

Clca1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Clca1

Project type

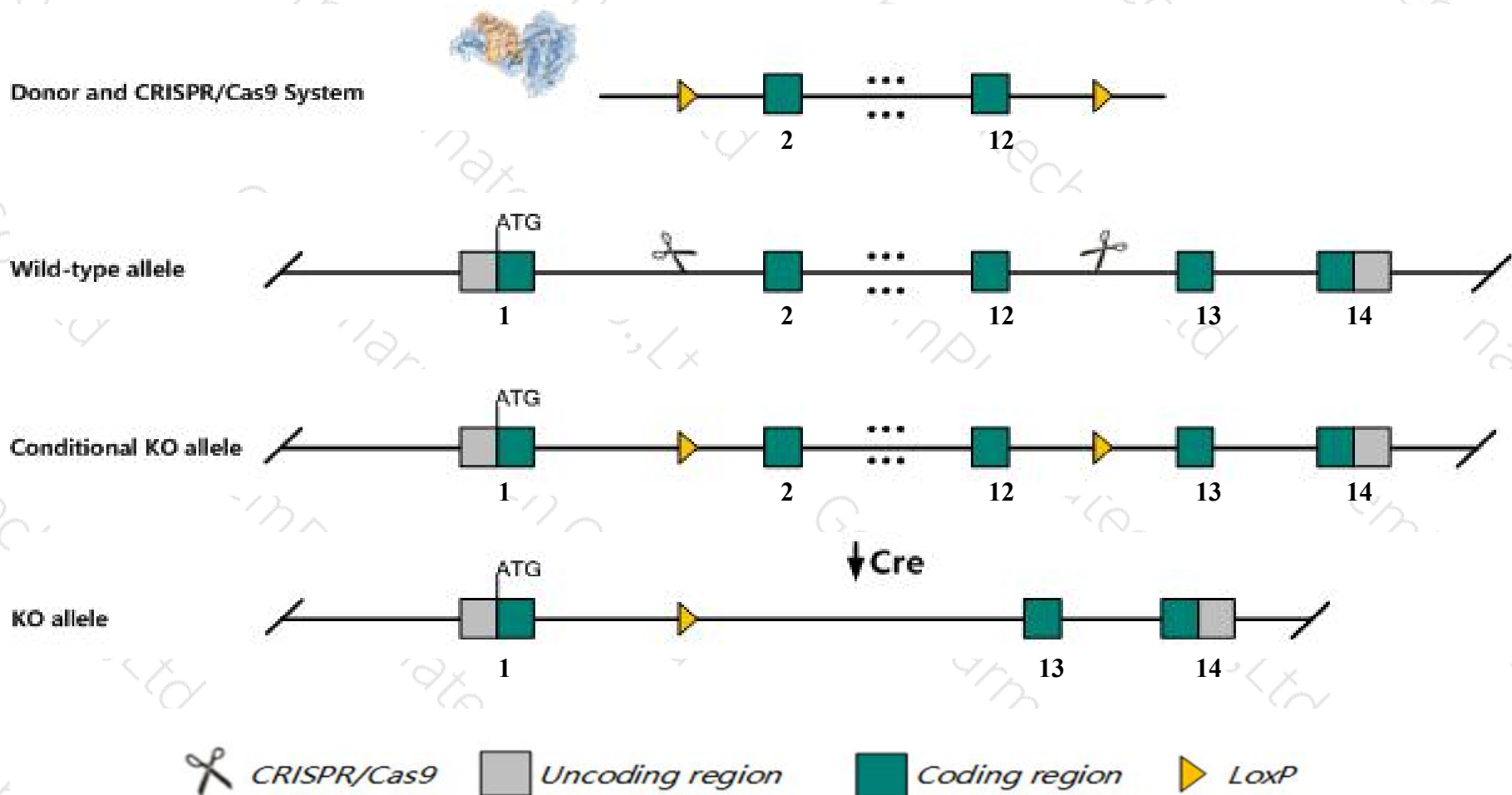
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Clca1* gene. The schematic diagram is as follows:



- The *Clca1* gene has 3 transcripts. According to the structure of *Clca1* gene, exon2-exon12 of *Clca1*-201 (ENSMUST00000029919.6) transcript is recommended as the knockout region. The region contains 1954bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Clca1* 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.

- According to the existing MGI data, Mice homozygous for a null allele exhibit an exacerbated mucin response.
- The *Clca1* gene is located on the Chr3. 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.

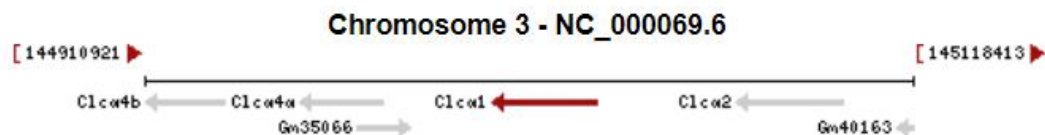
Gene information (NCBI)

Clca1 chloride channel accessory 1 [*Mus musculus* (house mouse)]

Gene ID: 23844, updated on 12-Aug-2019

Summary

Official Symbol	Clca1 provided by MGI
Official Full Name	chloride channel accessory 1 provided by MGI
Primary source	MGI:MGI:1346342
See related	Ensembl:ENSMUSG00000028255
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	gob5; Clca2; Clca3; gob-5
Expression	Biased expression in colon adult (RPKM 313.3), large intestine adult (RPKM 280.7) and 3 other tissues See more
Orthologs	human all

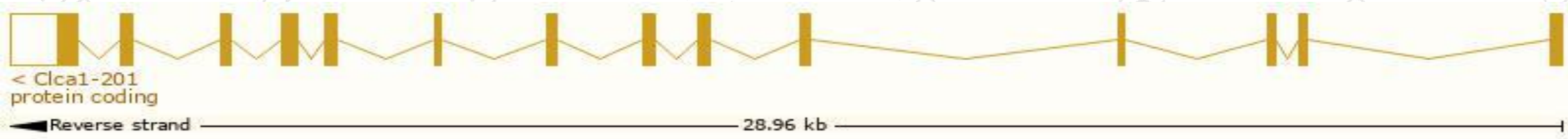


Transcript information (Ensembl)

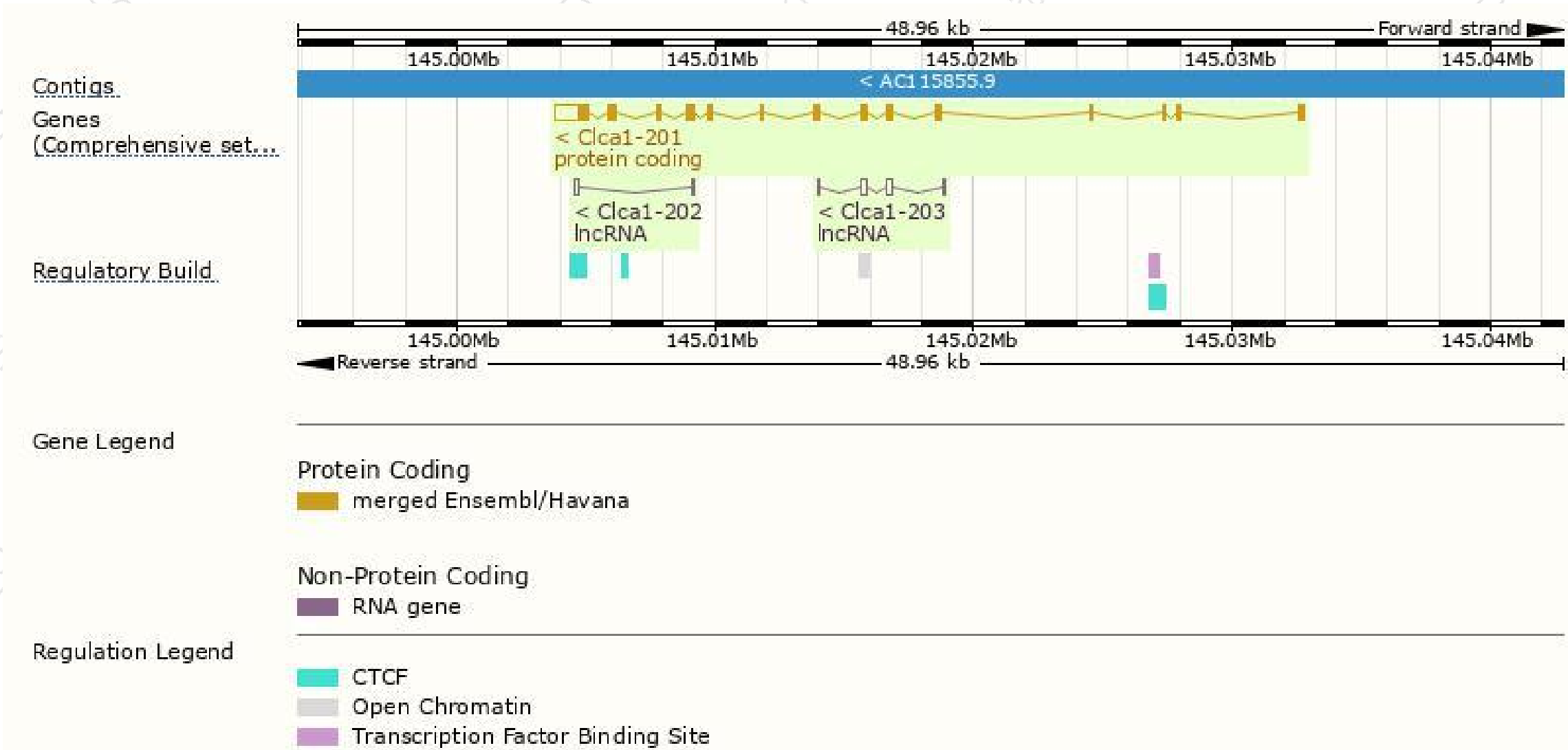
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Clca1-201	ENSMUST00000029919.6	3655	913aa	ENSMUSP00000029919.5	Protein coding	CCDS17889	Q9D7Z6	TSL:1 GENCODE basic APPRIS P1
Clca1-203	ENSMUST00000198832.1	629	No protein	-	lncRNA	-	-	TSL:3
Clca1-202	ENSMUST00000195901.1	261	No protein	-	lncRNA	-	-	TSL:3

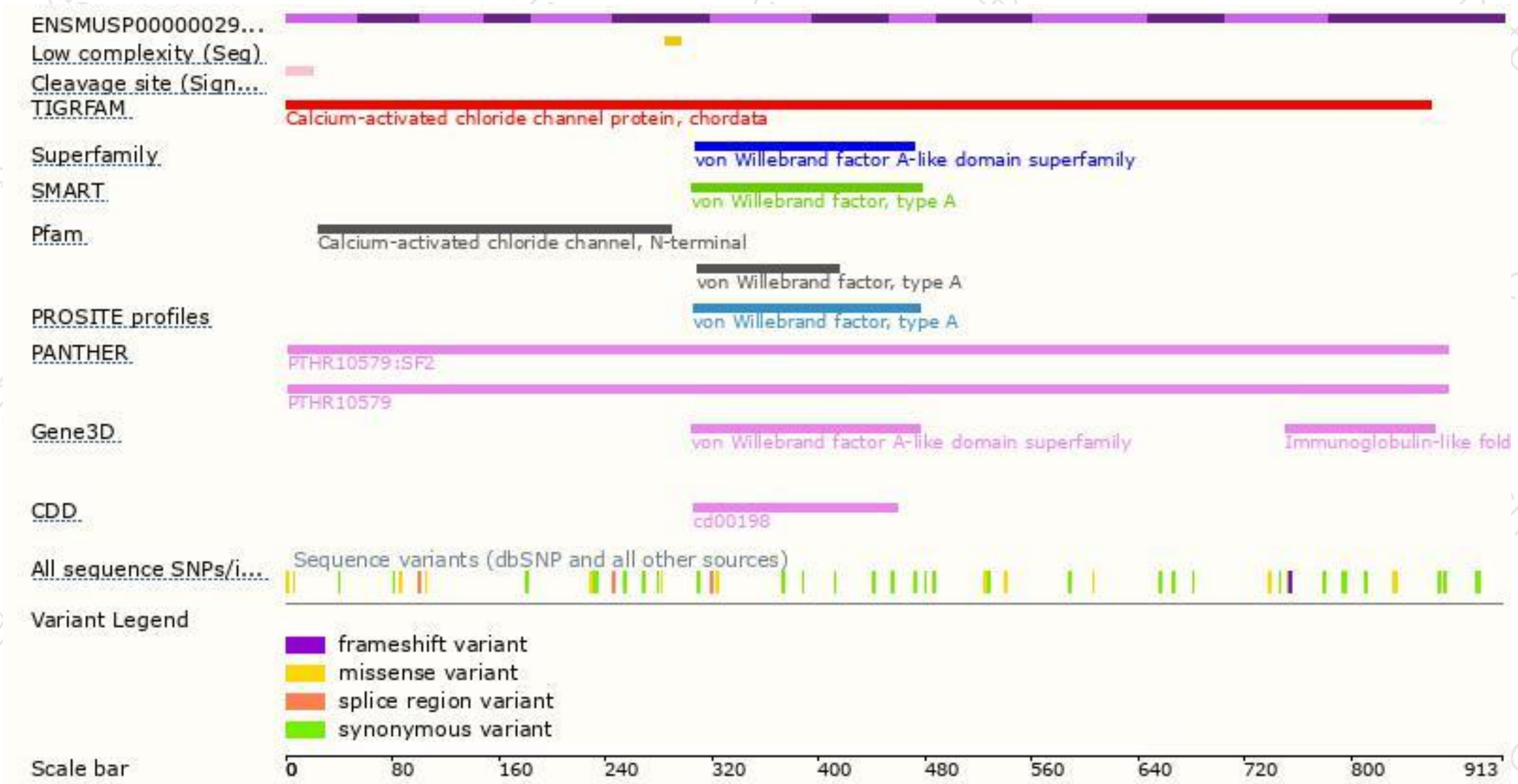
The strategy is based on the design of *Clca1-201* transcript,The transcription is shown below



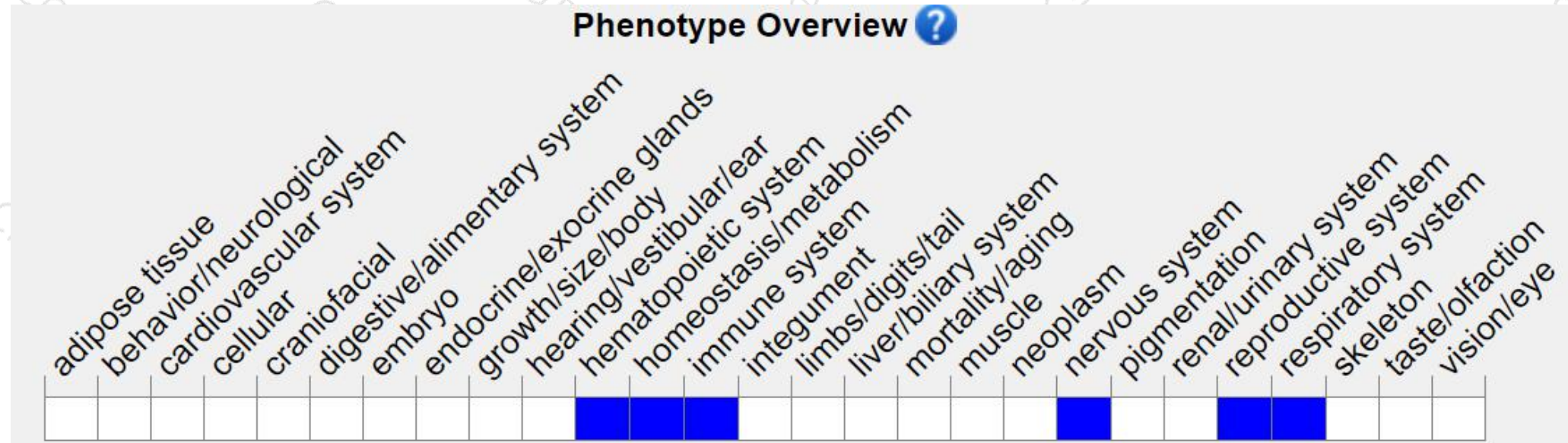
Genomic location distribution



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 null allele exhibit an exacerbated mucin response.

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

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