Atad2b Cas9-KO Strategy

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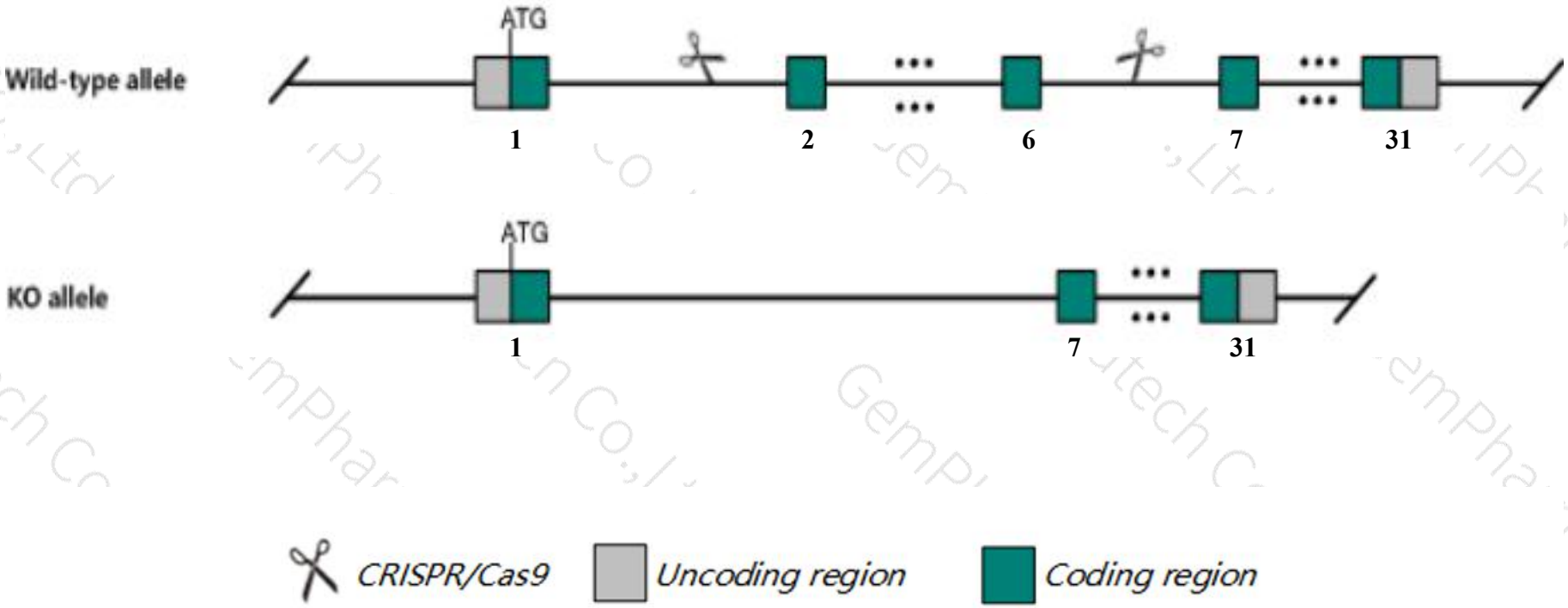
Project Overview

Project Name	***Atad2b***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atad2b* gene. The schematic diagram is as follows:



Technical routes

➢ The *Atad2b* gene has 5 transcripts. According to the structure of *Atad2b* gene, exon2-exon6 of *Atad2b-201*(ENSMUST00000045664.6) transcript is recommended as the knockout region.The region contains 568bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Atad2b* 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,mice homozygous for a transgenic gene disruption exhibit reduced body size and fertility in female mice.

➢ Transcript *Atad2b*-203&205 may not be affected.

➢ The *Atad2b* gene is located on the Chr12. 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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Atad2b ATPase family, AAA domain containing 2B [Mus musculus (house mouse)]

Gene ID: 320817, updated on 13-Mar-2020

Summary

Official Symbol	Atad2b provided by MGI
Official Full Name	ATPase family, AAA domain containing 2B provided byMGI
Primary source	MGI:MGI:2444798
See related	Ensembl:ENSMUSG00000052812
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	1110014E10Rik, BC032887, C79189, D530031C13Rik
Expression	Ubiquitous expression in CNS E11.5 (RPKM 5.7), CNS E14 (RPKM 4.6) and 28 other tissuesSee more
Orthologs	human all

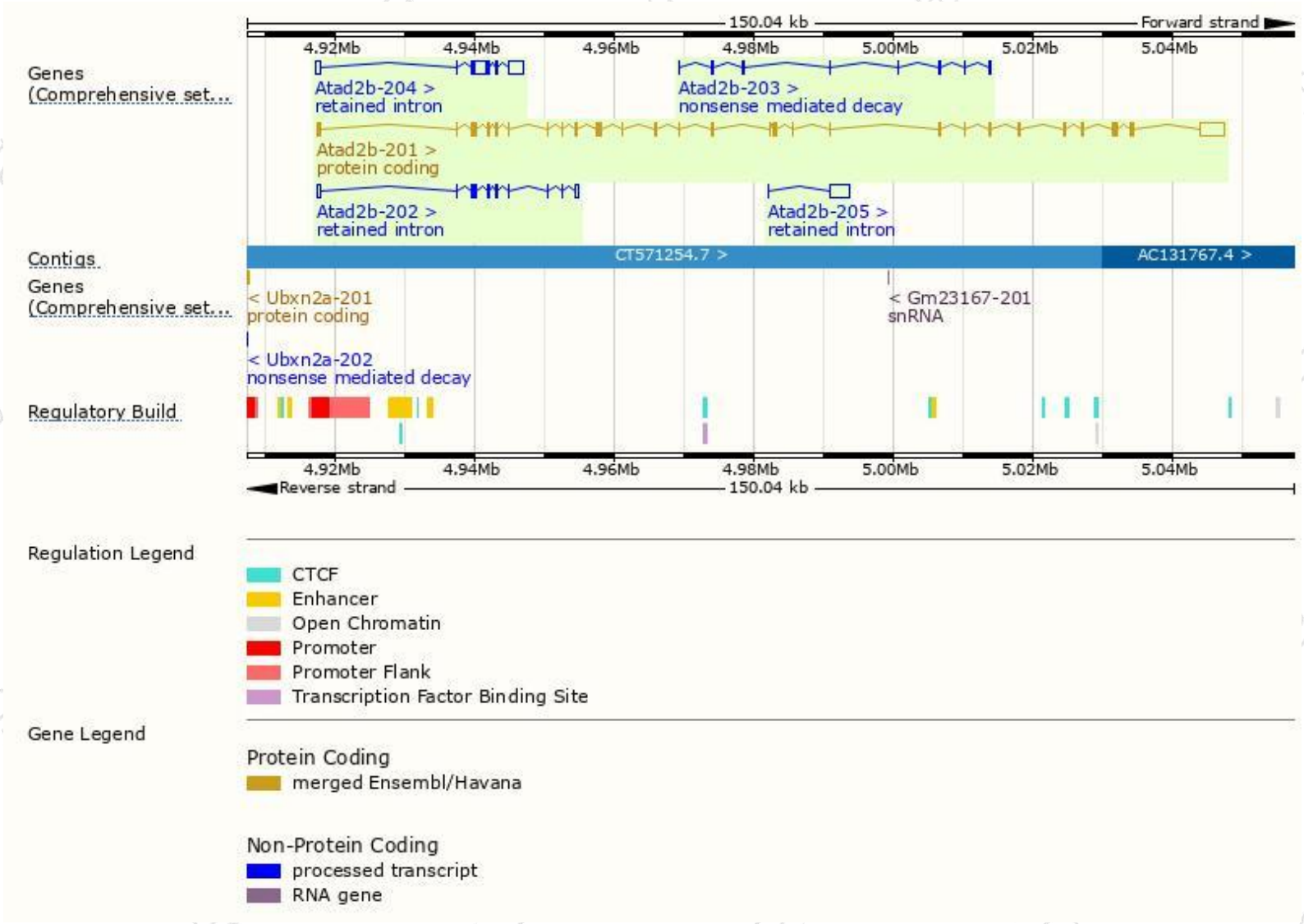
Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

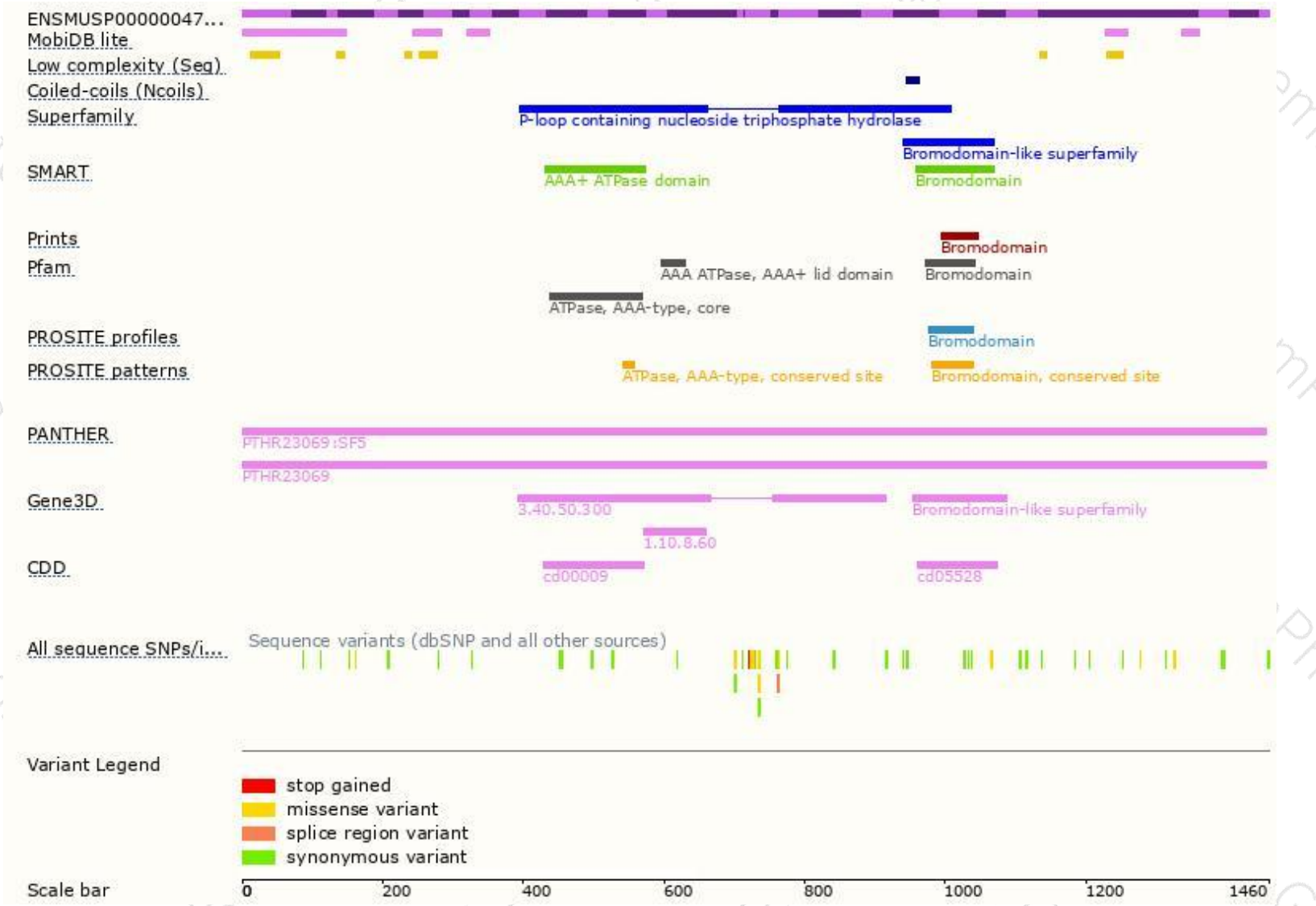
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atad2b-201	ENSMUST00000045664.6	8035	1460aa	Protein coding	-	E9Q166	TSL:5 GENCODE basic APPRIS P1
Atad2b-203	ENSMUST00000218859.1	1343	259aa	Nonsense mediated decay	-	A0A1W2P7J4	CDS 5' incomplete TSL:1
Atad2b-204	ENSMUST00000219187.1	4829	No protein	Retained intron	-	-	TSL:1
Atad2b-205	ENSMUST00000220408.1	3034	No protein	Retained intron	-	-	TSL:1
Atad2b-202	ENSMUST00000218303.1	1824	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Atad2b-201* transcript,the transcription is shown below:

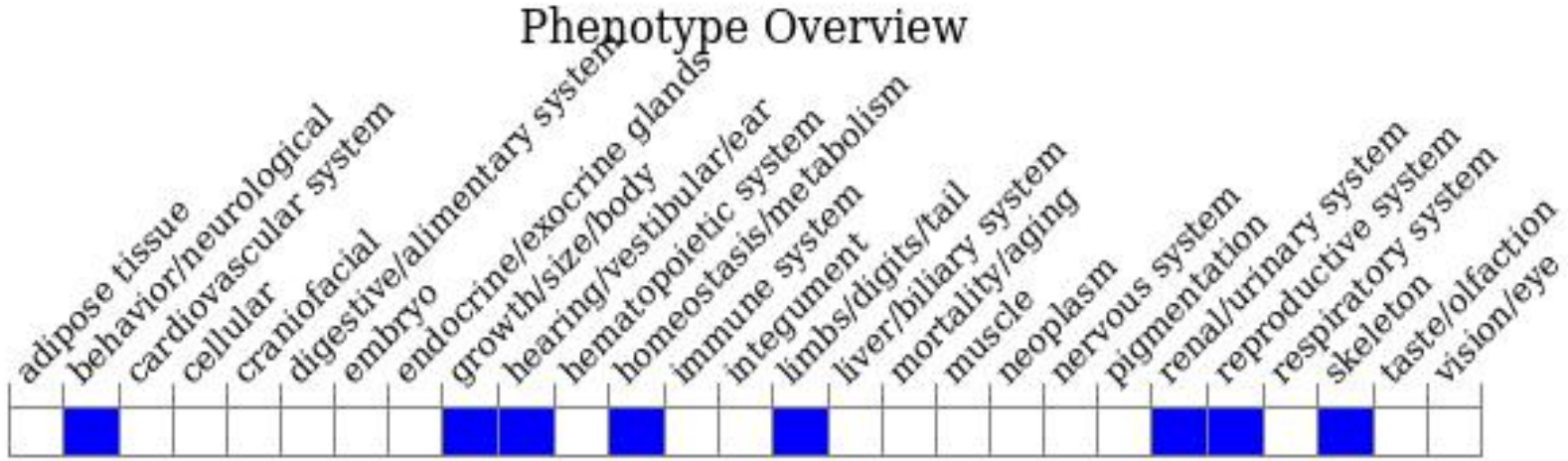
Genomic location distribution



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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