

# *Ptk7* Cas9-KO Strategy

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Design Date: 2020-4-24

# Project Overview

**Project Name**

*Ptk7*

**Project type**

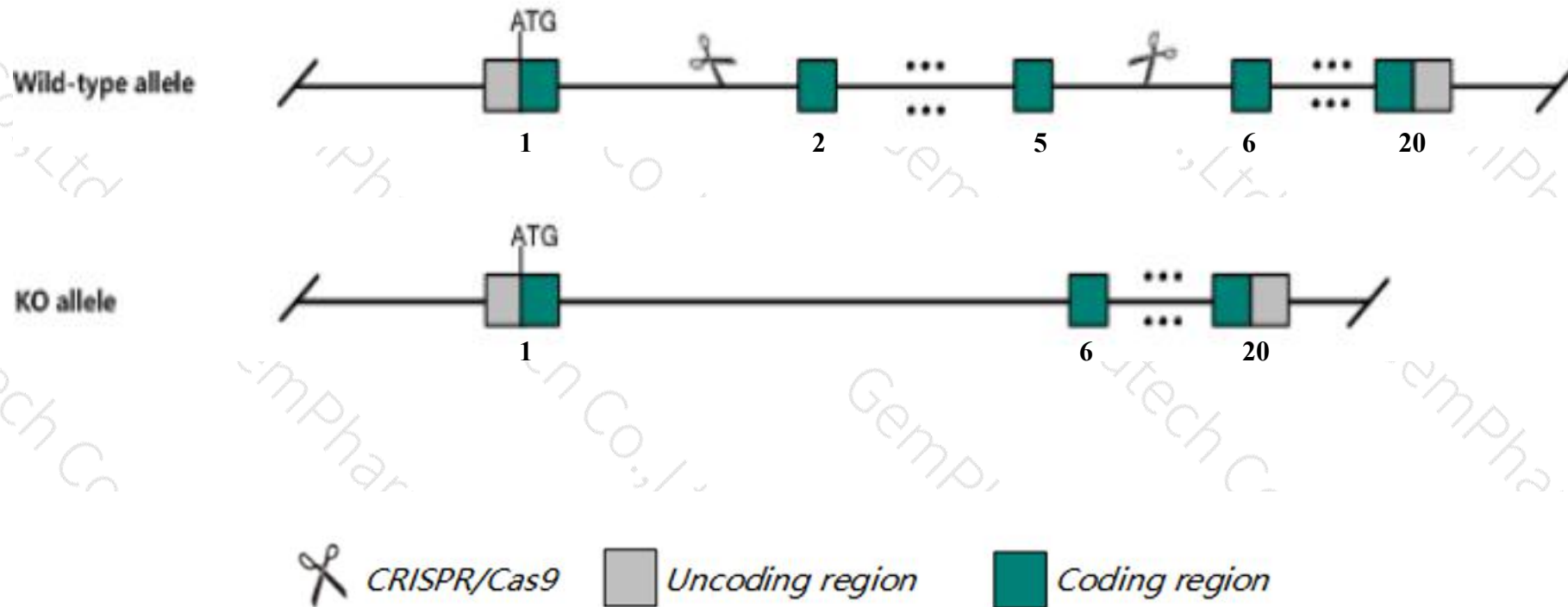
**Cas9-KO**

**Strain background**

**C57BL/6J**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptk7* gene. The schematic diagram is as follows:



- The *Ptk7* gene has 2 transcripts. According to the structure of *Ptk7* gene, exon2-exon5 of *Ptk7-201* (ENSMUST00000044442.9) transcript is recommended as the knockout region. The region contains 733bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptk7* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, mice homozygous for a gene trapped allele die perinatally with defects in neural tube closure and planar cell polarity in the ear. *enu*-induced mutant mice show omphalocele, impaired neural tube, heart and lung development, rib defects, polydactyly, failed eyelid closure and altered cell polarity.
- The *Ptk7* gene is located on the Chr17. 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)

## Ptk7 PTK7 protein tyrosine kinase 7 [Mus musculus (house mouse)]

Gene ID: 71461, updated on 13-Mar-2020

### Summary



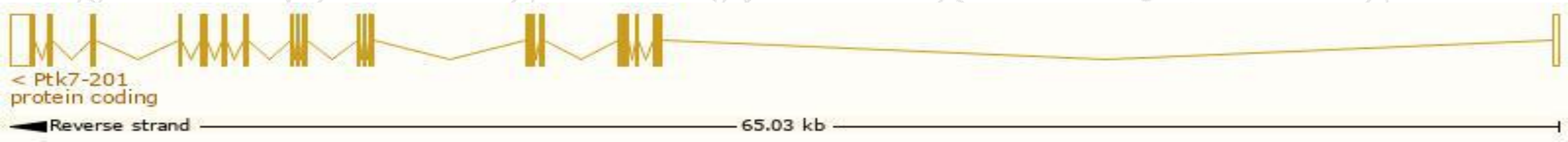
<b>Official Symbol</b>	Ptk7 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	PTK7 protein tyrosine kinase 7 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1918711</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000023972</a>
<b>Gene type</b>	protein coding
<b>RefSeq 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>	8430404F20Rik, chz, mPTK7/CCK4
<b>Expression</b>	Broad expression in limb E14.5 (RPKM 30.4), ovary adult (RPKM 29.7) and 22 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

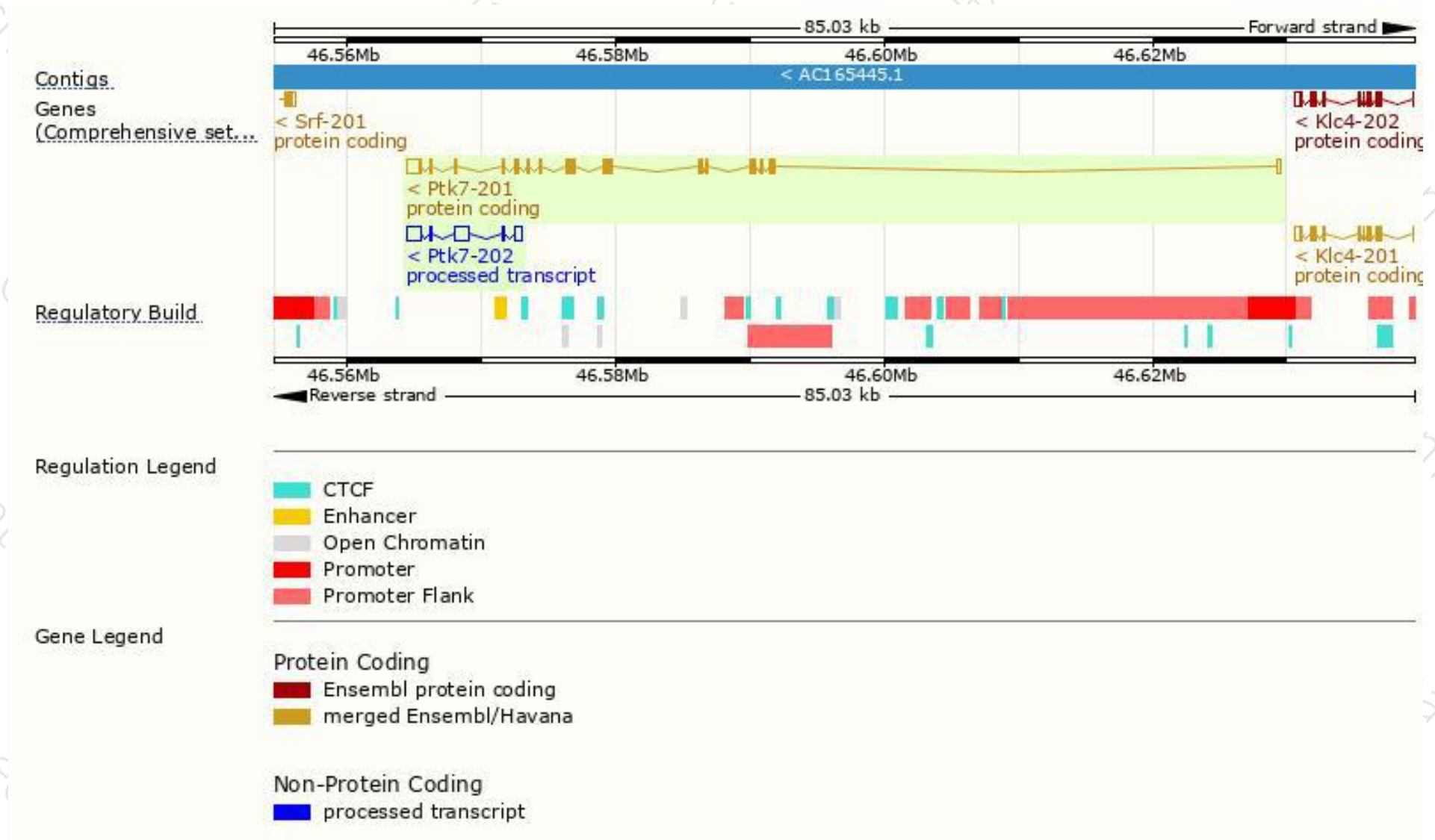
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptk7-201	<a href="#">ENSMUST00000044442.9</a>	4235	<a href="#">1062aa</a>	Protein coding	<a href="#">CCDS37637</a>	<a href="#">Q8BKG3</a>	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Ptk7-202	<a href="#">ENSMUST00000232855.1</a>	2819	No protein	Processed transcript	-	-	

The strategy is based on the design of *Ptk7-201* transcript,the transcription is shown below:



# Genomic location distribution





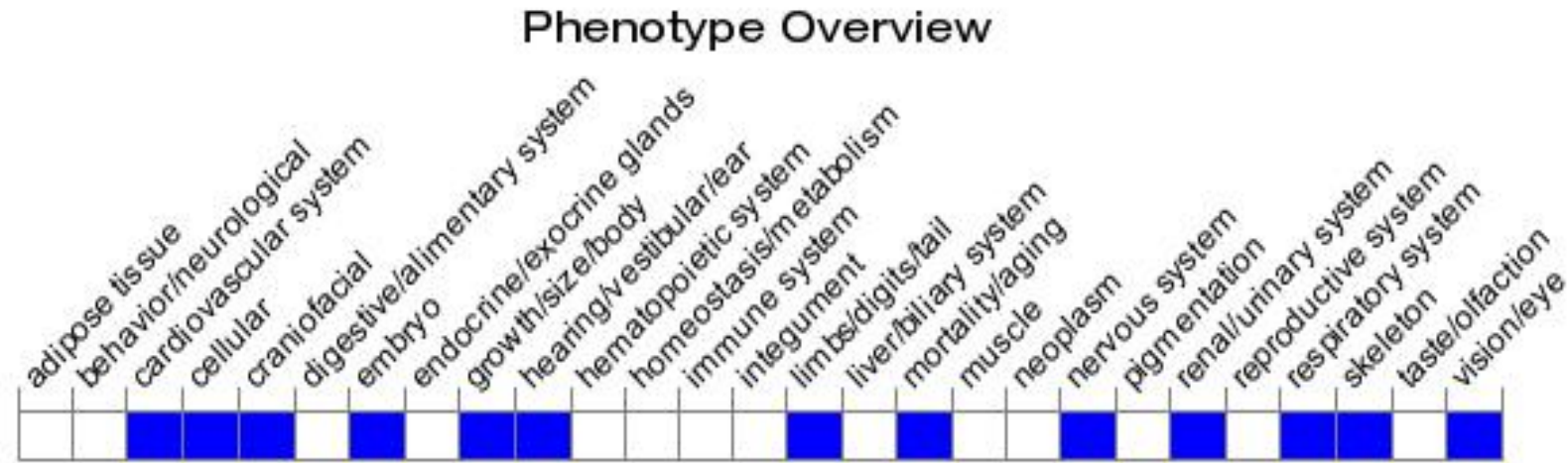
# Protein domain



集萃药康  
GemPharmatech



# 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 gene trapped allele die perinatally with defects in neural tube closure and planar cell polarity in the ear. ENU-induced mutant mice show omphalocele, impaired neural tube, heart and lung development, rib defects, polydactyly, failed eyelid closure and altered cell polarity.

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

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