

Boll Cas9-KO Strategy

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Project Overview

Project Name

Boll

Project type

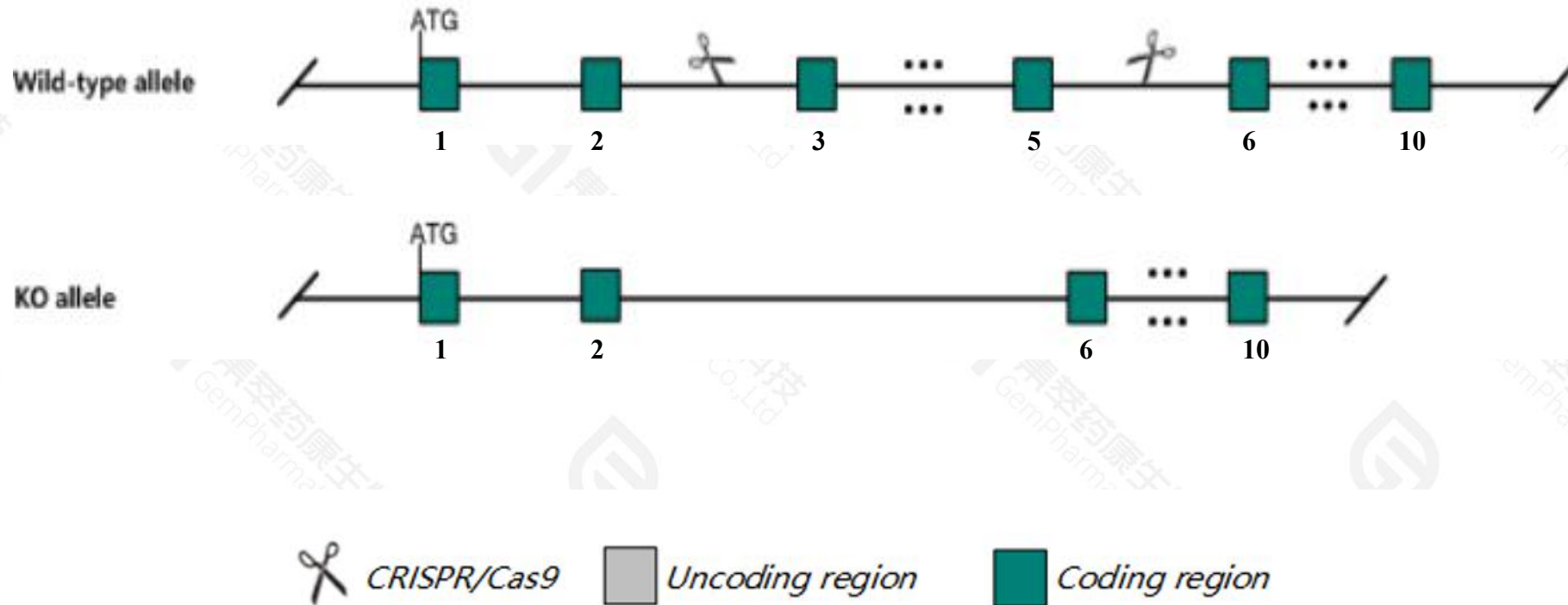
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Boll* gene has 7 transcripts. According to the structure of *Boll* gene, exon3-exon5 of *Boll-201*(ENSMUST00000087585.10) transcript is recommended as the knockout region. The region contains 223bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Boll* gene. The brief process is as follows: CRISPR/Cas9 system 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, male mice homozygous for a knock-out allele exhibit infertility due to arrested spermatogenesis at step 6 in spermiogenesis.
- The *Boll* gene is located on the Chr1. 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.

Boll boule homolog, RNA binding protein [Mus musculus (house mouse)]

Gene ID: 75388, updated on 13-Dec-2020

Summary



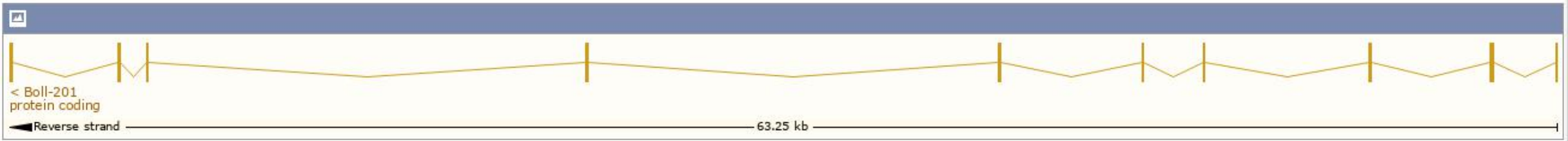
Official Symbol	Boll provided by MGI
Official Full Name	boule homolog, RNA binding protein provided by MGI
Primary source	MGI:MGI:1922638
See related	Ensembl:ENSMUSG00000025977
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930554P13Rik, 4930597B14Rik
Expression	Restricted expression toward testis adult (RPKM 18.9) See more
Orthologs	human all

Transcript information (Ensembl)

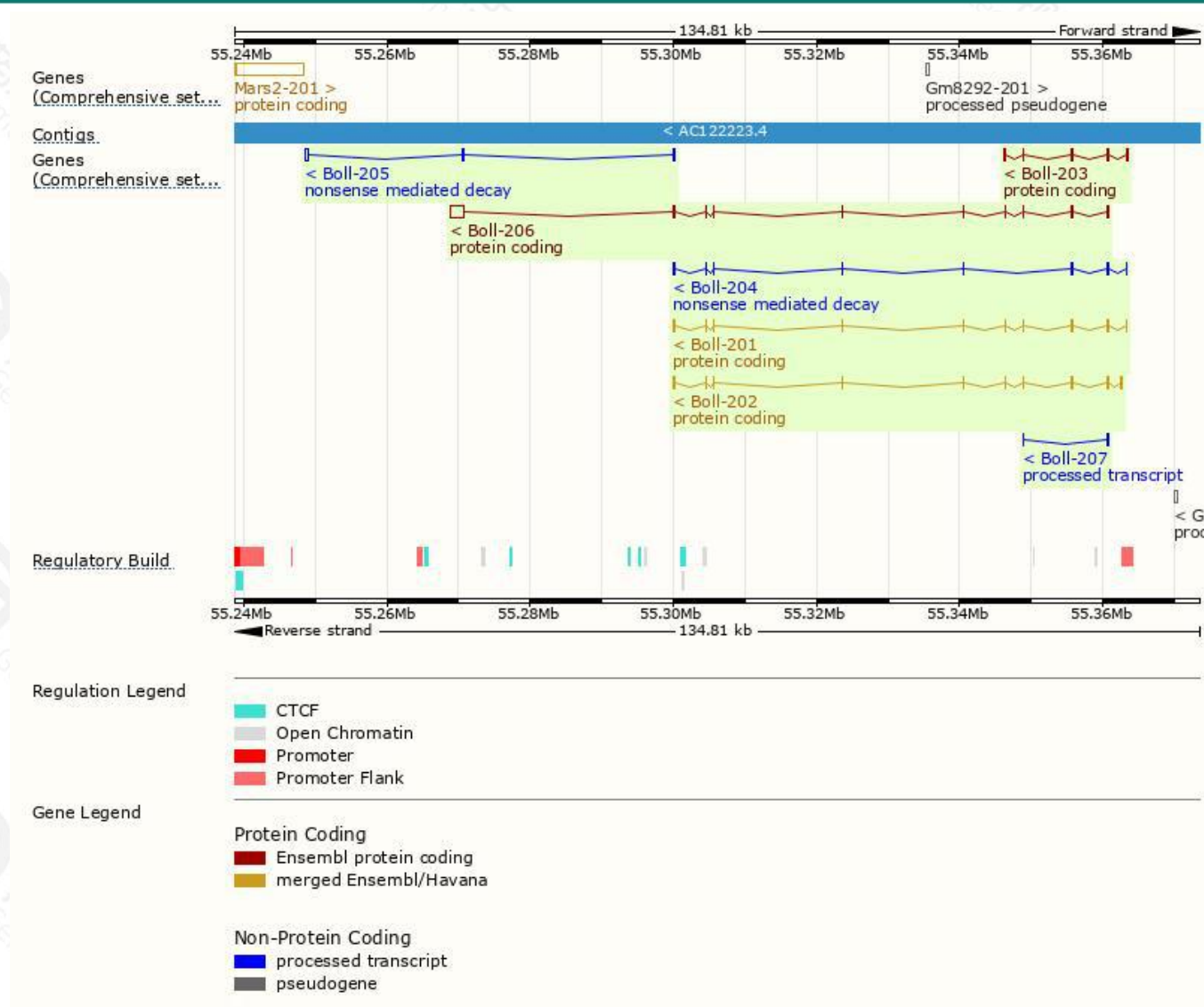
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Boll-202	ENSMUST00000114423.7	1106	160aa	Protein coding	CCDS48261		TSL:1 , GENCODE basic ,
Boll-201	ENSMUST00000087585.10	882	293aa	Protein coding	CCDS48262		TSL:1 , GENCODE basic , APPRIS P2 ,
Boll-206	ENSMUST00000173983.8	2635	282aa	Protein coding	-		CDS 5' incomplete , TSL:5 ,
Boll-203	ENSMUST00000159398.2	658	132aa	Protein coding	-		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Boll-204	ENSMUST00000159564.9	751	87aa	Nonsense mediated decay	-		TSL:5 ,
Boll-205	ENSMUST00000161810.2	535	38aa	Nonsense mediated decay	-		CDS 5' incomplete , TSL:3 ,
Boll-207	ENSMUST00000174065.2	147	No protein	Processed transcript	-		TSL:5 ,

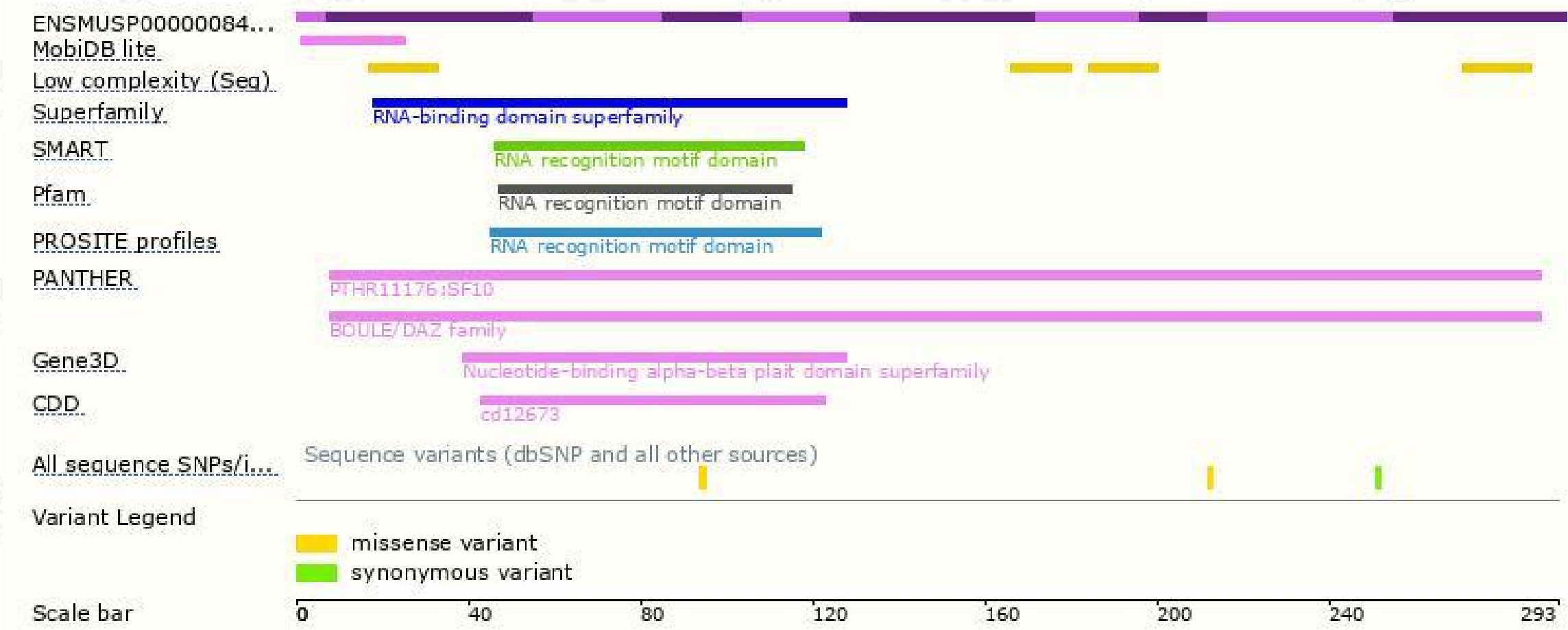
The strategy is based on the design of *Boll-201* transcript,the transcription is shown below:



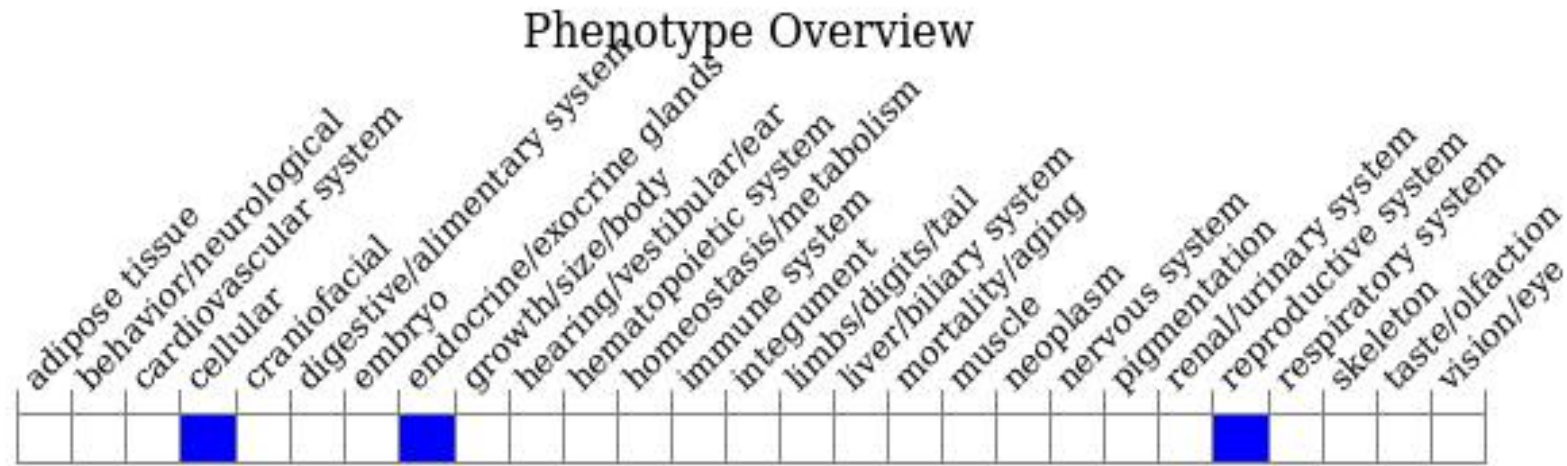
Genomic location distribution



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, male mice homozygous for a knock-out allele exhibit infertility due to arrested spermatogenesis at step 6 in spermiogenesis.

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