Chd6 Cas9-KO Strategy

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Reviewer

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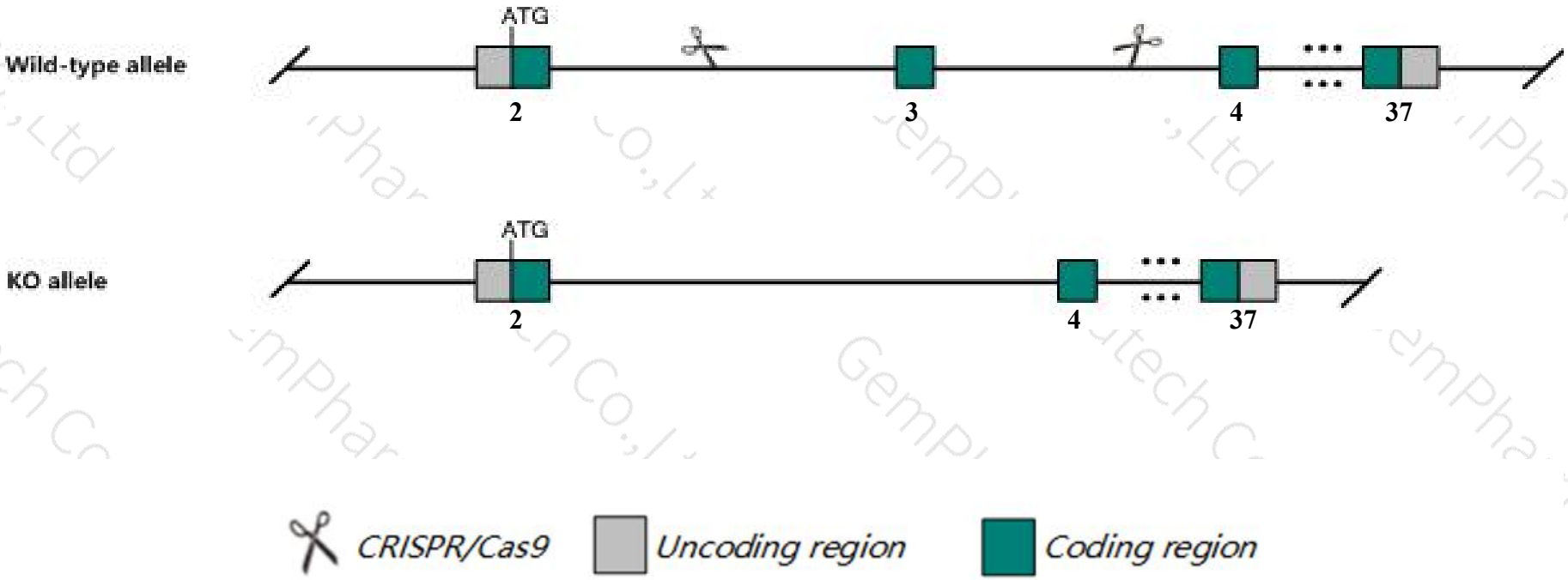
Project Overview

Project Name	***Chd6***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chd6* gene. The schematic diagram is as follows:



Technical routes

➢ The *Chd6* gene has 11 transcripts. According to the structure of *Chd6* gene, exon3 of *Chd6-201* (ENSMUST00000039782.13) transcript is recommended as the knockout region.The region contains 518bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Chd6* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous null mice display impaired coordination that is not due to muscle weakness or bradykinesia.

- Transcript *Chd6-205,206,208,209,211* may be unaffected.

- The *Chd6* 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 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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Chd6 chromodomain helicase DNA binding protein 6 [Mus musculus (house mouse)]

Gene ID: 71389, updated on 31-Jan-2019

Summary

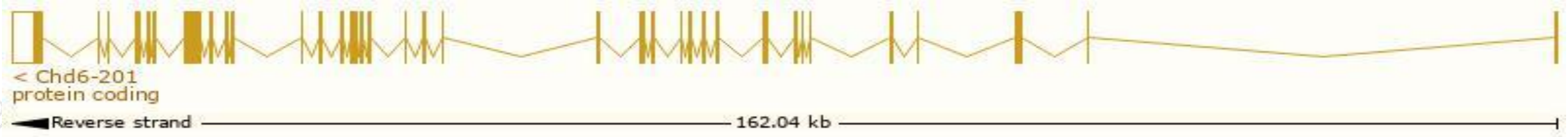
Official Symbol	Chd6 provided by MGI
Official Full Name	chromodomain helicase DNA binding protein 6 provided by MGI
Primary source	MGI:MGI:1918639
See related	Ensembl:ENSMUSG00000057133
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5430439G14Rik, 6330406J24Rik, CHD-6
Summary	This gene encodes a member of the chromodomain/helicase/DNA-binding domain family of chromatin remodeling enzymes. This protein has been found to be specifically involved in transcription initiation and elongation. Homozygous knockout mice exhibit impaired motor coordination. A pseudogene has been identified on chromosome 8. Alternative splicing of this gene results in multiple transcript variants. [provided by RefSeq, Nov 2014]
Expression	Ubiquitous expression in CNS E14 (RPKM 9.4), CNS E11.5 (RPKM 9.2) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

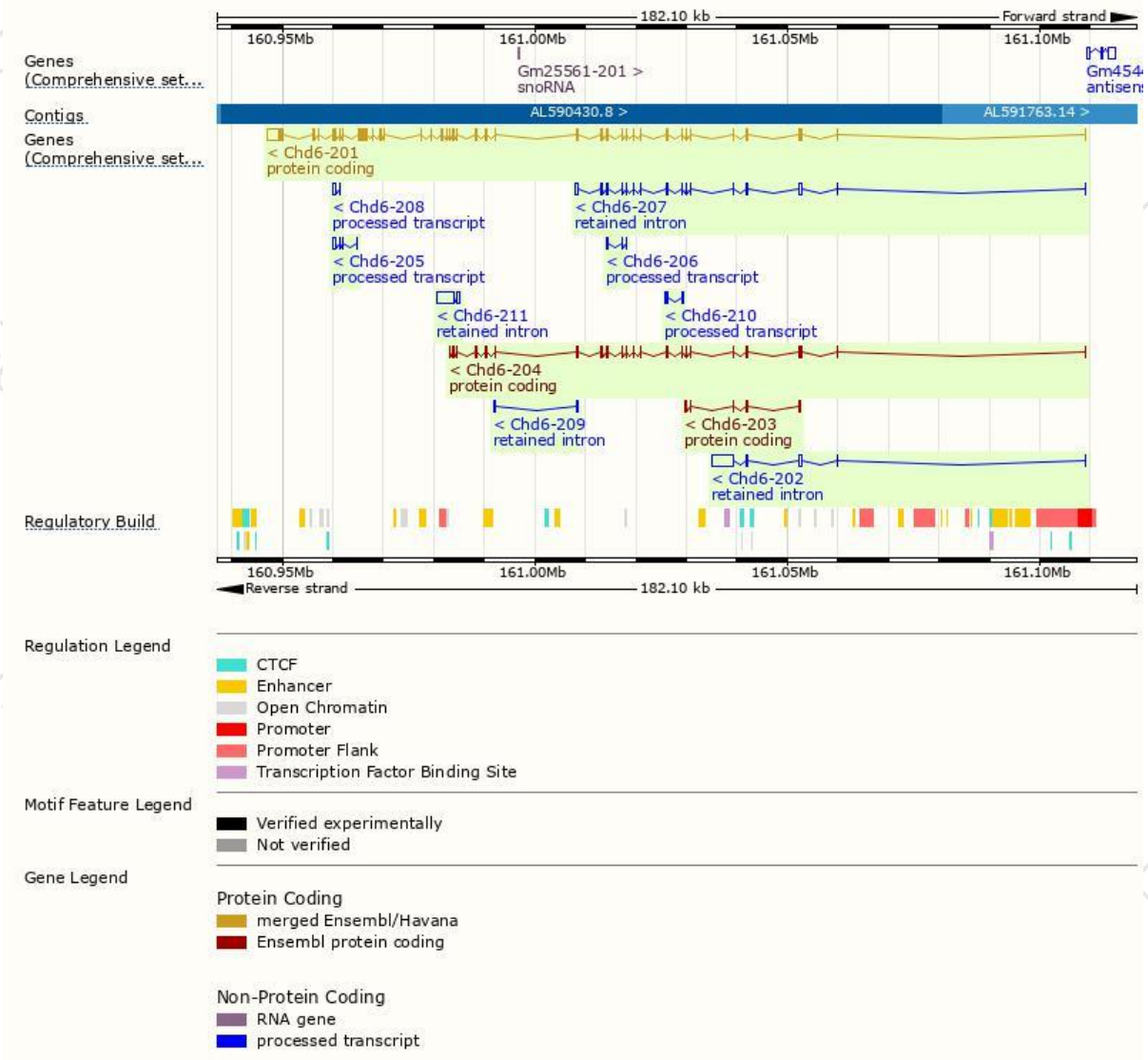
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chd6-201	ENSMUST00000039782.13	10515	2711aa	Protein coding	CCDS17000	A3KFM7	TSL:1 GENCODE basic APPRIS P1
Chd6-204	ENSMUST00000134178.7	3608	1183aa	Protein coding	-	A3KFM8	CDS 3' incomplete TSL:2
Chd6-203	ENSMUST00000130265.1	675	217aa	Protein coding	-	A3KFM6	CDS 5' incomplete TSL:5
Chd6-205	ENSMUST00000137152.1	764	No protein	Processed transcript	-	-	TSL:5
Chd6-208	ENSMUST00000143081.1	735	No protein	Processed transcript	-	-	TSL:2
Chd6-210	ENSMUST00000155066.1	646	No protein	Processed transcript	-	-	TSL:3
Chd6-206	ENSMUST00000137831.1	616	No protein	Processed transcript	-	-	TSL:5
Chd6-202	ENSMUST00000125179.1	5051	No protein	Retained intron	-	-	TSL:2
Chd6-211	ENSMUST00000155918.1	3970	No protein	Retained intron	-	-	TSL:2
Chd6-207	ENSMUST00000138078.7	3092	No protein	Retained intron	-	-	TSL:2
Chd6-209	ENSMUST00000149866.1	601	No protein	Retained intron	-	-	TSL:3

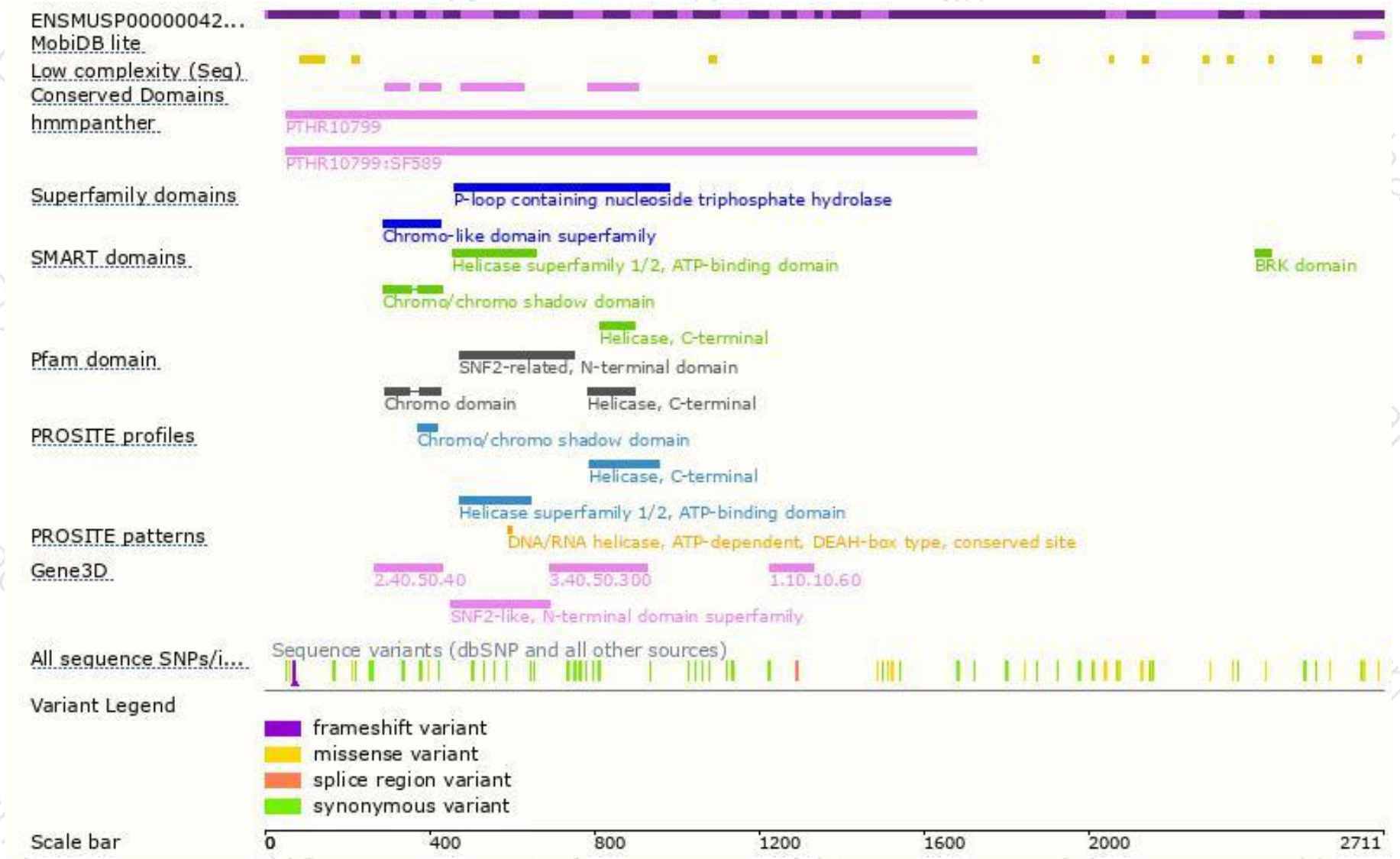
The strategy is based on the design of *Chd6-201* transcript,The transcription is shown below



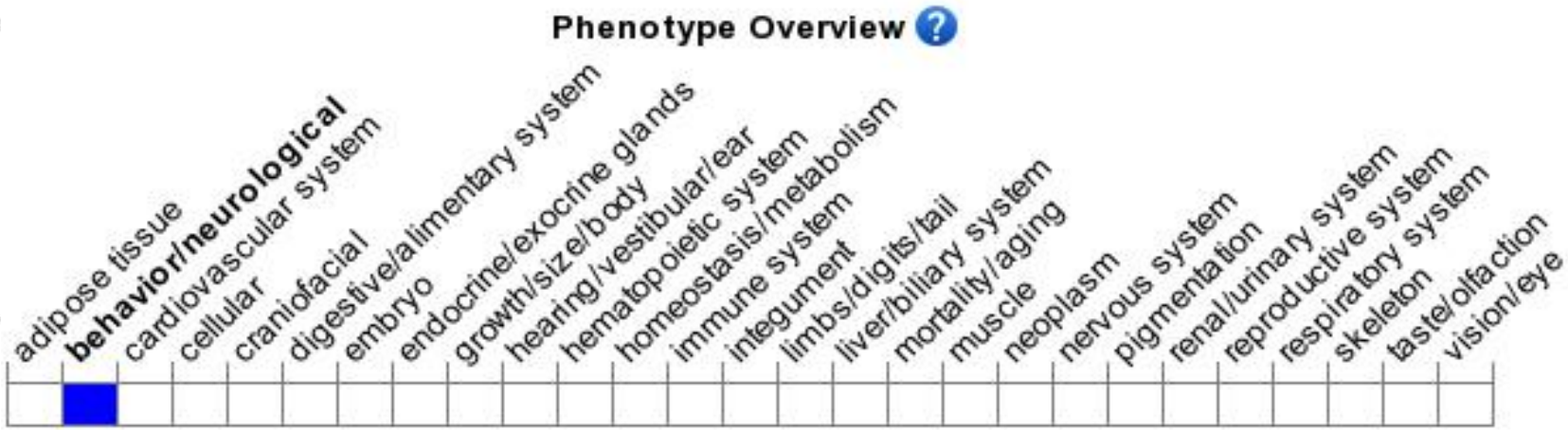
Genomic location distribution



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,Homozygous null mice display impaired coordination that is not due to muscle weakness or bradykinesia.

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

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