Reep1 Cas9-CKO Strategy

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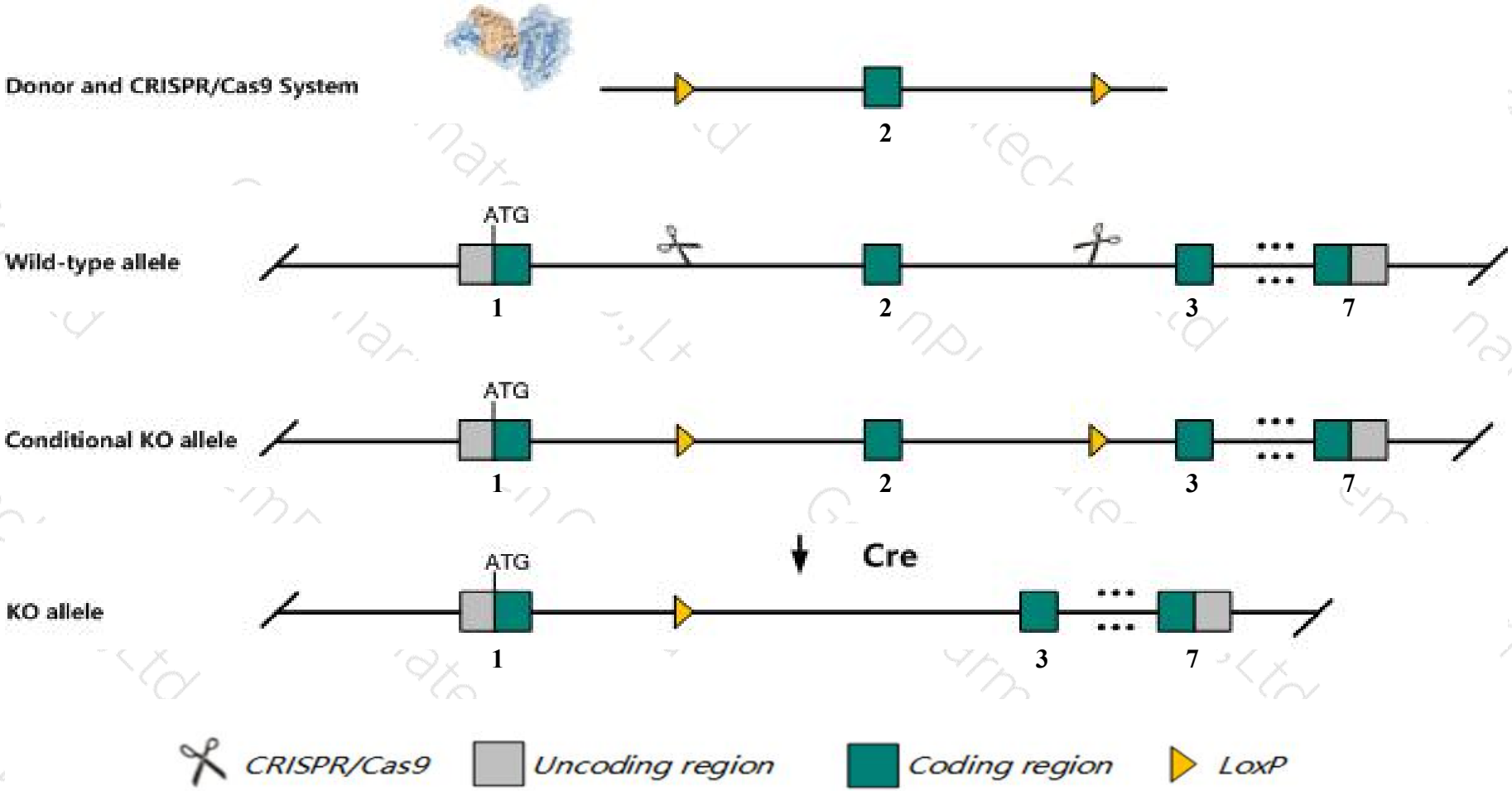
Project Overview

Project Name	***Reep1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Reep1* gene. The schematic diagram is as follows:



Technical routes

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- The *Reep1* gene has 3 transcripts. According to the structure of *Reep1* gene, exon2 of *Reep1-201* (ENSMUST00000121469.1) transcript is recommended as the knockout region.The region contains 73bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Reep1* 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 spastic paraplegia in aged mice with reduced ER complexity in cortical motor neurons.

- The *Reep1* 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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Reep1 receptor accessory protein 1 [Mus musculus (house mouse)]

Gene ID: 52250, updated on 31-Jan-2019

Summary

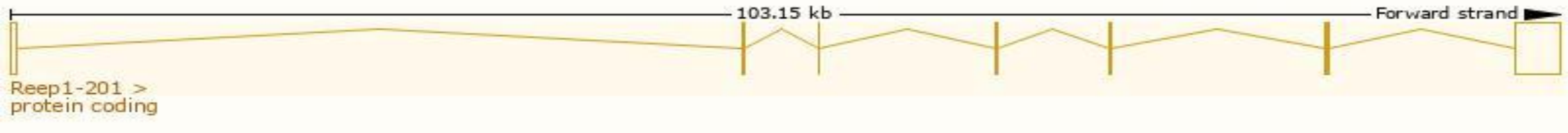
Official Symbol	Reep1 provided by MGI
Official Full Name	receptor accessory protein 1 provided by MGI
Primary source	MGI:MGI:1098827
See related	Ensembl:ENSMUSG00000052852
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	D6Ertd253e
Expression	Biased expression in CNS E18 (RPKM 80.0), whole brain E14.5 (RPKM 64.9) and 9 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

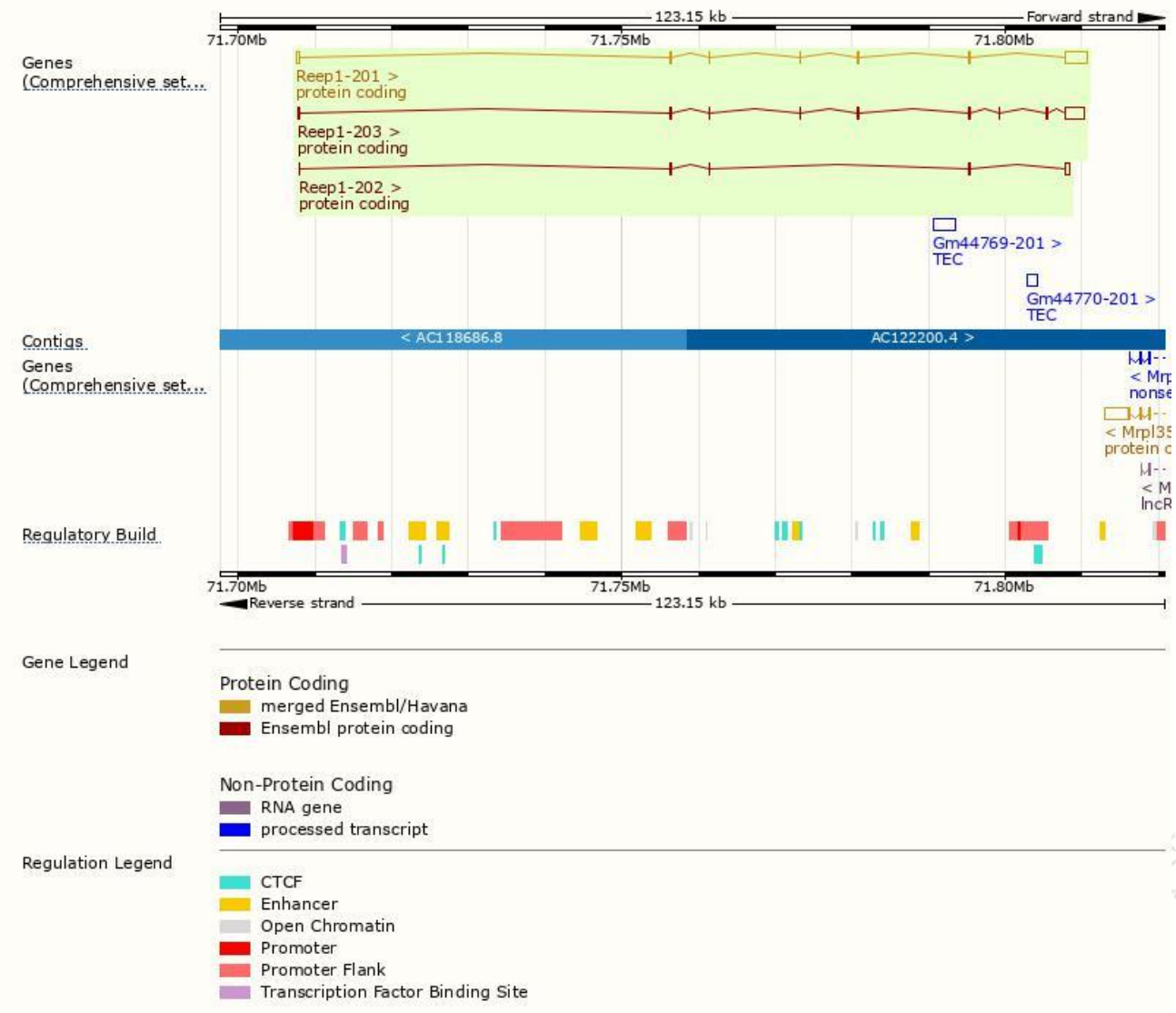
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Reep1-201	ENSMUST00000121469.1	3924	201aa	Protein coding	CCDS51807	Q8BGH4	TSL:1 GENCODE basic APPRIS P1
Reep1-203	ENSMUST00000212792.1	3339	284aa	Protein coding	-	A0A1D5RLF1	TSL:5 GENCODE basic
Reep1-202	ENSMUST00000212631.1	953	143aa	Protein coding	-	A0A1D5RM91	TSL:5 GENCODE basic

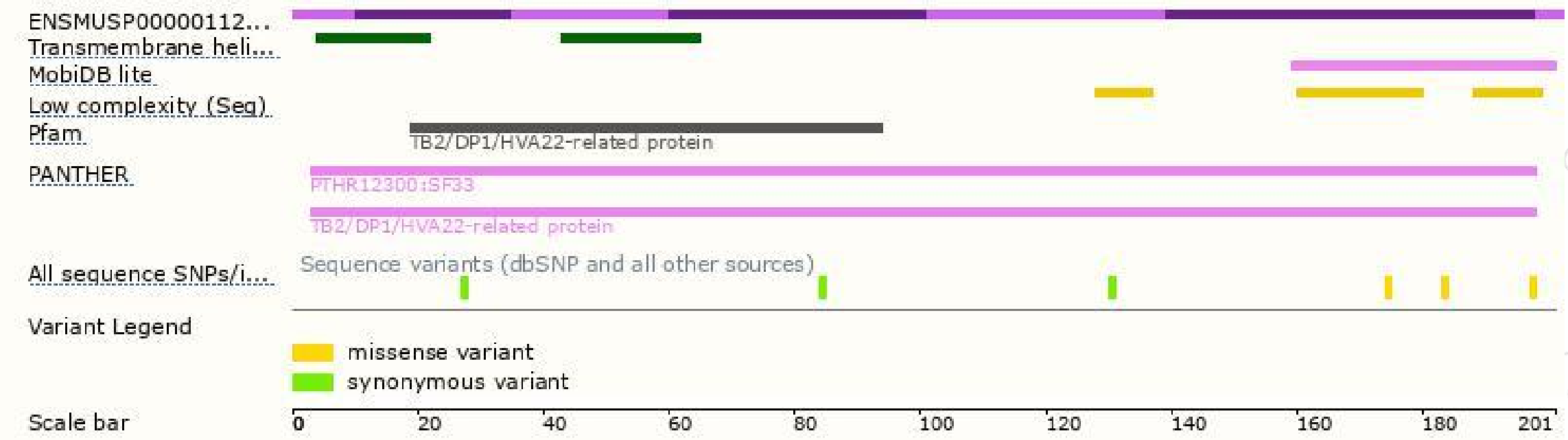
The strategy is based on the design of *Reep1-201* transcript,The transcription is shown below



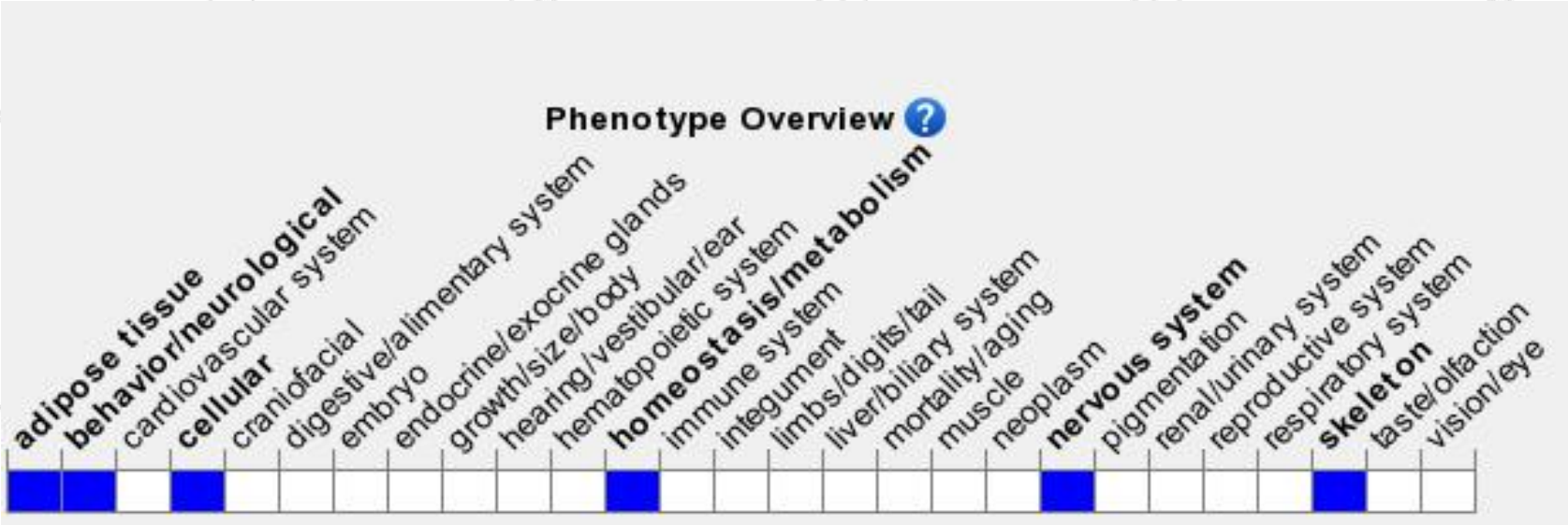
Genomic location distribution



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,Mice homozygous for a knock-out allele exhibit spastic paraplegia in aged mice with reduced ER complexity in cortical motor neurons.

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

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