Slc8a1 Cas9-KO Strategy

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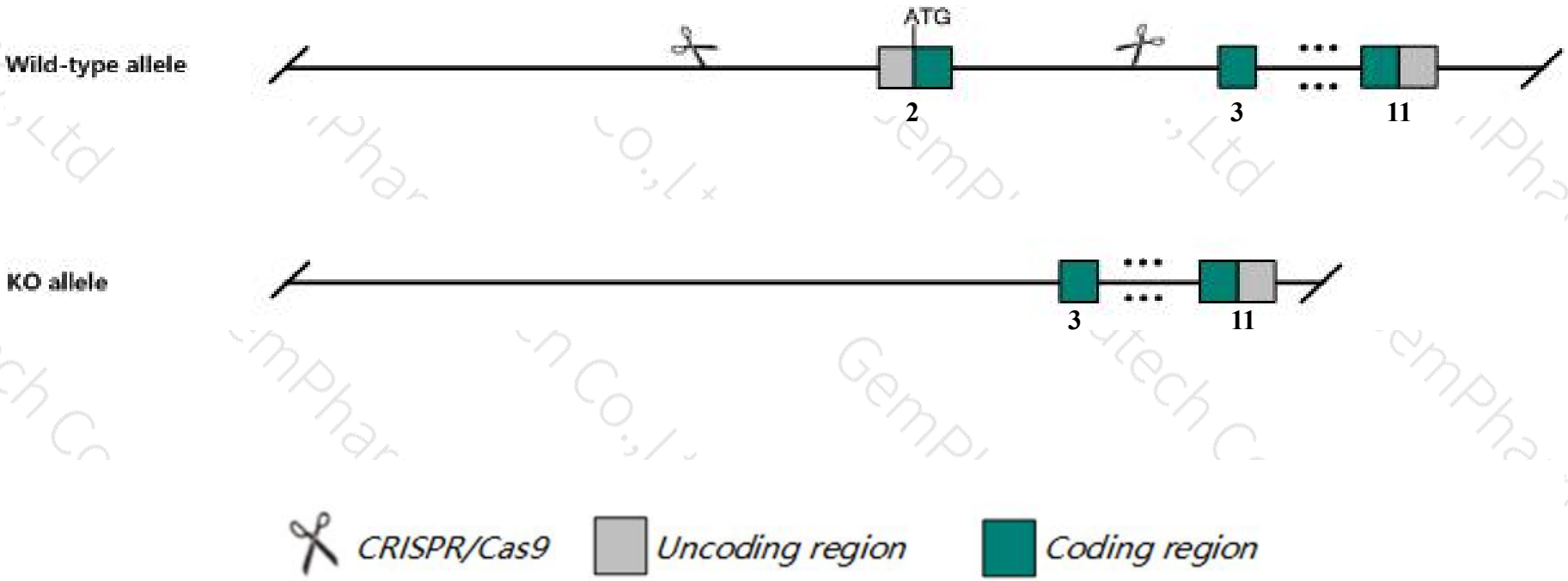
Project Overview

Project Name	***Slc8a1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc8a1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc8a1* gene has 6 transcripts. According to the structure of *Slc8a1* gene, exon2 of *Slc8a1-202* (ENSMUST00000163123.2) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc8a1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Homozygotes for targeted null mutations have underdeveloped, nonbeating hearts with massive apoptosis of myocytes, a dilated pericardium and die around embryonic day 9.5. Heterozygotes exhibit altered responses to experimental cardiac pressure overload.

➢ The *Slc8a1* gene is located on the Chr17. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Slc8a1 solute carrier family 8 (sodium/calcium exchanger), member 1 [Mus musculus (house mouse)]

Gene ID: 20541, updated on 10-Feb-2019

Summary

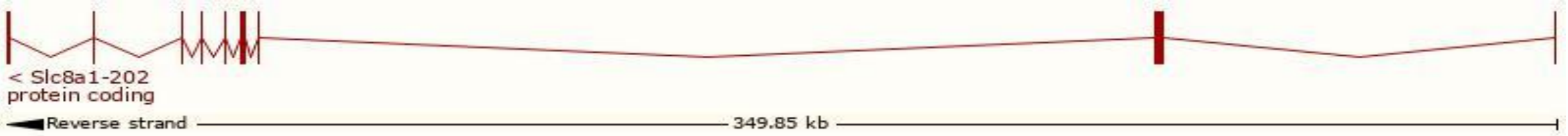
Official Symbol	Slc8a1 provided by MGI
Official Full Name	solute carrier family 8 (sodium/calcium exchanger), member 1 provided by MGI
Primary source	MGI:MGI:107956
See related	Ensembl:ENSMUSG00000054640
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI852629, AV344025, D930008O12Rik, Ncx1
Expression	Broad expression in heart adult (RPKM 10.8), frontal lobe adult (RPKM 7.0) and 16 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

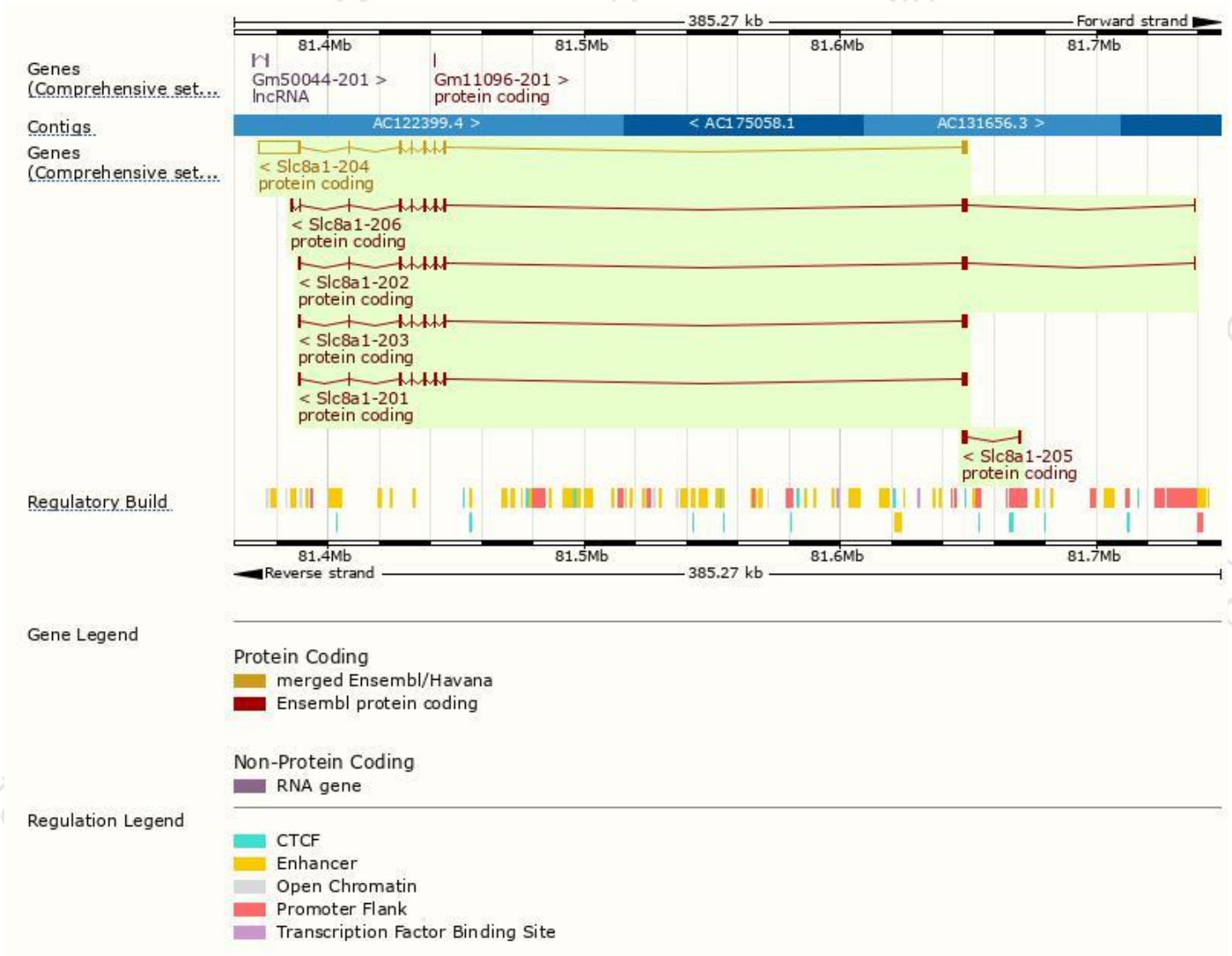
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc8a1-204	ENSMUST00000234131.1	18464	958aa	Protein coding	CCDS50191	-	GENCODE basic APPRIS ALT2
Slc8a1-202	ENSMUST00000163123.2	3180	970aa	Protein coding	CCDS37706	Q68FL0	TSL:1 GENCODE basic APPRIS P3
Slc8a1-201	ENSMUST00000086538.9	2913	970aa	Protein coding	CCDS37706	G3X9J1	TSL:5 GENCODE basic APPRIS P3
Slc8a1-206	ENSMUST00000235015.1	3339	940aa	Protein coding	-	-	GENCODE basic
Slc8a1-203	ENSMUST00000163680.8	2913	970aa	Protein coding	-	G5E8Y0	TSL:5 GENCODE basic APPRIS ALT1
Slc8a1-205	ENSMUST00000234923.1	2017	599aa	Protein coding	-	-	CDS 3' incomplete

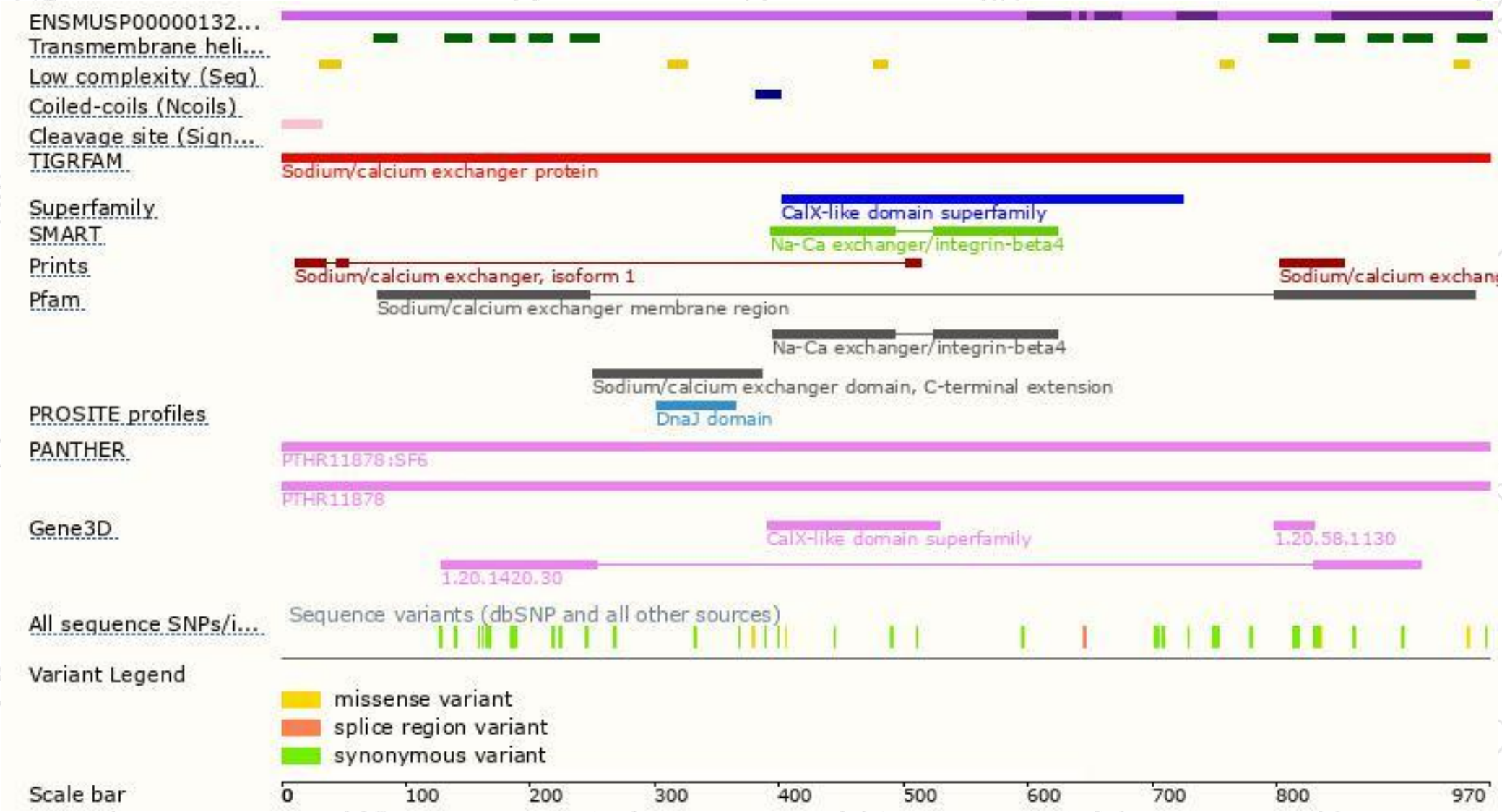
The strategy is based on the design of *Slc8a1-202* transcript,The transcription is shown below



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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