

# ***Slc10a7 Cas9-KO Strategy***

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**Reviewer: Lingyan Wu**

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# Project Overview

**Project Name**

*Slc10a7*

**Project type**

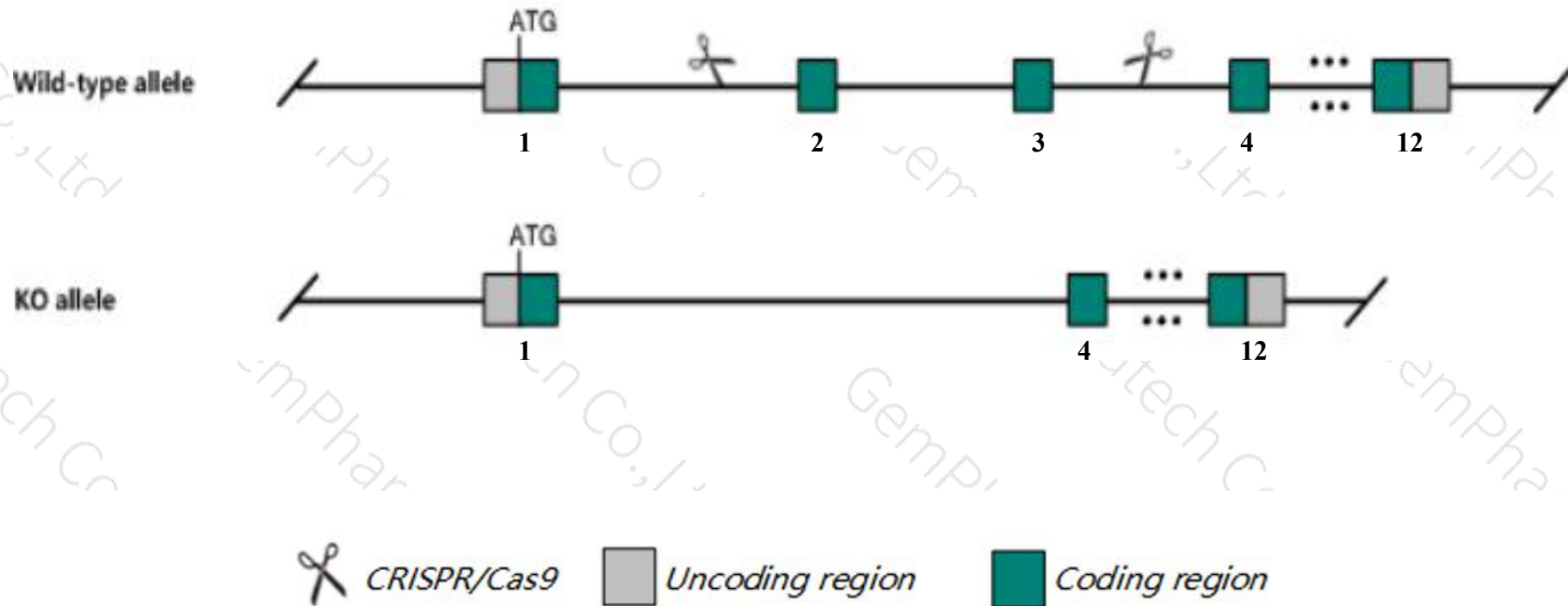
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc10a7* gene. The schematic diagram is as follows:



- The *Slc10a7* gene has 11 transcripts. According to the structure of *Slc10a7* gene, exon2-exon3 of *Slc10a7-201*(ENSMUST00000034111.9) transcript is recommended as the knockout region. The region contains 220bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc10a7* 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.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit postnatal growth retardation and skeletal dysplasia with craniofacial anomalies, shortened long bones, brachypodia, growth plate disorganization, and tooth enamel defects.
- The *Slc10a7* gene is located on the Chr8. 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)

Slc10a7 solute carrier family 10 (sodium/bile acid cotransporter family), member 7 [Mus musculus (house mouse)]

Gene ID: 76775, updated on 20-Mar-2020

## Summary



Official Symbol [Slc10a7](#) provided by [MGI](#)

Official Full Name [solute carrier family 10 \(sodium/bile acid cotransporter family\), member 7](#) provided by [MGI](#)

Primary source [MGI:MGI:1924025](#)

See related [Ensembl:ENSMUSG00000031684](#)

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 [2410193C02Rik](#), [P7](#)

Expression [Ubiquitous expression in limb E14.5 \(RPKM 4.4\), genital fat pad adult \(RPKM 3.0\) and 28 other tissues](#)[See more](#)

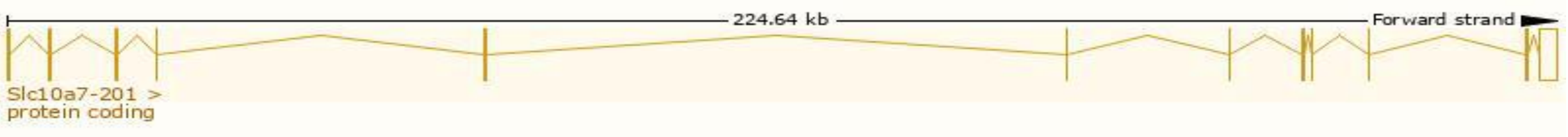
Orthologs [human](#) [all](#)

# Transcript information (Ensembl)

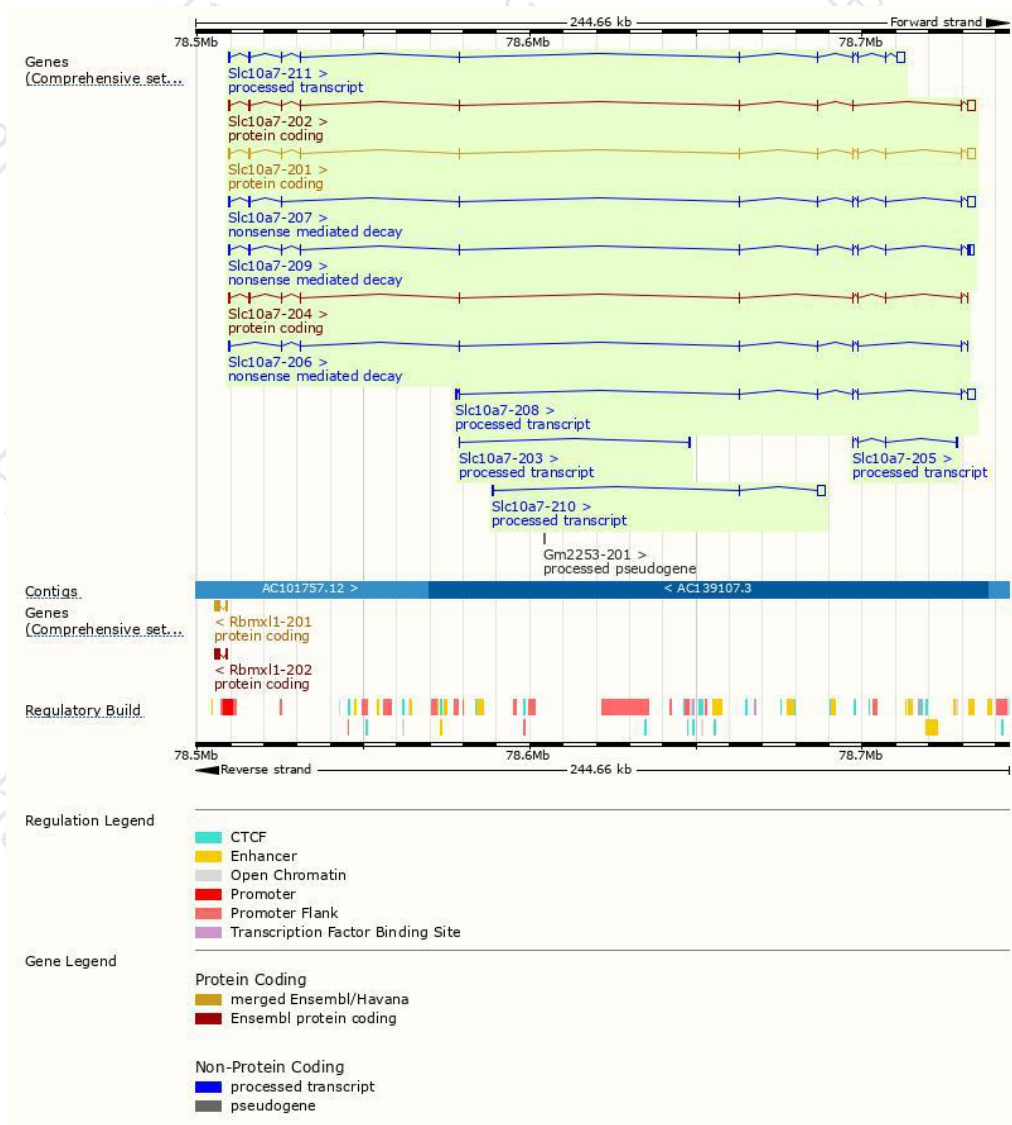
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc10a7-201	<a href="#">ENSMUST00000034111.9</a>	3595	<a href="#">340aa</a>	Protein coding	<a href="#">CCDS40395</a>	<a href="#">Q5PT53</a>	TSL:1 GENCODE basic APPRIS P1
Slc10a7-202	<a href="#">ENSMUST00000209490.1</a>	3485	<a href="#">298aa</a>	Protein coding	<a href="#">CCDS85567</a>	<a href="#">Q5PT53</a>	TSL:1 GENCODE basic
Slc10a7-204	<a href="#">ENSMUST00000209992.1</a>	939	<a href="#">312aa</a>	Protein coding	<a href="#">CCDS85568</a>	<a href="#">Q5PT53</a>	TSL:1 GENCODE basic
Slc10a7-207	<a href="#">ENSMUST00000210630.1</a>	3494	<a href="#">123aa</a>	Nonsense mediated decay	-	<a href="#">A0A1B0GR66</a>	TSL:1
Slc10a7-209	<a href="#">ENSMUST00000211286.1</a>	2752	<a href="#">340aa</a>	Nonsense mediated decay	-	<a href="#">Q5PT53</a>	TSL:1
Slc10a7-206	<a href="#">ENSMUST00000210515.1</a>	866	<a href="#">103aa</a>	Nonsense mediated decay	-	<a href="#">Q5PT52</a>	TSL:1
Slc10a7-211	<a href="#">ENSMUST00000211332.1</a>	3517	No protein	Processed transcript	-	-	TSL:1
Slc10a7-208	<a href="#">ENSMUST00000210703.1</a>	3315	No protein	Processed transcript	-	-	TSL:1
Slc10a7-210	<a href="#">ENSMUST00000211315.1</a>	2628	No protein	Processed transcript	-	-	TSL:1
Slc10a7-205	<a href="#">ENSMUST00000210132.1</a>	680	No protein	Processed transcript	-	-	TSL:5
Slc10a7-203	<a href="#">ENSMUST00000209643.1</a>	121	No protein	Processed transcript	-	-	TSL:5

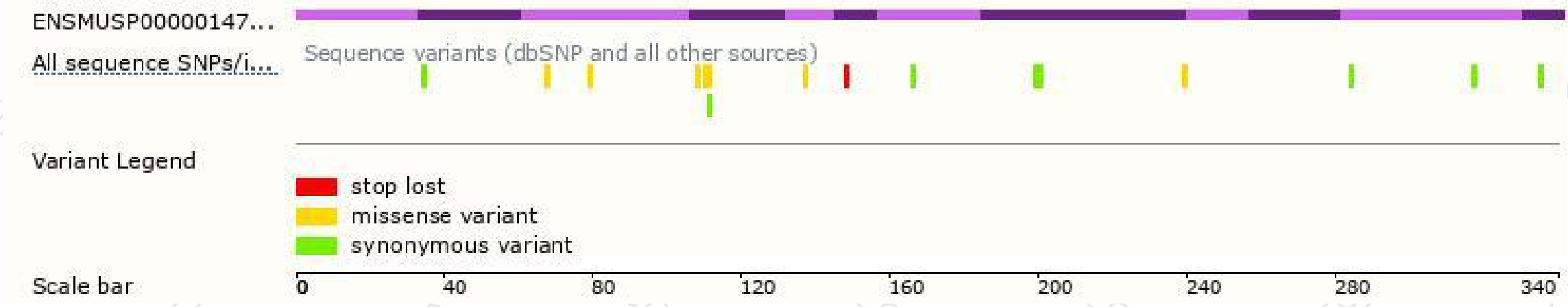
The strategy is based on the design of *Slc10a7-201* transcript,the transcription is shown below:



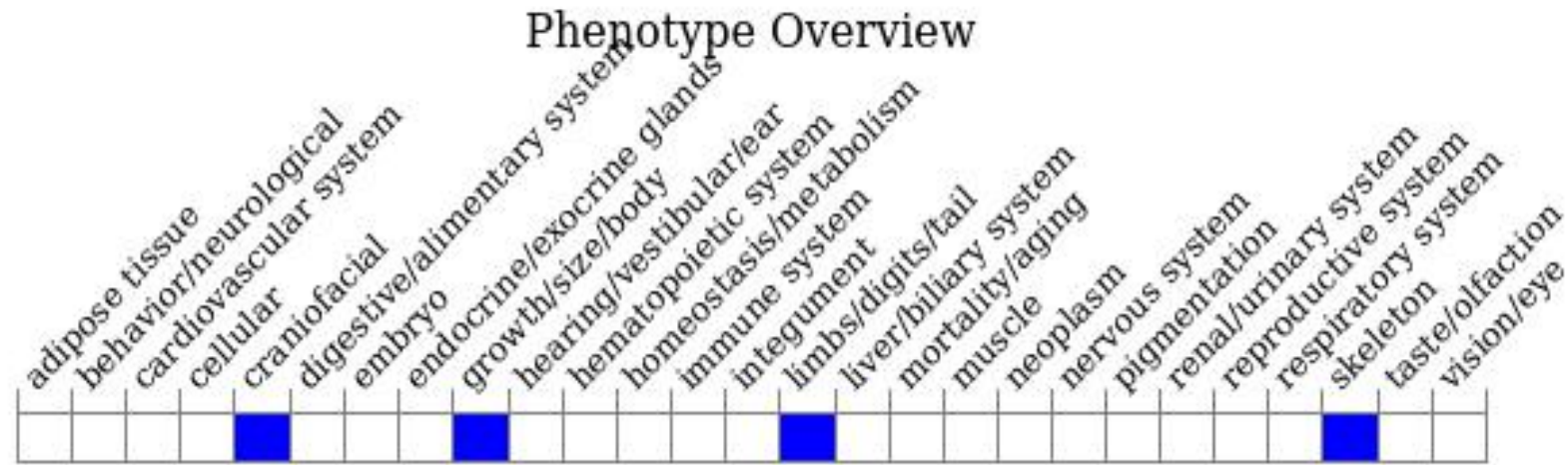
# Genomic location distribution



# 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 exhibit postnatal growth retardation and skeletal dysplasia with craniofacial anomalies, shortened long bones, brachypodia, growth plate disorganization, and tooth enamel defects.

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

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