Scarb1 Cas9-KO Strategy

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Reviewer: Huimin Su

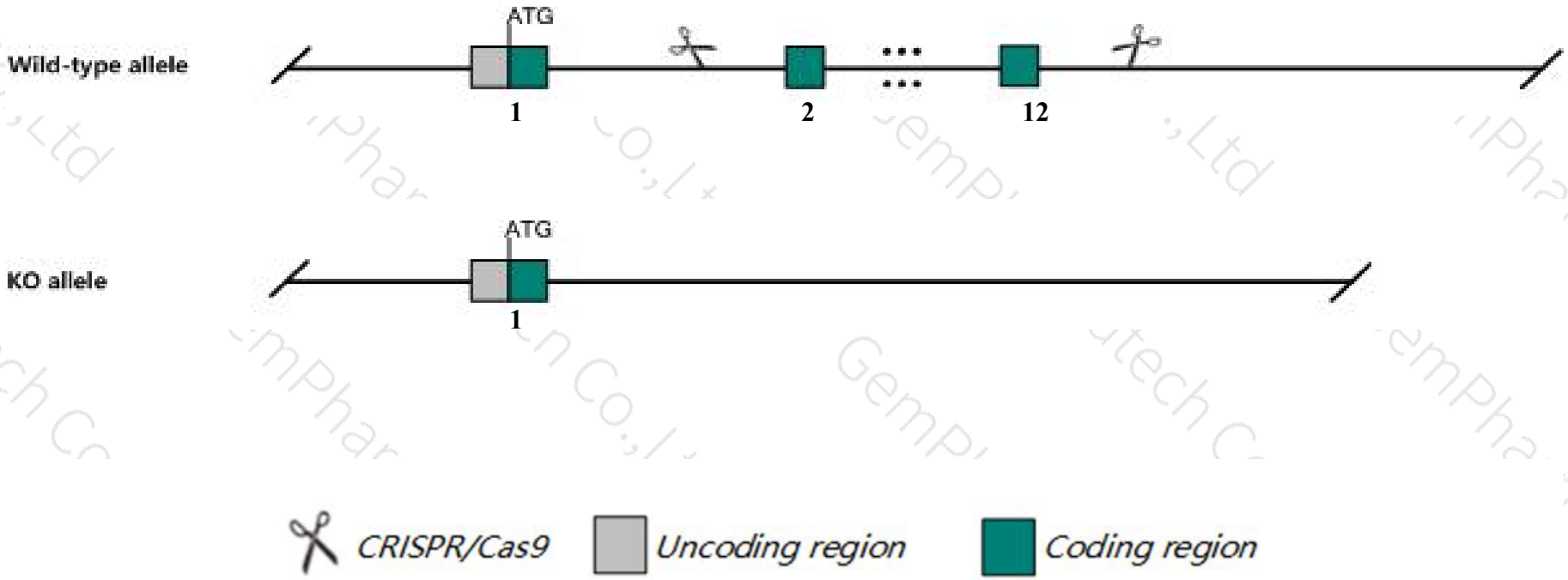
Design Date: 2019-11-13

Project Overview

Project Name	***Scarb1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Scarb1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Scarb1* gene has 11 transcripts. According to the structure of *Scarb1* gene, exon2-exon12 of *Scarb1-201* (ENSMUST00000086075.12) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Scarb1* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Targeted mutations result in abnormal lipoprotein metablolism and, for one allele, reversible female infertility. An ENU mutant shows increased cholesterol levels.

- The *Scarb1* gene is located on the Chr5. 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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Scarb1 scavenger receptor class B, member 1 [Mus musculus (house mouse)]

Gene ID: 20778, updated on 3-Feb-2019

Summary

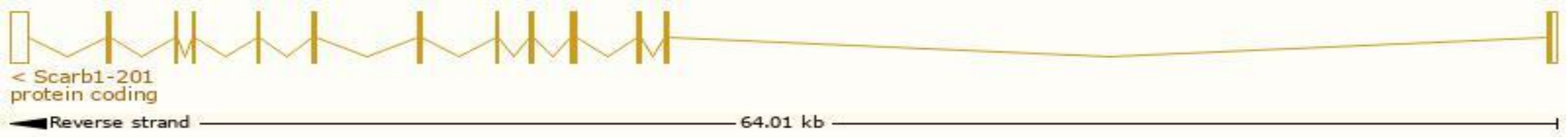
Official Symbol	Scarb1 provided by MGI
Official Full Name	scavenger receptor class B, member 1 provided by MGI
Primary source	MGI:MGI:893578
See related	Ensembl:ENSMUSG00000037936
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI120173, CD36, Cd36l1, Chohd1, Cla-1, Cla1, D5Ertd460e, Hdlq1, Hlb398, SR-B1, SR-BI, SRBI, Srb1, mSR-BI
Expression	Biased expression in adrenal adult (RPKM 762.6), ovary adult (RPKM 288.2) and 7 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

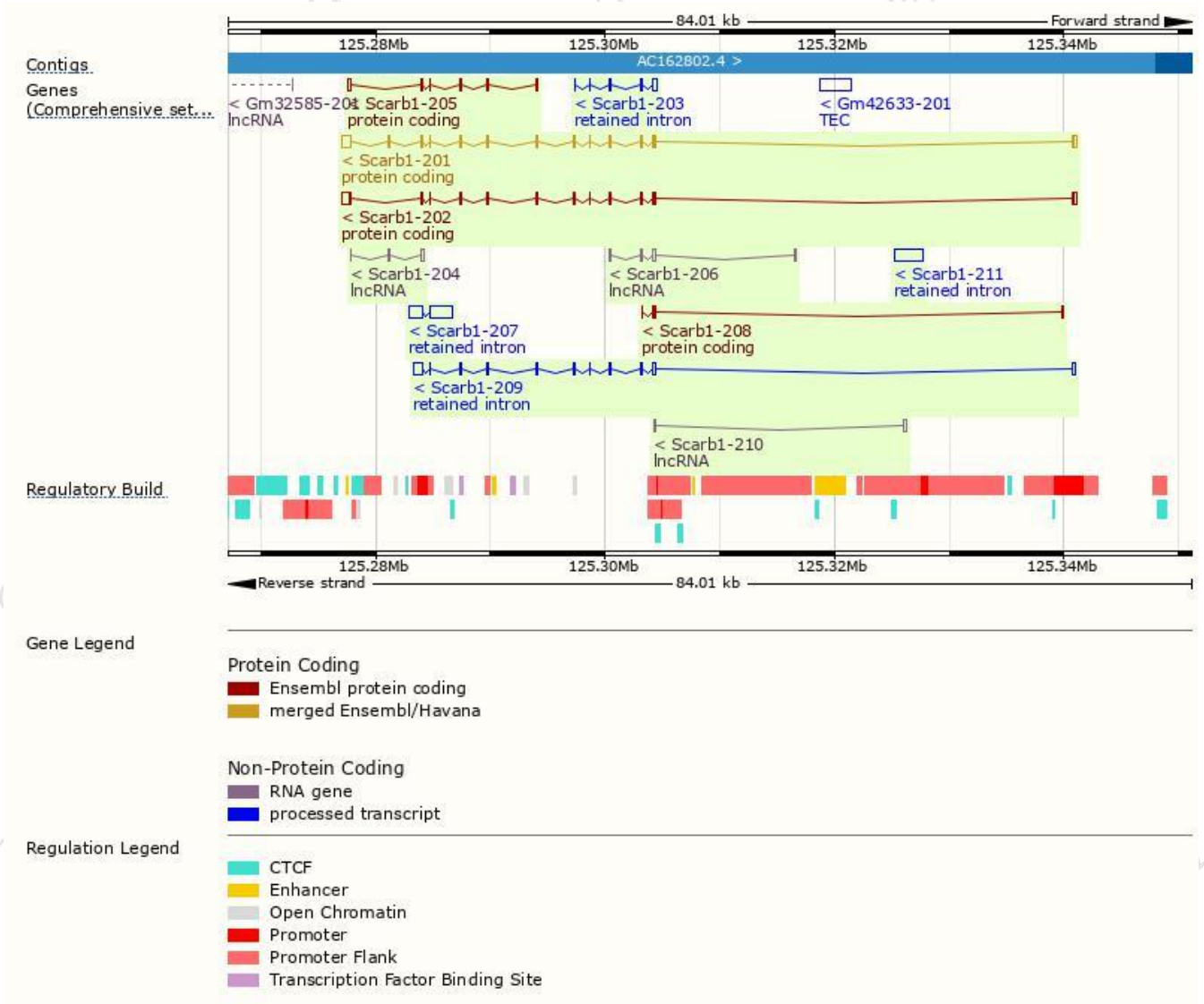
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Scarb1-201	ENSMUST00000086075.12	2521	509aa	Protein coding	CCDS19683	Q61009	TSL:1 GENCODE basic APPRIS P3
Scarb1-202	ENSMUST00000111390.7	2367	506aa	Protein coding	CCDS57383	Q61009	TSL:1 GENCODE basic APPRIS ALT2
Scarb1-205	ENSMUST00000127148.1	823	176aa	Protein coding	-	F7C5U2	CDS 5' incomplete TSL:3
Scarb1-208	ENSMUST00000137783.2	358	94aa	Protein coding	-	D3Z5U8	CDS 3' incomplete TSL:5
Scarb1-207	ENSMUST00000135736.1	3093	No protein	Retained intron	-	-	TSL:2
Scarb1-211	ENSMUST00000197310.1	2459	No protein	Retained intron	-	-	TSL:NA
Scarb1-209	ENSMUST00000148373.7	2082	No protein	Retained intron	-	-	TSL:1
Scarb1-203	ENSMUST00000123338.7	813	No protein	Retained intron	-	-	TSL:5
Scarb1-206	ENSMUST00000133624.1	638	No protein	lncRNA	-	-	TSL:2
Scarb1-204	ENSMUST00000124582.1	469	No protein	lncRNA	-	-	TSL:1
Scarb1-210	ENSMUST00000156532.1	338	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Scarb1-201* transcript,The transcription is shown below

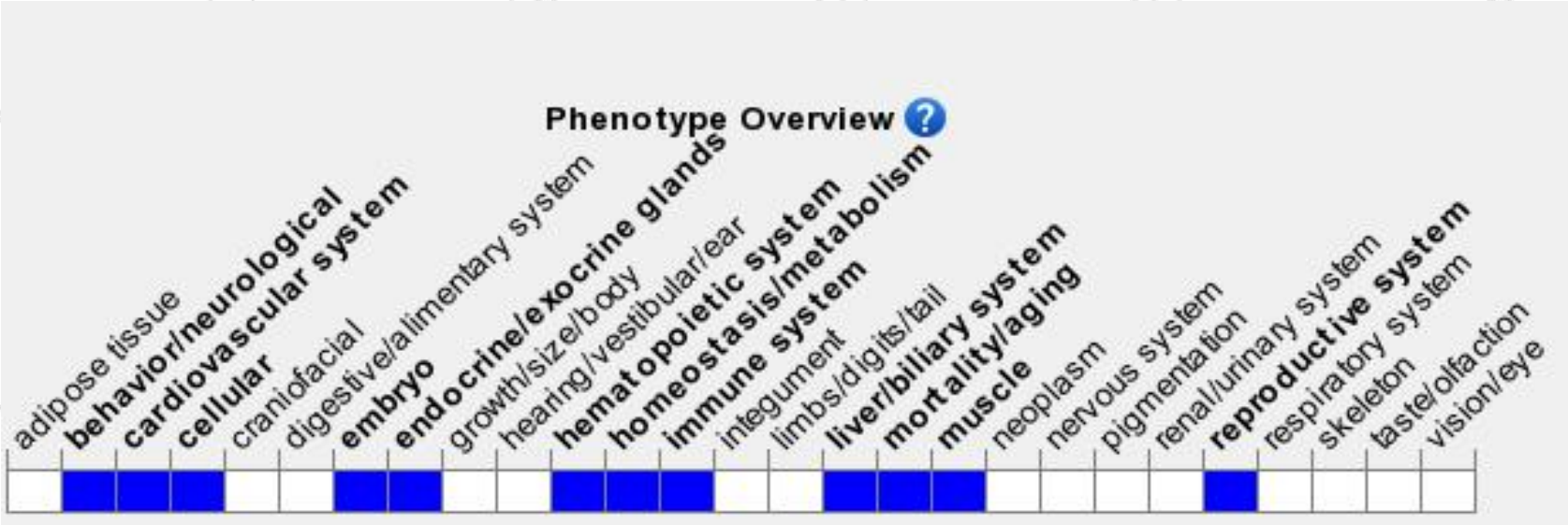


Genomic location distribution



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,Targeted mutations result in abnormal lipoprotein metablolism and, for one allele, reversible female infertility. An ENU mutant shows increased cholesterol levels.

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

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