Ppp1r9a Cas9-CKO Strategy

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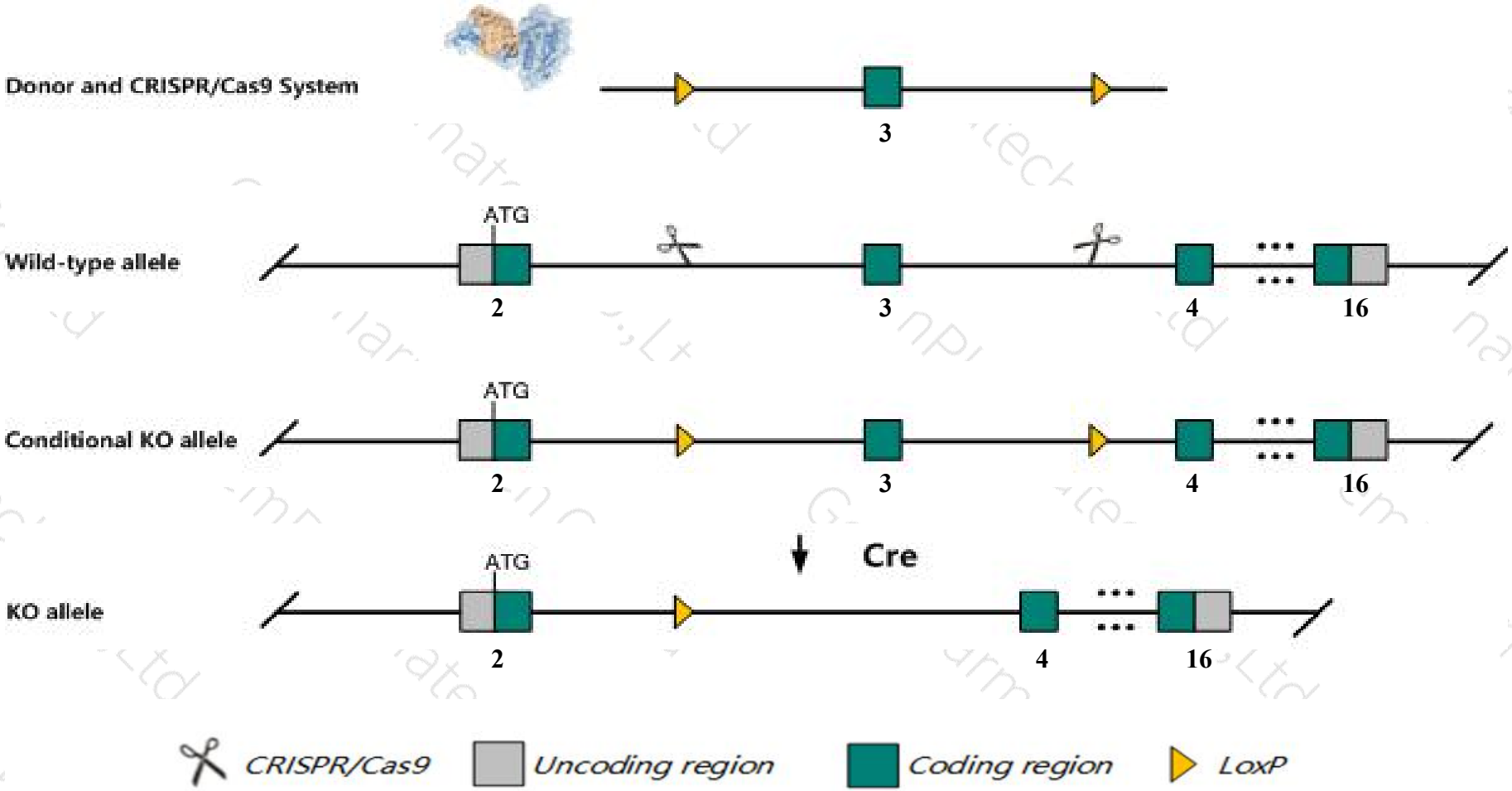
Project Overview

Project Name	***Ppp1r9a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppp1r9a* gene. The schematic diagram is as follows:



Technical routes

- The *Ppp1r9a* gene has 12 transcripts. According to the structure of *Ppp1r9a* gene, exon3 of *Ppp1r9a-201* (ENSMUST00000035813.8) transcript is recommended as the knockout region.The region contains 133bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ppp1r9a* gene. The brief process is as follows:CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice.Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.

- The flox mice will be 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,Mice homozygous for a knock-out allele exhibit defects in dopamine-mediated neuromodulation, deficient long-term potentiation at corticostriatal synapses, increased spontaneous excitatory post-synaptic current frequency, and enhanced locomotor activationin response to cocaine treatment.

➢ The *Ppp1r9a* gene is located on the Chr6. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Ppp1r9a protein phosphatase 1, regulatory subunit 9A [*Mus musculus* (house mouse)]

Gene ID: 243725, updated on 24-Oct-2019

Summary

Official Symbol	Ppp1r9a provided by MGI
Official Full Name	protein phosphatase 1, regulatory subunit 9A provided by MGI
Primary source	MGI:MGI:2442401
See related	Ensembl:ENSMUSG00000032827
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	NRB; BB181831; 5330407E15; neurabin-I; 2810430P21Rik; 4930518N04Rik; A230094E16Rik
Expression	Broad expression in cortex adult (RPKM 12.5), frontal lobe adult (RPKM 11.0) and 22 other tissues See more
Orthologs	human all

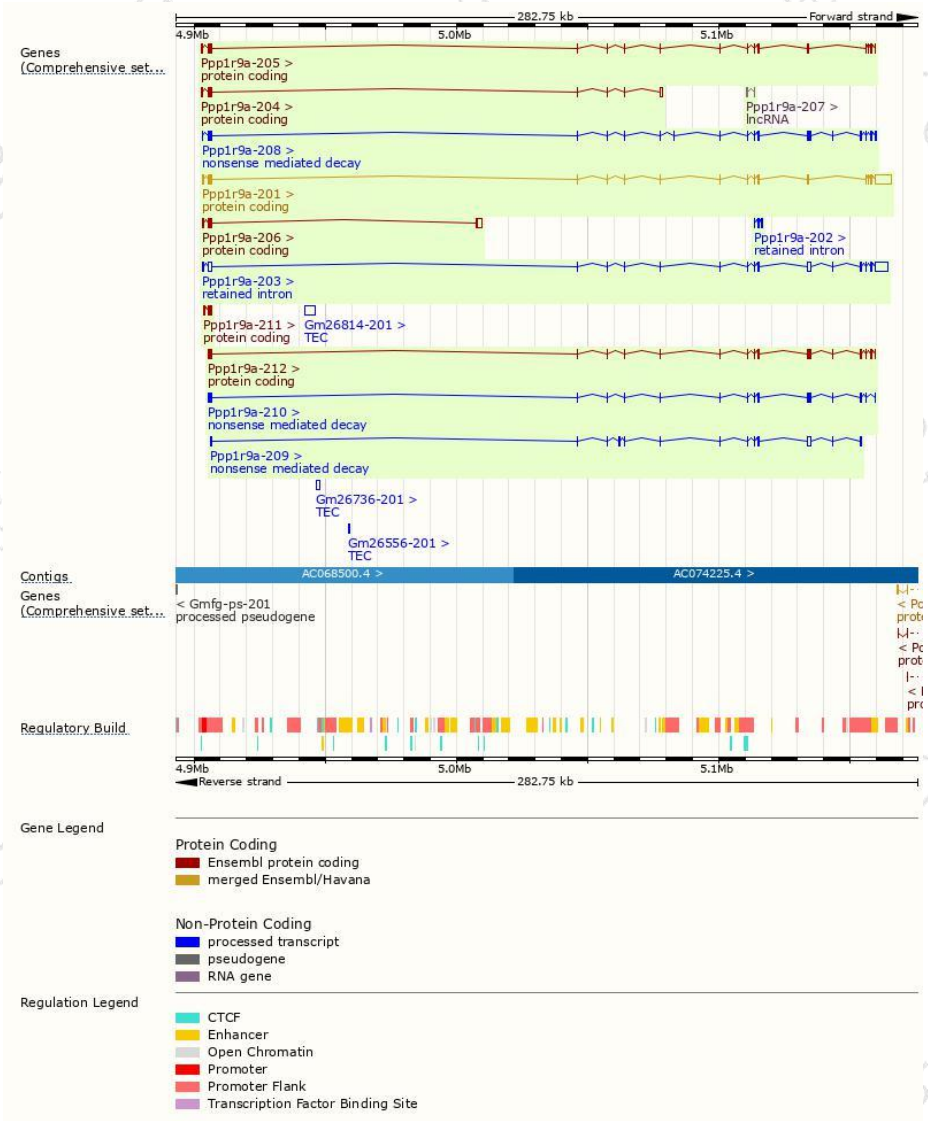
Transcript information（Ensembl）

The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp1r9a-201	ENSMUST00000035813.8	9547	1095aa	Protein coding	CCDS19897	Q7TN74	TSL:1 GENCODE basic APPRIS P2
Ppp1r9a-212	ENSMUST00000177456.7	3975	1292aa	Protein coding	-	H3BJD6	TSL:5 GENCODE basic APPRIS ALT2
Ppp1r9a-206	ENSMUST00000175962.1	3769	533aa	Protein coding	-	H3BKE7	TSL:1 GENCODE basic
Ppp1r9a-205	ENSMUST00000175889.7	3462	1042aa	Protein coding	-	H3BL28	CDS 3' incomplete TSL:1
Ppp1r9a-204	ENSMUST00000168998.8	2966	642aa	Protein coding	-	Q3UXW4	TSL:1 GENCODE basic
Ppp1r9a-211	ENSMUST00000177338.1	1680	447aa	Protein coding	-	Q8BMP0	CDS 3' incomplete TSL:1
Ppp1r9a-208	ENSMUST00000176263.7	4810	977aa	Nonsense mediated decay	-	H3BJD0	TSL:5
Ppp1r9a-210	ENSMUST00000177153.7	3834	955aa	Nonsense mediated decay	-	H3BKQ7	TSL:5
Ppp1r9a-209	ENSMUST00000176729.7	3046	232aa	Nonsense mediated decay	-	H3BJA6	CDS 5' incomplete TSL:1
Ppp1r9a-203	ENSMUST00000164110.8	9395	No protein	Retained intron	-	-	TSL:1
Ppp1r9a-202	ENSMUST00000065842.6	885	No protein	Retained intron	-	-	TSL:1
Ppp1r9a-207	ENSMUST00000176136.1	357	No protein	lncRNA	-	-	TSL:2

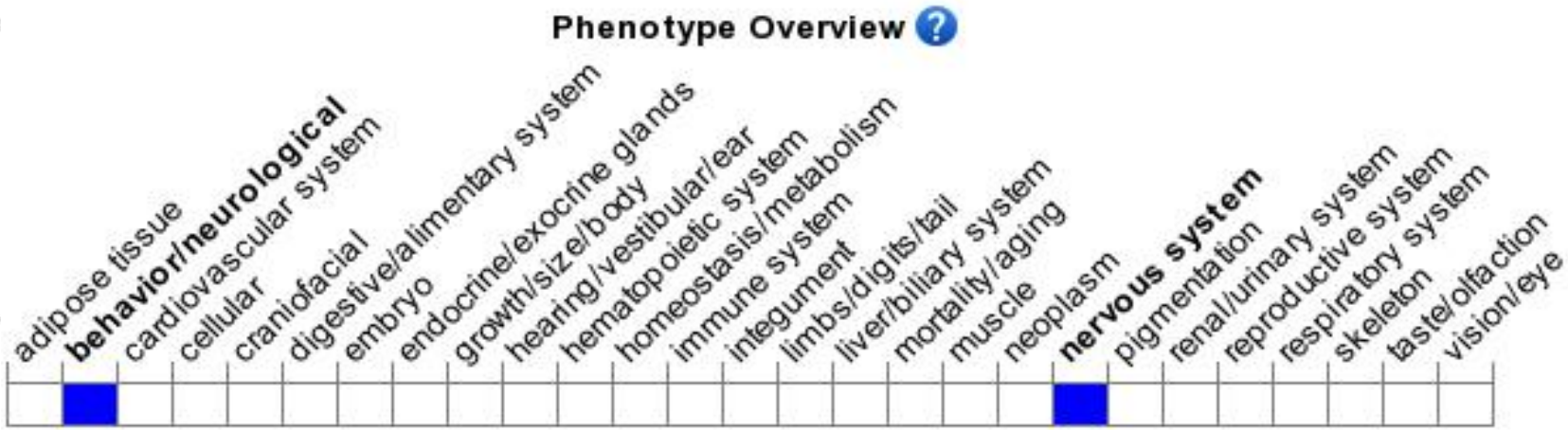
The strategy is based on the design of *Ppp1r9a-201* transcript,The transcription is shown below

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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