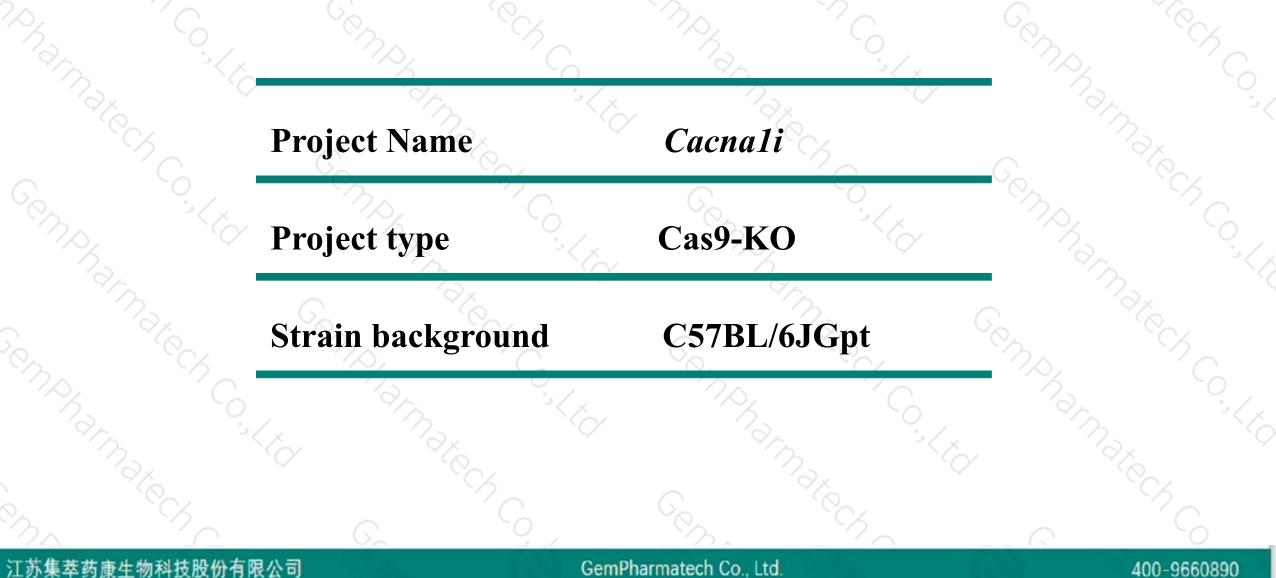


# Cacnali Cas9-KO Strategy

Designer: Reviewer: Design Date: JiaYu Xiaojing Li 2020-2-12

## **Project Overview**



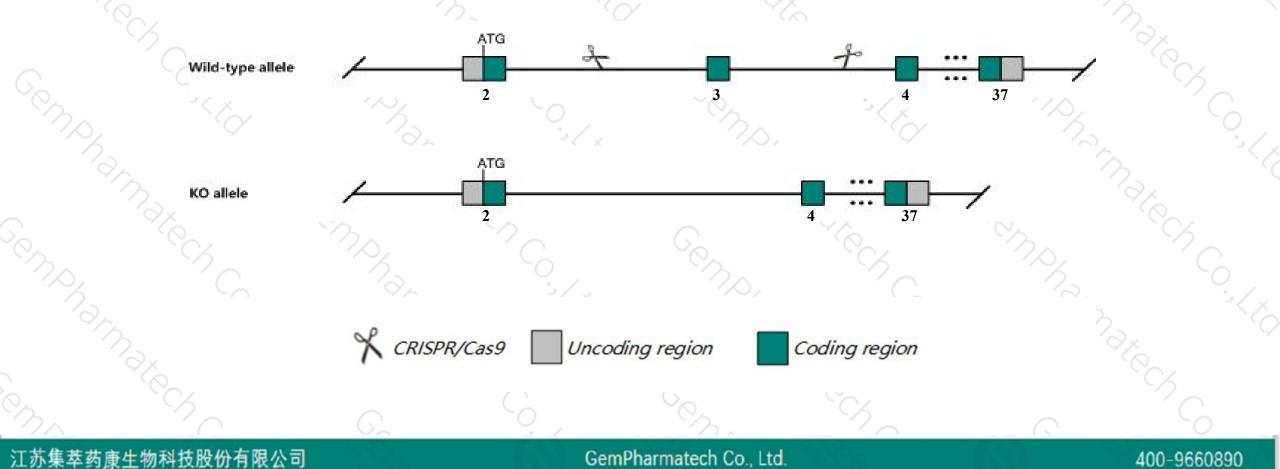


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## **Knockout strategy**



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





- The Cacnali gene has 6 transcripts. According to the structure of Cacnali gene, exon3 of Cacnali-202 (ENSMUST00000160424.7) transcript is recommended as the knockout region. The region contains 112bp coding sequence. Knock out the region will result in disruption of protein function.
- > In this project we use CRISPR/Cas9 technology to modify Cacnali gene. The brief process is as follows: CRISPR/Cas9 systemeters and the systemeters of the systemeters of the systemeters and the systemeters are consistent of the systemeters and the systemeters are consistent of the systemeters are consistent of

- The Cacnali gene is located on the Chr15. 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.
- Transcript 201,203,204 CDS 5' and 3' incomplete the influences is unknown.
- 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.

Notice

## **Gene information (NCBI)**



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### Cacna1i calcium channel, voltage-dependent, alpha 1I subunit [Mus musculus (house mouse)]

Gene ID: 239556, updated on 31-Jan-2019

### Summary

Official Symbol	Cacna1i provided by MGI						
Official Full Name	calcium channel, voltage-dependent, alpha 1I subunit provided by MGI						
Primary source	MGI:MGI:2178051						
See related	Ensembl:ENSMUSG0000022416						
Gene type	protein coding						
<b>RefSeq status</b>	VALIDATED						
Organism	Mus musculus						
Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myor							
	Muroidea; Muridae; Murinae; Mus; Mus						
Also known as	Ca(V)3.3						
Expression	Biased expression in spleen adult (RPKM 8.3), frontal lobe adult (RPKM 8.1) and 8 other tissues See more						
Orthologs	human all						

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## **Transcript information (Ensembl)**



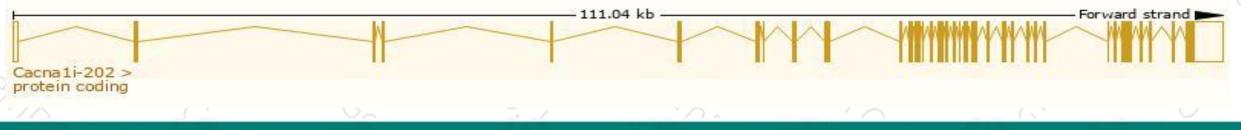
400-9660890

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

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Name 🖕	Transcript ID	bp 🖕	Protein 🖕	Biotype 👙	CCDS 🍦	UniProt 🖕	Flags		
Cacna1i-202	ENSMUST00000160424.7	9781	<u>2199aa</u>	Protein coding	<u>CCDS49670</u> &	<u>E9Q7P2</u> €	TSL:1 GENCODE basic APPRIS P1		
Cacna1i-201	ENSMUST00000160175.1	779	<u>260aa</u>	Protein coding	8	F6V0N5团	CDS 5' and 3' incomplete TSL:5		
Cacna1i-203	ENSMUST00000161863.7	394	<u>132aa</u>	Protein coding		F6TAX9	CDS 5' and 3' incomplete TSL:5		
Cacna1i-204	ENSMUST00000162025.7	313	<u>105aa</u>	Protein coding		<u>F7BQ85</u> 团	CDS 5' and 3' incomplete TSL:5		
Cacna1i-205	ENSMUST00000162155.7	6913	<u>1835aa</u>	Nonsense mediated decay	2	EOCXK2@	TSL:5		
Cacna1i-206	ENSMUST00000162913.7	273	No protein	Processed transcript		5	TSL:5		
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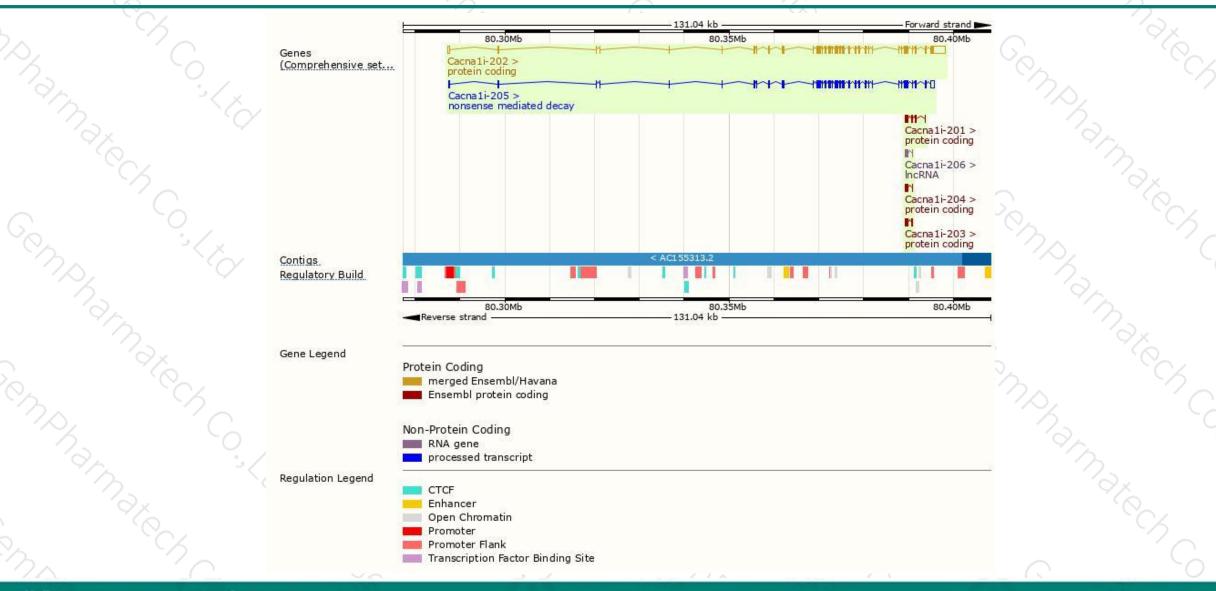
The strategy is based on the design of Cacnali-202 transcript, The transcription is shown below



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## **Genomic location distribution**





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## **Protein domain**



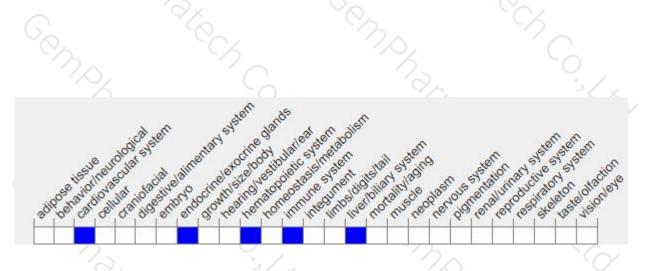
	- Com			<u> </u>			
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						1975 -
5.0) 9)	ENSMUSP00000125 Transmembrane heli MobiDB lite Low complexity (Seg) Coiled-coils (Ncoils)						
	Superfamily Prints	SSF81324		Voltage-dependent cal	ium channel, alpha-1 su	bunit	
		Voltage-depende	nt calcium channel, T	type, alpha-1 subunit			
3	Pfam PANTHER	Ion transport d	omain	type, alpha-1I subunit			
	Gene3D		ent channel domain su	perfamily			
			1.10.287.70				
32	All sequence SNPs/i	Sequence variant	s (dbSNP and all oth	ner sources)	<b>LEAD</b> CONTRACTOR OF CONTRACT	i i mni i i i i	
	Variant Legend	missense va splice regior synonymous	n variant				st x
	Scale bar	0 200	400 600	800 1000	1200 1400	1600 1800	2199
2	20	G.	0	C.S.	<u>`</u> %		6

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## Mouse phenotype description(MGI)





Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).



If you have any questions, you are welcome to inquire. Tel: 400-9660890



