

# ***Hnf4g Cas9-KO Strategy***

**Designer:**

**Daohua Xu**

**Reviewer:**

**Huimin Su**

**Design Date:**

**2020-3-10**

# Project Overview

**Project Name**

*Hnf4g*

**Project type**

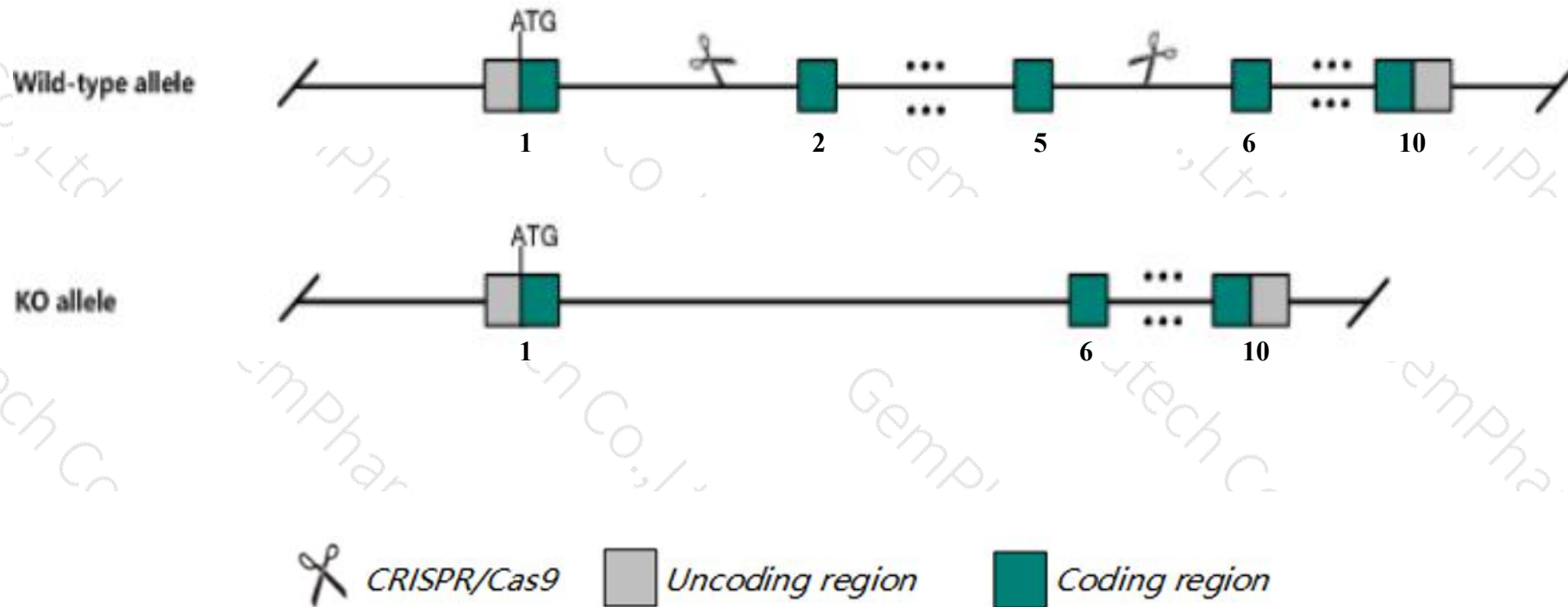
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hnf4g* gene. The schematic diagram is as follows:



- The *Hnf4g* gene has 2 transcripts. According to the structure of *Hnf4g* gene, exon2-exon5 of *Hnf4g-201* (ENSMUST00000108393.7) transcript is recommended as the knockout region. The region contains 530bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hnf4g* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele are less inclined to build nests, spend more time in a passive state during the forced swim test, and display a reduction in energy expenditure and night time activity that results in increased body weight despite a decreased intake of food and water.
- The *Hnf4g* gene is located on the Chr3. 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)

## Hnf4g hepatocyte nuclear factor 4, gamma [Mus musculus (house mouse)]

Gene ID: 30942, updated on 19-Feb-2019

### Summary



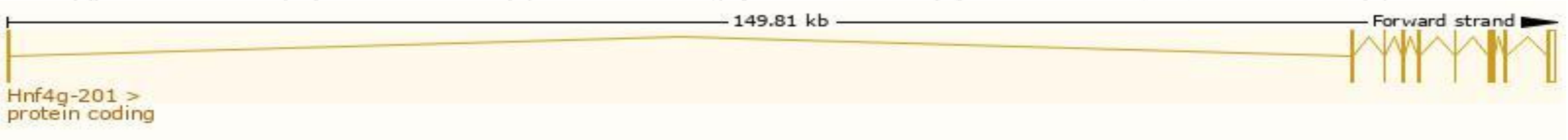
<b>Official Symbol</b>	Hnf4g provided by <a href="#">MGI</a>
<b>Official Full Name</b>	hepatocyte nuclear factor 4, gamma provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1353604</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000017688</a>
<b>Gene type</b>	protein coding
<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>	NR2A2
<b>Expression</b>	Biased expression in large intestine adult (RPKM 18.4), small intestine adult (RPKM 7.7) and 3 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

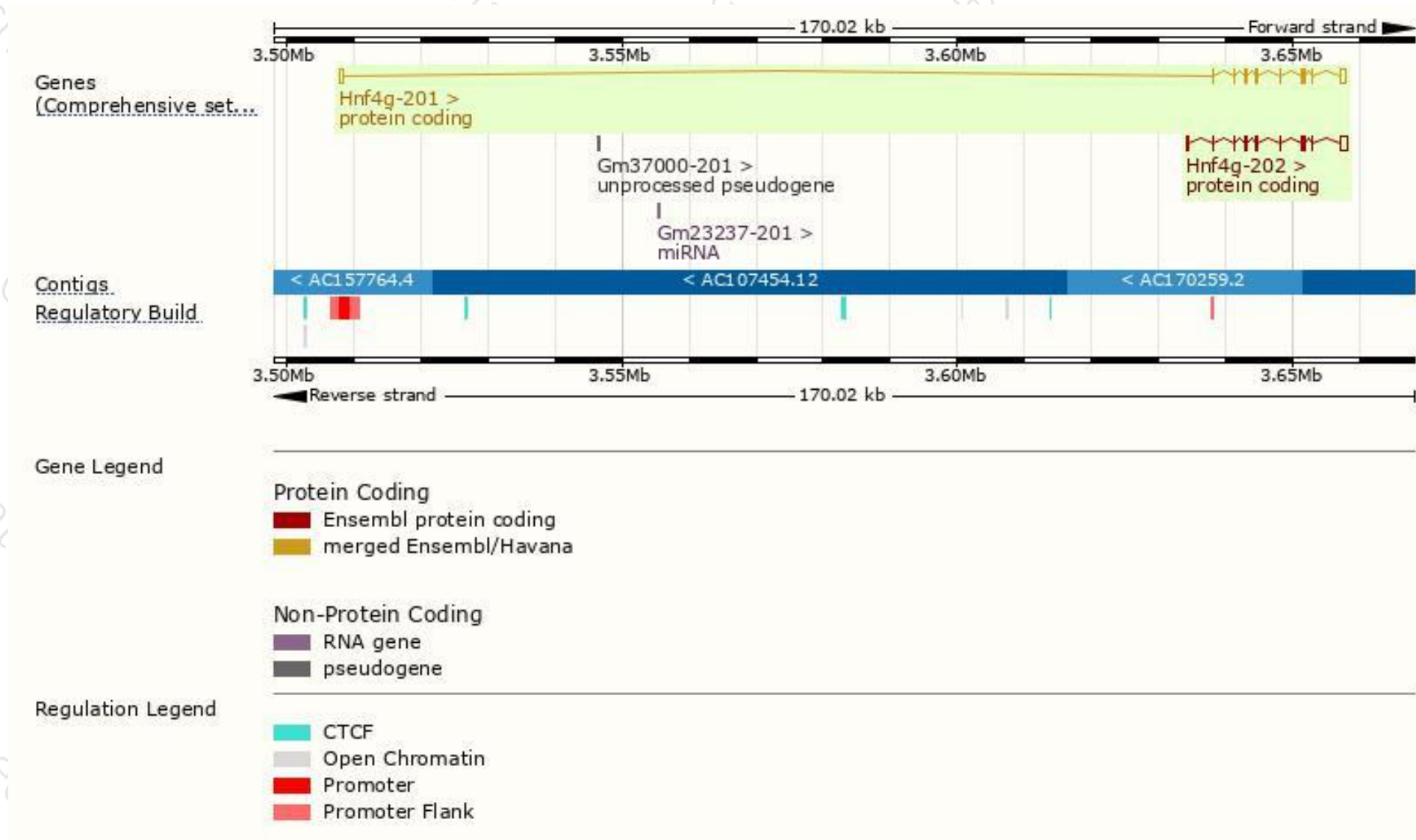
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hnf4g-201	<a href="#">ENSMUST00000108393.7</a>	2224	<a href="#">418aa</a>	Protein coding	<a href="#">CCDS17226</a>	<a href="#">Q059V1</a>	TSL:1 GENCODE basic
Hnf4g-202	<a href="#">ENSMUST00000108394.2</a>	2327	<a href="#">462aa</a>	Protein coding	-	<a href="#">E9QPS1</a>	TSL:5 GENCODE basic APPRIS P1

The strategy is based on the design of *Hnf4g-201* transcript,The transcription is shown below

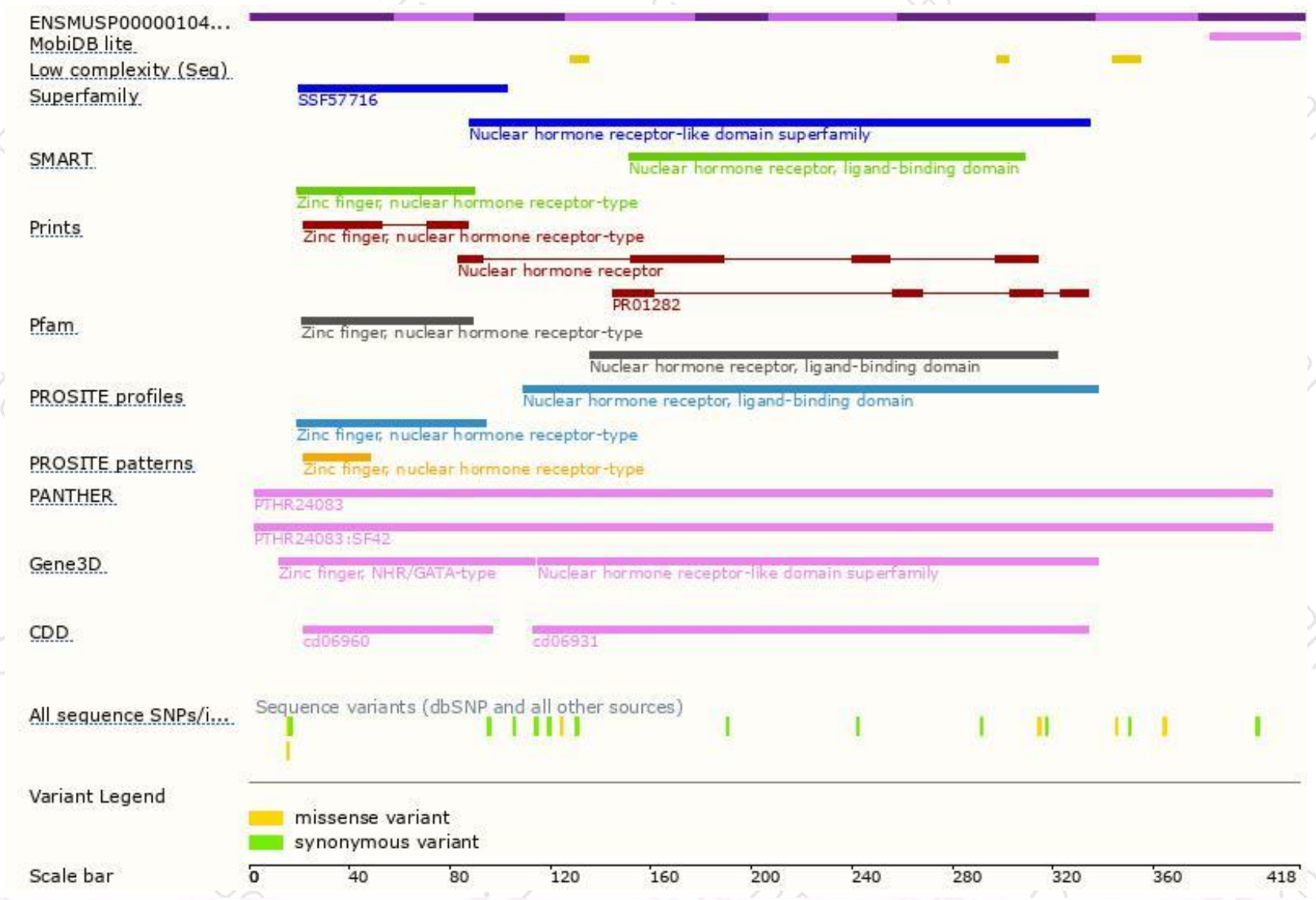


# Genomic location distribution

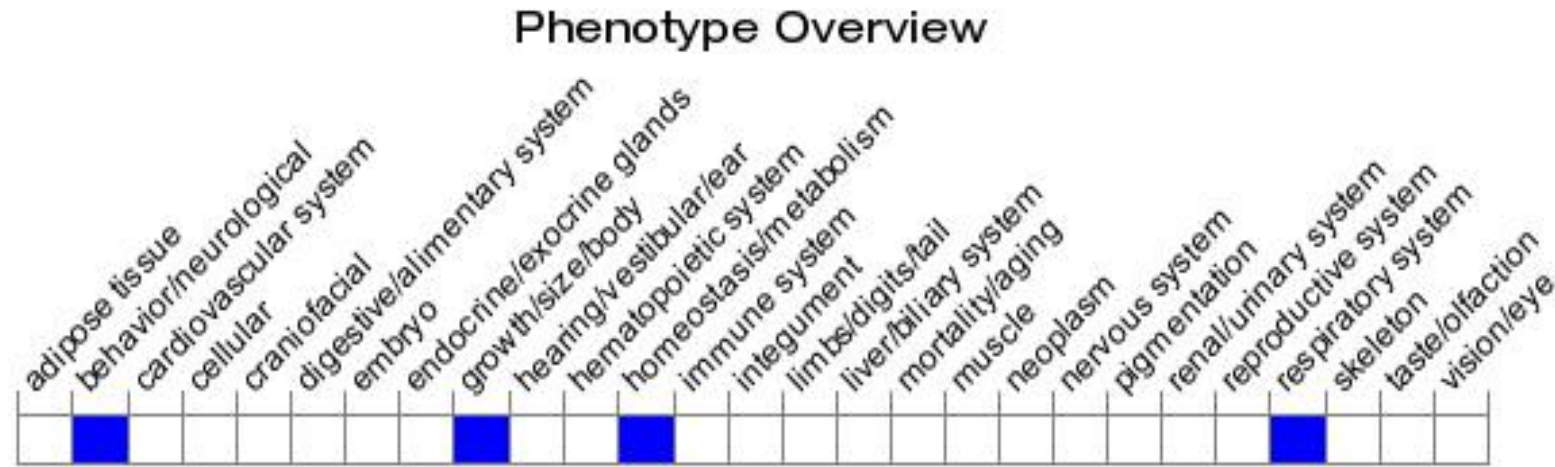




# Protein domain



# Mouse phenotype description(MGI )



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

According to the existing MGI data, Mice homozygous for a knock-out allele are less inclined to build nests, spend more time in a passive state during the forced swim test, and display a reduction in energy expenditure and night time activity that results in increased body weight despite a decreased intake of food and water.

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

Tel: 400-9660890

