

Hmgxb3 Cas9-CKO Strategy

Designer: Xueting Zhang

Reviewer: Daohua Xu

Design Date: 2020-7-28

Project Overview

Project Name

Hmgxb3

Project type

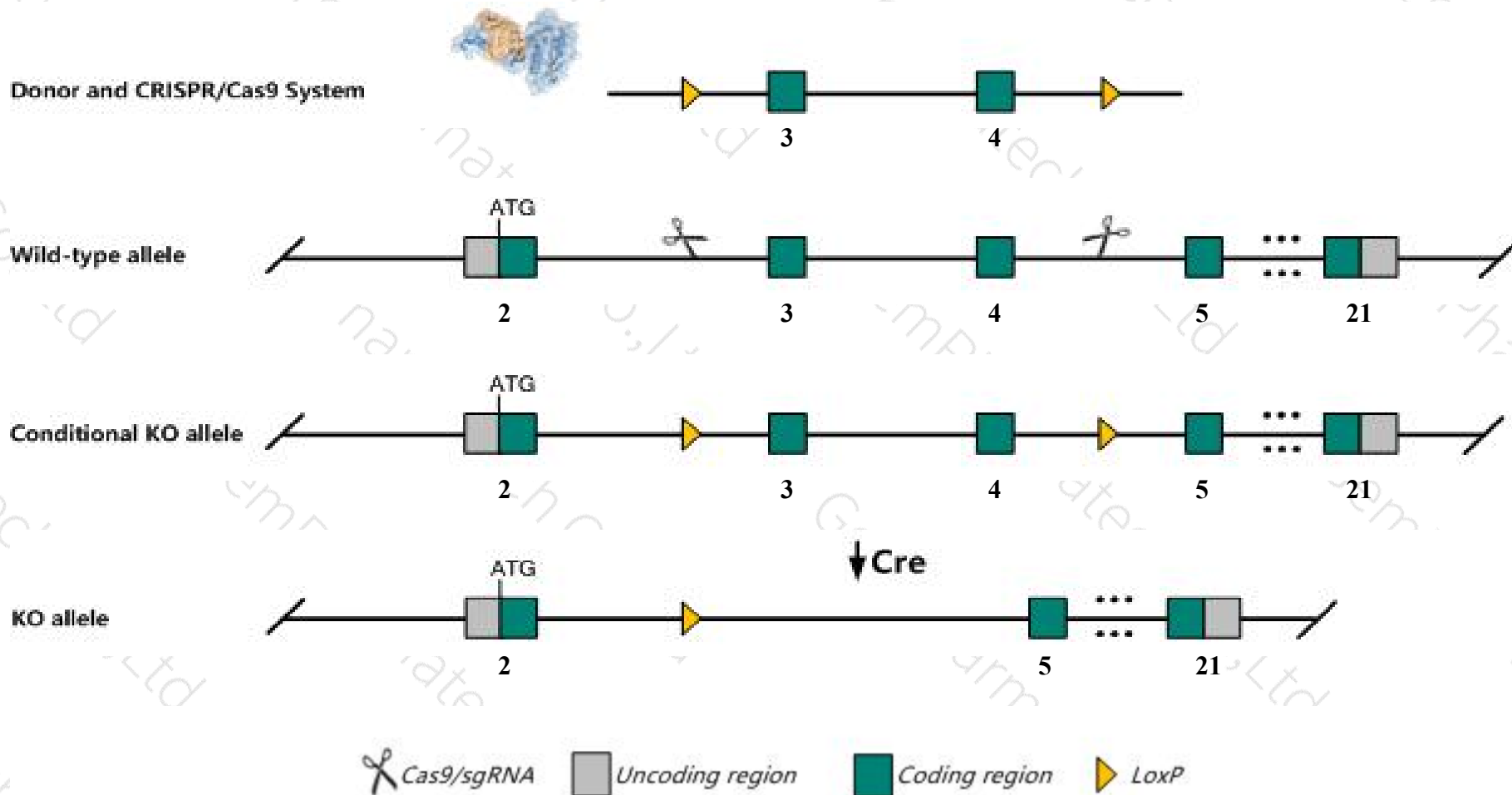
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hmgxb3* gene. The schematic diagram is as follows:



Technical routes

- The *Hmgxb3* gene has 9 transcripts. According to the structure of *Hmgxb3* gene, exon3-exon4 of *Hmgxb3-201*(ENSMUST00000091884.5) transcript is recommended as the knockout region. The region contains 673bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hmgxb3* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

Notice

- The *Hmgxb3* gene is located on the Chr18. 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 *Hmgxb3*-202&204&206 may not be affected.
- 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)

Hmgxb3 HMG box domain containing 3 [Mus musculus (house mouse)]

Gene ID: 106894, updated on 13-Mar-2020

Summary



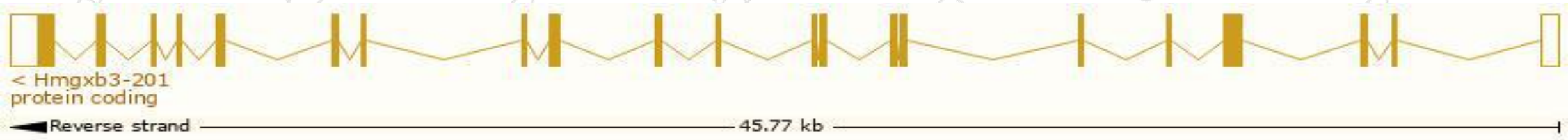
Official Symbol	Hmgxb3 provided by MGI
Official Full Name	HMG box domain containing 3 provided by MGI
Primary source	MGI:MGI:2441817
See related	Ensembl:ENSMUSG00000024622
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2510002C16Rik, A630042L21Rik, AI413166, mKIAA0194
Expression	Ubiquitous expression in ovary adult (RPKM 11.8), adrenal adult (RPKM 11.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

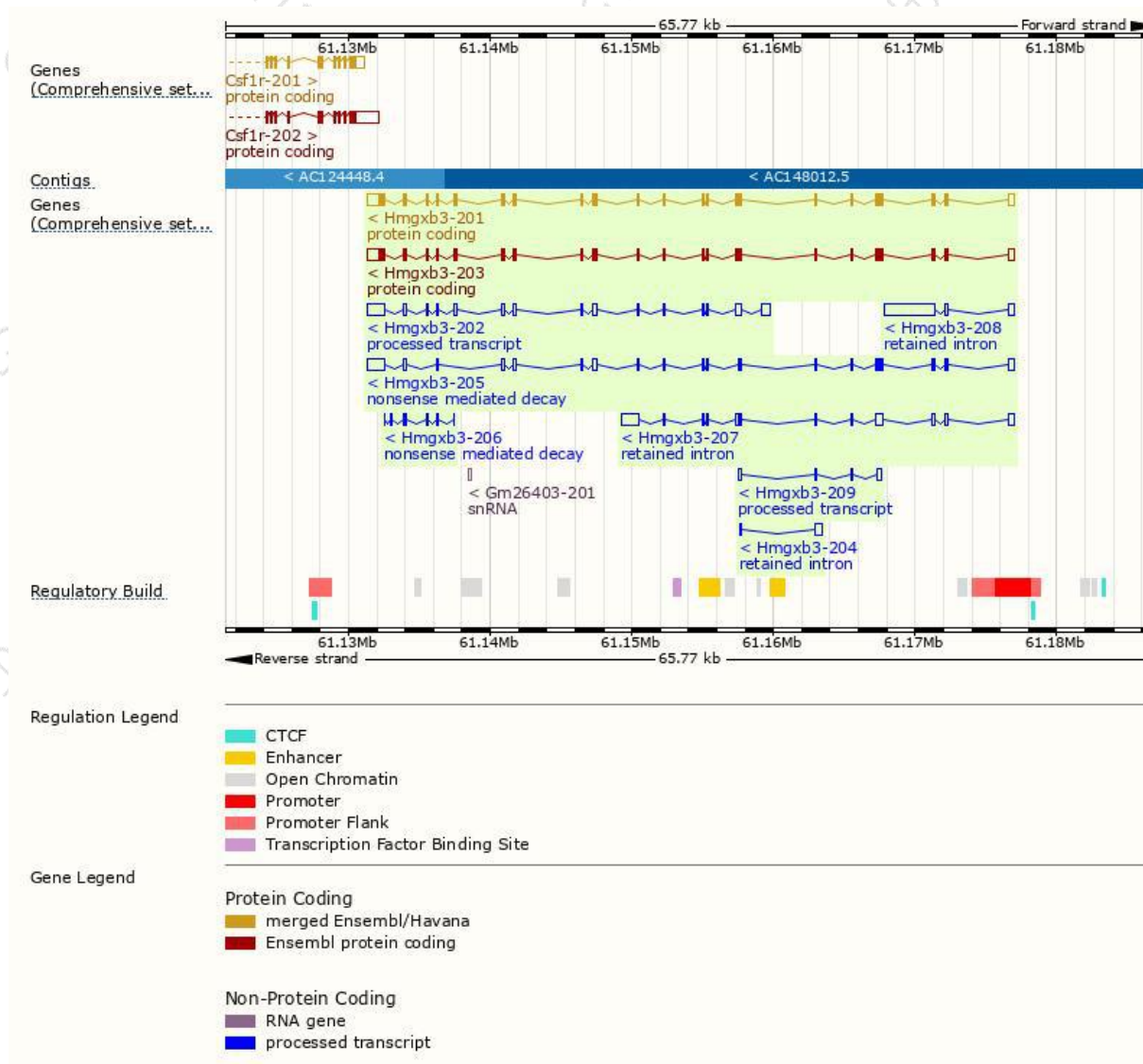
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hmgxb3-201	ENSMUST00000091884.5	5103	1254aa	Protein coding	CCDS50301	G3X9M3	TSL:1 GENCODE basic APPRIS P2
Hmgxb3-203	ENSMUST00000235480.1	5131	1286aa	Protein coding	-	Q6AXF8	GENCODE basic APPRIS ALT2
Hmgxb3-205	ENSMUST00000236068.1	4597	421aa	Nonsense mediated decay	-	A0A494B973	
Hmgxb3-206	ENSMUST00000237101.1	776	184aa	Nonsense mediated decay	-	A0A494B9M0	CDS 5' incomplete
Hmgxb3-202	ENSMUST00000235236.1	4319	No protein	Processed transcript	-	-	
Hmgxb3-209	ENSMUST00000237535.1	755	No protein	Processed transcript	-	-	
Hmgxb3-208	ENSMUST00000237498.1	4179	No protein	Retained intron	-	-	
Hmgxb3-207	ENSMUST00000237443.1	3410	No protein	Retained intron	-	-	
Hmgxb3-204	ENSMUST00000235663.1	697	No protein	Retained intron	-	-	

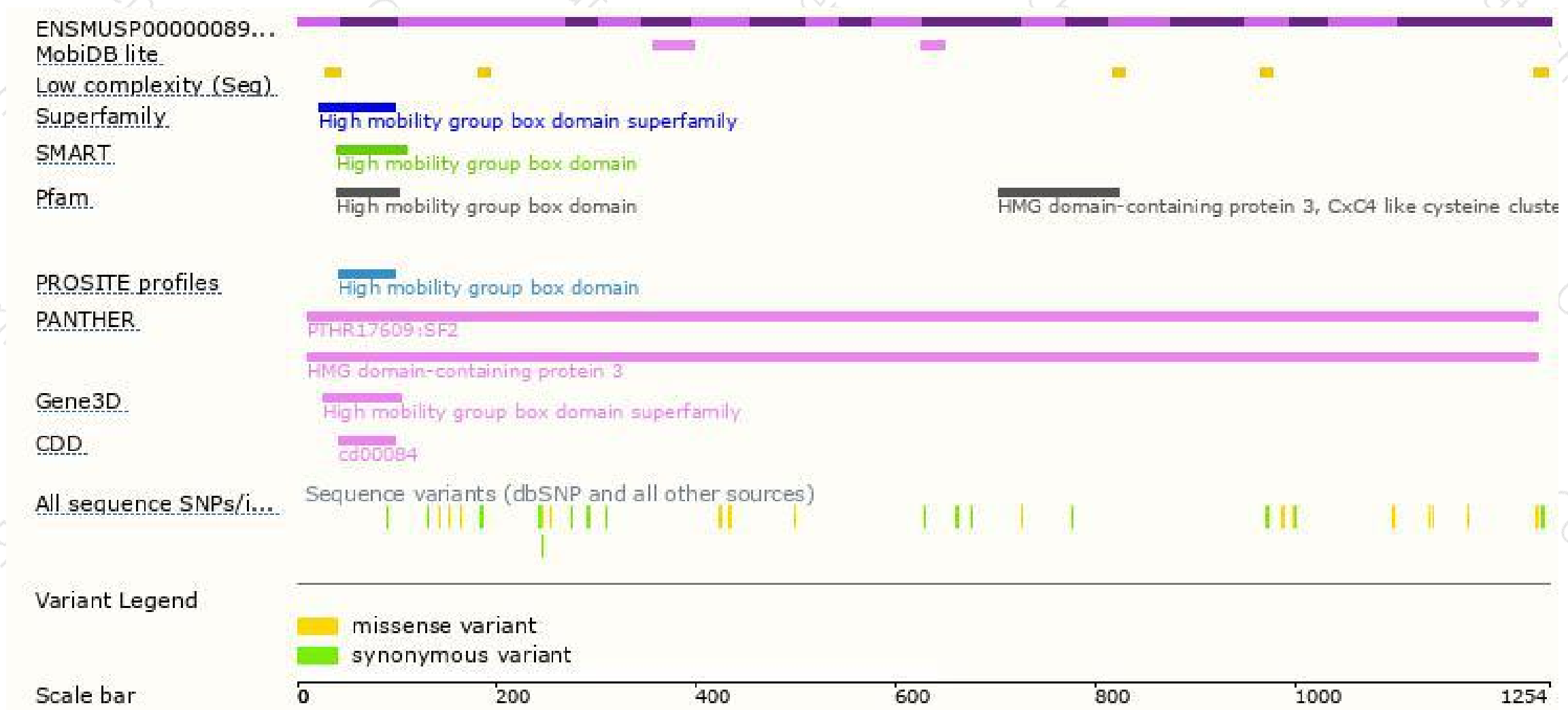
The strategy is based on the design of *Hmgxb3-201* transcript,the transcription is shown below:



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/>).

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

Tel: 025-5864 1534

