Nlrp1a Cas9-KO Strategy

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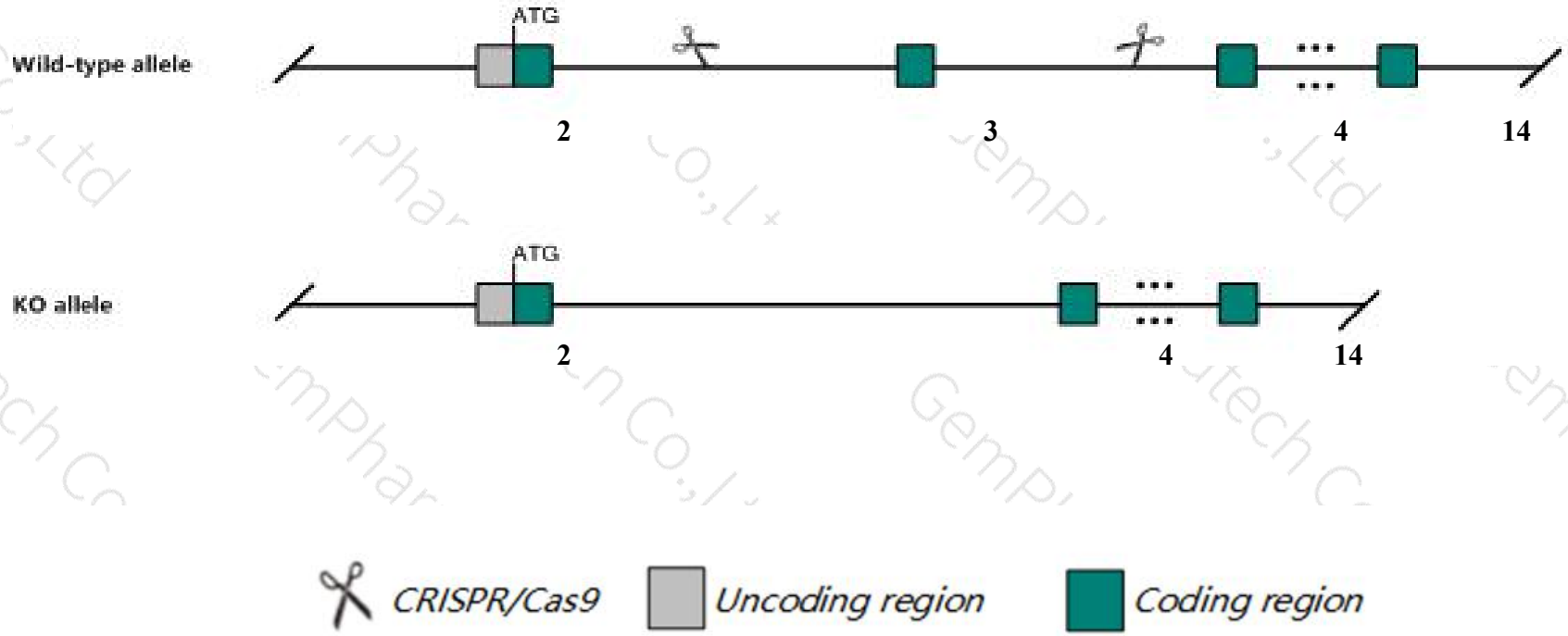
Design Date: 2019-11-13

Project Overview

Project Name	***Nlrp1a***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nlrp1a* gene. The schematic diagram is as follows:



Technical routes

➢ The *Nlrp1a* gene has 2 transcripts. According to the structure of *Nlrp1a* gene, exon3 of *Nlrp1a-202* (ENSMUST00000108518.2) transcript is recommended as the knockout region.The region contains 1681bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Nlrp1a* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Mice heterozygous for an ENU-induced allele develop a multi-organ neutrophilic inflammatory disease. Homozygotes for the same ENU-induced allele develop a similar but lethal condition and exhibit neutrophilia, lymphopenia, splenomegaly, loss of peritoneal macrophages, and premature death.

- The *Nlrp1a* 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）

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Nlrp1a NLR family, pyrin domain containing 1A [Mus musculus (house mouse)]

Gene ID: 195046, updated on 19-Mar-2019

Summary

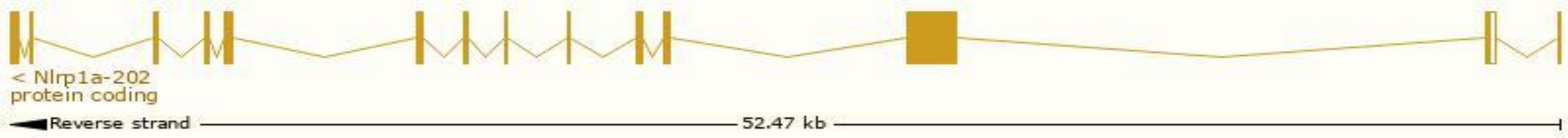
Official Symbol	Nlrp1a provided by MGI
Official Full Name	NLR family, pyrin domain containing 1A provided by MGI
Primary source	MGI:MGI:2684861
See related	Ensembl:ENSMUSG00000069830
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CARD7, DEFCAP, Gm14, Gm15, NAC, Nalp1, Nalp1a, Nlrp1, PP1044
Expression	Low expression observed in reference dataset See more

Transcript information（Ensembl）

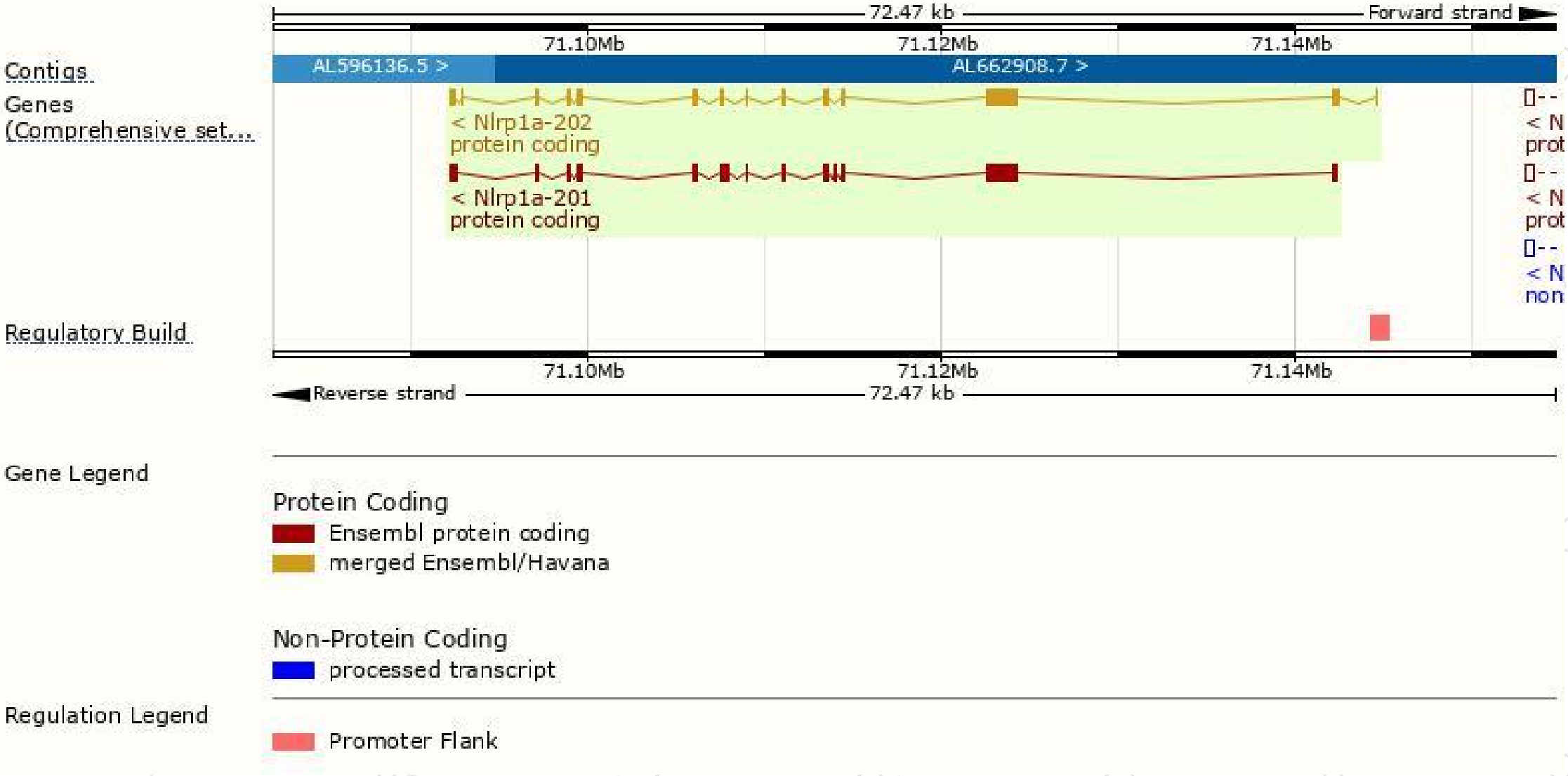
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nlrp1a-202	ENSMUST00000108518.2	3767	1182aa	Protein coding	CCDS48838	Q2LKU9	TSL:5 GENCODE basic APPRIS P2
Nlrp1a-201	ENSMUST00000048514.10	3903	1300aa	Protein coding	-	Q2LKU9	TSL:1 GENCODE basic APPRIS ALT2

The strategy is based on the design of *Nlrp1a-202* transcript,The transcription is shown below

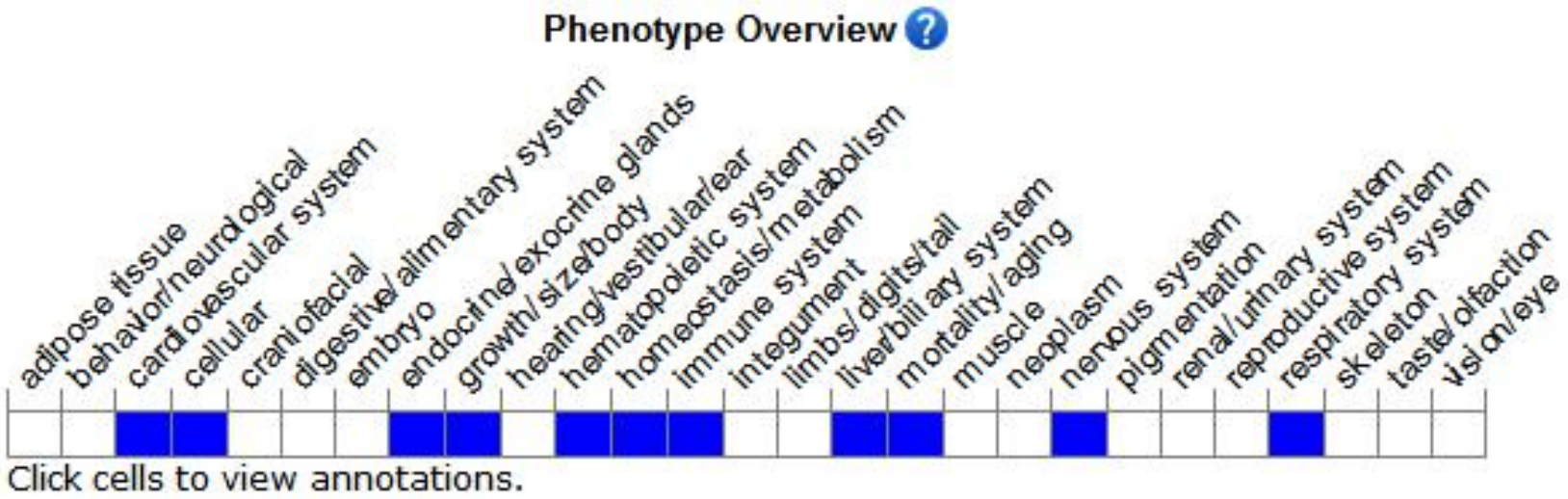


Genomic location distribution



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/).

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

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