Prnp Cas9-CKO *Strategy*

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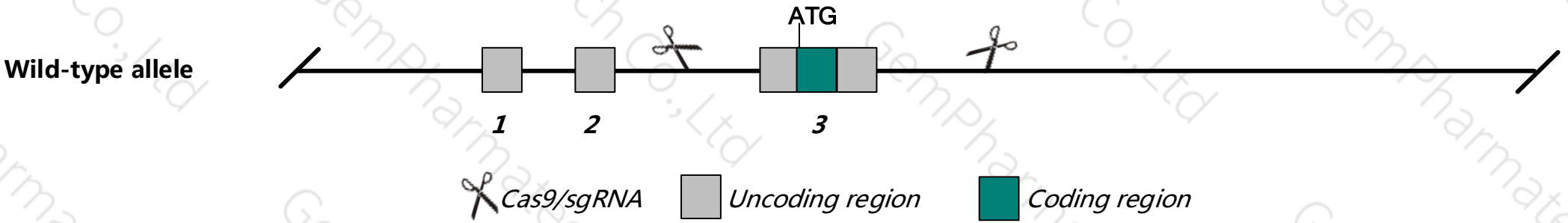
Project Overview

Project Name	*Prnp*
Project type	Cas9-CKO
Animal background	C57BL/6JGpt

Knockout strategy

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



Technical routes

- The *Prnp* gene has 2 transcripts, According to the structure of *Prnp* gene, exon3 of *Prnp-201* transcript is recommended as the knockout region.The region contains the all of coding seqence.Knock out the region,result in destruction of protein.

- This project uses CRISPR/Cas9 technology to modify *Prnp* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed, Cas9, sgRNA and donor were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.

- The flox mice was 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

- According to the existing MGI data，Mutations at this locus affect resistance to scrapie infection and spongiform encephalopathy and/or alter scrapie incubation time. Homozygous mutants also show impaired locomotor coordination and reduced mitochondria numbers with unusual morphology.
- The *Prnp* gene is coincident with the *Prn* gene. After the combination of the Cre and the gene, knocking out the target gene also knocks out the partial intron of the *Prn* gene, and the effect is unknown.
- The *Prnp* gene is located in the Chr2. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information （NCBI）

集萃药康 GemPharmatech

Prnp prion protein [*Mus musculus* (house mouse)]

Gene ID: 19122, updated on 22-Jan-2019

Summary

Official Symbol	Prnp provided by MGI
Official Full Name	prion protein provided by MGI
Primary source	MGI:MGI:97769
See related	Ensembl:ENSMUSG00000079037
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	PrP; PrPC; Sinc; CD230; PrPSc; Prn-i; Prn-p; PrP<C>; AA960666; AI325101; prP27-30; prP33-35C
Expression	Broad expression in cortex adult (RPKM 102.3), frontal lobe adult (RPKM 102.0) and 23 other tissues See more
Orthologs	human all

Transcript information （Ensembl）

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

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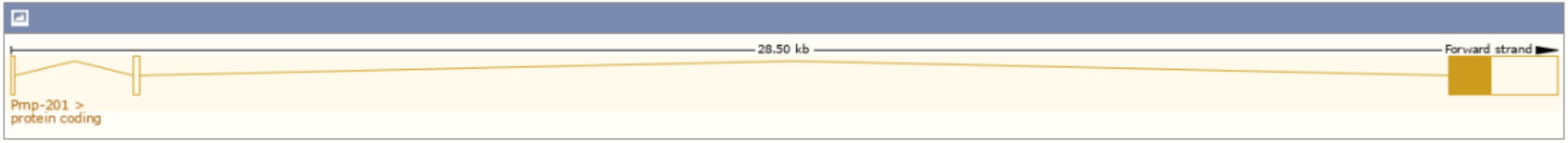
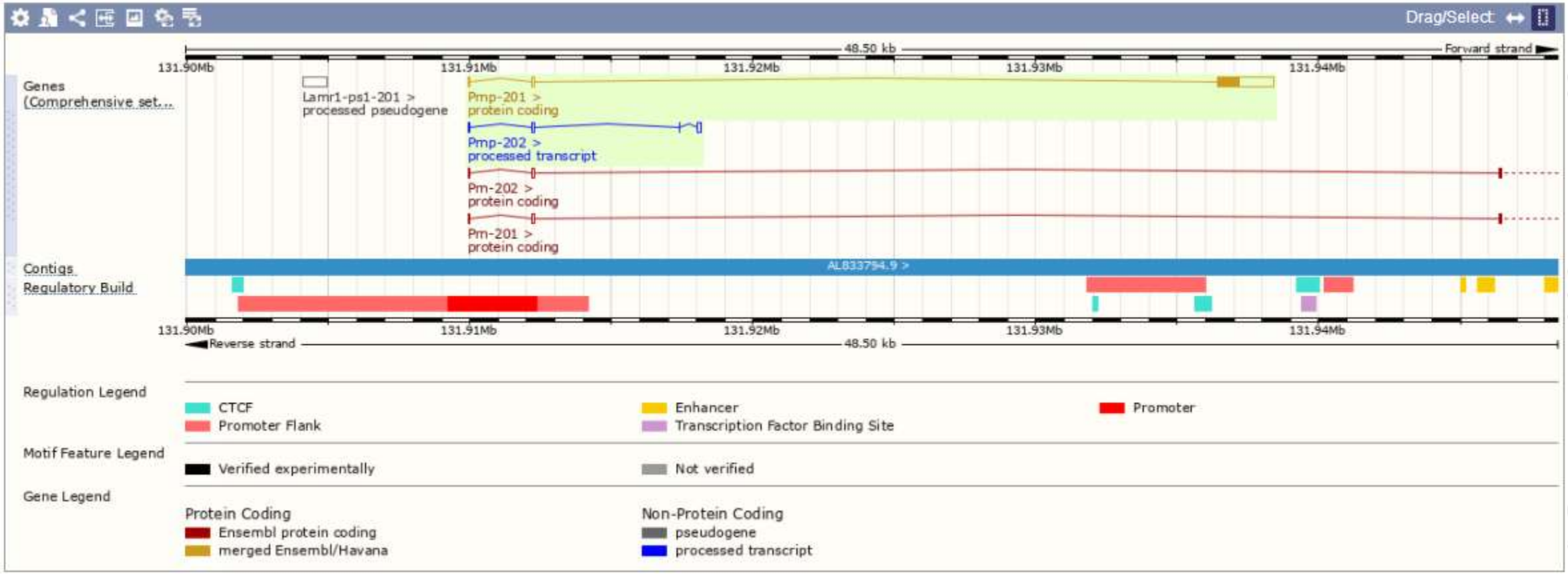
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Prnp-201	ENSMUST00000091288.12	2184	254aa	Protein coding	CCDS16766	P04925 Q4FJQ7	NM_001278256 NM_011170 NP_001265185 NP_035300	TSL:1 GENCODE basic APPRIS P1
Prnp-202	ENSMUST00000142070.1	319	No protein	Processed transcript	-	-	-	TSL:3

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

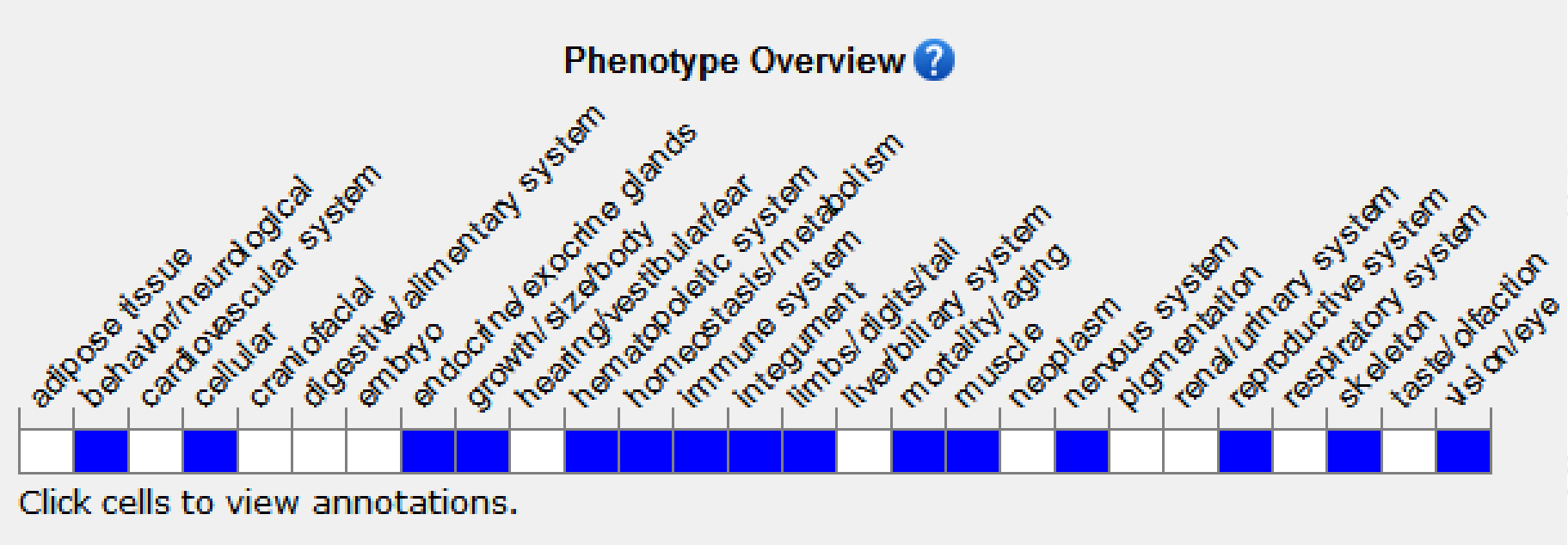


Genomic location distribution



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,Mutations at this locus affect resistance to scrapie infection and spongiform encephalopathy and/or alter scrapie incubation time. Homozygous mutants also show impaired locomotor coordination and reduced mitochondria numbers with unusual morphology.

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

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