Abhd12 Cas9-CKO Strategy

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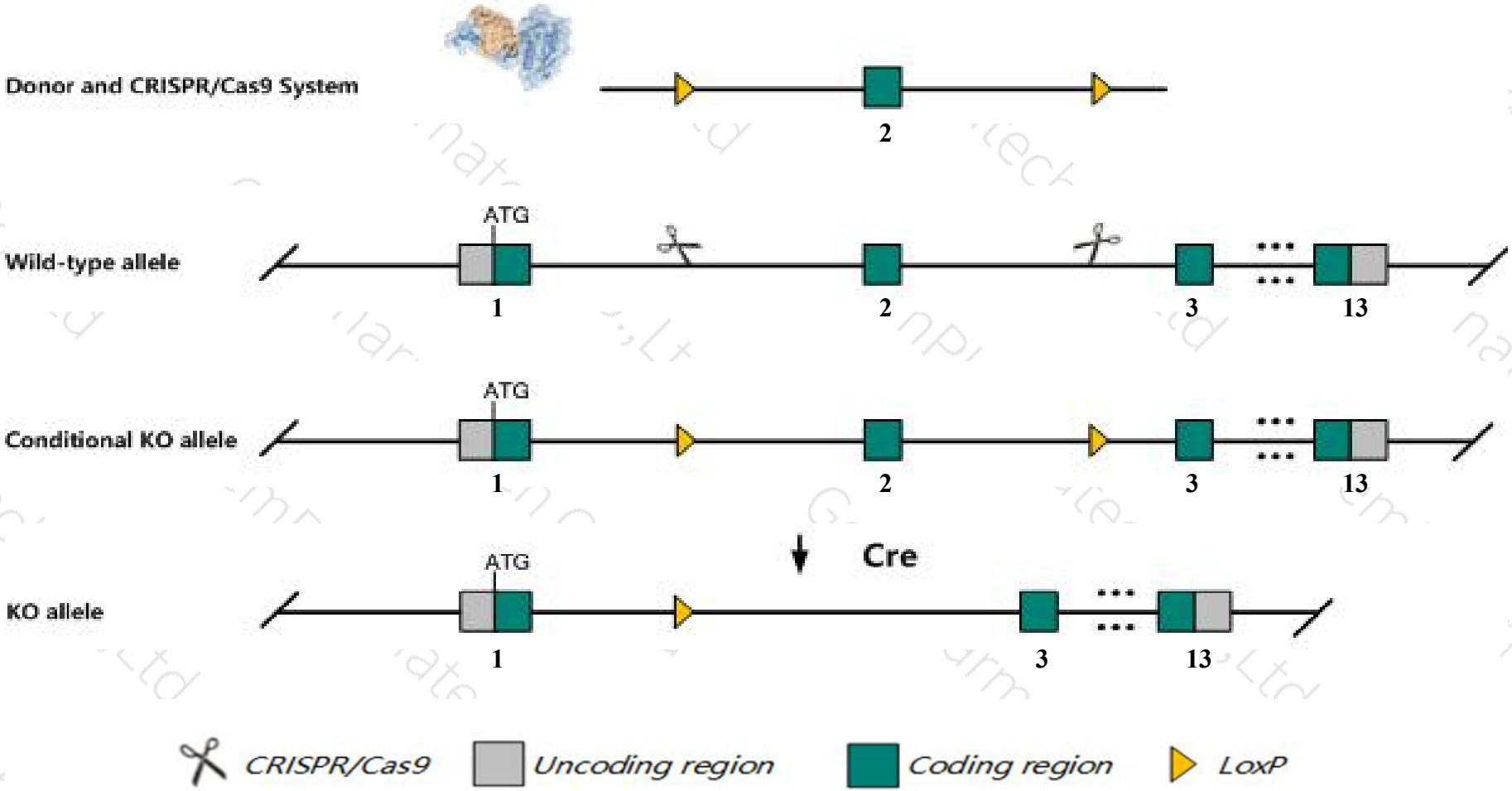
Project Overview

Project Name	***Abhd12***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Abhd12* gene. The schematic diagram is as follows:



Technical routes

- The *Abhd12* gene has 7 transcripts. According to the structure of *Abhd12* gene, exon2 of *Abhd12-201* (ENSMUST00000056149.14) transcript is recommended as the knockout region.The region contains 125bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Abhd12* 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 neurological symptoms of neurodegeneration, hearing loss, ataxia, microgliosis and reduced brain lysophosphatidylserine lipase activity.

- The *Abhd12* gene is located on the Chr2. 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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Abhd12 abhydrolase domain containing 12 [Mus musculus (house mouse)]

Gene ID: 76192, updated on 31-Jan-2019

Summary

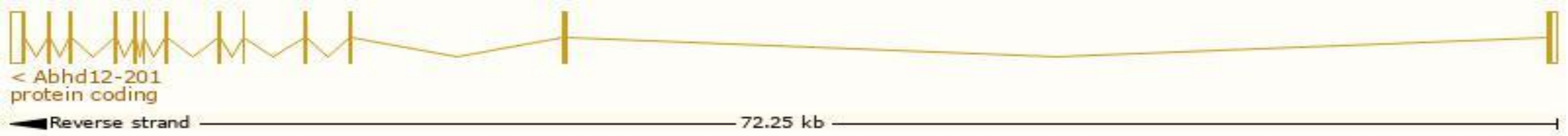
Official Symbol	Abhd12 provided by MGI
Official Full Name	abhydrolase domain containing 12 provided by MGI
Primary source	MGI:MGI:1923442
See related	Ensembl:ENSMUSG00000032046
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1500011G07Rik, 6330583M11Rik, AI431047, AW547313
Expression	Ubiquitous expression in cortex adult (RPKM 64.9), bladder adult (RPKM 63.9) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

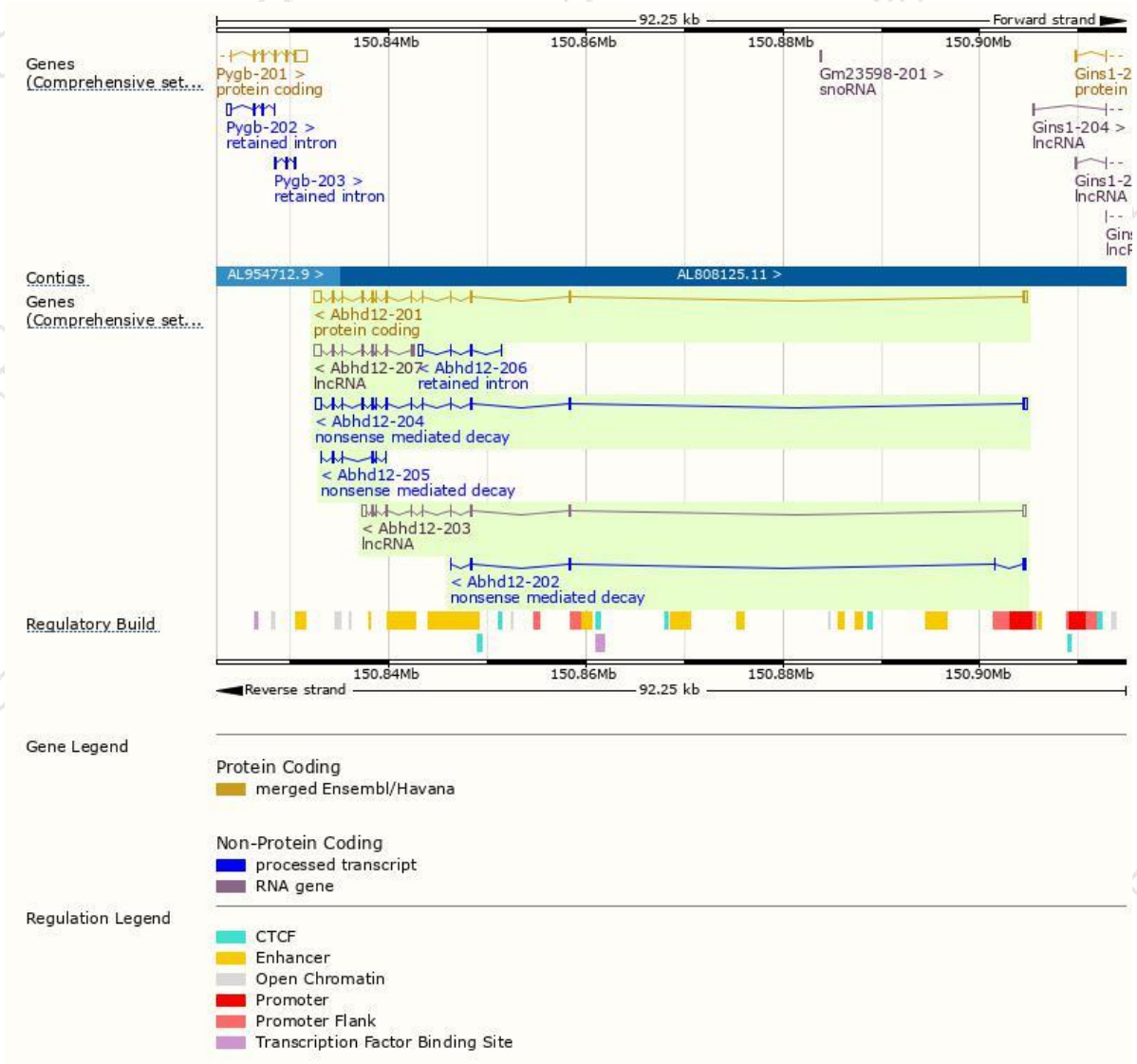
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Abhd12-201	ENSMUST00000056149.14	1999	398aa	Protein coding	CCDS50742	Q99LR1	TSL:1 GENCODE basic APPRIS P1
Abhd12-204	ENSMUST00000141899.7	1969	298aa	Nonsense mediated decay	-	D6RFU2	TSL:1
Abhd12-202	ENSMUST00000129228.1	597	70aa	Nonsense mediated decay	-	D6RI21	TSL:3
Abhd12-205	ENSMUST00000145826.1	353	56aa	Nonsense mediated decay	-	F7BHM8	CDS 5' incomplete TSL:5
Abhd12-206	ENSMUST00000155119.7	700	No protein	Retained intron	-	-	TSL:3
Abhd12-203	ENSMUST00000138608.7	1334	No protein	lncRNA	-	-	TSL:1
Abhd12-207	ENSMUST00000156641.7	1292	No protein	lncRNA	-	-	TSL:1

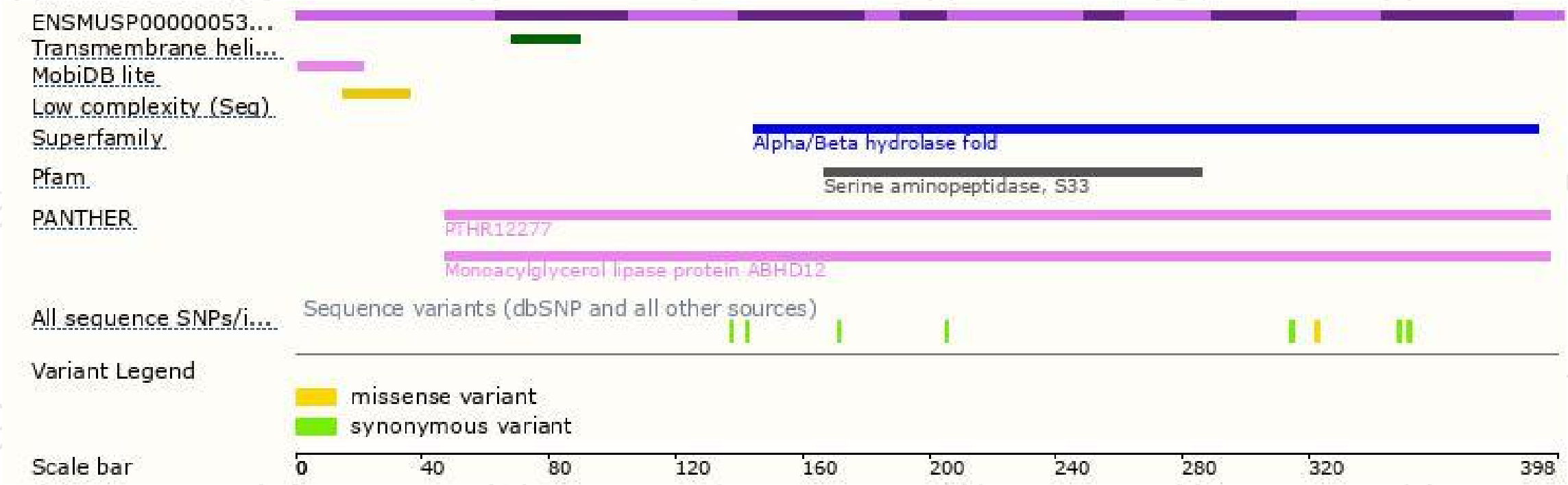
The strategy is based on the design of *Abhd12-201* transcript,The transcription is shown below



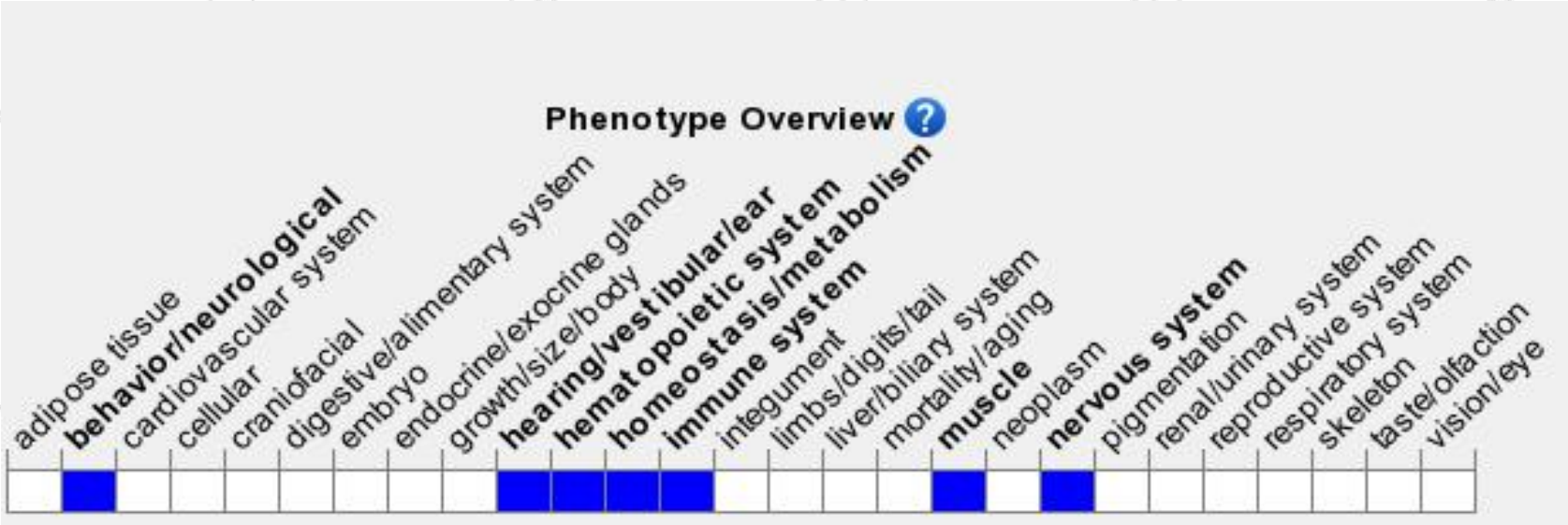
Genomic location distribution



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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