Myef2 Cas9-KO Strategy

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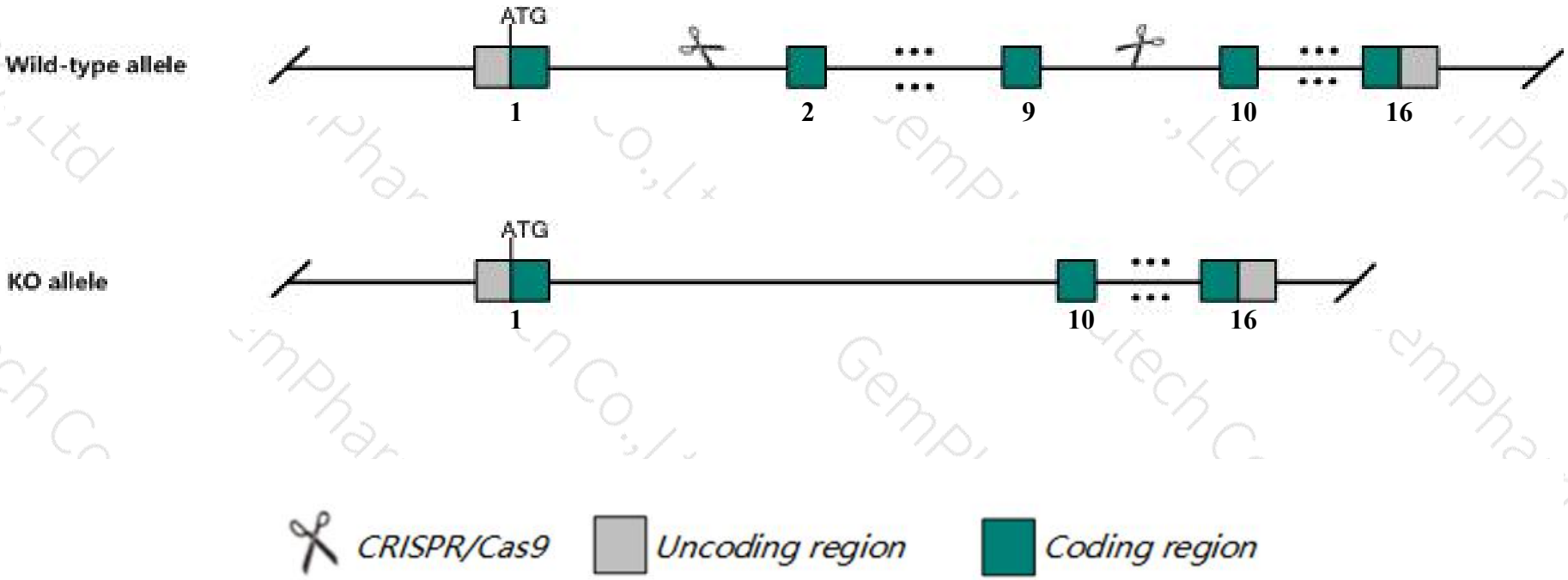
Project Overview

Project Name	***Myef2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myef2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Myef2* gene has 9 transcripts. According to the structure of *Myef2* gene, exon2-exon9 of *Myef2-201* (ENSMUST00000067780.9) transcript is recommended as the knockout region.The region contains 824bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Myef2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- Transcript *Myef2*-204 may not be affected.
- The *Myef2* 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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Myef2 myelin basic protein expression factor 2, repressor [*Mus musculus* (house mouse)]

Gene ID: 17876, updated on 12-Aug-2019

Summary

Official Symbol	Myef2 provided by MGI
Official Full Name	myelin basic protein expression factor 2, repressor provided by MGI
Primary source	MGI:MGI:104592
See related	Ensembl:ENSMUSG00000027201
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	mKIAA1341; 9430071B01
Expression	Broad expression in CNS E11.5 (RPKM 22.6), CNS E14 (RPKM 21.9) and 18 other tissues See more
Orthologs	human all

Genomic context

Location: 2 F1; 2 61.16 cM

See Myef2 in Genome Data Viewer

Exon count: 18

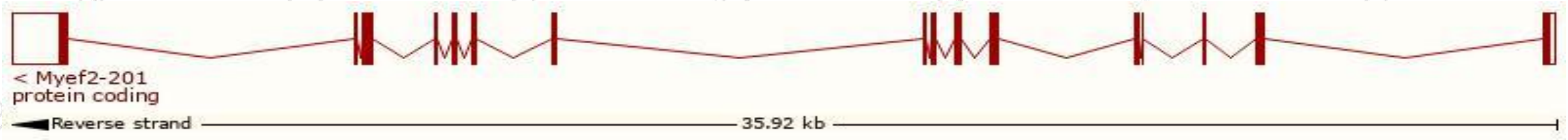
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (125080975..125123660, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (124912007..124949396, complement)

Transcript information（Ensembl）

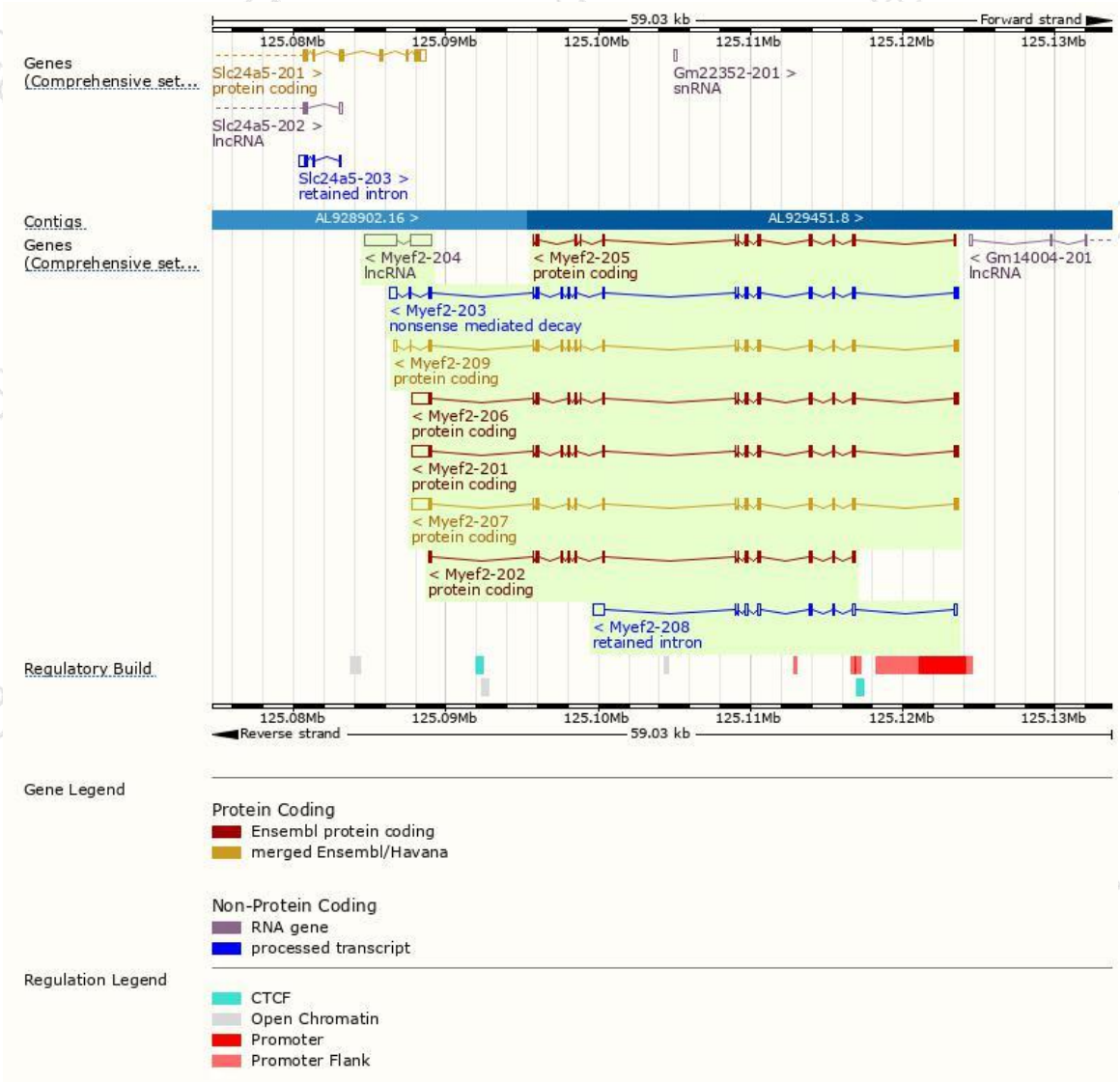
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myef2-201	ENSMUST00000067780.9	2999	574aa	Protein coding	CCDS50690	Q8C854	TSL:5 GENCODE basic APPRIS ALT2
Myef2-207	ENSMUST00000147105.7	2928	550aa	Protein coding	CCDS50689	A2ATP5	TSL:1 GENCODE basic APPRIS ALT2
Myef2-209	ENSMUST00000152367.7	2071	591aa	Protein coding	CCDS50691	Q8C854	TSL:1 GENCODE basic APPRIS P4
Myef2-206	ENSMUST00000142718.7	2942	567aa	Protein coding	-	A2ATP6	TSL:5 GENCODE basic APPRIS ALT2
Myef2-202	ENSMUST00000089825.12	1631	530aa	Protein coding	-	G8JL68	CDS 5' incomplete TSL:1
Myef2-205	ENSMUST00000137091.2	1337	446aa	Protein coding	-	F6XJA1	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:1
Myef2-203	ENSMUST00000110501.7	2333	574aa	Nonsense mediated decay	CCDS50690	Q8C854	TSL:1
Myef2-208	ENSMUST00000149911.1	1801	No protein	Retained intron	-	-	TSL:1
Myef2-204	ENSMUST00000129945.1	3424	No protein	lncRNA	-	-	TSL:1

The strategy is based on the design of *Myef2-201* 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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