Micu1 Cas9-CKO *Strategy*

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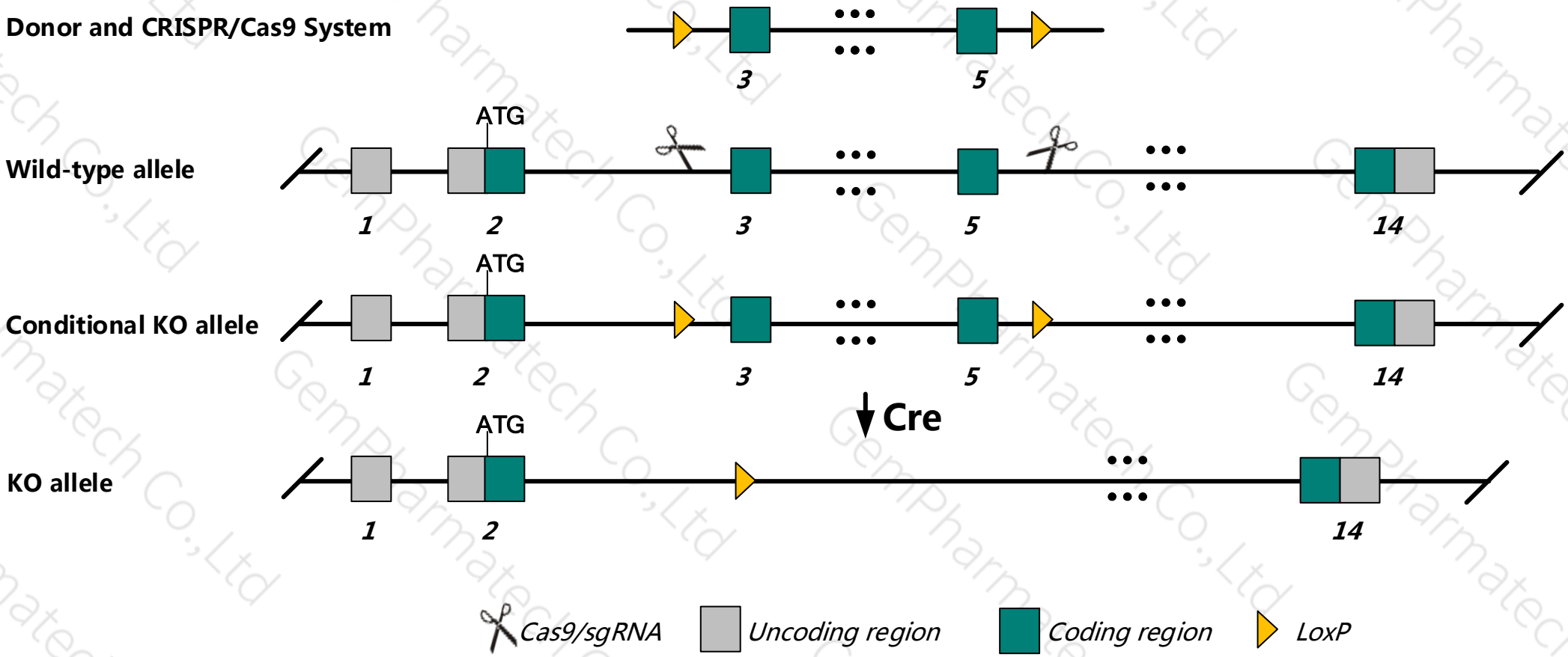
Project Overview

Project Name	*Micu1*
Project type	Cas9-CKO
Animal background	C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Micu1* gene. The schematic diagram is as follows:



Technical routes

- The *Micu1* gene has 12 transcripts, According to the structure of *Micu1* gene, exon3-exon5 of *Micu1-201* transcript is recommended as the knockout region.The region contains the 382bp coding seqence.Knock out the region,result in destruction of protein.

- This project uses CRISPR/Cas9 technology to modify *Micu1* 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

- The *Micu1* gene is located in the Chr10. 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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Micu1 mitochondrial calcium uptake 1 [*Mus musculus* (house mouse)]

Gene ID: 216001, updated on 7-May-2019

Summary

Official Symbol	Micu1 provided by MGI
Official Full Name	mitochondrial calcium uptake 1 provided by MGI
Primary source	MGI:MGI:2384909
See related	Ensembl:ENSMUSG00000020111
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	Calc; Cbara1; C730016L05Rik
Expression	Ubiquitous expression in large intestine adult (RPKM 46.0), duodenum adult (RPKM 43.8) and 28 other tissues See more
Orthologs	human all

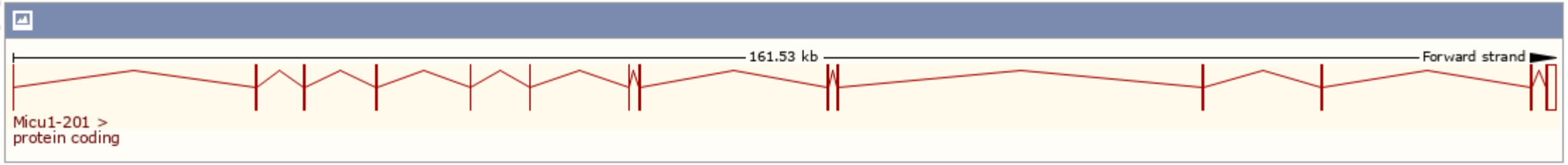
Transcript information （Ensembl）

The gene has 12 transcripts, and all transcripts are shown below ：

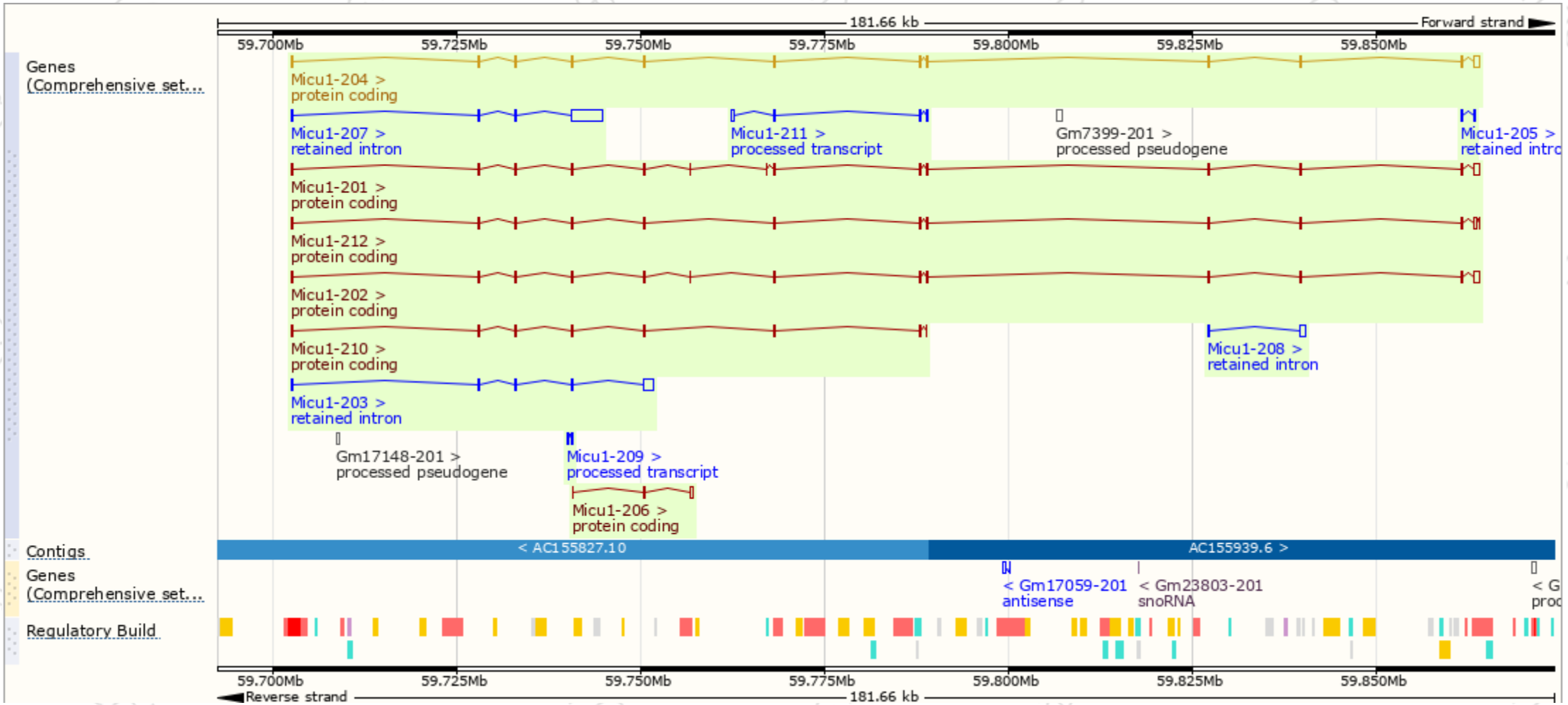
Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Micu1-204	ENSMUST00000165563.7	2442	477aa	Protein coding	CCDS35909	Q8VCX5	TSL:1 GENCODE basic APPRIS P3
Micu1-201	ENSMUST00000020311.12	2336	483aa	Protein coding	CCDS78817	Q8VCX5	TSL:5 GENCODE basic APPRIS ALT1
Micu1-202	ENSMUST00000092508.11	2294	481aa	Protein coding	CCDS78818	Q8VCX5	TSL:1 GENCODE basic APPRIS ALT1
Micu1-212	ENSMUST00000179709.7	1814	477aa	Protein coding	CCDS35909	Q8VCX5	TSL:1 GENCODE basic APPRIS P3
Micu1-210	ENSMUST00000171409.7	806	234aa	Protein coding	-	E9Q9E0	CDS 3' incomplete TSL:3
Micu1-206	ENSMUST00000167612.1	562	78aa	Protein coding	-	F6Z1Z9	CDS 5' incomplete TSL:3
Micu1-211	ENSMUST00000172034.1	600	No protein	Processed transcript	-	-	TSL:3
Micu1-209	ENSMUST00000170952.1	311	No protein	Processed transcript	-	-	TSL:3
Micu1-207	ENSMUST00000167872.7	4699	No protein	Retained intron	-	-	TSL:2
Micu1-203	ENSMUST00000165405.1	1732	No protein	Retained intron	-	-	TSL:1
Micu1-208	ENSMUST00000169842.1	799	No protein	Retained intron	-	-	TSL:1
Micu1-205	ENSMUST00000166565.1	360	No protein	Retained intron	-	-	TSL:1

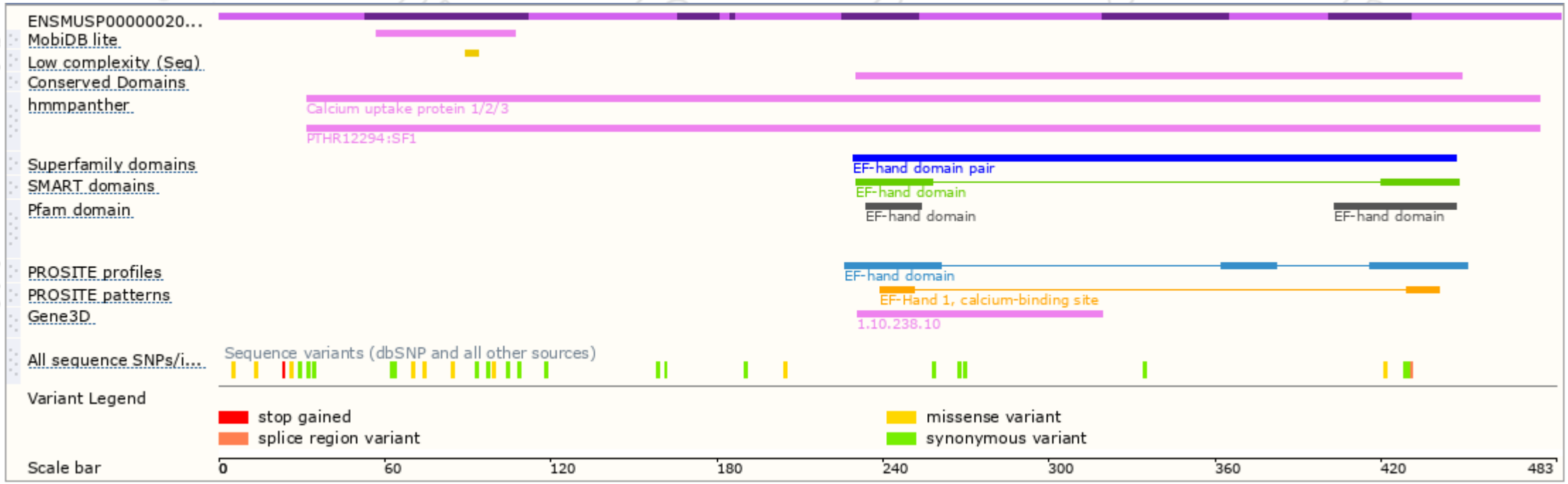
The strategy is based on the design of *Micu1-201* transcript,The transcription is shown below：



Genomic location distribution



Protein domain



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

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