

# *Npc1l1* Cas9-CKO Strategy

**Designer:**

**Yang Zeng**

**Reviewer:**

**Xiaojing Li**

**Design Date:**

**2019-11-26**

# Project Overview

**Project Name**

*Npc1l1*

**Project type**

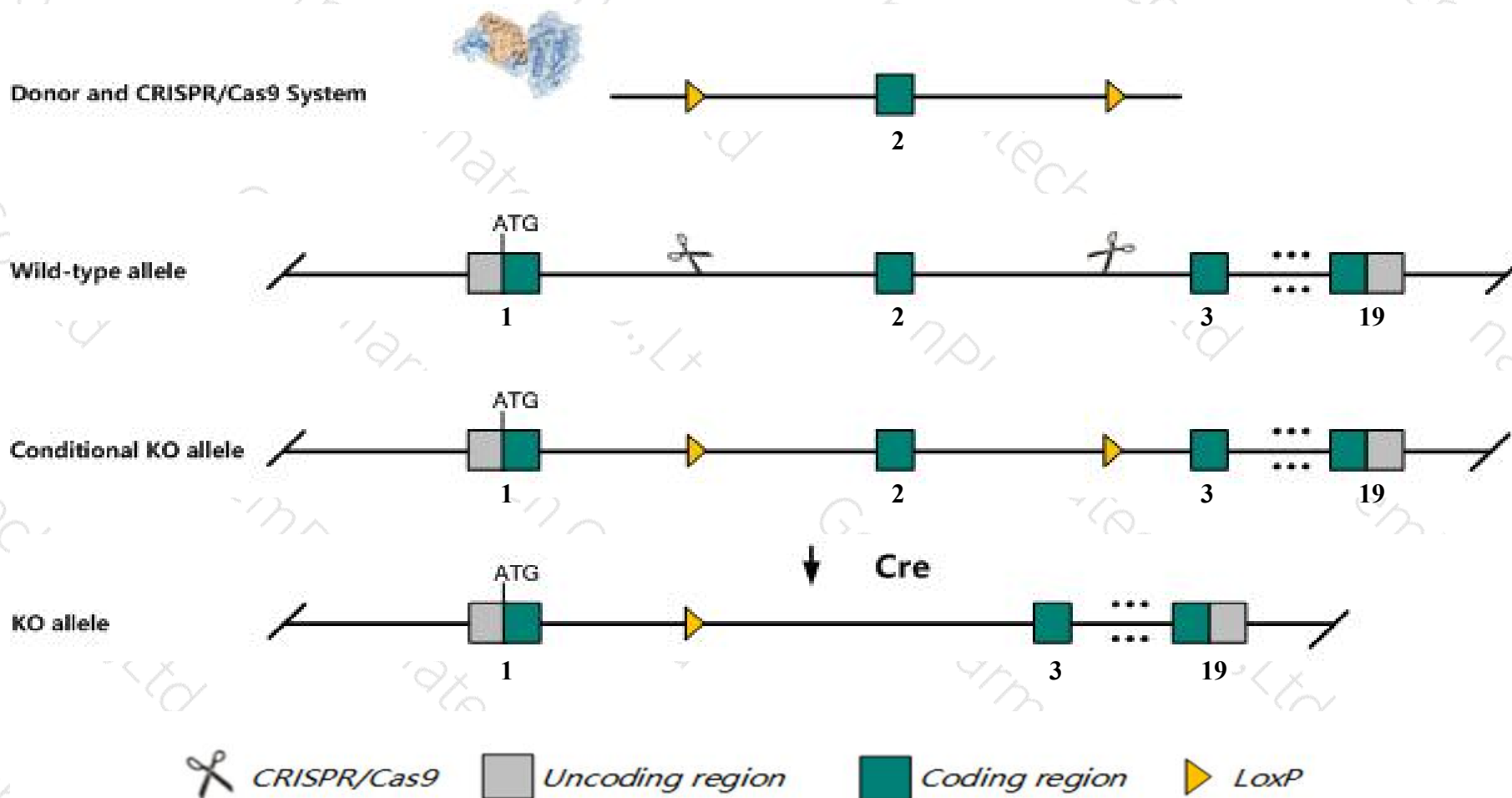
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Npc1ll1* gene. The schematic diagram is as follows:



# Technical routes

- The *Npc1ll1* gene has 1 transcript. According to the structure of *Npc1ll1* gene, exon2 of *Npc1ll1-201* (ENSMUST00000004505.2) transcript is recommended as the knockout region. The region contains 1529bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Npc1ll1* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Mice homozygous for a targeted null mutation exhibit normal intestinal development, fertility and plasma cholesterol and triglyceride levels; however, intestinal cholesterol absorption was substantially reduced.
- The *Npc1l1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.



# Gene information (NCBI)

## Npc111 NPC1 like intracellular cholesterol transporter 1 [ *Mus musculus* (house mouse) ]

Gene ID: 237636, updated on 28-Oct-2019

### Summary

<b>Official Symbol</b>	Npc111 provided by MGI
<b>Official Full Name</b>	NPC1 like intracellular cholesterol transporter 1 provided by MGI
<b>Primary source</b>	<a href="#">MGI:MGI:2685089</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000020447</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Gm243; 9130221N23Rik
<b>Expression</b>	Biased expression in small intestine adult (RPKM 209.5), duodenum adult (RPKM 153.8) and 1 other tissue <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>



# Transcript information (Ensembl)

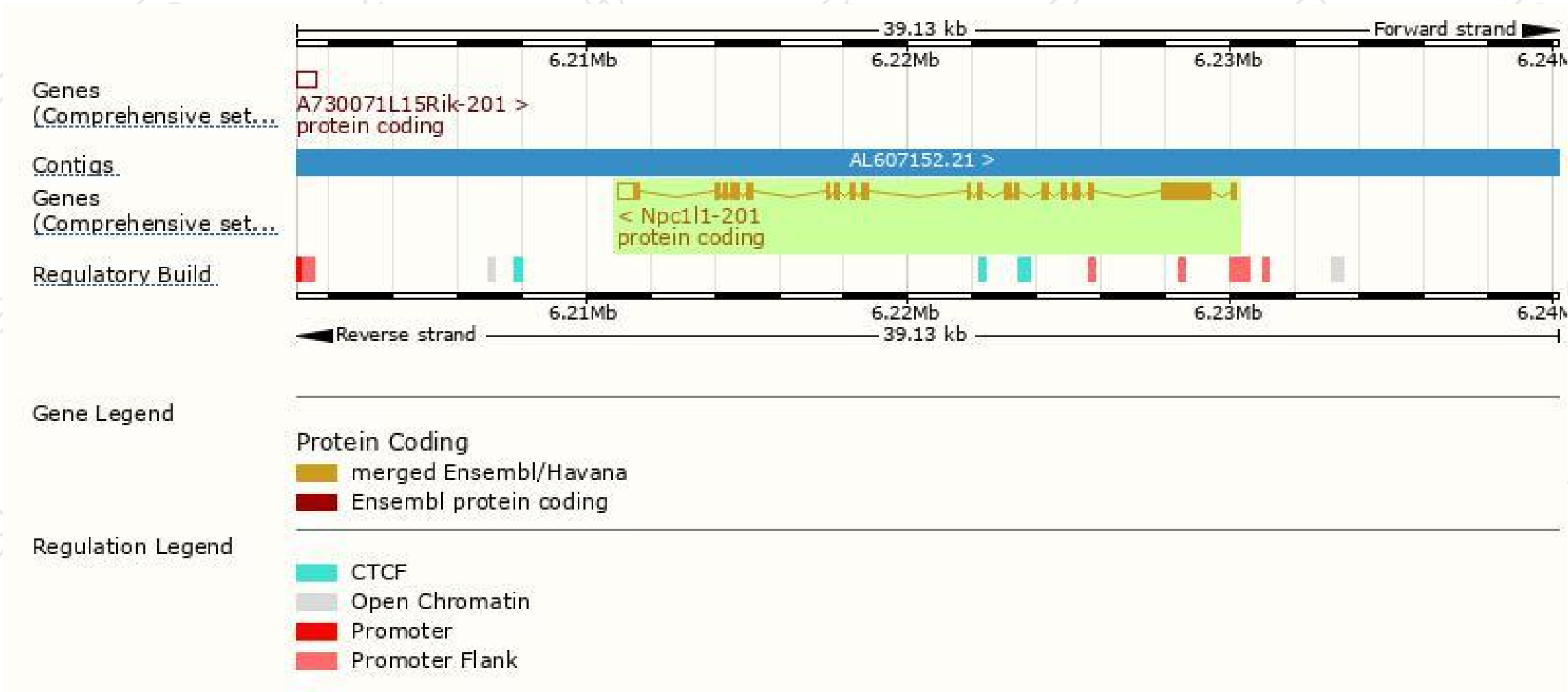
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
<b>Npc1l1-201</b>	<a href="#">ENSMUST00000004505.2</a>	4467	<a href="#">1333aa</a>	Protein coding	<a href="#">CCDS24413</a>	<a href="#">Z4YJC9</a>	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Npc1l1-201* transcript, The transcription is shown below



# Genomic location distribution



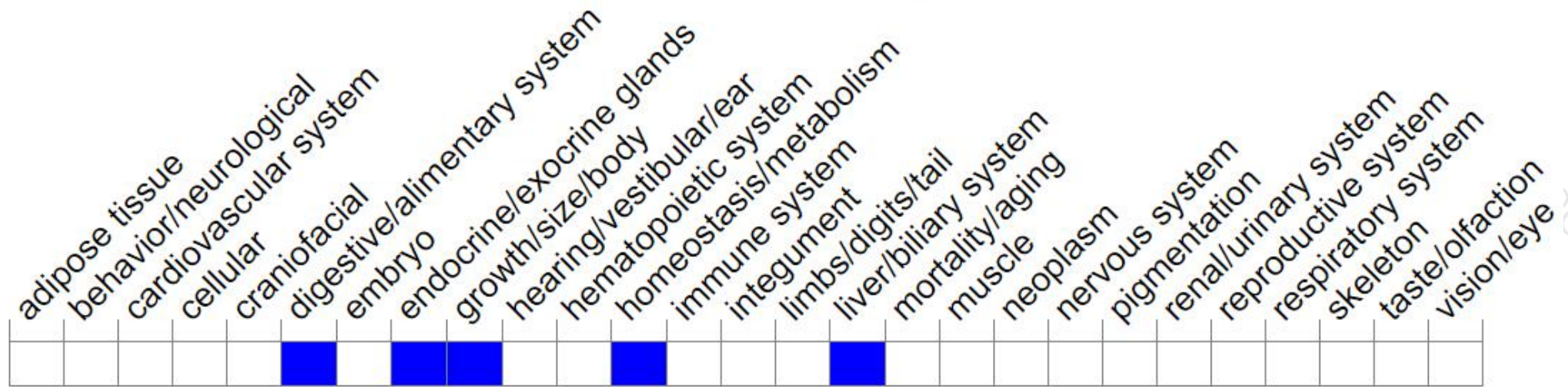


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database (<http://www.informatics.jax.org/>).

According to the existing MGI data, Mice homozygous for a targeted null mutation exhibit normal intestinal development, fertility and plasma cholesterol and triglyceride levels; however, intestinal cholesterol absorption was substantially reduced.

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

Tel: 400-9660890

