

Hmgb2 Cas9-KO Strategy

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Project Overview

Project Name

Hmgb2

Project type

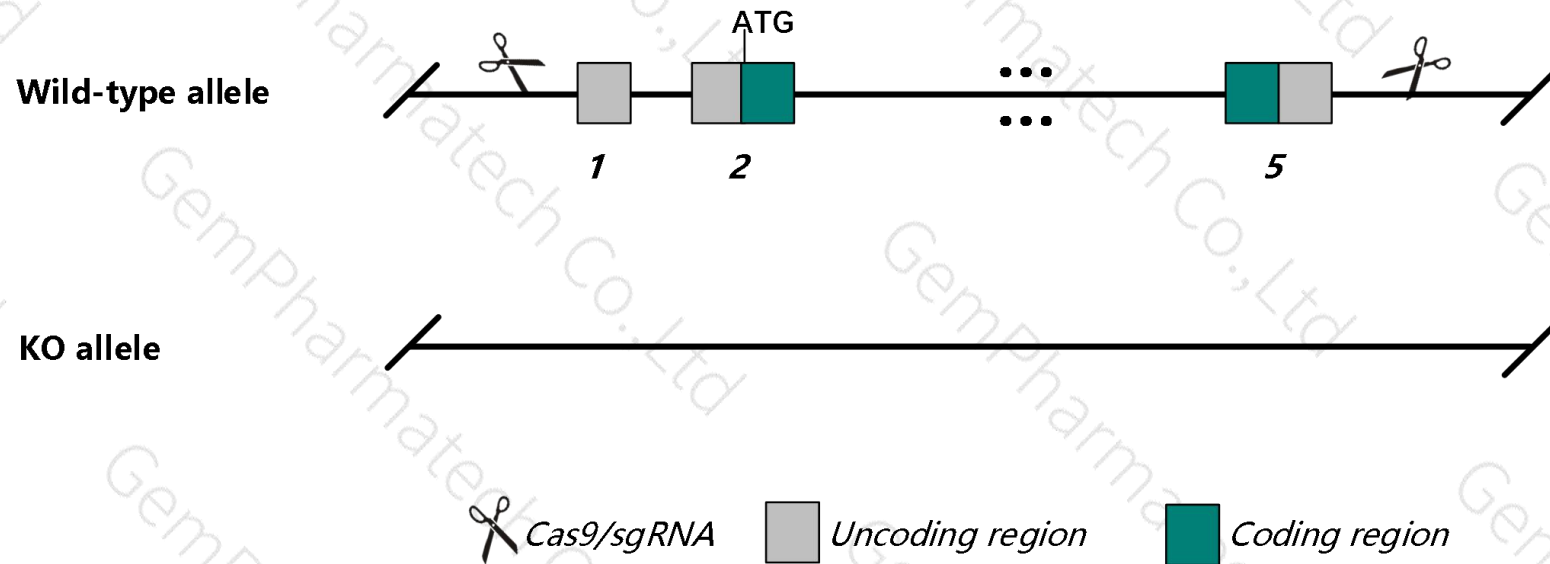
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hmgb2* gene. The schematic diagram is as follows:



Technical routes

- The *Hmgb2* gene has 3 transcripts. According to the structure of *Hmgb2* gene, exon1-exon5 of *Hmgb2*-201(ENSMUST00000067925.7) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hmgb2* 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 disruptions in this gene display reduced fertility. Female fertility is normal.
- The flox region is about 2.9 kb away from the C-terminus of the *2500002B13Rik* gene, which may affect the regulation of the C-terminus of the gene.
- The *Hmgb2* gene is located on the Chr8. 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)

Hmgb2 high mobility group box 2 [Mus musculus (house mouse)]

Gene ID: 97165, updated on 13-Mar-2020

Summary



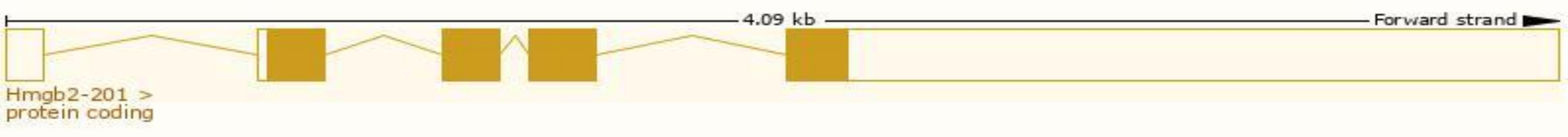
Official Symbol	Hmgb2 provided by MGI
Official Full Name	high mobility group box 2 provided by MGI
Primary source	MGI:MGI:96157
See related	Ensembl:ENSMUSG00000054717
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C80539, HMG-2, Hmg2
Expression	Biased expression in CNS E11.5 (RPKM 181.4), liver E14 (RPKM 138.7) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

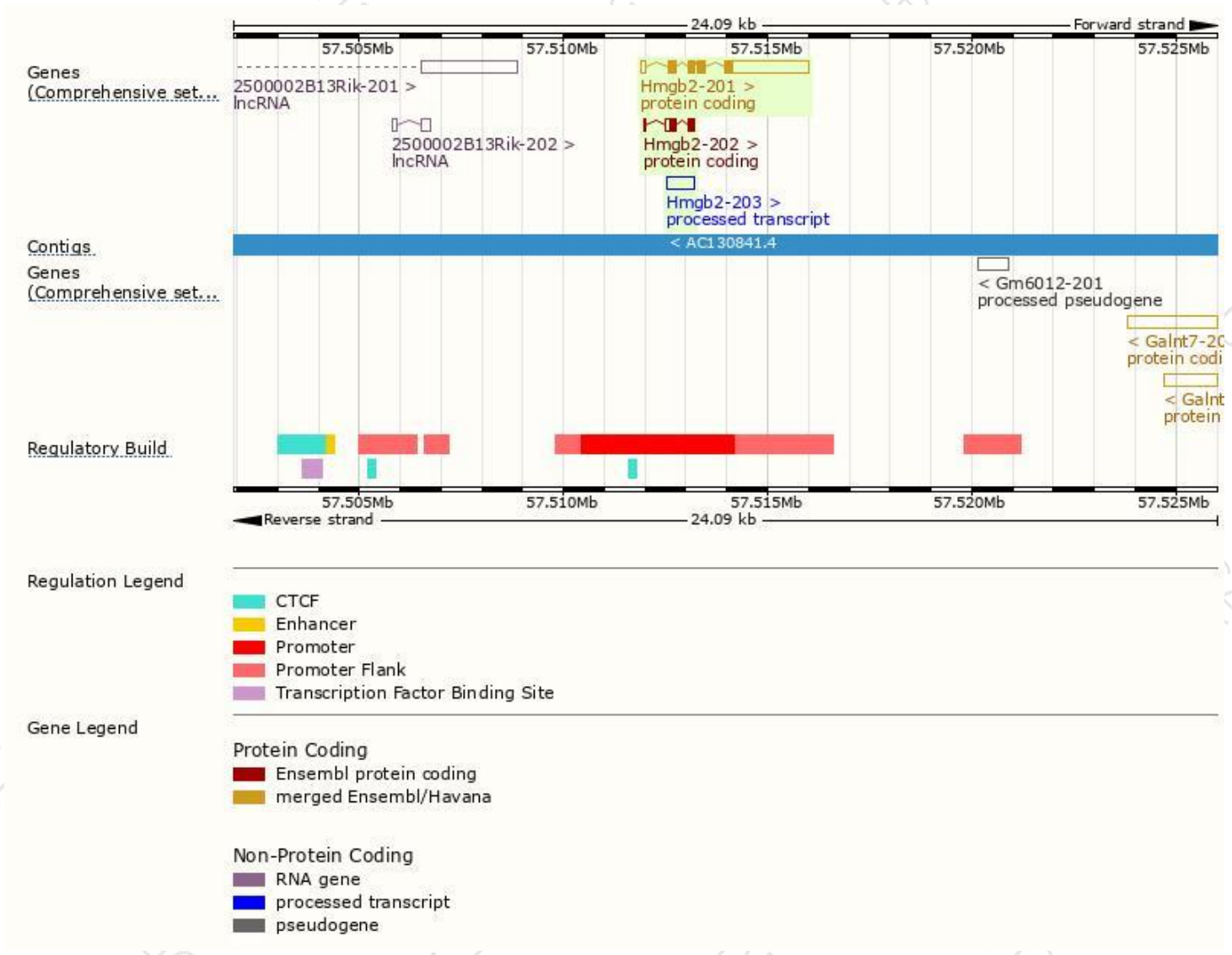
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hmgb2-201	ENSMUST00000067925.7	2628	210aa	Protein coding	CCDS40343	P30681	TSL:1 GENCODE basic APPRIS P1
Hmgb2-202	ENSMUST00000210871.1	414	99aa	Protein coding	-	A0A1B0GQX9	CDS 3' incomplete TSL:5
Hmgb2-203	ENSMUST00000211198.1	660	No protein	Processed transcript	-	-	TSL:NA

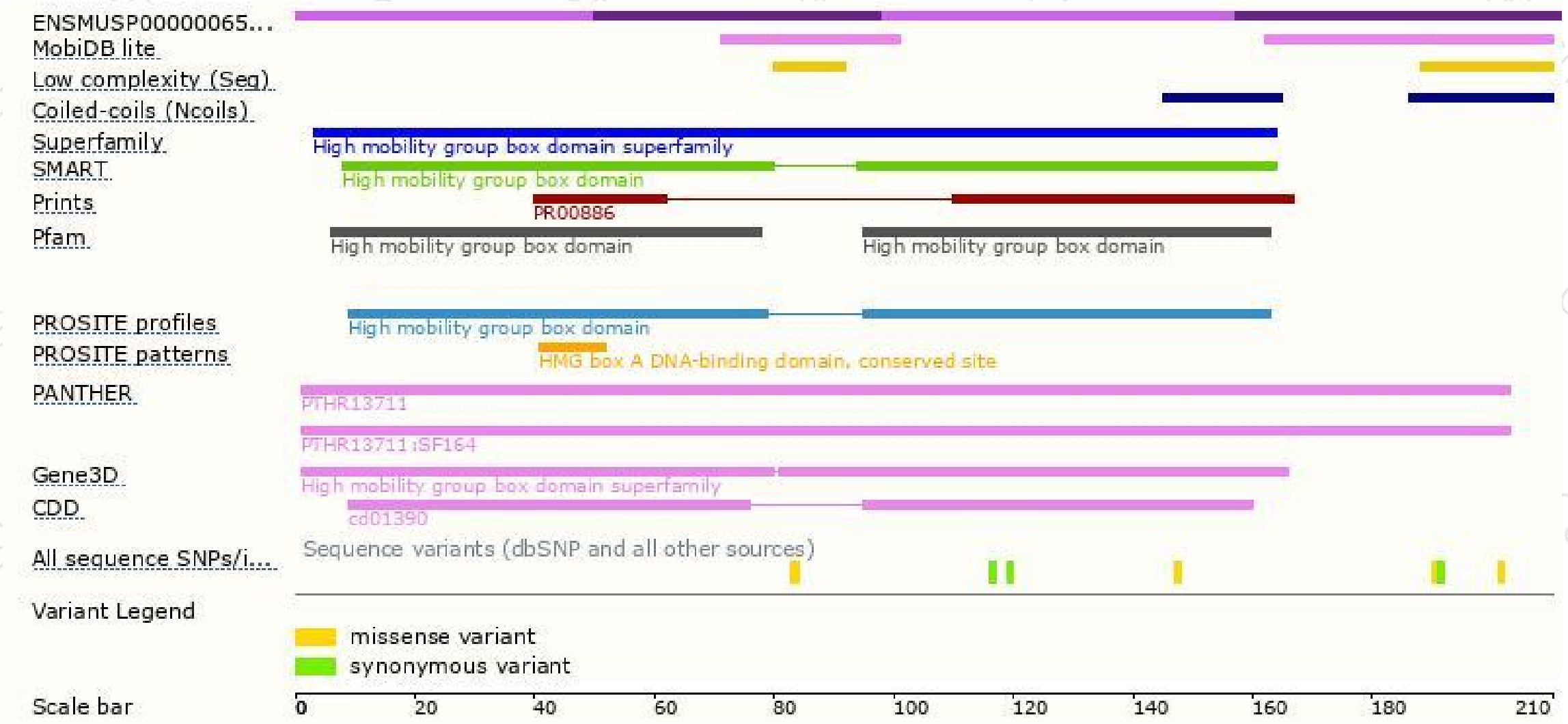
The strategy is based on the design of *Hmgb2-201* transcript,the transcription is shown below:



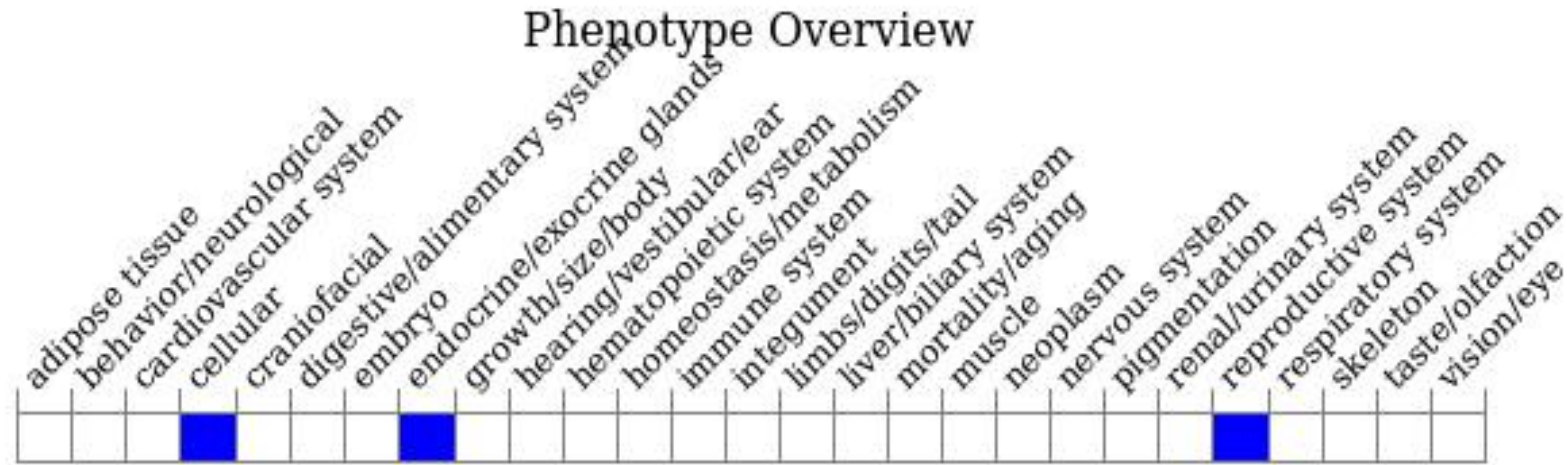
Genomic location distribution



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 disruptions in this gene display reduced fertility.

Female fertility is normal.

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

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