Prkg1 Cas9-KO Strategy

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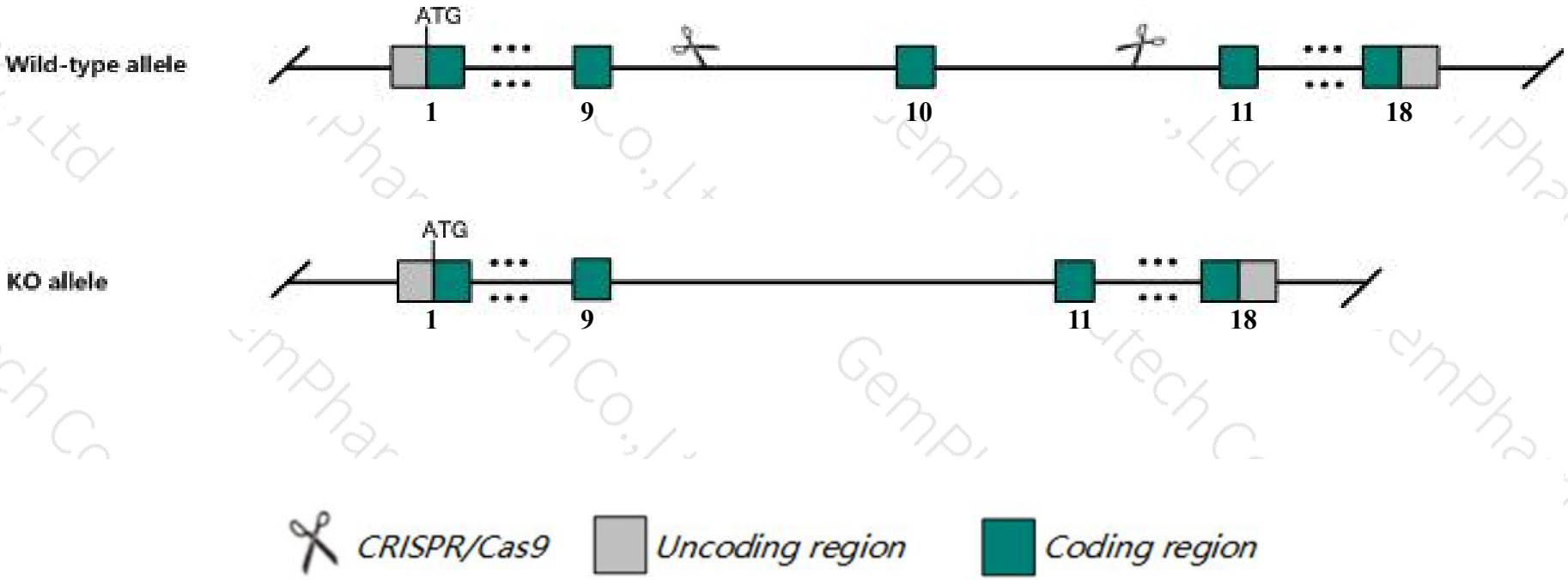
Project Overview

Project Name	***Prkg1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prkg1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Prkg1* gene has 7 transcripts. According to the structure of *Prkg1* gene, exon10 of *Prkg1-201* (ENSMUST00000065067.13) transcript is recommended as the knockout region.The region contains 97bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Prkg1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mutant mice exhibit abnormal smooth muscle function and penile erectile deficiency. Conditional disruption in the hippocampus results in impaired LTP. Mice homozygous for a transposon induced allele exhibit postnatal lethality.

- The *Prkg1* gene is located on the Chr19. 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）

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Prkg1 protein kinase, cGMP-dependent, type I [Mus musculus (house mouse)]

Gene ID: 19091, updated on 9-Apr-2019

Summary

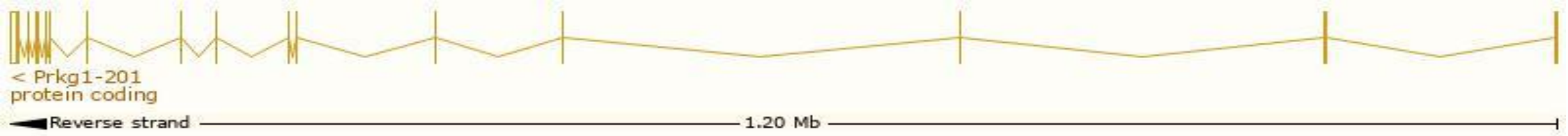
Official Symbol	Prkg1 provided by MGI
Official Full Name	protein kinase, cGMP-dependent, type I provided by MGI
Primary source	MGI:MGI:108174
See related	Ensembl:ENSMUSG00000052920
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW125416, CGKI, Gm19690, Prkg1b, Prkgr1b
Expression	Ubiquitous expression in testis adult (RPKM 1.7), CNS E11.5 (RPKM 1.6) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

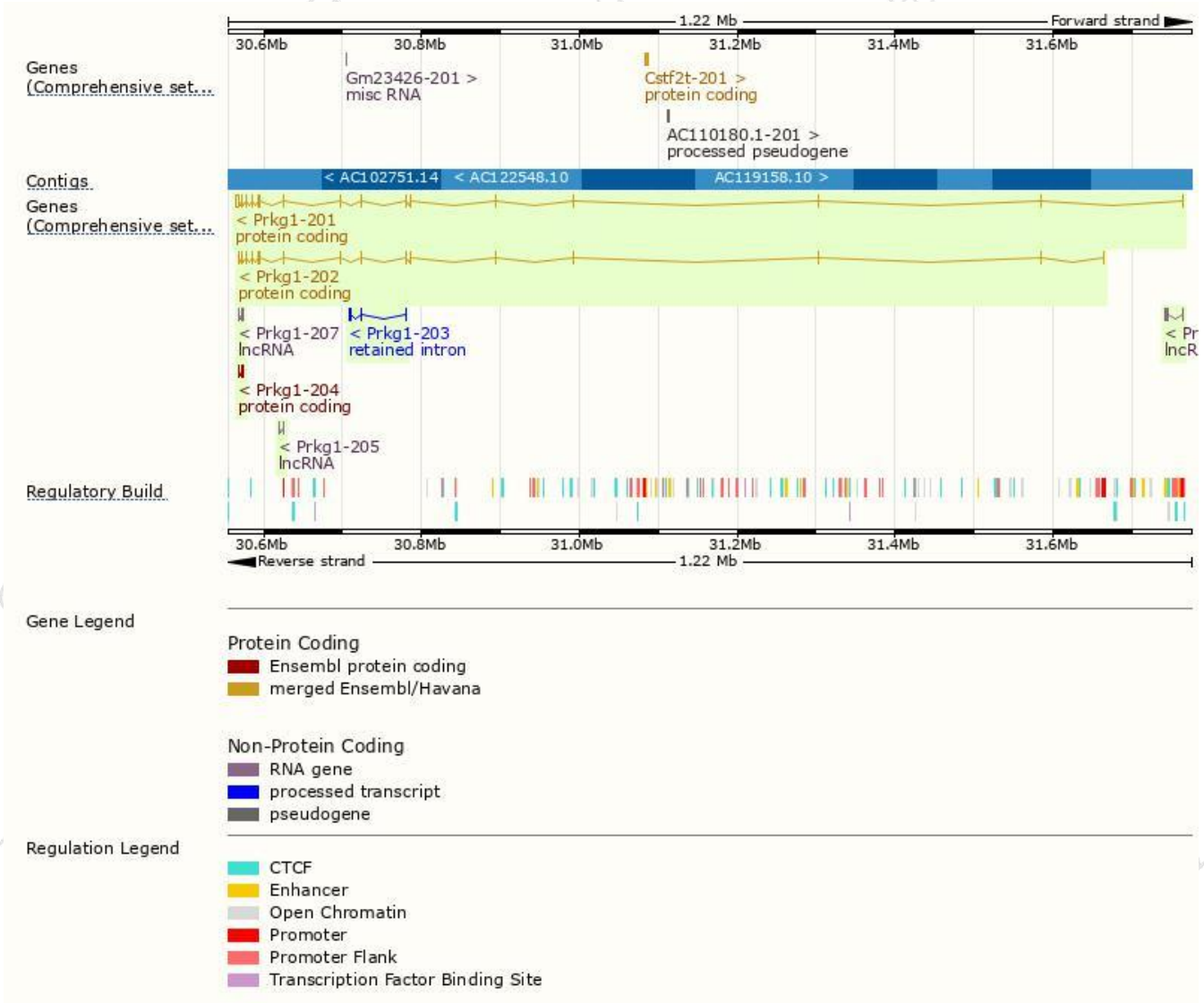
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prkg1-201	ENSMUST00000065067.13	6976	671aa	Protein coding	CCDS29745	P0C605 Q8BND1	TSL:1 GENCODE basic APPRIS P1
Prkg1-202	ENSMUST00000073581.5	2841	686aa	Protein coding	CCDS29746	P0C605	TSL:1 GENCODE basic
Prkg1-204	ENSMUST00000182459.1	479	62aa	Protein coding	-	-	TSL:2 GENCODE basic
Prkg1-203	ENSMUST00000182401.1	1455	No protein	Retained intron	-	-	TSL:1
Prkg1-206	ENSMUST00000182685.1	1628	No protein	lncRNA	-	-	TSL:1
Prkg1-205	ENSMUST00000182527.1	978	No protein	lncRNA	-	-	TSL:1
Prkg1-207	ENSMUST00000183135.7	542	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Prkg1-201* transcript,The transcription is shown below

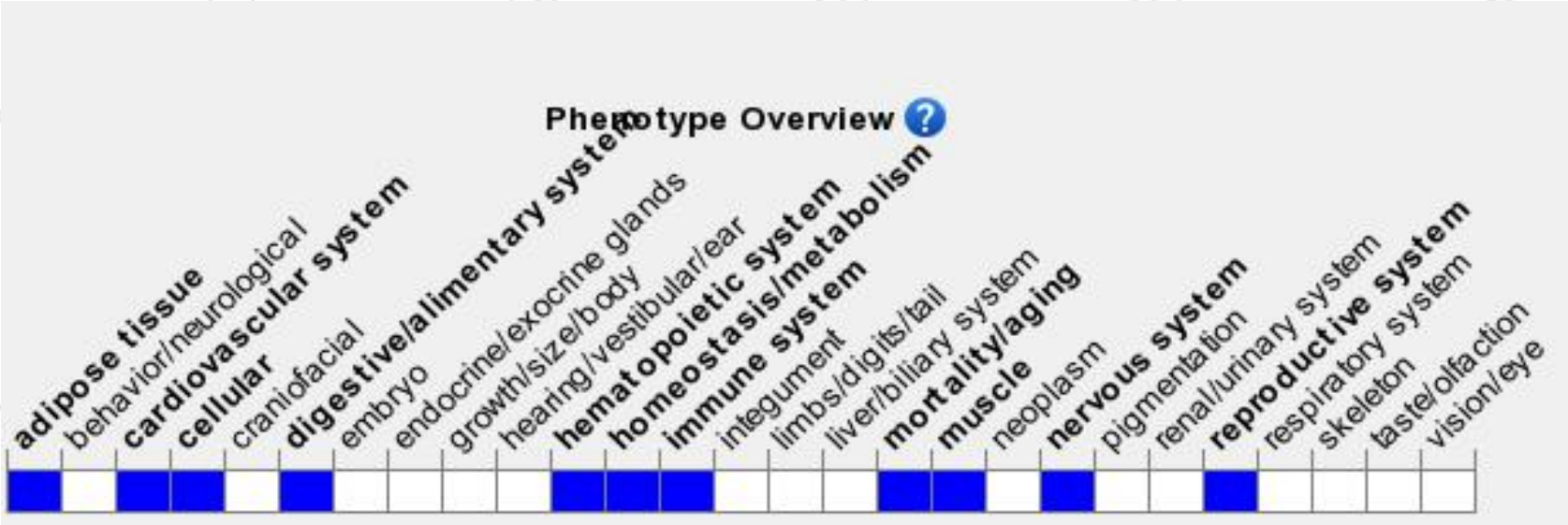


Genomic location distribution



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/).

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

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