

Rab20 Cas9-KO Strategy

Designer:

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Reviewer

Design Date:

2019-8-19

Project Overview

Project Name

Rab20

Project type

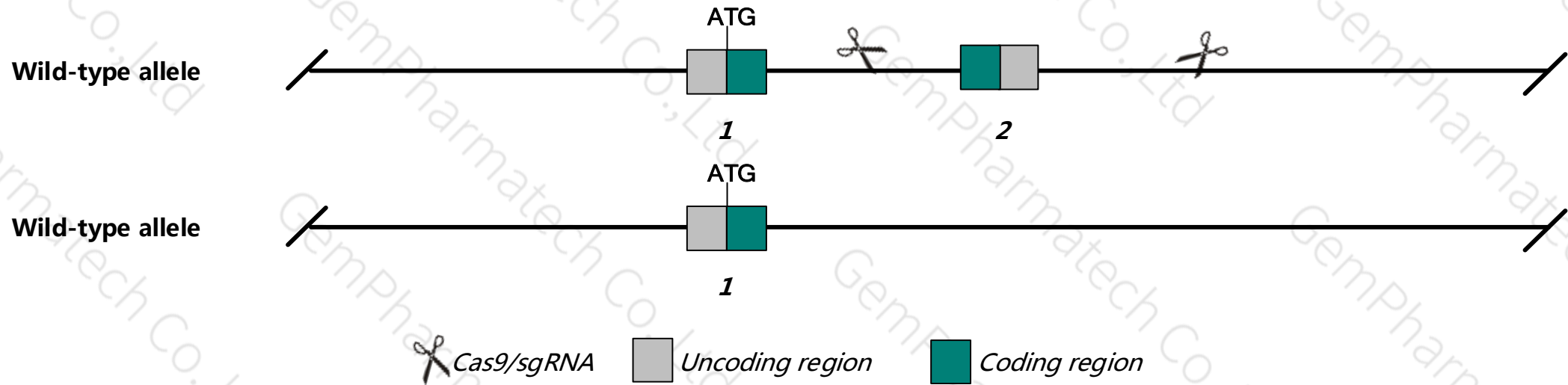
Cas9-KO

Animal background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rab20* gene. The schematic diagram is as follows:



Technical routes

- The *Rab20* gene has 1 transcript, According to the structure of *Rab20* gene, exon2 of *Rab20-201* transcript is recommended as the knockout region. The region contains the most of coding sequence. Knock out the region, result in destruction of protein.
- This project uses CRISPR/Cas9 technology to modify *Rab20* gene. The brief process is as follows: sgRNA was transcribed in vitro, Cas9 and sgRNA were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.

- According to the existing MGI data , Mice homozygous for a knock-out allele fail to develop M. tuberculosis-containing proteolytic spacious phagosomes.
- The *Rab20* gene is located in the Chr8. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Rab20 RAB20, member RAS oncogene family [*Mus musculus* (house mouse)]

Gene ID: 19332, updated on 31-Jan-2019

Summary

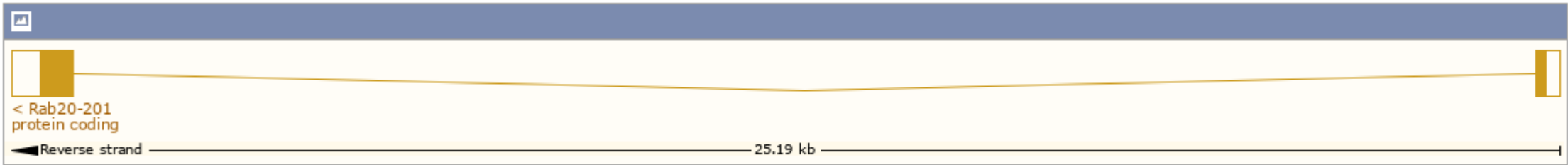
Official Symbol	Rab20 provided by MGI
Official Full Name	RAB20, member RAS oncogene family provided by MGI
Primary source	MGI:MGI:102789
See related	Ensembl:ENSMUSG00000031504
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA536966; D8Ert350e
Expression	Broad expression in kidney adult (RPKM 27.8), ovary adult (RPKM 16.0) and 20 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

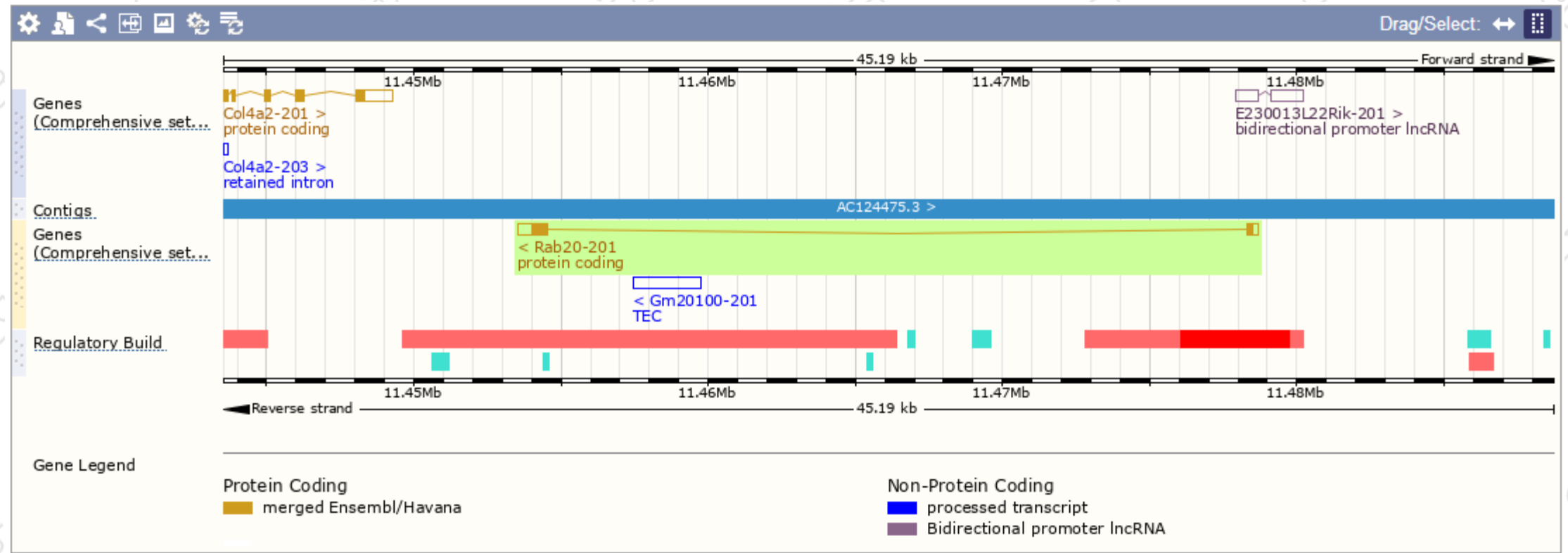
The gene has 1 transcript, and all transcripts are shown below :

Show/hide columns (1 hidden)						Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rab20-201	ENSMUST00000033900.6	1392	233aa	Protein coding	CCDS22095	P35295 Q3TPA7	TSL:1 Gencode basic APPRIS P1

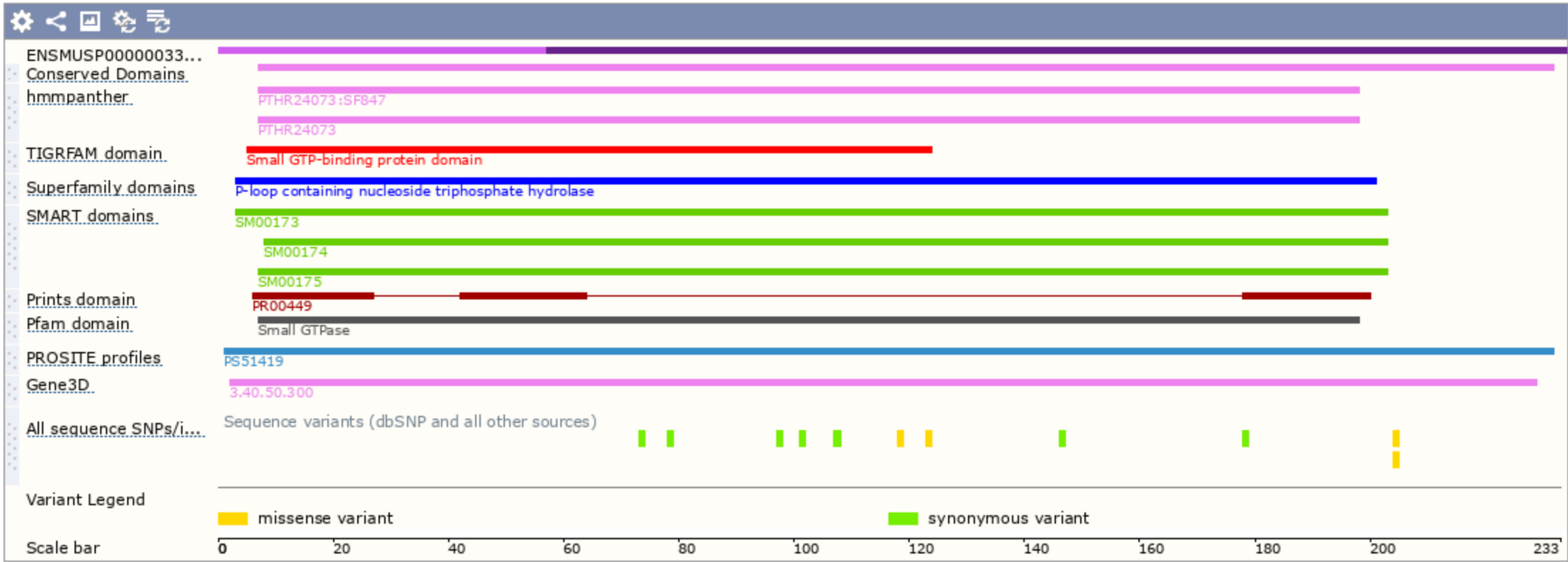
The strategy is based on the design of *Rab20-201* transcript, The transcription is shown below :



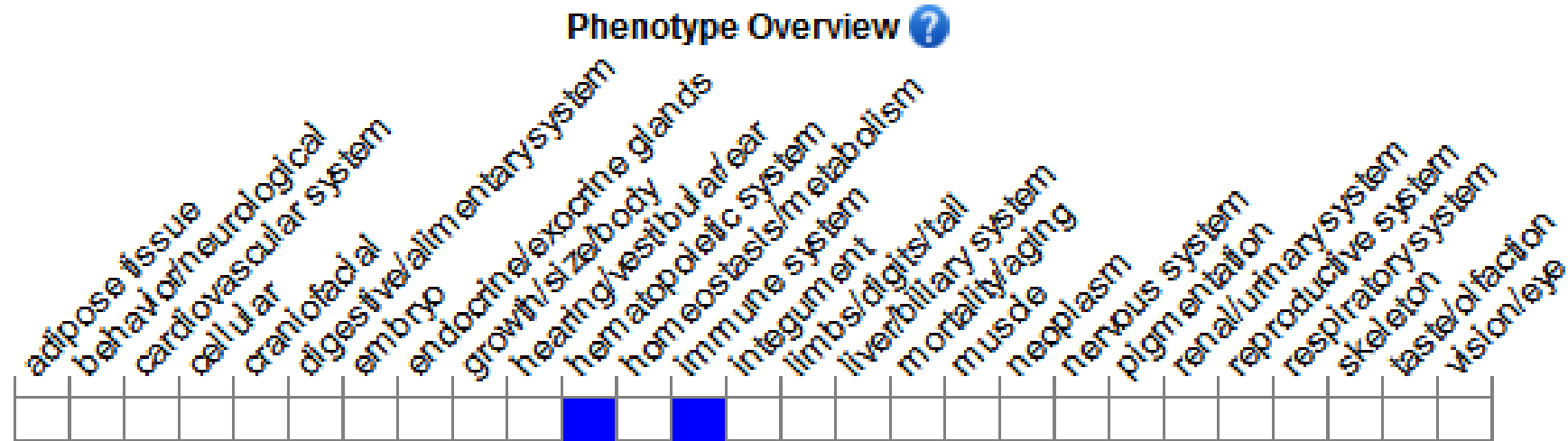
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Click cells to view annotations.

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 fail to develop M. tuberculosis-containing proteolytic spacious phagosomes.

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