

Gas7 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Gas7

Project type

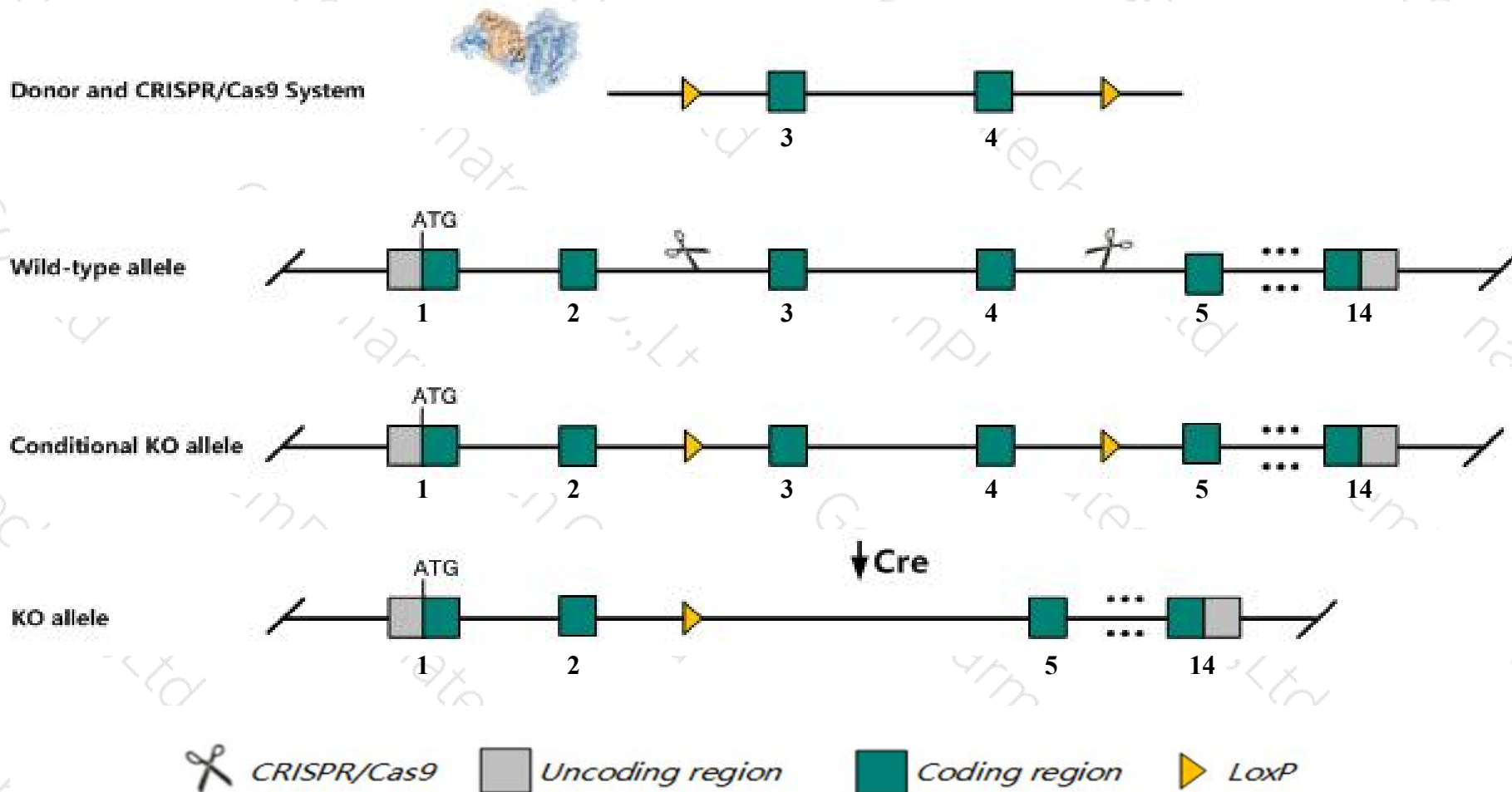
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gas7* gene. The schematic diagram is as follows:



- The *Gas7* gene has 11 transcripts. According to the structure of *Gas7* gene, exon3-exon4 of *Gas7*-204 (ENSMUST00000108682.8) transcript is recommended as the knockout region. The region contains 167bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gas7* 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.

- According to the existing MGI data, Aged mice homozygous for a hypomorphic allele show impaired coordination, decreased grip strength, decreased motor neuron number, muscle weakness, abnormal skeletal muscle fiber type ratio in the soleus muscle, and defects in motor neuron axon terminal sprouting.
- The *Gas7* gene is located on the Chr11. 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)

Gas7 growth arrest specific 7 [Mus musculus (house mouse)]

Gene ID: 14457, updated on 31-Jan-2019

Summary



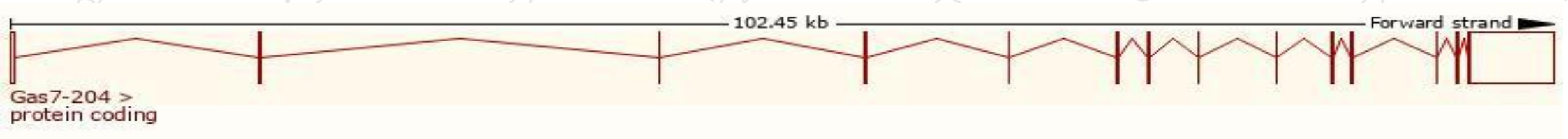
Official Symbol	Gas7 provided by MGI
Official Full Name	growth arrest specific 7 provided by MGI
Primary source	MGI:MGI:1202388
See related	Ensembl:ENSMUSG000000033066
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW124766, B230343A10Rik, Gas7-cb
Expression	Broad expression in cortex adult (RPKM 37.9), cerebellum adult (RPKM 29.9) and 15 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

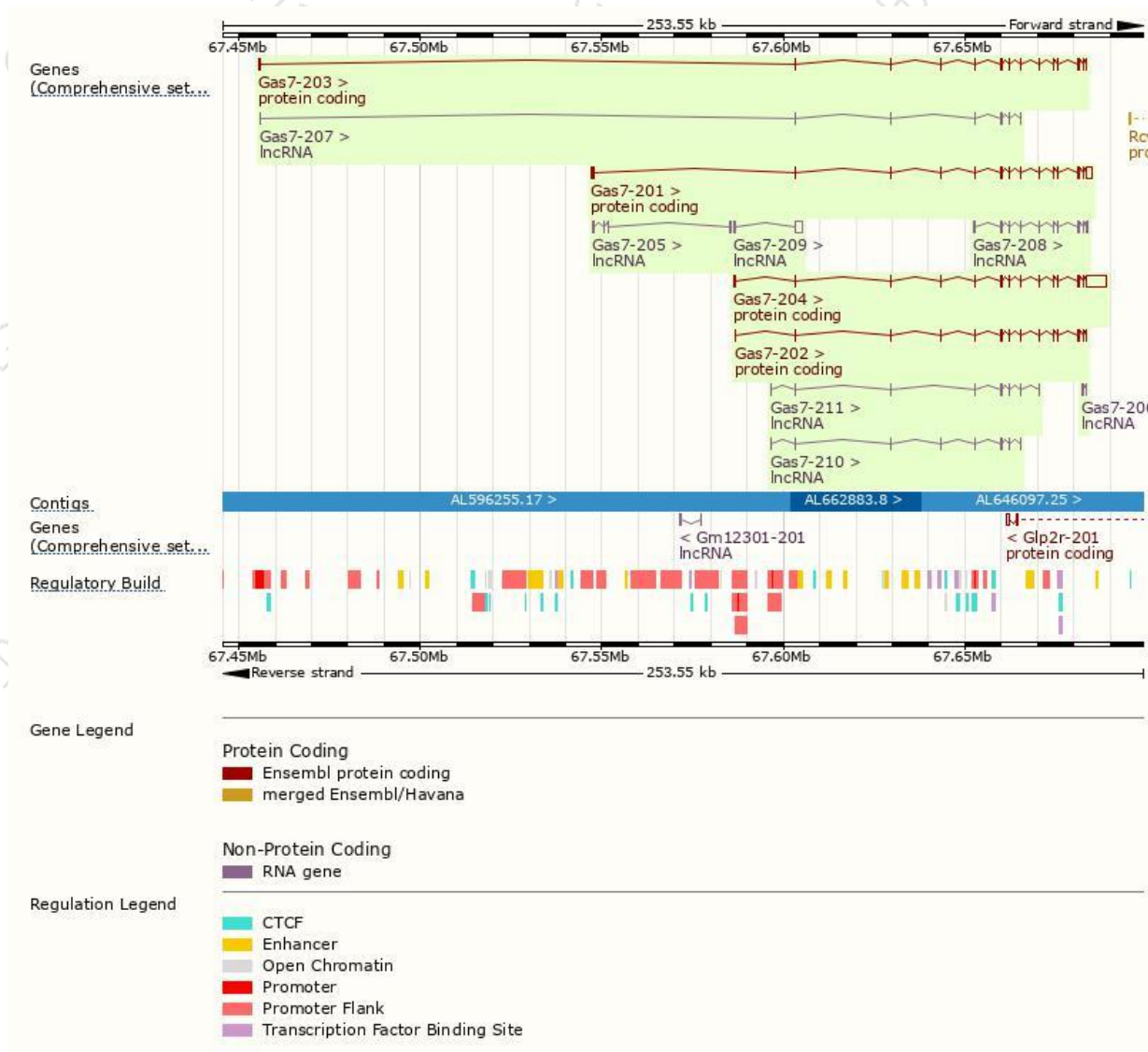
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gas7-204	ENSMUST00000108682.8	7067	416aa	Protein coding	CCDS48821	Q3U432	TSL:1 GENCODE basic APPRIS P3
Gas7-201	ENSMUST00000041611.11	2968	412aa	Protein coding	CCDS70210	B1ATI9	TSL:1 GENCODE basic APPRIS ALT 1
Gas7-203	ENSMUST00000108681.7	1595	412aa	Protein coding	CCDS70210	B1ATI9	TSL:5 GENCODE basic APPRIS ALT 1
Gas7-202	ENSMUST00000108680.1	1466	412aa	Protein coding	CCDS70210	B1ATI9	TSL:1 GENCODE basic APPRIS ALT 1
Gas7-209	ENSMUST00000145496.1	2628	No protein	lncRNA	-	-	TSL:2
Gas7-208	ENSMUST00000140863.1	1479	No protein	lncRNA	-	-	TSL:2
Gas7-206	ENSMUST00000133367.1	789	No protein	lncRNA	-	-	TSL:2
Gas7-205	ENSMUST00000129801.1	785	No protein	lncRNA	-	-	TSL:3
Gas7-211	ENSMUST00000151784.7	750	No protein	lncRNA	-	-	TSL:5
Gas7-210	ENSMUST00000147276.7	721	No protein	lncRNA	-	-	TSL:3
Gas7-207	ENSMUST00000136796.7	575	No protein	lncRNA	-	-	TSL:3

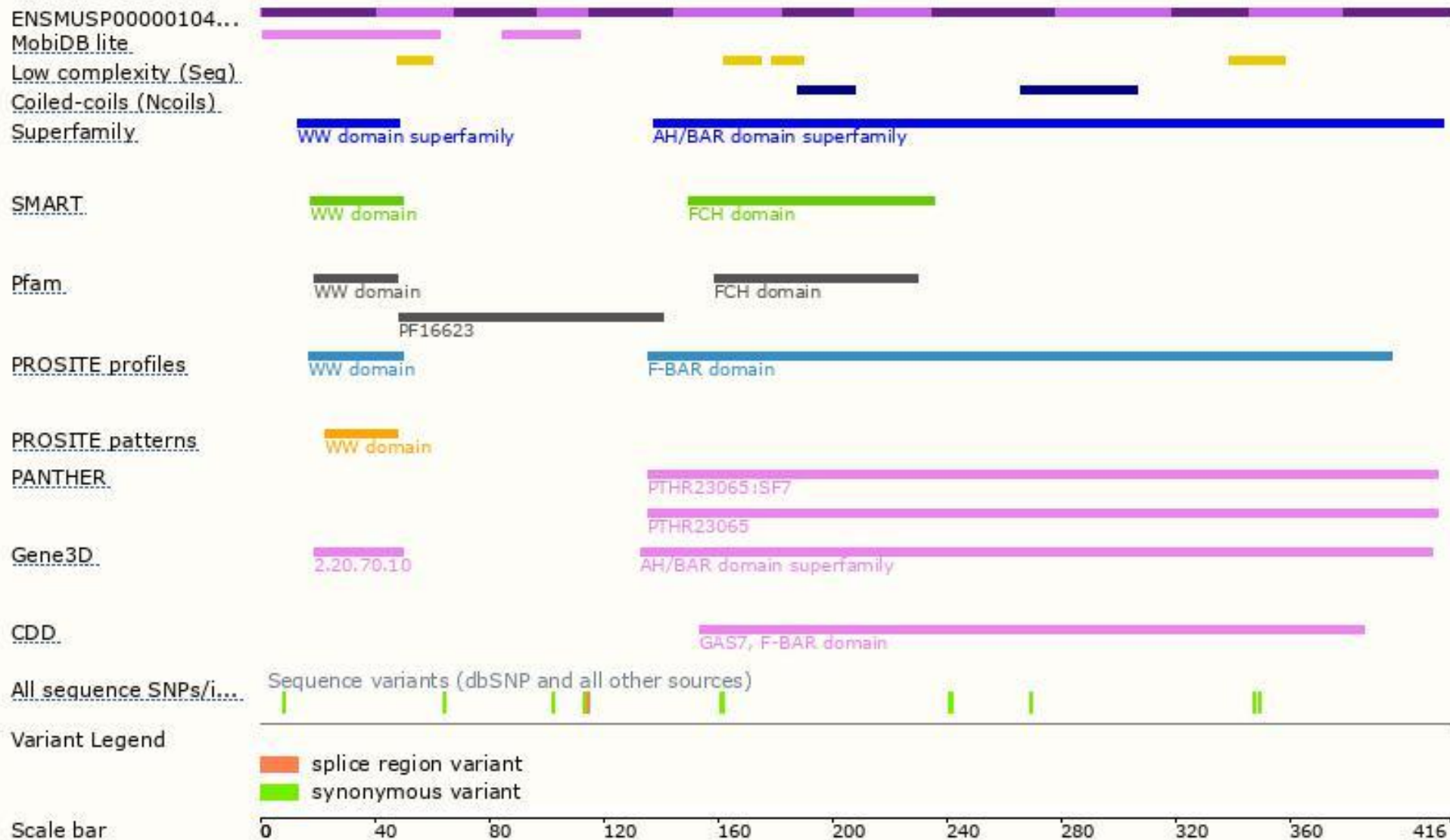
The strategy is based on the design of *Gas7-204* transcript,The transcription is shown below



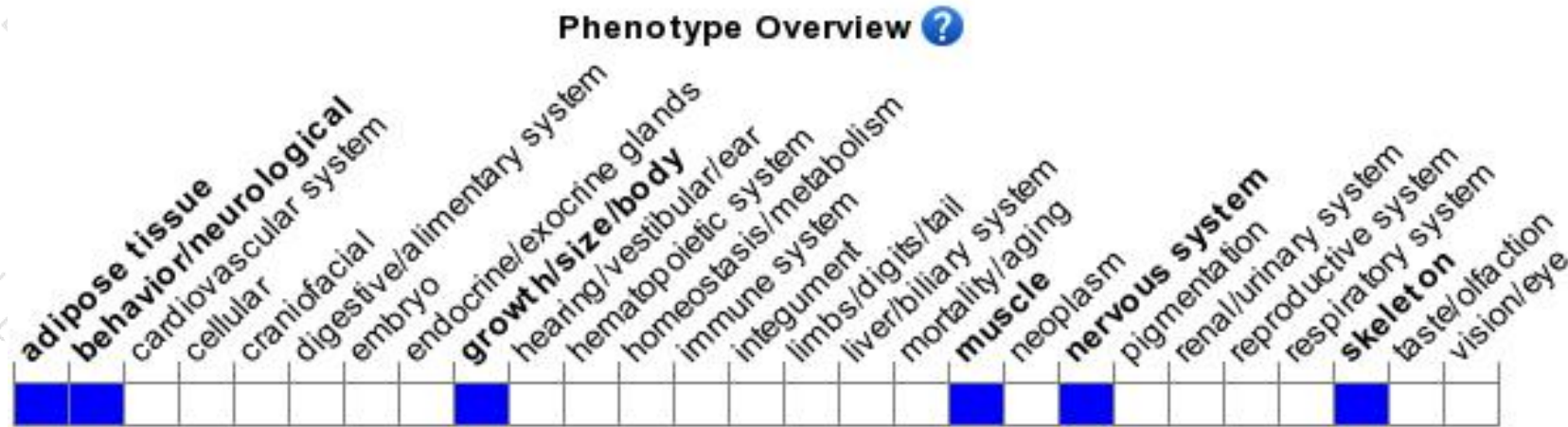
Genomic location distribution



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, Aged mice homozygous for a hypomorphic allele show impaired coordination, decreased grip strength, decreased motor neuron number, muscle weakness, abnormal skeletal muscle fiber type ratio in the soleus muscle, and defects in motor neuron axon terminal sprouting.

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

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