Cd33 Cas9-KO Strategy

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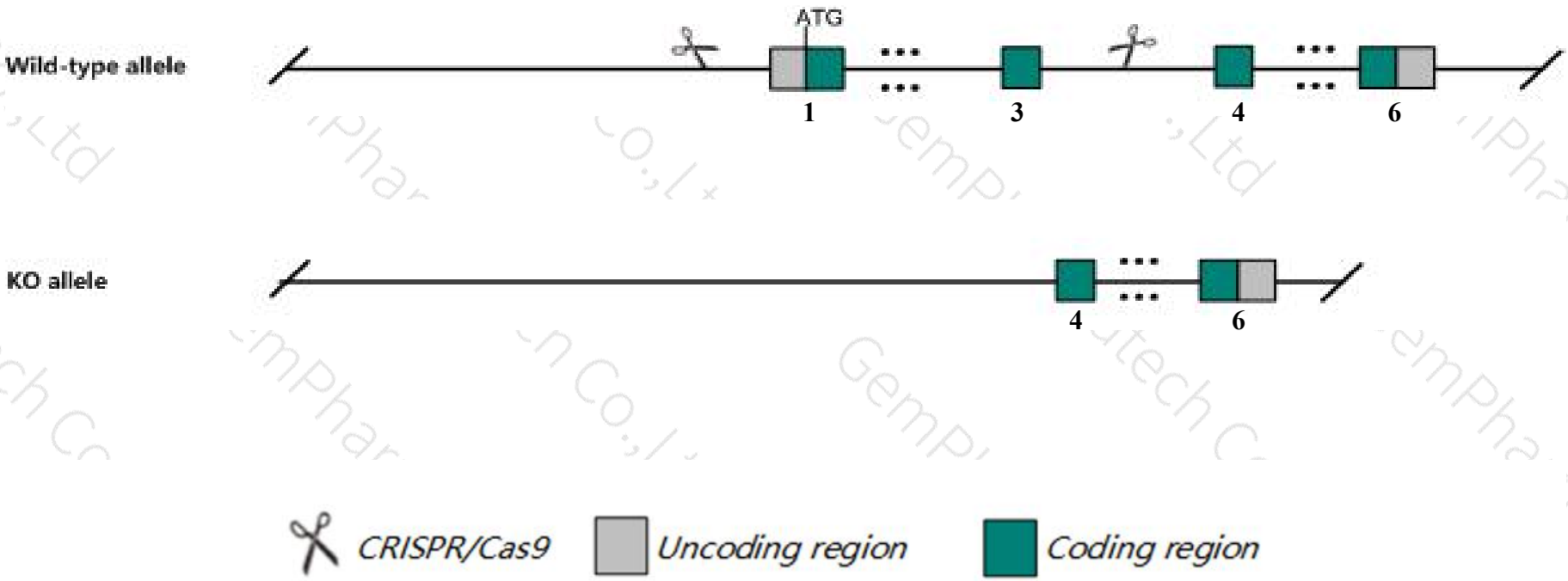
Design Date: 2020-1-13

Project Overview

Project Name	***Cd33***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd33* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cd33* gene has 6 transcripts. According to the structure of *Cd33* gene, exon1-exon3 of *Cd33-203* (ENSMUST00000205503.1) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cd33* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for disruptions in this gene show slight reductions in mean erythrocyte count and hematocrit and increased concentration of blood aspartate aminotransaminase. There is also a hyporesponsiveness to induced peritonitis and a weaker IL-6 response to LPS-induced systemic inflammation.

- The *Cd33* gene is located on the Chr7. 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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Cd33 CD33 antigen [Mus musculus (house mouse)]

Gene ID: 12489, updated on 31-Jan-2019

Summary

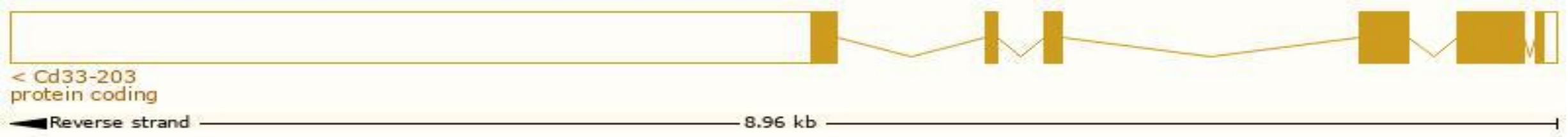
Official Symbol	Cd33 provided by MGI
Official Full Name	CD33 antigen provided by MGI
Primary source	MGI:MGI:99440
See related	Ensembl:ENSMUSG00000004609
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Siglec-3, gp67
Expression	Broad expression in liver E18 (RPKM 4.3), mammary gland adult (RPKM 4.2) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

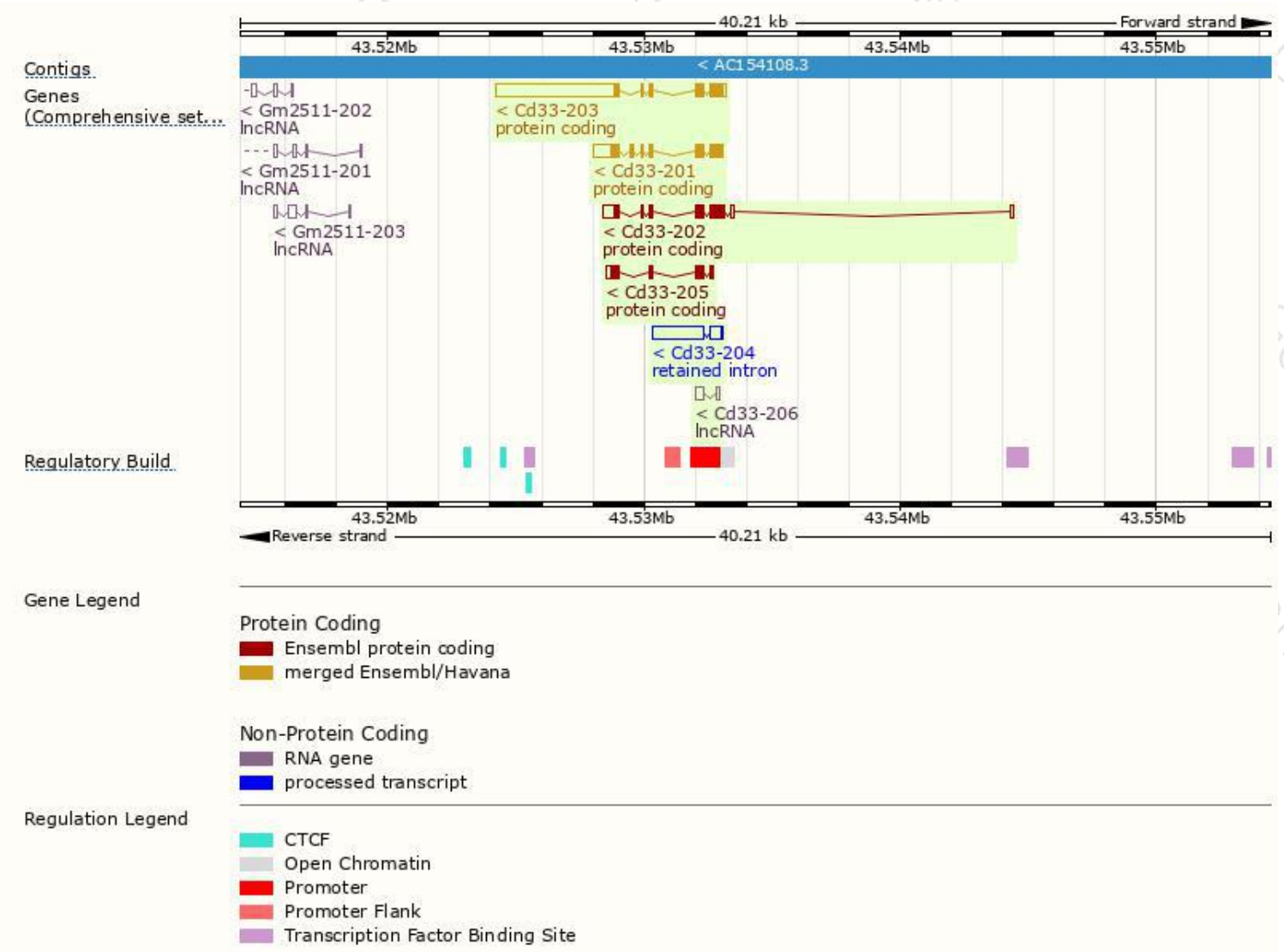
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd33-203	ENSMUST00000205503.1	5728	334aa	Protein coding	CCDS21173	Q63994	TSL:1 GENCODE basic APPRIS P3
Cd33-201	ENSMUST00000004728.11	1962	403aa	Protein coding	CCDS52224	Q63994	TSL:1 GENCODE basic APPRIS ALT2
Cd33-202	ENSMUST00000039861.6	1791	334aa	Protein coding	CCDS21173	Q63994	TSL:1 GENCODE basic APPRIS P3
Cd33-205	ENSMUST00000206371.1	933	240aa	Protein coding	-	A0A0U1RNJ9	CDS 5' incomplete TSL:5
Cd33-204	ENSMUST00000205687.1	2376	No protein	Retained intron	-	-	TSL:1
Cd33-206	ENSMUST00000206977.1	402	No protein	lncRNA	-	-	TSL:2

The strategy is based on the design of *Cd33-203* transcript,The transcription is shown below

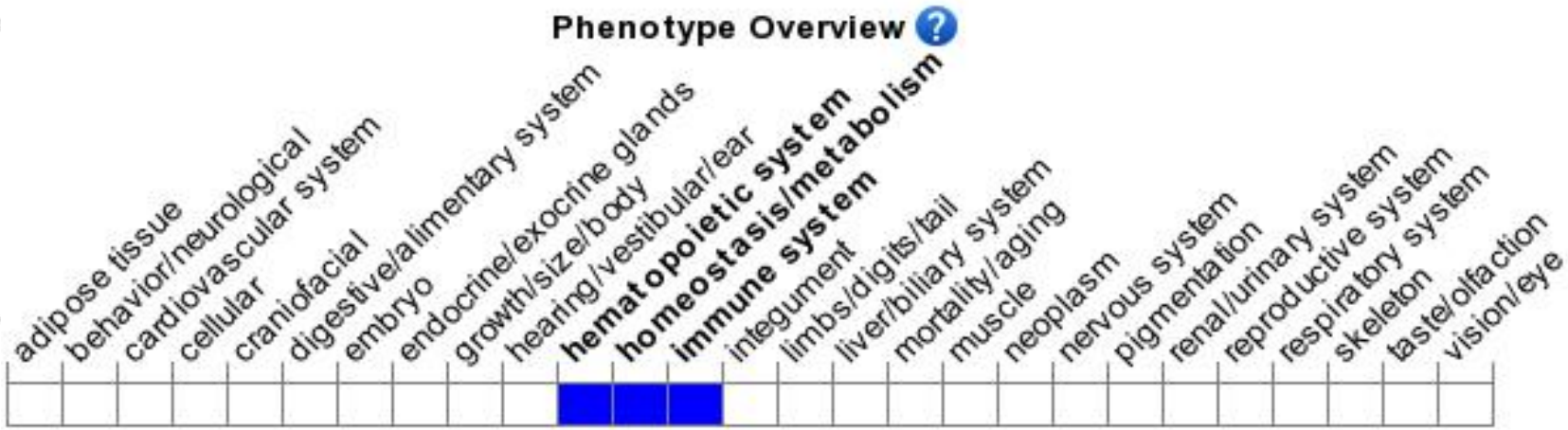


Genomic location distribution



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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