Arl4c Cas9-KO Strategy

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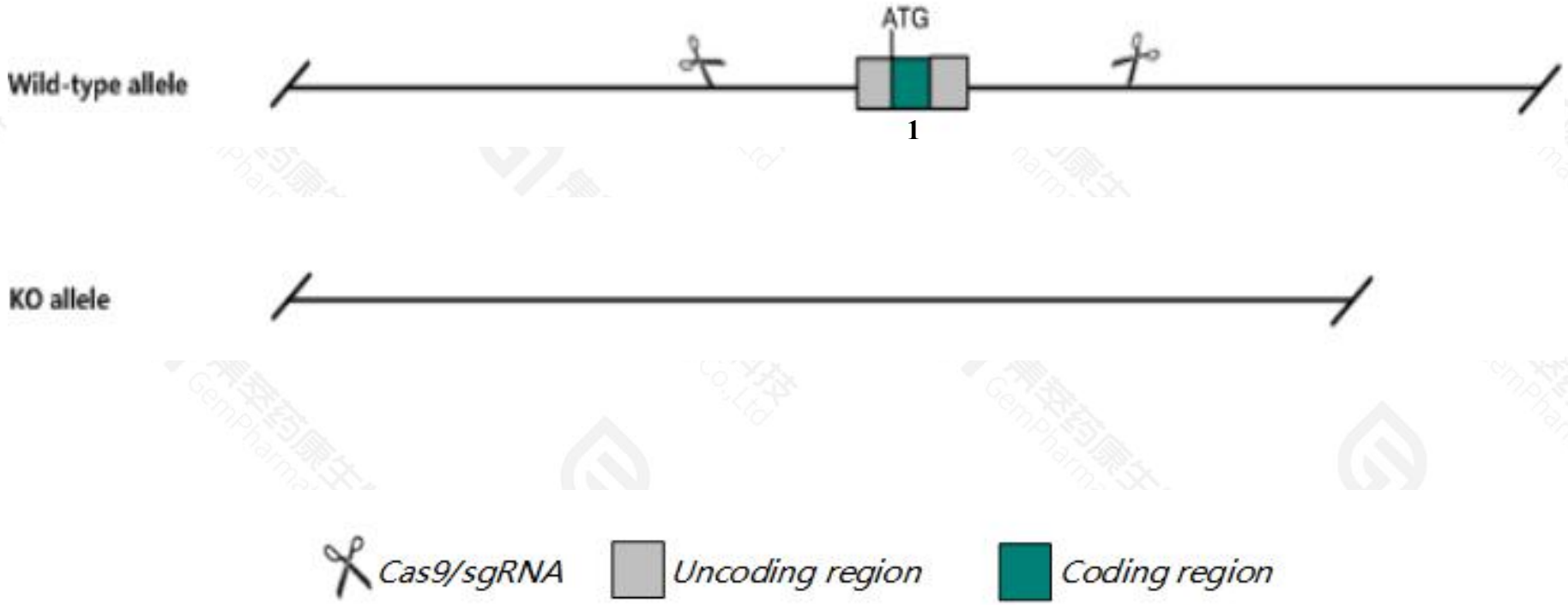
Project Overview

Project Name	***Arl4c***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arl4c* gene. The schematic diagram is as follows:



Technical routes

➢ The *Arl4c* gene has 3 transcripts. According to the structure of *Arl4c* gene, exon1 of *Arl4c-203*(ENSMUST00000187810.2) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Arl4c* 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 *Arl4c* gene is located on the Chr1. 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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Arl4c ADP-ribosylation factor-like 4C [Mus musculus (house mouse)]

Gene ID: 320982, updated on 1-Nov-2020

Summary

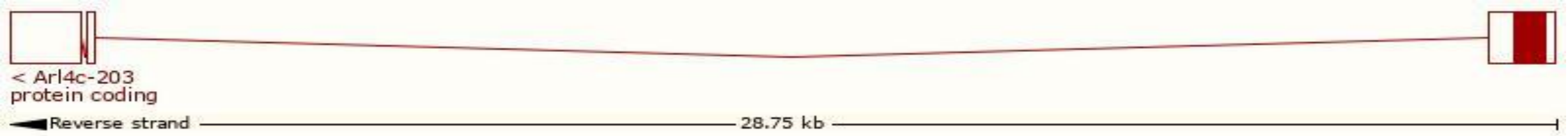
Official Symbol	Arl4c provided by MGI
Official Full Name	ADP-ribosylation factor-like 4C provided byMGI
Primary source	MGI:MGI:2445172
See related	Ensembl:ENSMUSG00000049866
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A, A630084M22Rik, Arl7, LAK
Orthologs	human all

Transcript information（Ensembl）

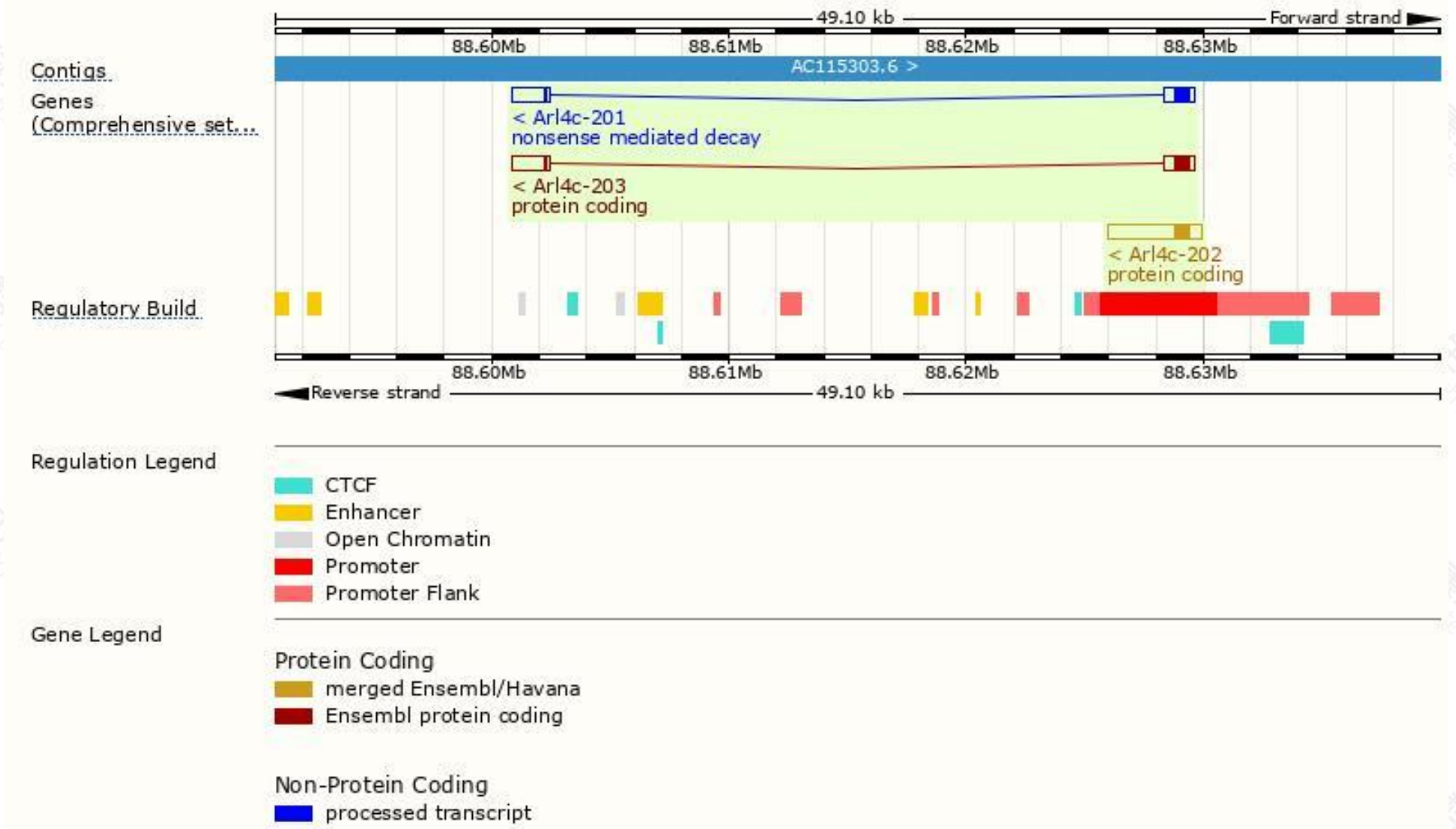
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arl4c-202	ENSMUST00000159814.2	3997	192aa	Protein coding	CCDS15146		TSL:NA , GENCODE basic , APPRIS P1 ,
Arl4c-203	ENSMUST00000187810.2	2740	192aa	Protein coding	CCDS15146		TSL:1 , GENCODE basic , APPRIS P1 ,
Arl4c-201	ENSMUST00000051236.11	2742	192aa	Nonsense mediated decay	CCDS15146		TSL:1 ,

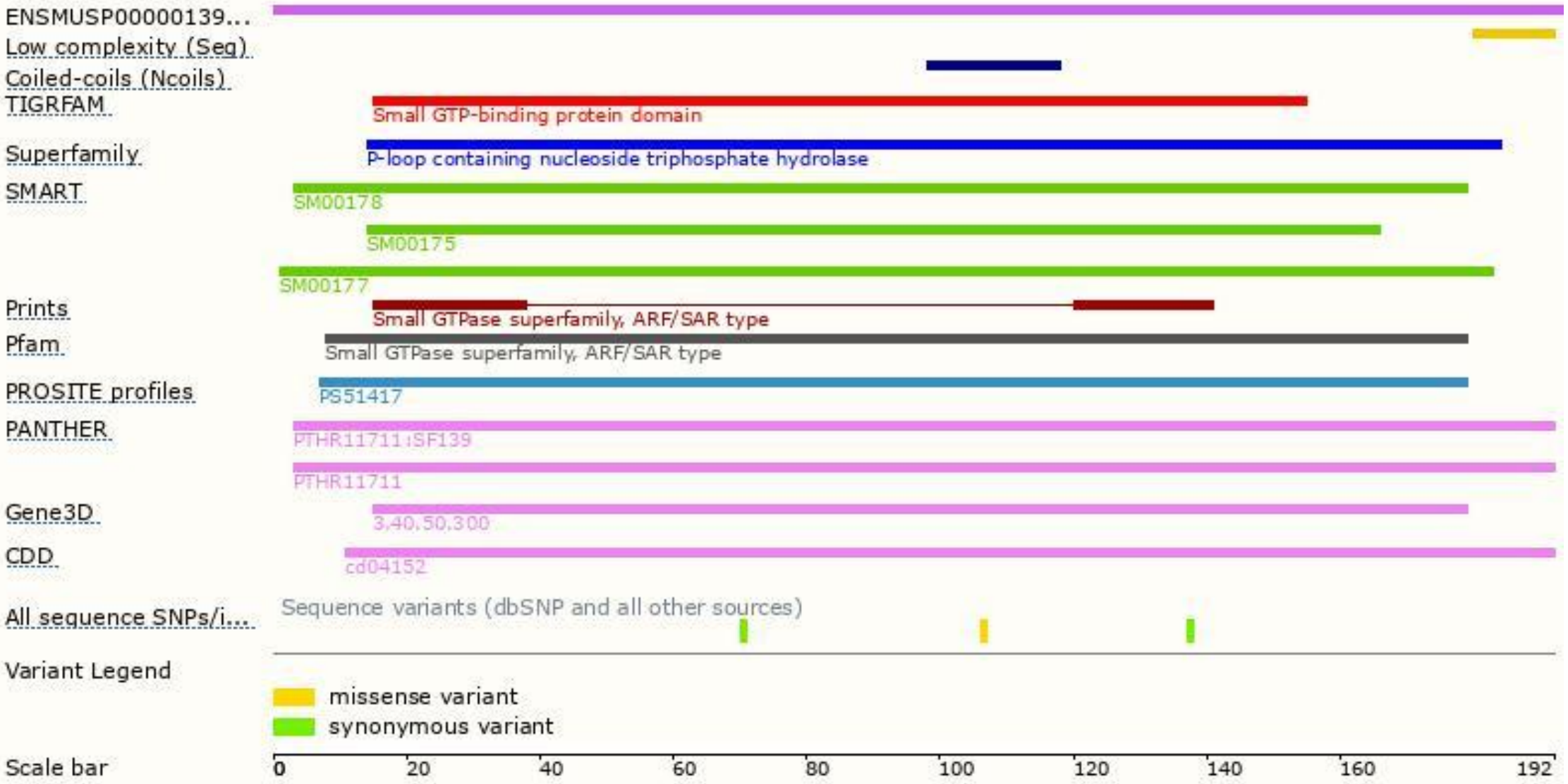
The strategy is based on the design of *Arl4c-203* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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