Nat9 Cas9-KO Strategy

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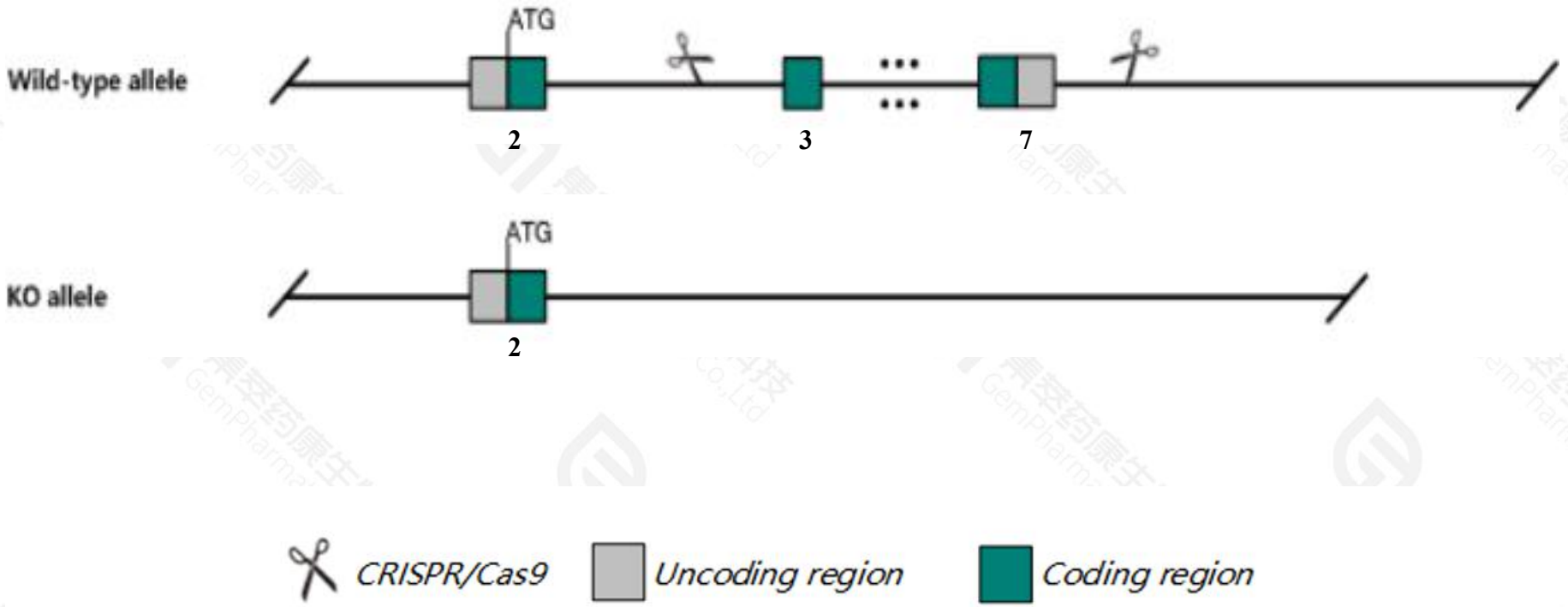
Project Overview

Project Name	***Nat9***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nat9* gene. The schematic diagram is as follows:



Technical routes

➢ The *Nat9* gene has 9 transcripts. According to the structure of *Nat9* gene, exon3-exon7 of *Nat9-203*(ENSMUST00000103040.10) transcript is recommended as the knockout region.The region contains 649bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Nat9* gene. The brief process is as follows: CRISPR/Cas9 system 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 KO region contains functional region of the *Tmem104* gene.Knockout the region may affect the function of *Tmem104* gene.

➢ The *Nat9* 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 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

Nat9 N-acetyltransferase 9 (GCN5-related, putative) [Mus musculus (house mouse)]

Gene ID: 66176, updated on 13-Mar-2020

Summary

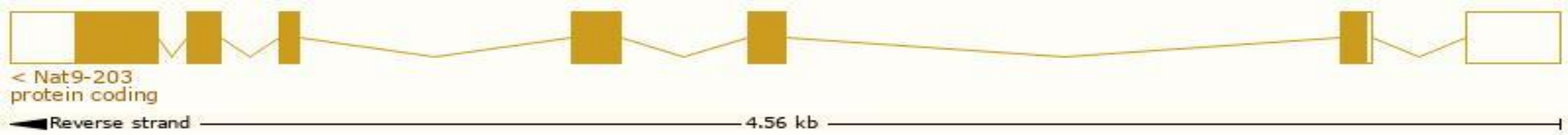
Official Symbol	Nat9 provided by MGI
Official Full Name	N-acetyltransferase 9 (GCN5-related, putative) provided byMGI
Primary source	MGI:MGI:1913426
See related	Ensembl:ENSMUSG00000015542
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110028N05Rik
Expression	Ubiquitous expression in testis adult (RPKM 30.3), ovary adult (RPKM 10.1) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

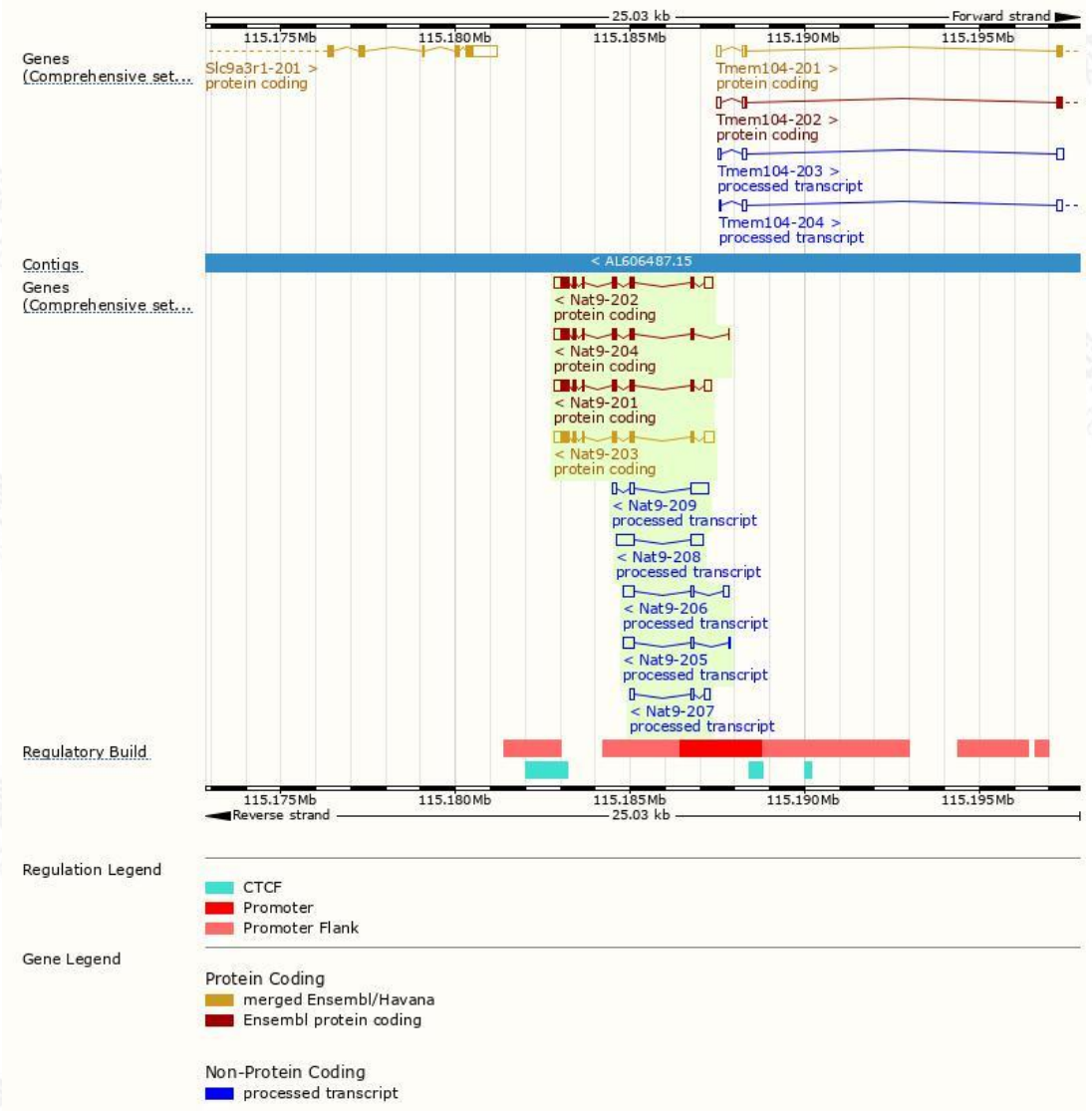
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nat9-203	ENSMUST00000103040.10	1204	241aa	Protein coding	CCDS25622	Q3UG98	TSL:1 GENCODE basic APPRIS P1
Nat9-202	ENSMUST00000103039.1	1158	241aa	Protein coding	CCDS25622	Q3UG98	TSL:5 APPRIS P1
Nat9-201	ENSMUST00000103038.7	1143	241aa	Protein coding	CCDS25622	Q3UG98	TSL:1 GENCODE basic APPRIS P1
Nat9-204	ENSMUST00000103041.7	953	241aa	Protein coding	CCDS25622	Q3UG98	TSL:5 GENCODE basic APPRIS P1
Nat9-208	ENSMUST00000137843.1	846	No protein	Processed transcript	-	-	TSL:2
Nat9-209	ENSMUST00000153796.1	751	No protein	Processed transcript	-	-	TSL:5
Nat9-206	ENSMUST00000134399.1	593	No protein	Processed transcript	-	-	TSL:3
Nat9-205	ENSMUST00000127419.7	450	No protein	Processed transcript	-	-	TSL:5
Nat9-207	ENSMUST00000134769.1	386	No protein	Processed transcript	-	-	TSL:2

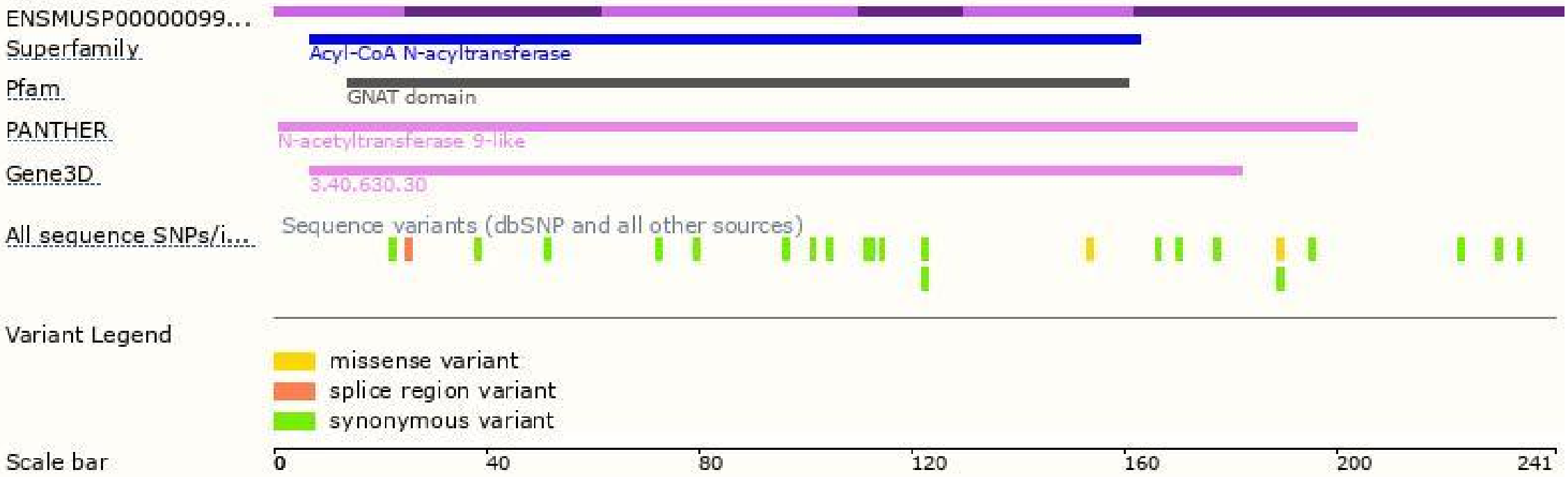
The strategy is based on the design of *Nat9-203* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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