Rimbp2 Cas9-KO Strategy

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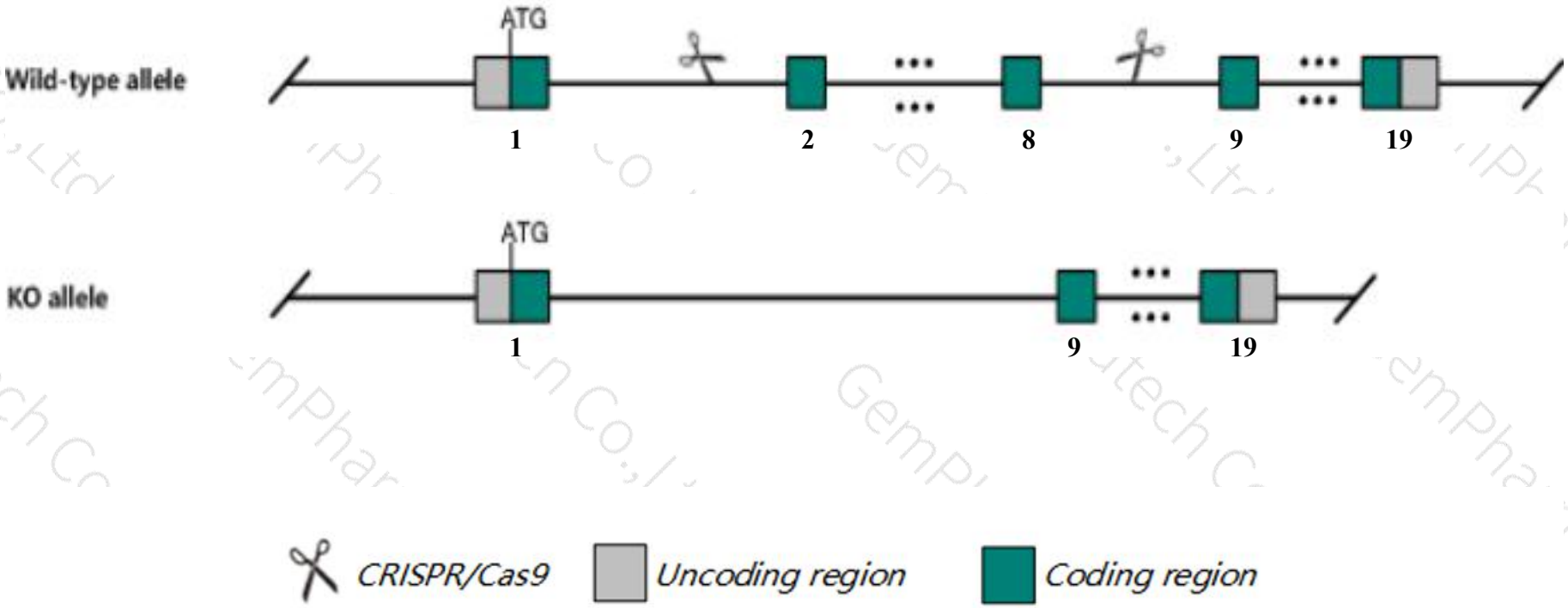
Design Date: 2020-9-3

Project Overview

Project Name	***Rimbp2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rimbp2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rimbp2* gene has 9 transcripts. According to the structure of *Rimbp2* gene, exon2-exon8 of *Rimbp2-204*(ENSMUST00000198941.4) transcript is recommended as the knockout region.The region contains 1414bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rimbp2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,homozygous knockout results in a mild neurological phenotype with changes in the synaptic transmission and plasticity of hippocampal neurons.

➢ The *Rimbp2* gene is located on the Chr5. 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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Rimbp2 RIMS binding protein 2 [Mus musculus (house mouse)]

Gene ID: 231760, updated on 14-Mar-2020

Summary

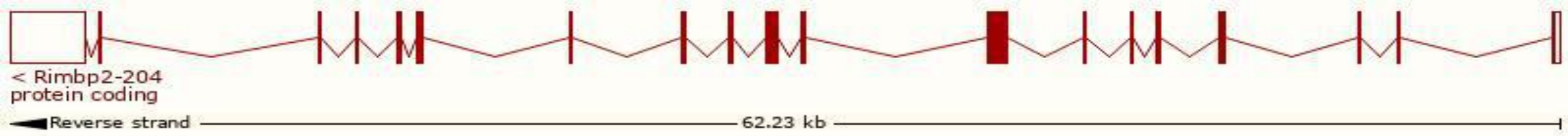
Official Symbol	Rimbp2 provided by MGI
Official Full Name	RIMS binding protein 2 provided byMGI
Primary source	MGI:MGI:2443235
See related	Ensembl:ENSMUSG00000029420
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A930033C01Rik, mKIAA0318
Expression	Biased expression in cortex adult (RPKM 19.2), frontal lobe adult (RPKM 17.0) and 5 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

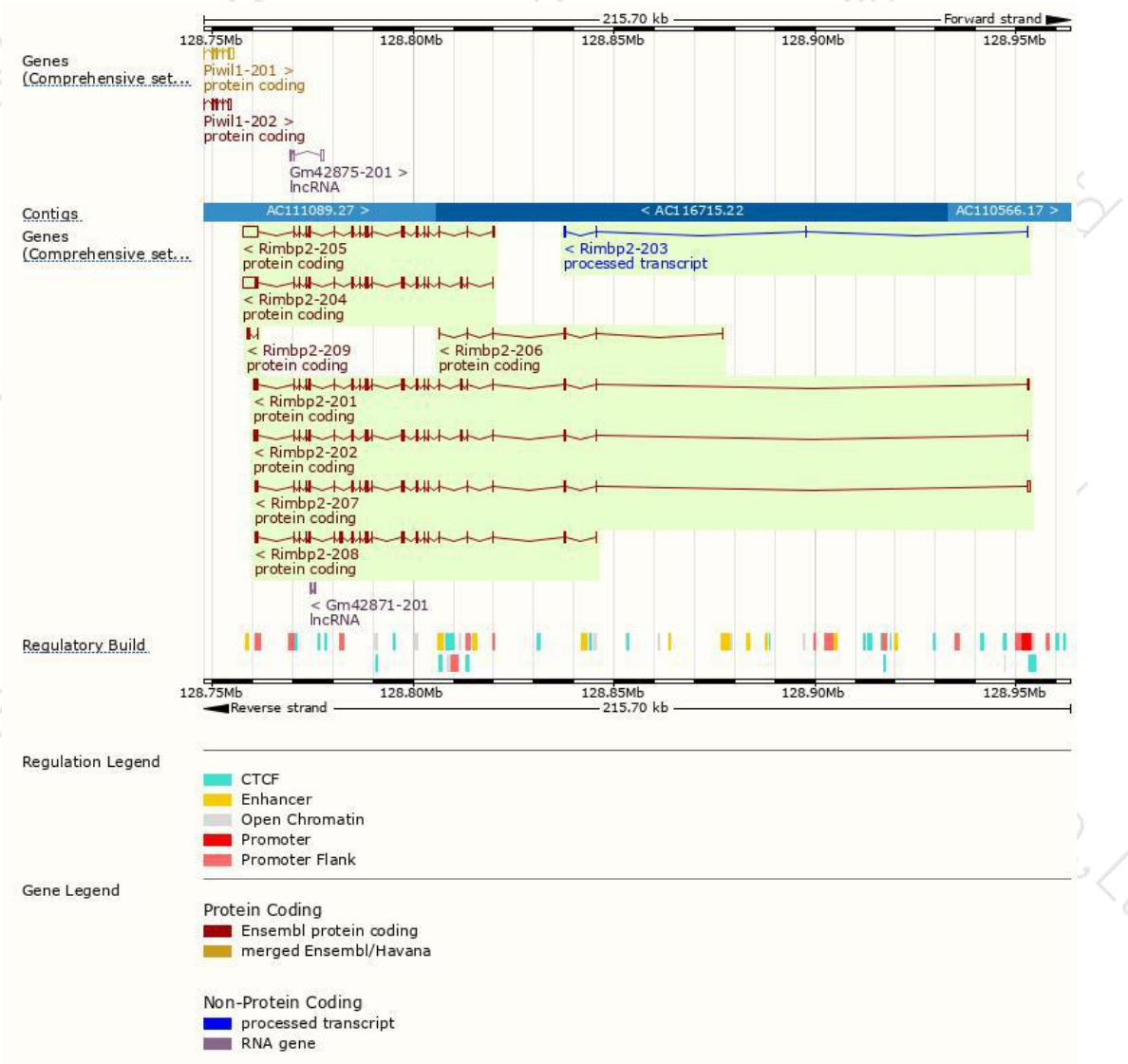
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rimbp2-204	ENSMUST00000198941.4	6446	1079aa	Protein coding	CCDS39288	D3YXR8	TSL:2 GENCODE basic APPRIS P3
Rimbp2-201	ENSMUST00000111346.5	4264	1079aa	Protein coding	CCDS39288	D3YXR8	TSL:5 GENCODE basic APPRIS P3
Rimbp2-207	ENSMUST00000200470.4	4083	1071aa	Protein coding	CCDS80415	A0A0G2JFB0	TSL:1 GENCODE basic APPRIS ALT2
Rimbp2-205	ENSMUST00000199537.4	6966	1069aa	Protein coding	-	Q80U40	TSL:1 GENCODE basic APPRIS ALT2
Rimbp2-208	ENSMUST00000238334.1	4101	1291aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Rimbp2-202	ENSMUST00000196085.4	3732	1004aa	Protein coding	-	A0A0G2JGW5	TSL:5 GENCODE basic APPRIS ALT2
Rimbp2-206	ENSMUST00000199737.4	620	100aa	Protein coding	-	A0A0G2JEC0	CDS 3' incomplete TSL:3
Rimbp2-209	ENSMUST00000239036.1	455	76aa	Protein coding	-	-	CDS 5' incomplete
Rimbp2-203	ENSMUST00000196569.1	329	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Rimbp2-204* transcript,the transcription is shown below:

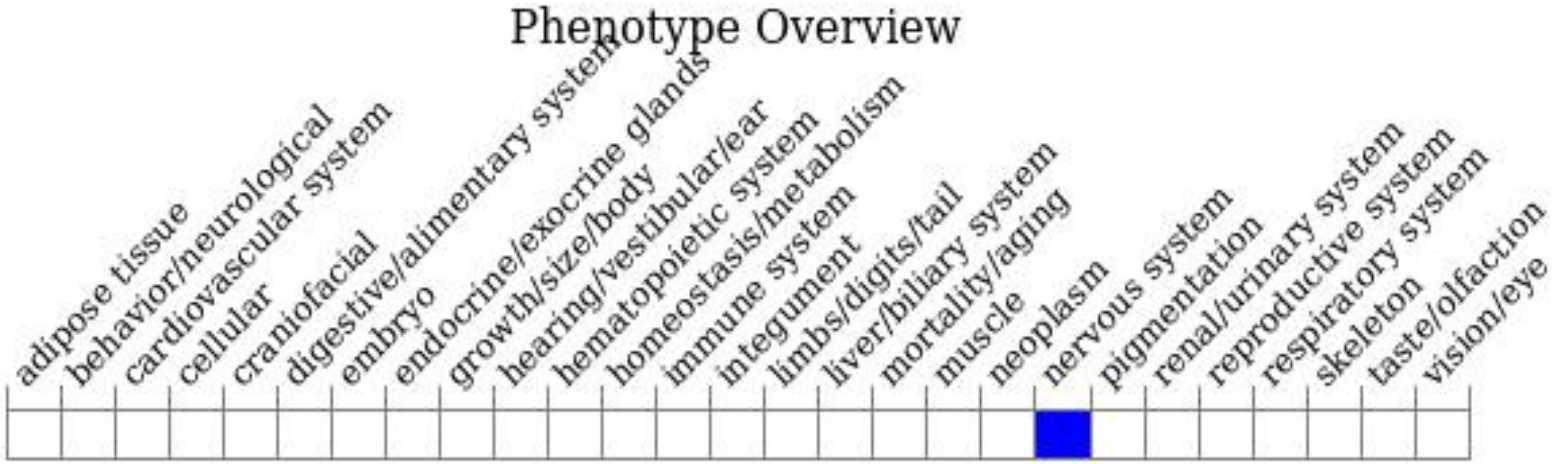


Genomic location distribution



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,homozygous knockout results in a mild neurological phenotype with changes in the synaptic transmission and plasticity of hippocampal neurons.

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

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