Rnase10 Cas9-CKO *Strategy*

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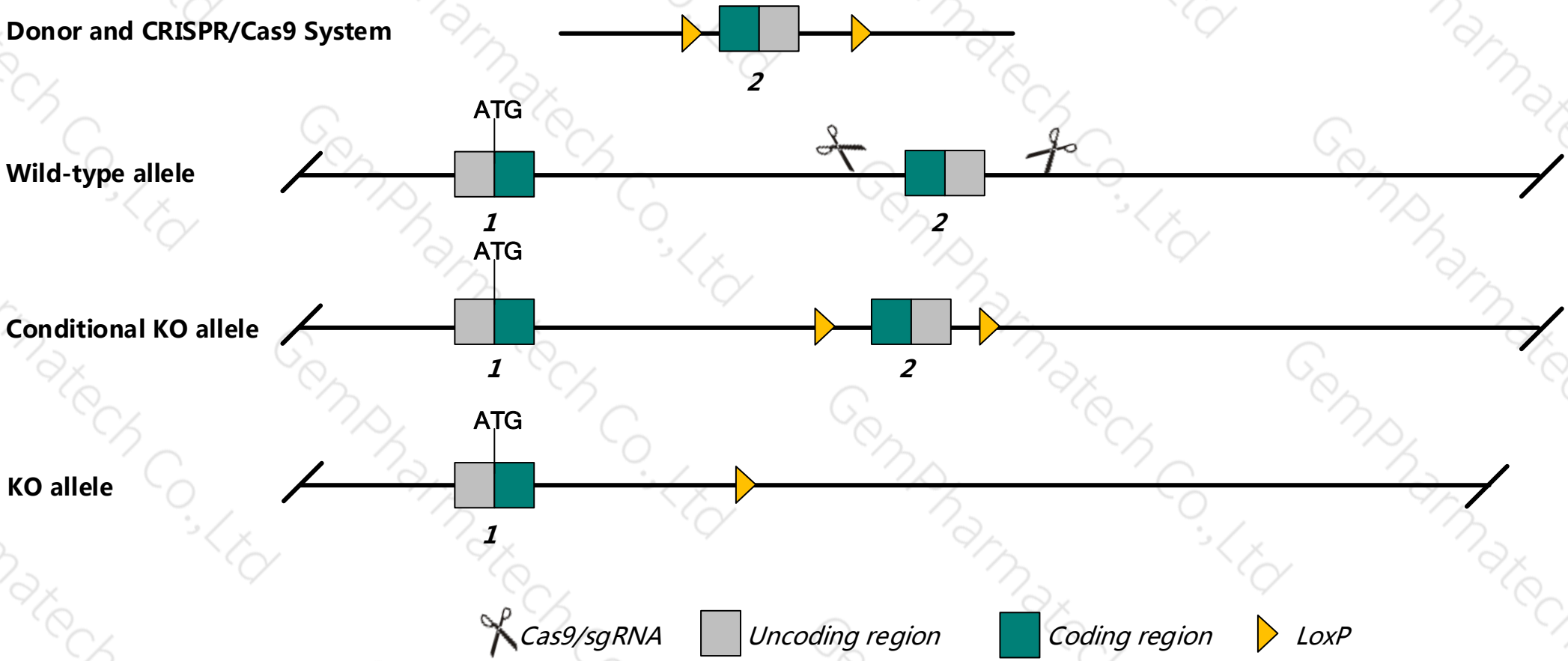
Project Overview

Project Name	*Rnase10*
Project type	Cas9-CKO
Animal background	C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnase10* gene. The schematic diagram is as follows:



Technical routes

- The *Rnase10* gene has 2 transcripts, According to the structure of *Rnase10* gene, exon2 of *Rnase10-201* transcript is recommended as the knockout region.The region contains the most of coding seqence.Knock out the region,result in destruction of protein.

- This project uses CRISPR/Cas9 technology to modify *Rnase10* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed, Cas9, sgRNA and donor 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.

- The flox mice was 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，Homozygous disruption of this gene leads to decreased bone mineral density, alterations in B cell, T cell and NK cell number, and abnormal circulating glucose, creatinine, chloride and serum albumin levels.

- The *Rnase10* gene is located in the Chr14. 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）

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Rnase10 ribonuclease, RNase A family, 10 (non-active) [*Mus musculus* (house mouse)]

Gene ID: 75019, updated on 23-Oct-2018

Summary

Official Symbol	Rnase10 provided by MGI
Official Full Name	ribonuclease, RNase A family, 10 (non-active) provided by MGI
Primary source	MGI:MGI:1922269
See related	Ensembl:ENSMUSG00000021872
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	Rah1; 4930474F22Rik
Expression	Restricted expression toward genital fat pad adult (RPKM 393.6) See more
Orthologs	human all

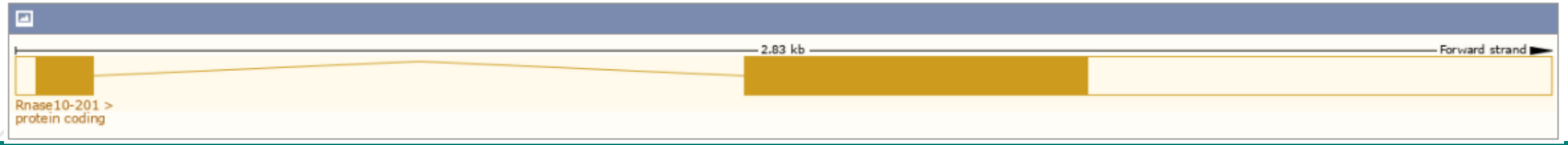
Transcript information （Ensembl）

The gene has 2 transcripts, and all transcripts are shown below ：

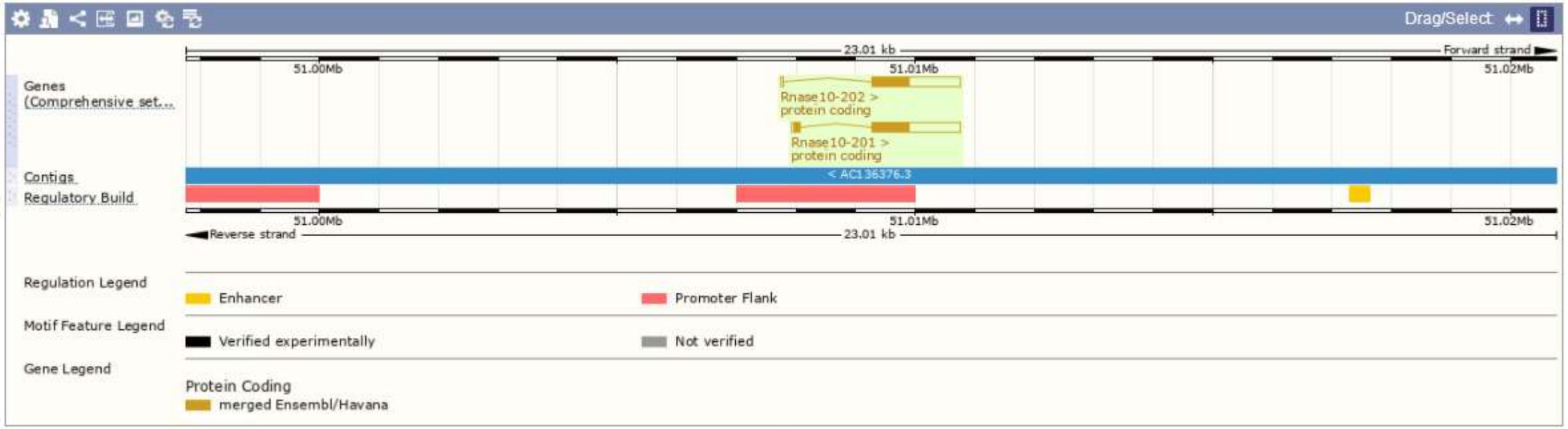
Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Rnase10-201	ENSMUST00000022424.7	1629	245aa	Protein coding	CCDS27030	E9QPU5	NM_029145 NP_083421	TSL:1 GENCODE basic APPRIS P3
Rnase10-202	ENSMUST00000164632.1	1521	208aa	Protein coding	CCDS49480	G3UWD1	NM_001162863 NP_001156335	TSL:1 GENCODE basic APPRIS ALT2

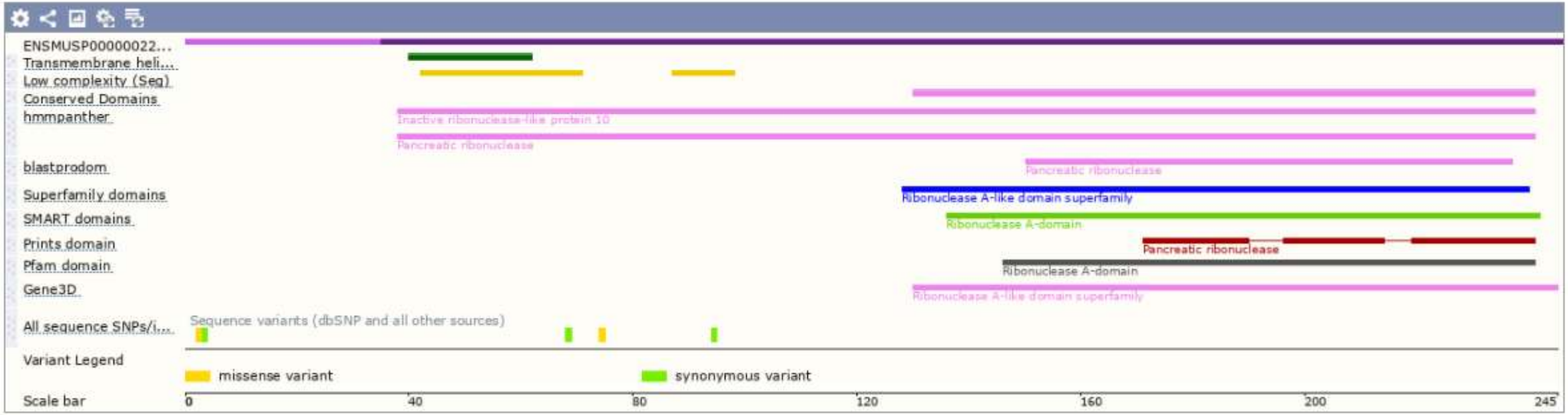
The strategy is based on the design of *Rnase10-201* transcript,The transcription is shown below：



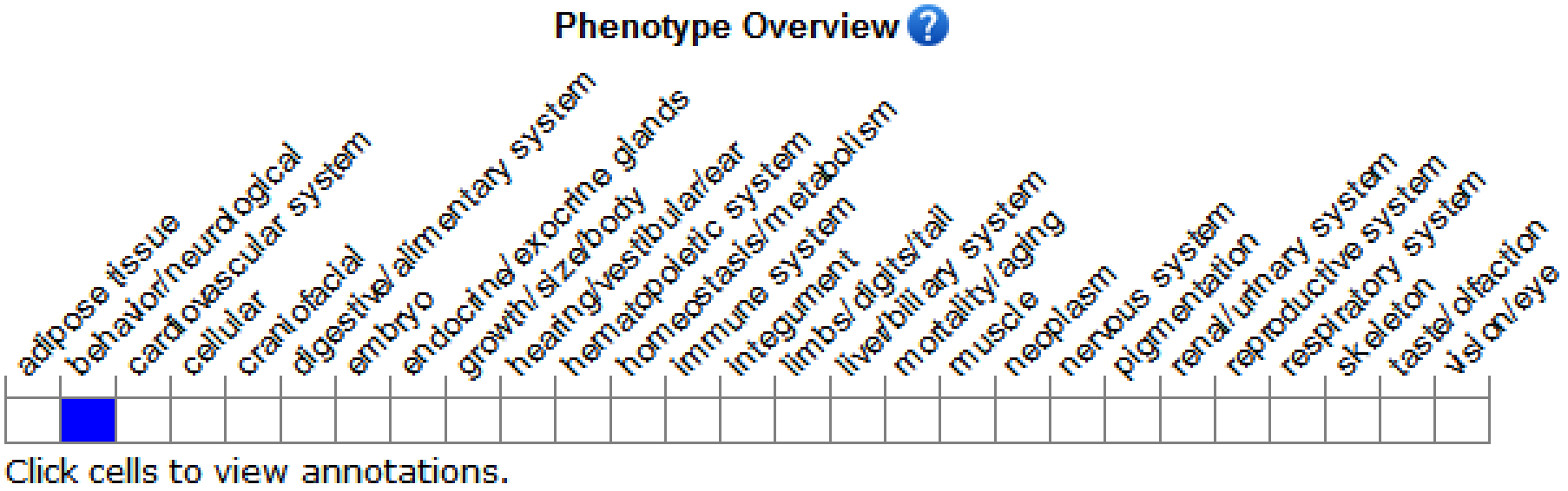
Genomic location distribution



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/) .

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