

Cib1 Cas9-KO Strategy

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Project Overview

Project Name

Cib1

Project type

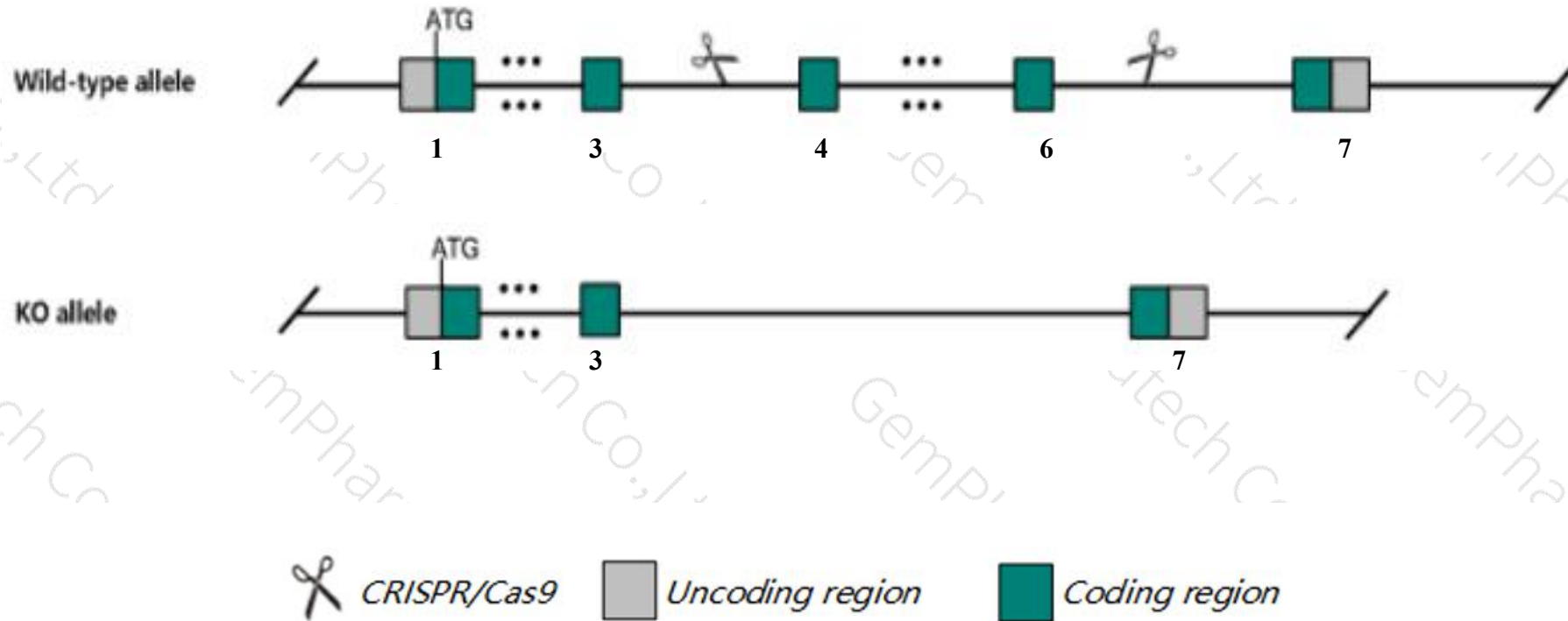
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cib1* gene. The schematic diagram is as follows:



- The *Cib1* gene has 10 transcripts. According to the structure of *Cib1* gene, exon4-exon6 of *Cib1*-201(ENSMUST00000065163.14) transcript is recommended as the knockout region. The region contains 359bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cib1* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- According to the existing MGI data, homozygous mutation of this gene results in male infertility due to disruption of the haploid phase of spermatogenesis and is associated with small testis size and loss of elongated spermatids and sperm.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The *Cib1* gene is located on the Chr7. 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)

Cib1 calcium and integrin binding 1 (calmyrin) [*Mus musculus* (house mouse)]

Gene ID: 23991, updated on 26-Jun-2020

Summary

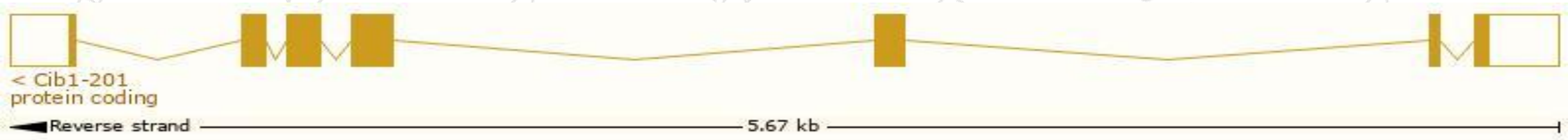
Official Symbol	Cib1 provided by MGI
Official Full Name	calcium and integrin binding 1 (calmyrin) provided by MGI
Primary source	MGI:MGI:1344418
See related	Ensembl:ENSMUSG00000030538
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Kip; Cibkip; Prkdcip
Expression	Broad expression in duodenum adult (RPKM 235.6), large intestine adult (RPKM 223.6) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

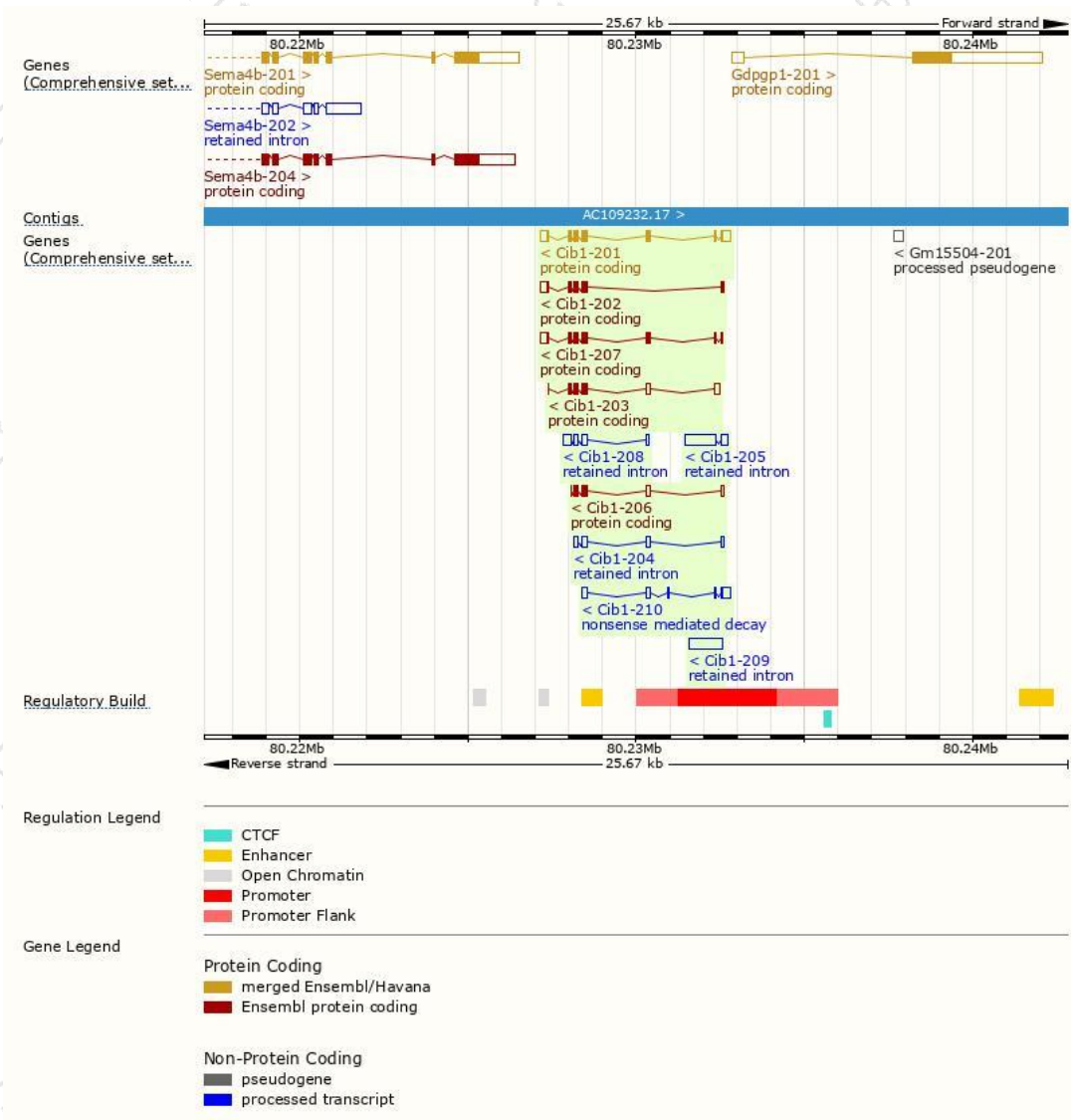
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cib1-201	ENSMUST00000065163.14	1047	191aa	Protein coding	CCDS21392	Q9Z0F4	TSL:1 GENCODE basic APPRIS P1
Cib1-207	ENSMUST00000206084.1	772	186aa	Protein coding	CCDS85324	A0A0U1RPF3	TSL:3 GENCODE basic
Cib1-202	ENSMUST00000071457.11	702	143aa	Protein coding	CCDS80740	Q8C2K4	TSL:1 GENCODE basic
Cib1-203	ENSMUST00000123279.7	627	113aa	Protein coding	-	D3YY46	CDS 3' incomplete TSL:2
Cib1-206	ENSMUST00000205996.1	487	87aa	Protein coding	-	A0A0U1RPW6	CDS 3' incomplete TSL:3
Cib1-210	ENSMUST00000206802.1	657	43aa	Nonsense mediated decay	-	A0A0U1RNH3	TSL:3
Cib1-205	ENSMUST00000144295.1	1150	No protein	Retained intron	-	-	TSL:1
Cib1-209	ENSMUST00000206618.1	1016	No protein	Retained intron	-	-	TSL:NA
Cib1-208	ENSMUST00000206211.1	566	No protein	Retained intron	-	-	TSL:3
Cib1-204	ENSMUST00000131402.2	471	No protein	Retained intron	-	-	TSL:2

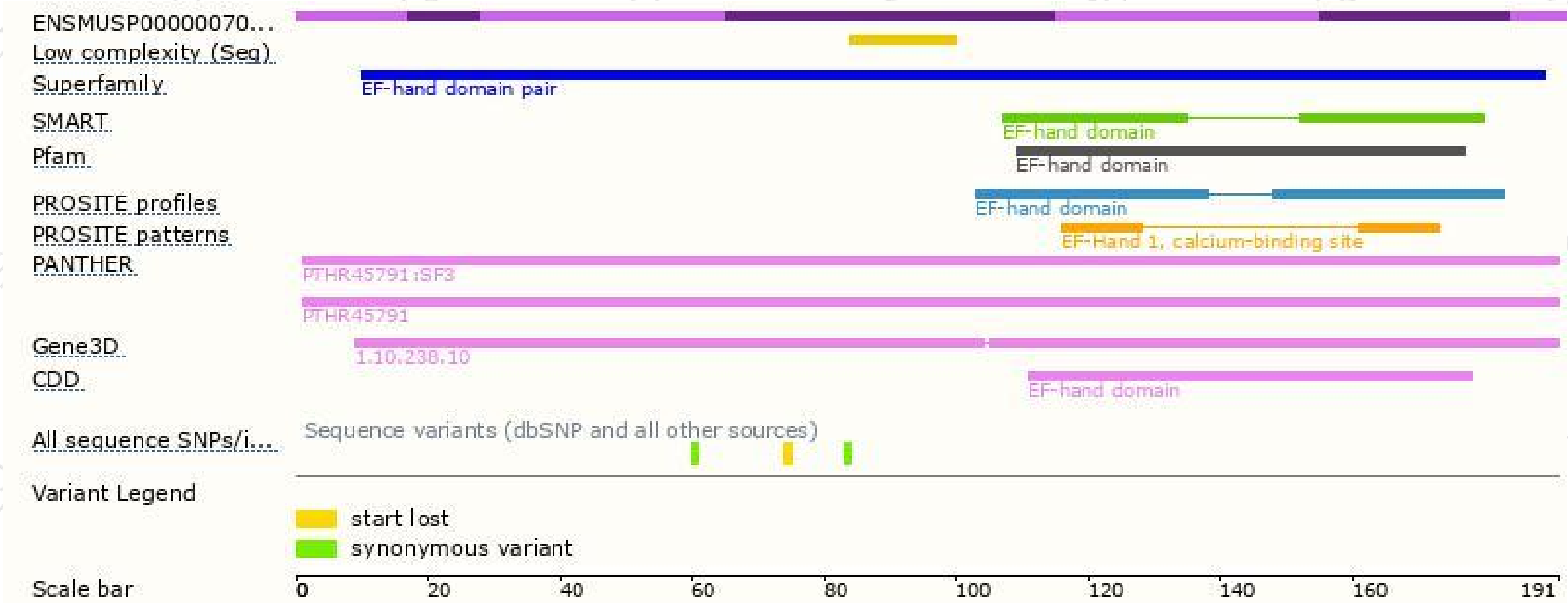
The strategy is based on the design of *Cib1-201* transcript,the transcription is shown below:



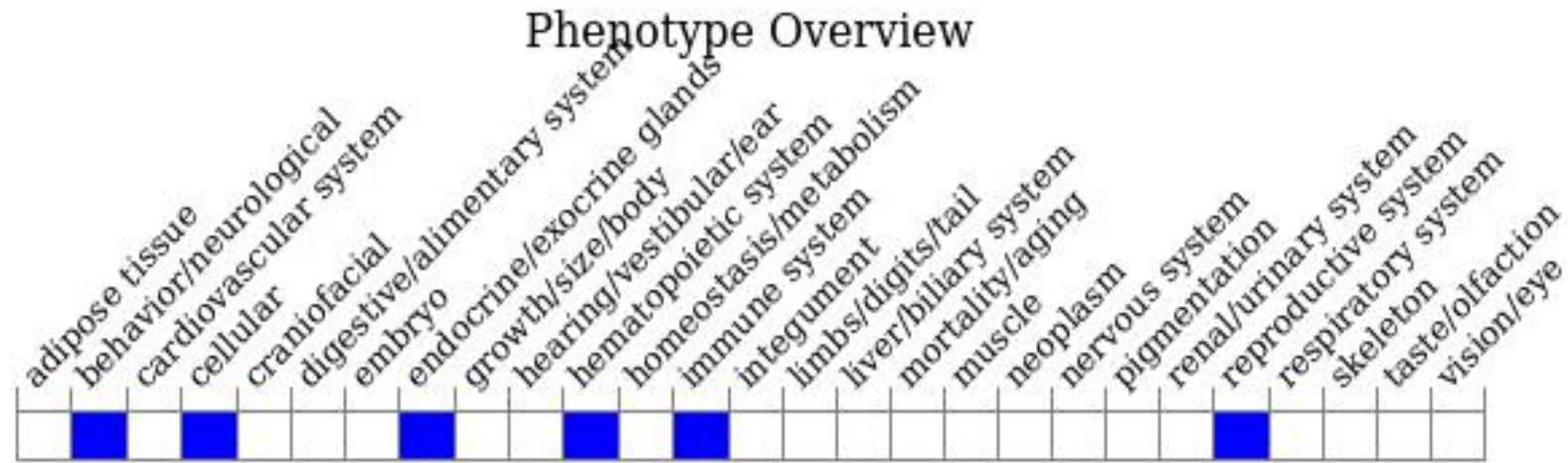
Genomic location distribution



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/>).

According to the existing MGI data, homozygous mutation of this gene results in male infertility due to disruption of the haploid phase of spermatogenesis and is associated with small testis size and loss of elongated spermatids and sperm.

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

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