Rab20 Cas9-CKO Strategy

Designer: **Daohua Xu**

Reviewer：   **Huimin Su**

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Project Overview

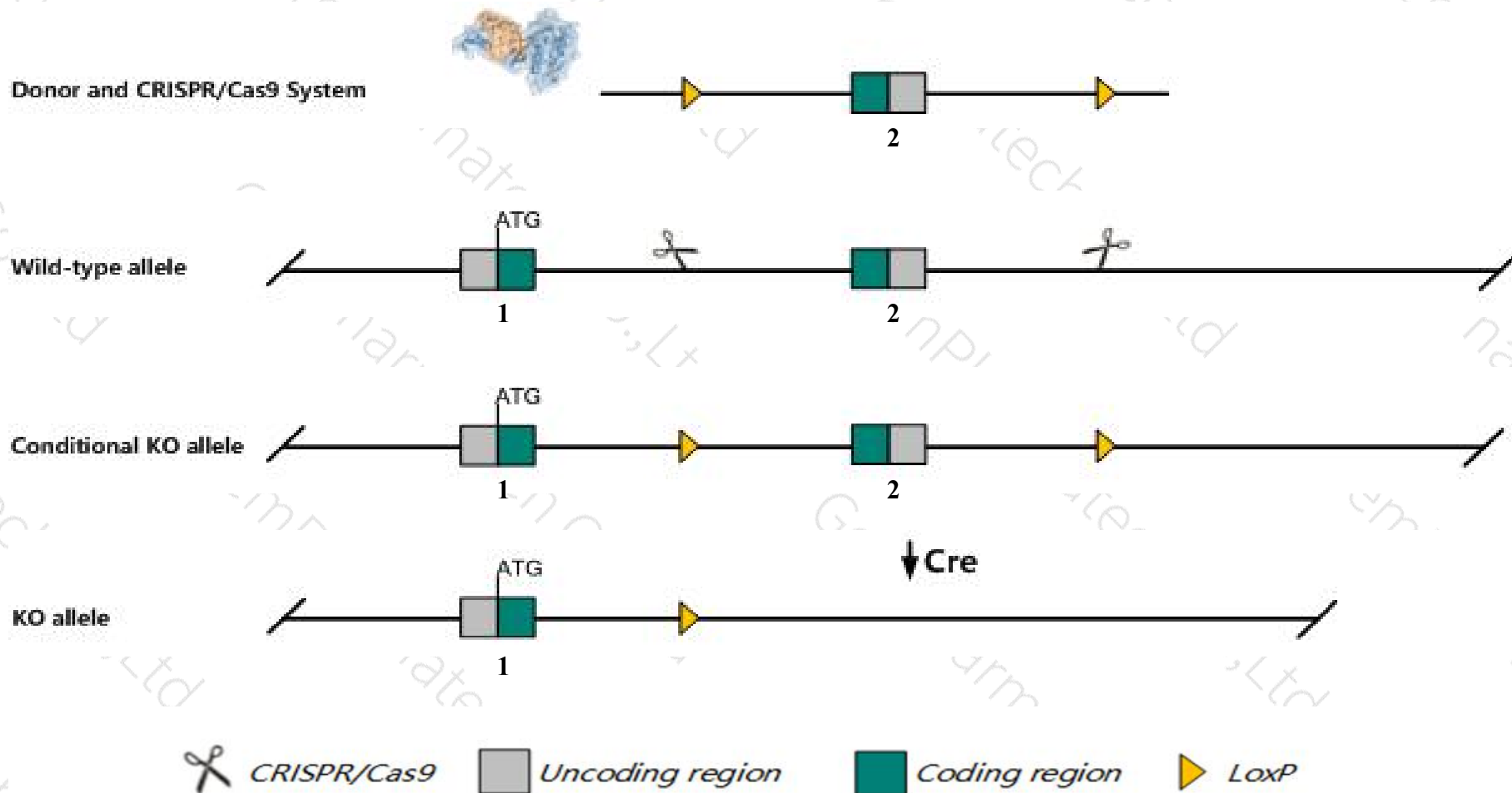|	
Project Name	*Rab20*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional 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* (ENSMUST00000033900.6) transcript is recommended as the knockout region.The region contains Ens 530bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rab20* gene. The brief process is as follows:CRISPR/Cas9 system and Donor 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.

➢ The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

➢ 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 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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

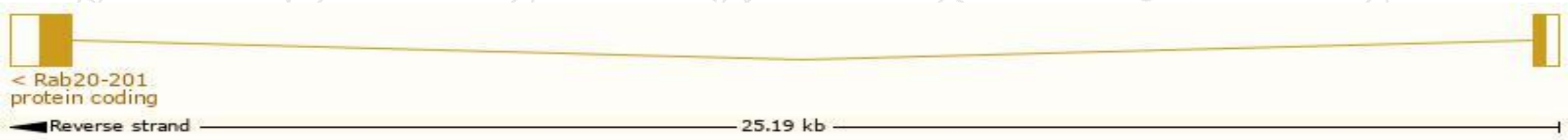Gene ID: 19332, updated on 31-Jan-2019

▲ Summary

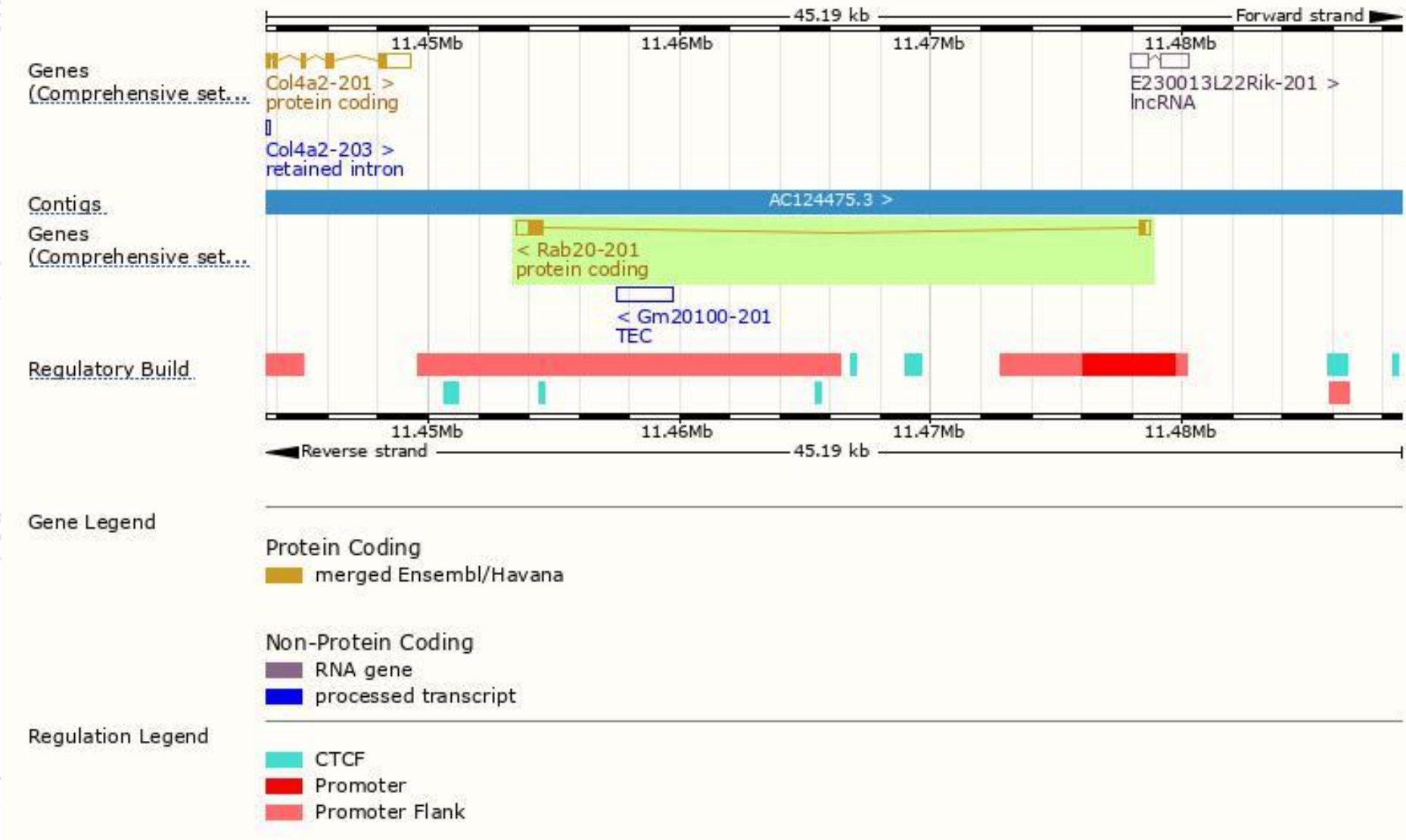|	
Official Symbol	Rab20 provided by MGI
Official Full Name	RAB20, member RAS oncogene family provided by MGI
Primary source	MGI:MGI:102789
See related	Ensembl:ENSMUSG00000031504
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA536966, D8Ertd350e
Expression	Broad expression in kidney adult (RPKM 27.8), ovary adult (RPKM 16.0) and 20 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 1 transcript,and the transcript is shown below:

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
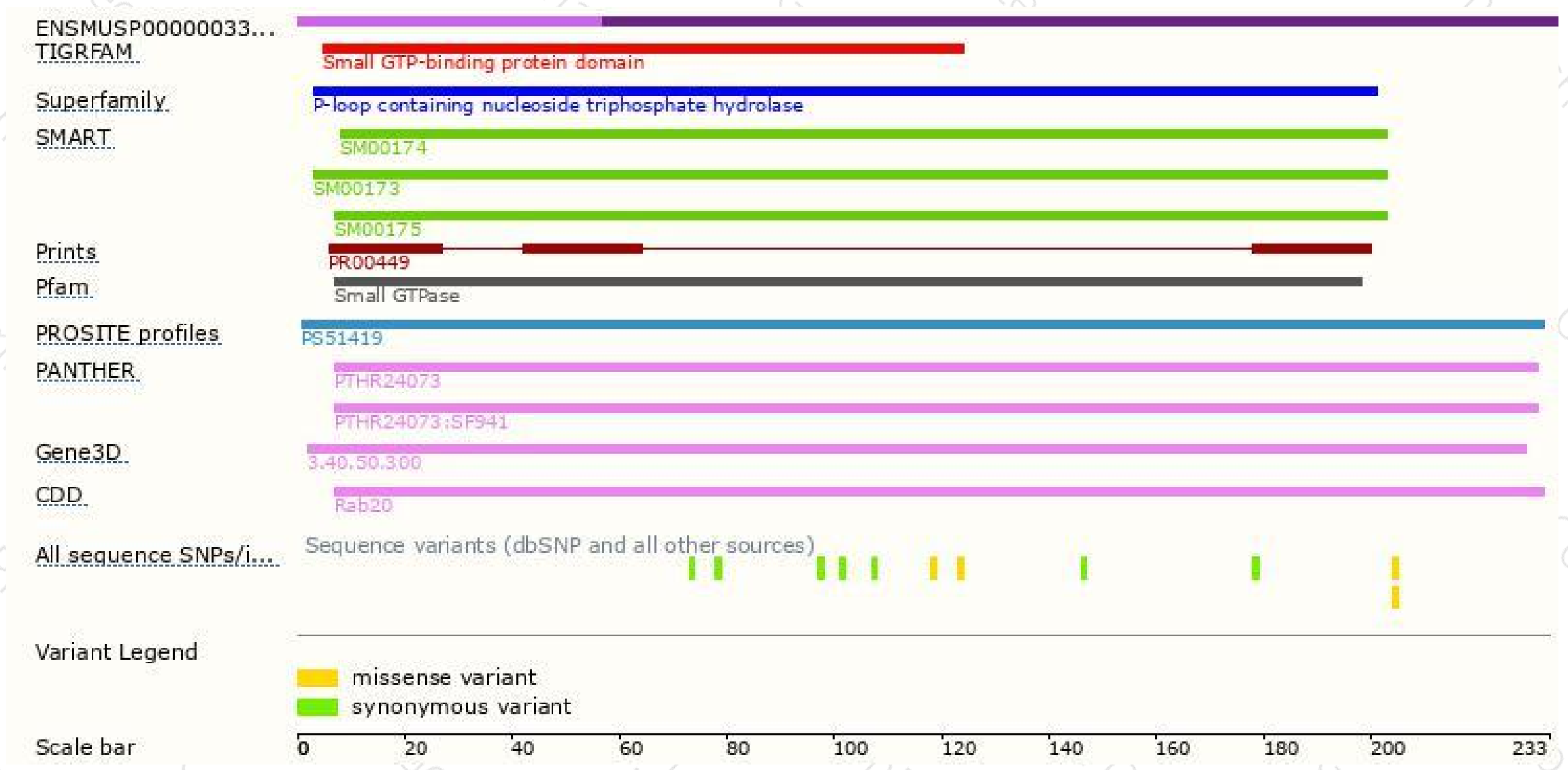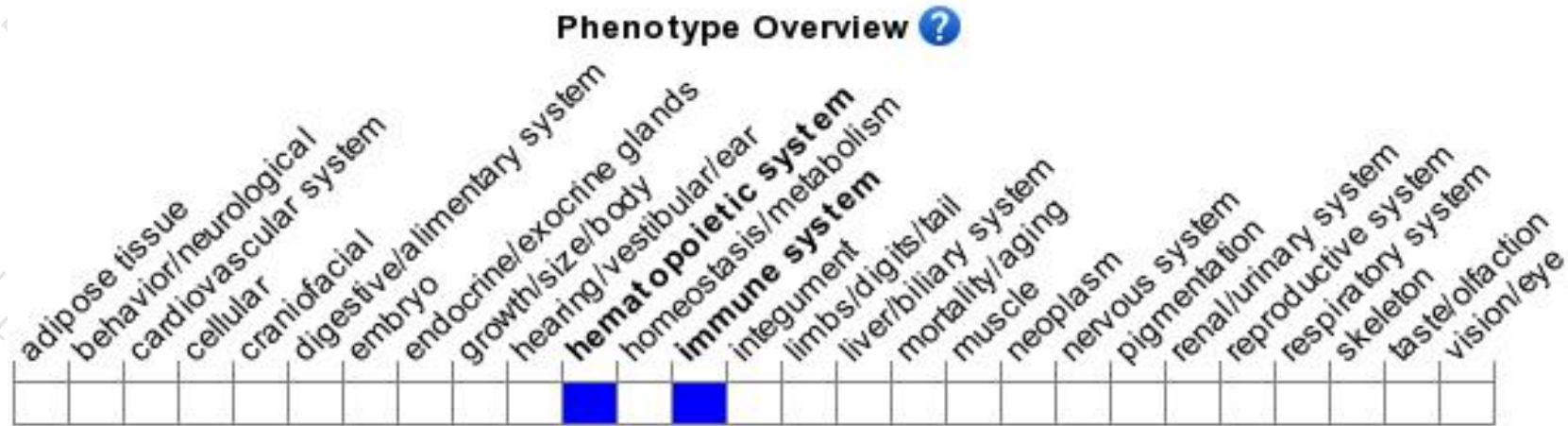

< Rab20-201
protein coding

◄ Reverse strand

25.19 kb

Genomic location distribution

Protein domain

ENSMUSP00000033...	
TIGRFAM	Small GTP-binding protein domain
Superfamily	P-loop containing nucleoside triphosphate hydrolase
SMART	SM00174
	SM00173
	SM00175
Prints	PR00449
Pfam	Small GTPase
PROSITE profiles	PS51419
PANTHER	PTHR24073
	PTHR24073:SF941
Gene3D	3.40.50.300
CDD	Rab20
All sequence SNPs/i...	Sequence variants (dbSNP and all other sources)

Variant Legend

- missense variant
- synonymous variant

Scale bar: 0 20 40 60 80 100 120 140 160 180 200 233

江苏集萃药康生物科技股份有限公司   GemPharmatech Co., Ltd.   400-9660890

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

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd