

Canx Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Canx

Project type

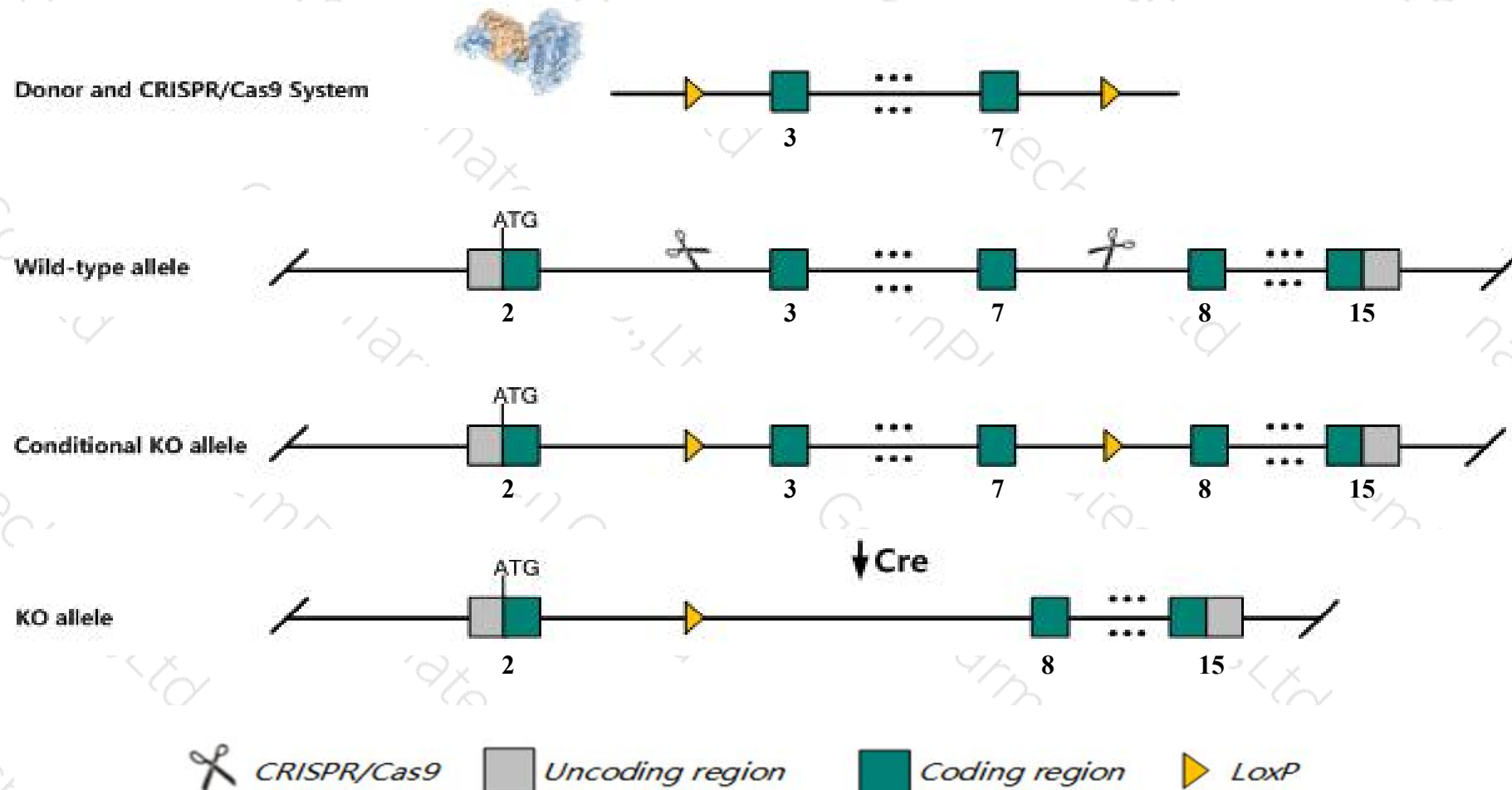
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Canx* gene has 5 transcripts. According to the structure of *Canx* gene, exon3-exon7 of *Canx*-205 (ENSMUST00000179865.7) transcript is recommended as the knockout region. The region contains 550bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Canx* 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, Homozygotes for a targeted null mutation exhibit motor defects, loss of large myelinated nerve fibers, small size, and very high mortality between birth and 4 weeks of age.
- Transcript *Canx-202/203/204* lncRNA may not be affected.
- The *Canx* gene is located on the Chr11. 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.

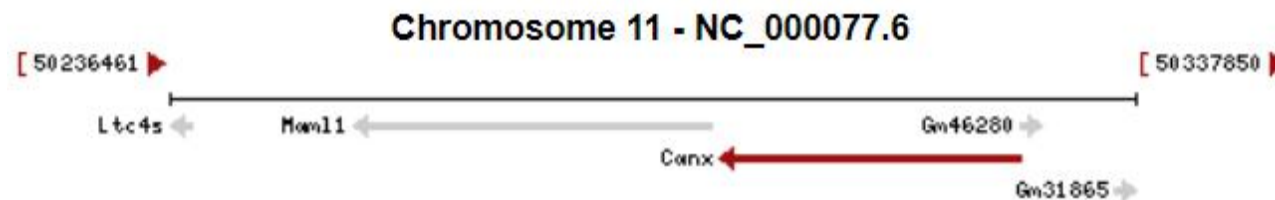
Gene information (NCBI)

Canx calnexin [*Mus musculus* (house mouse)]

Gene ID: 12330, updated on 12-Aug-2019

Summary

Official Symbol	Canx provided by MGI
Official Full Name	calnexin provided by MGI
Primary source	MGI:MGI:88261
See related	Ensembl:ENSMUSG00000020368
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	Cnx; AI988026; D11Etd153e; 1110069N15Rik
Expression	Ubiquitous expression in placenta adult (RPKM 118.8), CNS E11.5 (RPKM 79.3) and 26 other tissues See more
Orthologs	human all

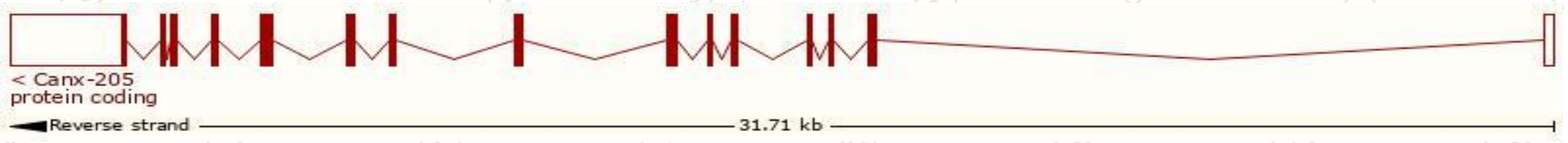


Transcript information (Ensembl)

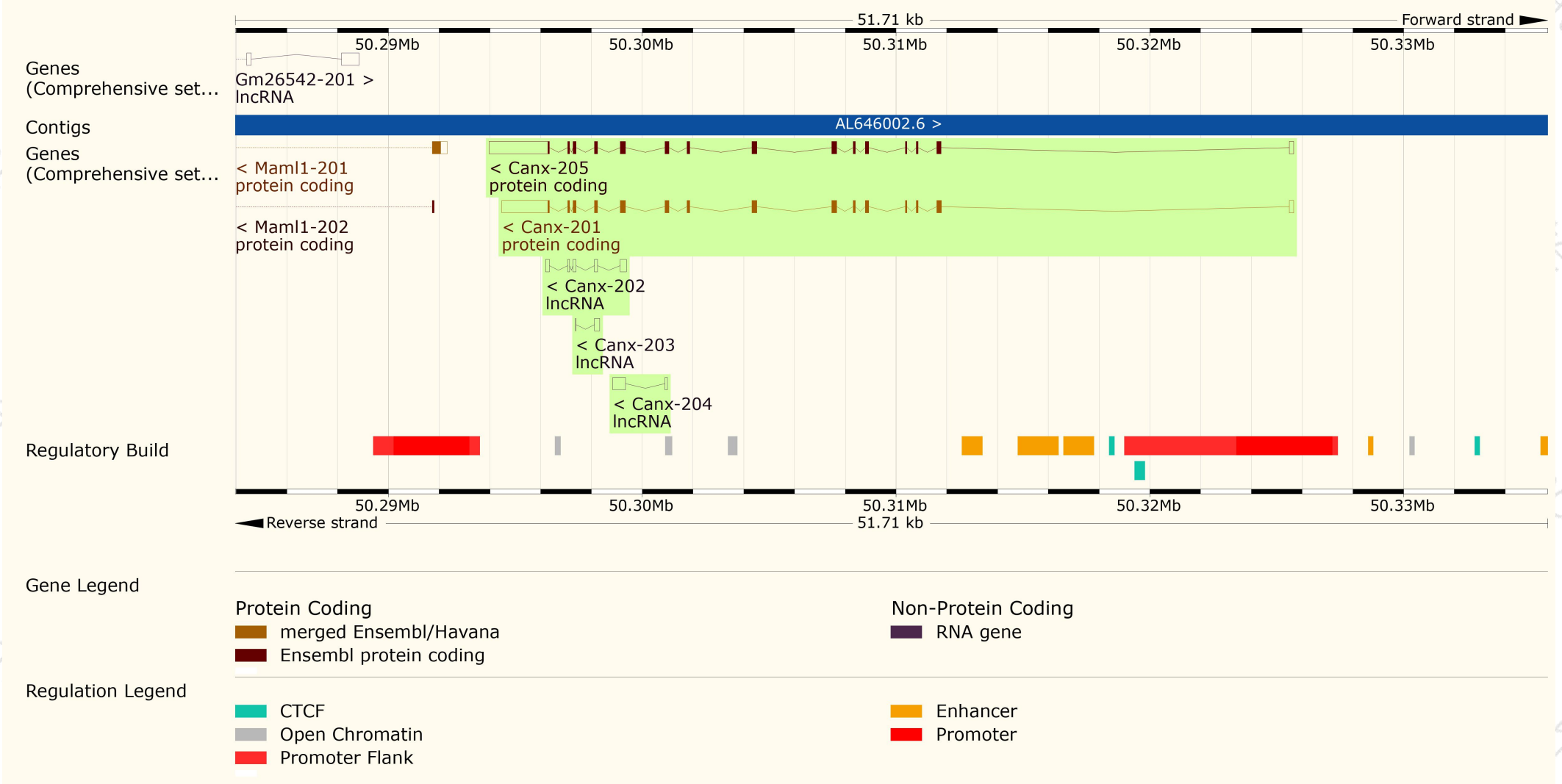
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Canx-205	ENSMUST00000179865.7	4281	591aa	ENSMUSP000000137440.1	Protein coding	CCDS24633	P35564 Q5SUC3	TSL:1 GENCODE basic APPRIS P1
Canx-201	ENSMUST00000020637.8	3779	591aa	ENSMUSP00000020637.8	Protein coding	CCDS24633	P35564 Q5SUC3	TSL:1 GENCODE basic APPRIS P1
Canx-202	ENSMUST00000146979.1	708	No protein	-	lncRNA	-	-	TSL:2
Canx-204	ENSMUST00000155801.1	600	No protein	-	lncRNA	-	-	TSL:3
Canx-203	ENSMUST00000153068.1	234	No protein	-	lncRNA	-	-	TSL:5

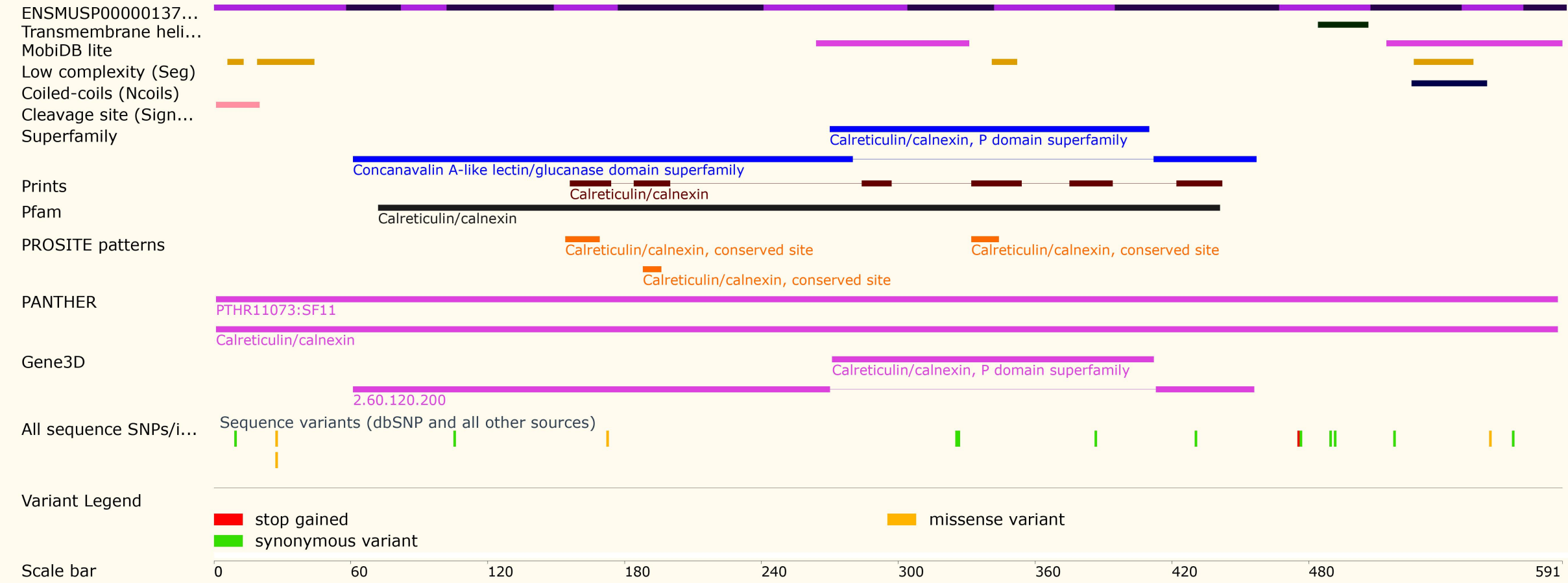
The strategy is based on the design of *Canx-205* transcript,The transcription is shown below



Genomic location distribution

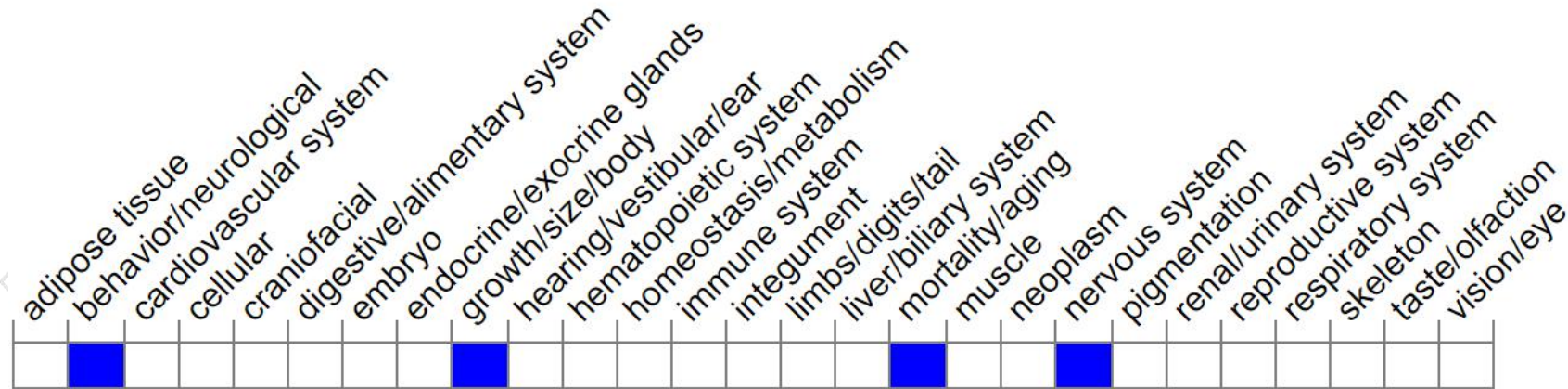


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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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