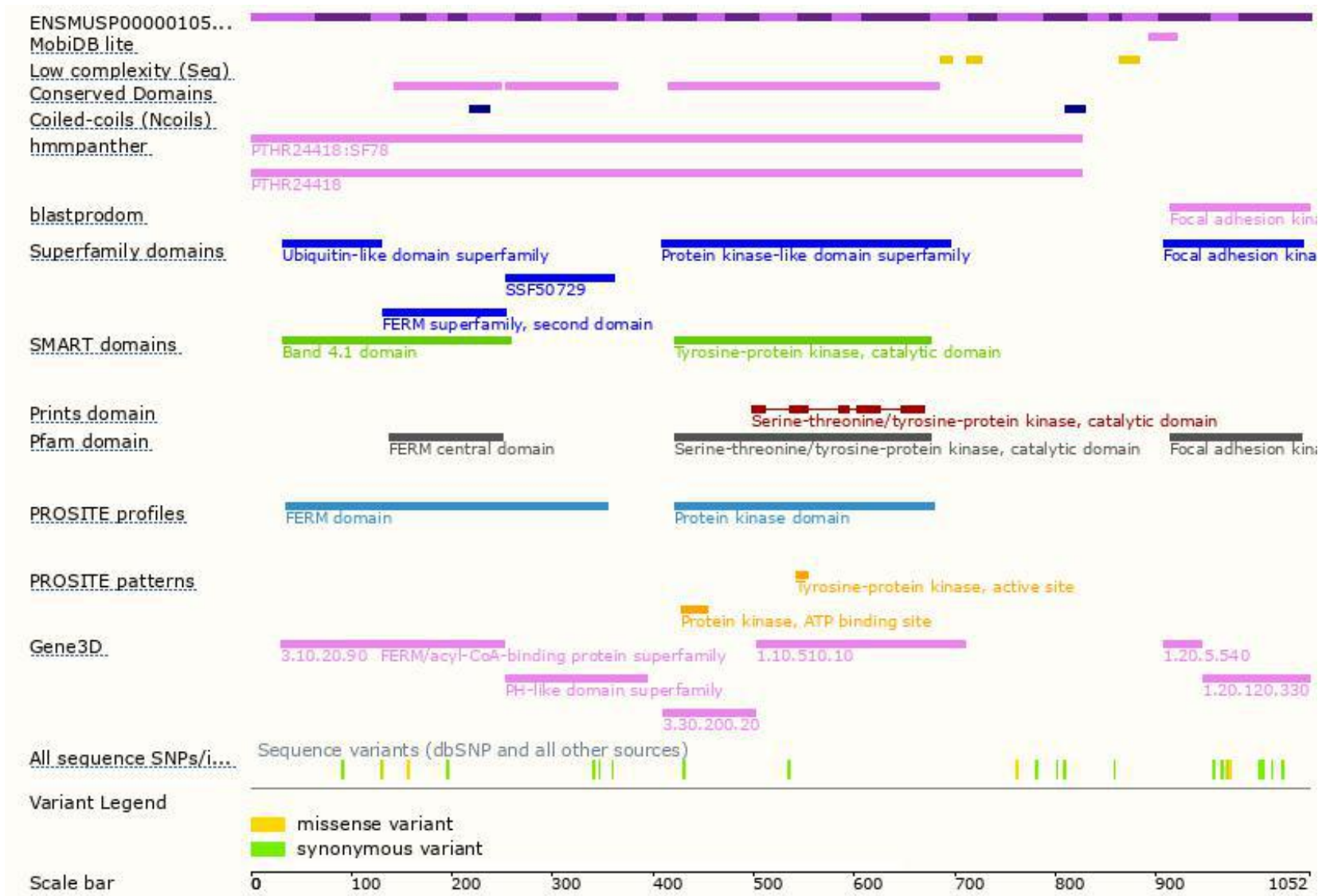


# Genomic location distribution

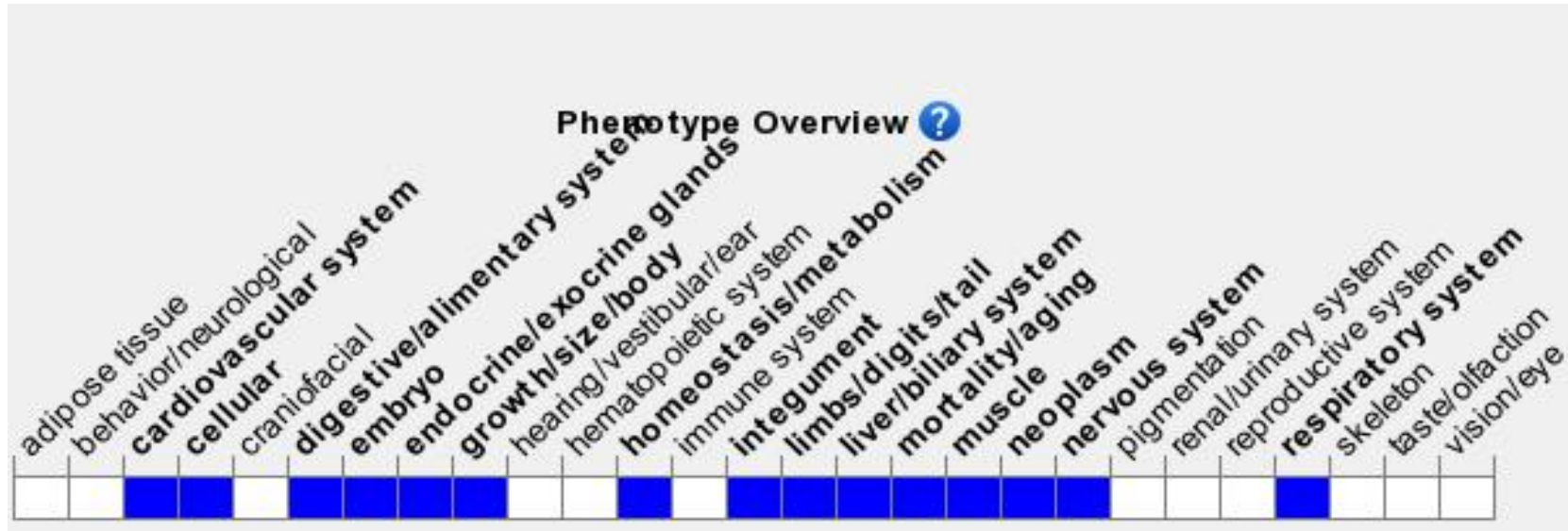




# Protein domain



# Mouse phenotype description(MGI )



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

According to the existing MGI data, Mice homozygous for a null allele die before or during organogenesis with growth retardation, abnormal embryonic and extra embryonic tissue development, and abnormal vascular development.

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