Atl2 Cas9-KO Strategy

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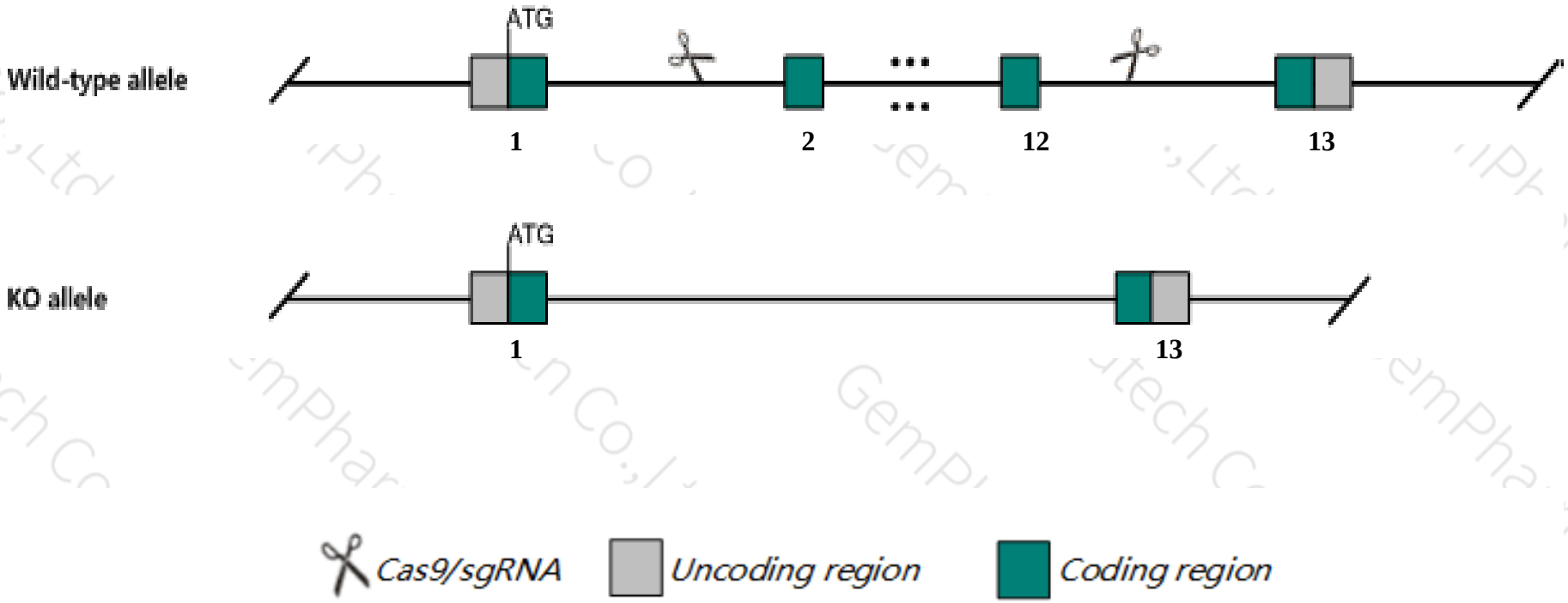
Project Overview

Project Name	***Atl2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atl2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Atl2* gene has 8 transcripts. According to the structure of *Atl2* gene, exon2-exon12 of *Atl2-201*(ENSMUST00000068282.6) transcript is recommended as the knockout region.The region contains 1514bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Atl2* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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

➢ The *Atl2* gene is located on the Chr17. 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）

集萃药康 GemPharmatech

Atl2 atlastin GTPase 2 [Mus musculus (house mouse)]

Gene ID: 56298, updated on 13-Mar-2020

Summary

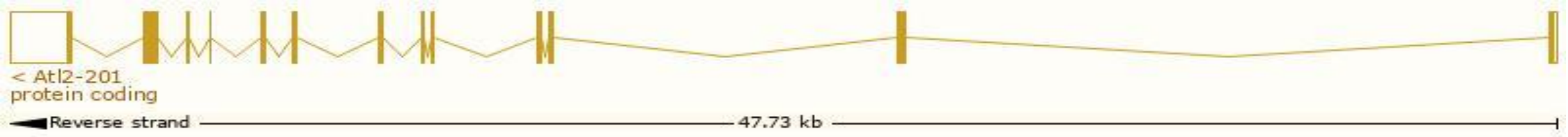
Official Symbol	Atl2 provided by MGI
Official Full Name	atlastin GTPase 2 provided byMGI
Primary source	MGI:MGI:1929492
See related	Ensembl:ENSMUSG00000059811
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2010110I21Rik, AA407293, AV334690, Aip-2, Arl6ip2
Expression	Ubiquitous expression in cerebellum adult (RPKM 8.7), thymus adult (RPKM 7.2) and 27 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

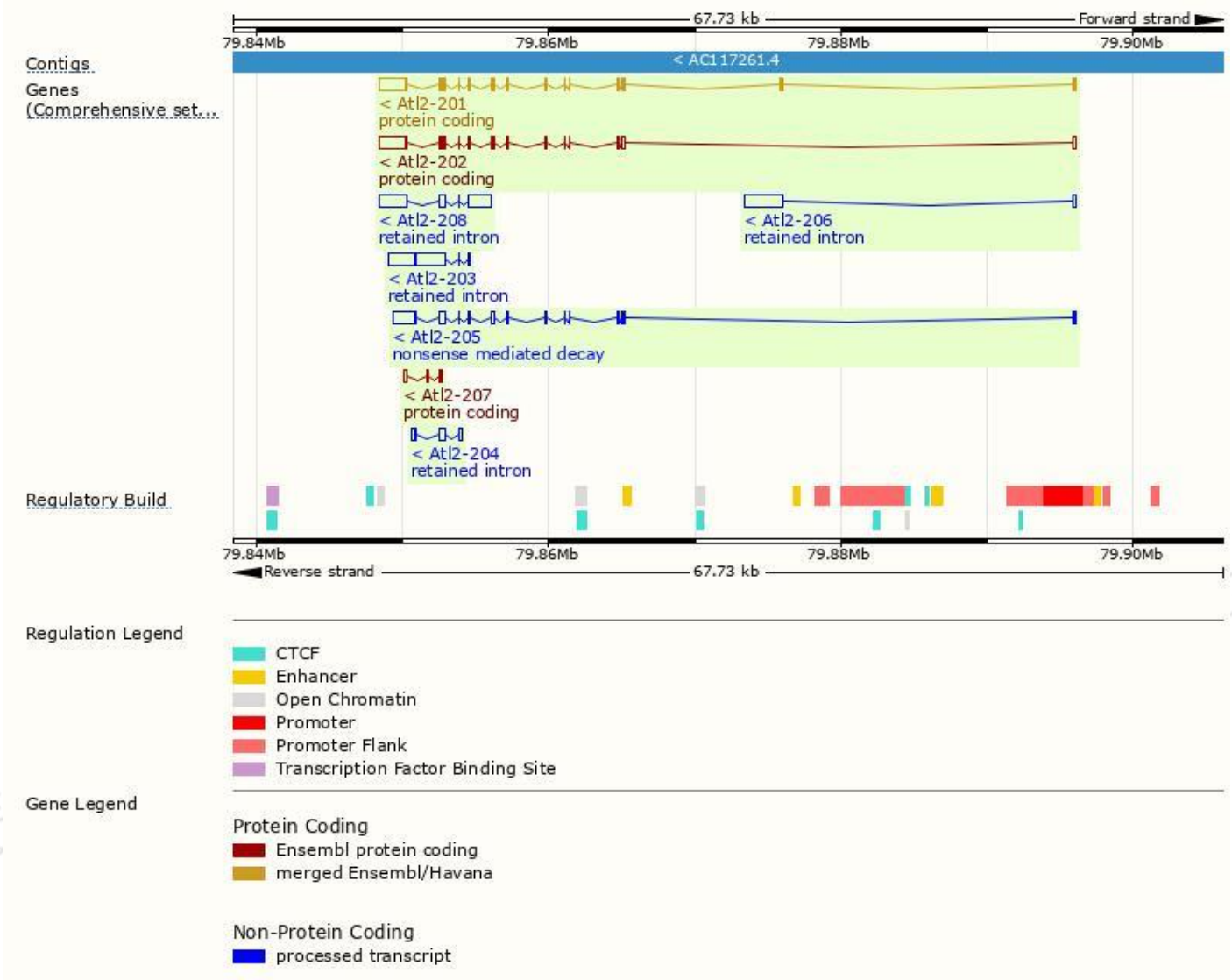
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atl2-201	ENSMUST00000068282.6	3618	583aa	Protein coding	CCDS37700	Q6PA06	TSL:1 GENCODE basic APPRIS P1
Atl2-202	ENSMUST00000112437.7	3371	412aa	Protein coding	CCDS37701	E9QND8	TSL:1 GENCODE basic
Atl2-207	ENSMUST00000222415.1	458	87aa	Protein coding	-	A0A1Y7VKB0	CDS 5' incomplete TSL:3
Atl2-205	ENSMUST00000222193.1	2902	49aa	Nonsense mediated decay	-	A0A1Y7VJ85	TSL:1
Atl2-208	ENSMUST00000223273.1	3968	No protein	Retained intron	-	-	TSL:1
Atl2-203	ENSMUST00000221286.1	3922	No protein	Retained intron	-	-	TSL:1
Atl2-206	ENSMUST00000222243.1	2849	No protein	Retained intron	-	-	TSL:1
Atl2-204	ENSMUST00000221666.1	866	No protein	Retained intron	-	-	TSL:3

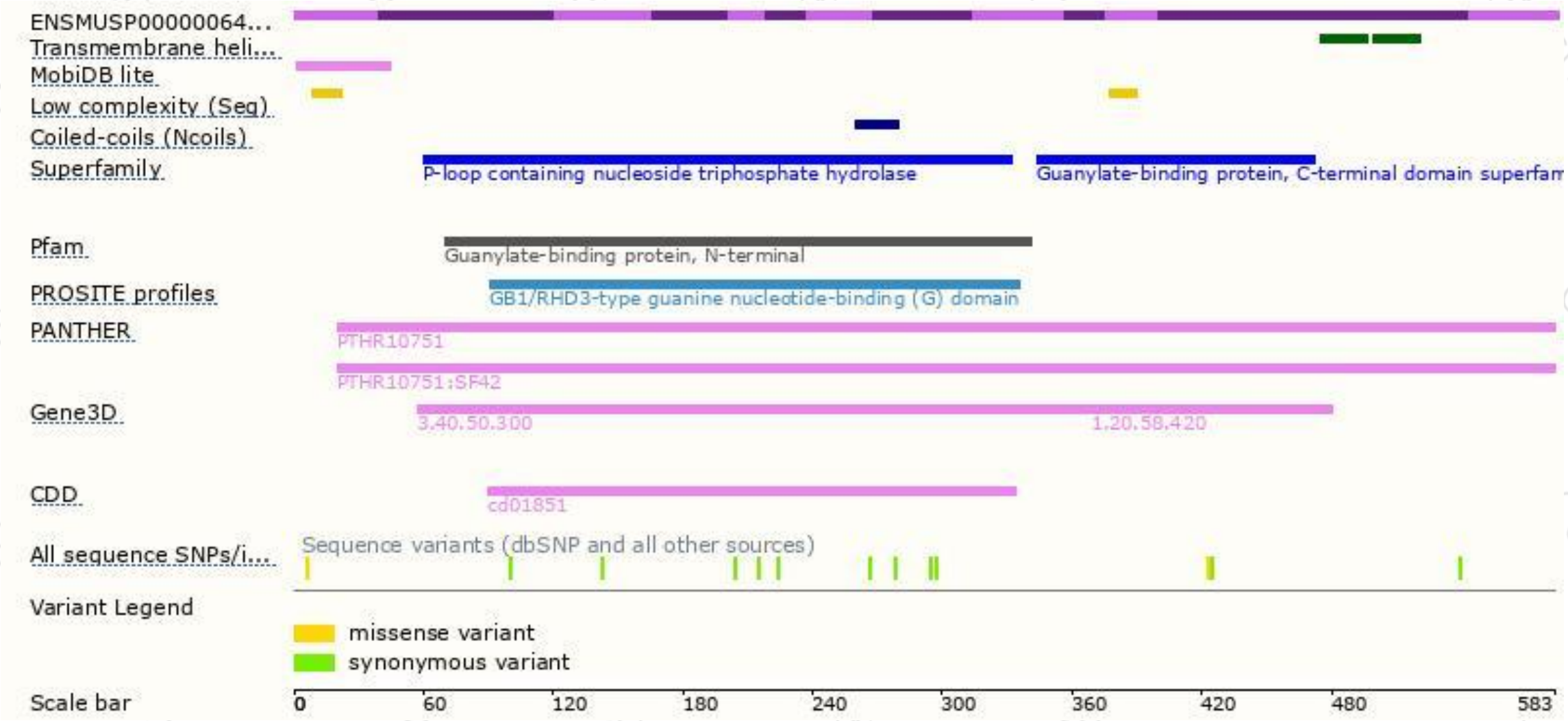
The strategy is based on the design of *Atl2-201* transcript,the transcription is shown below:



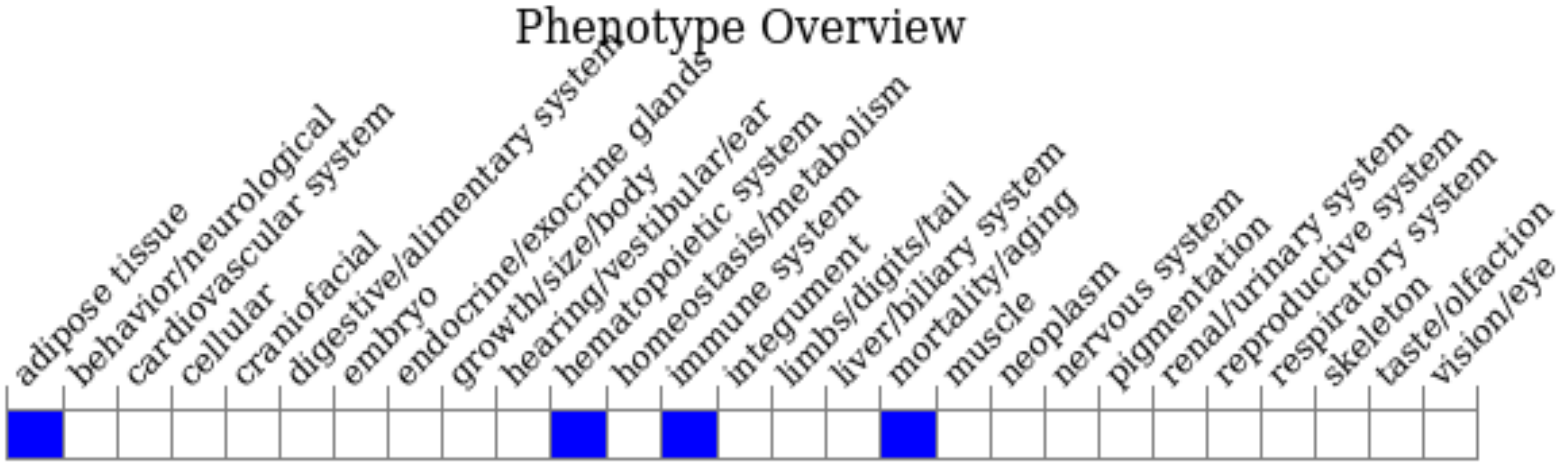
Genomic location distribution



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/).

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

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