

Ibsp Cas9-KO Strategy

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Project Overview

Project Name

Ibsp

Project type

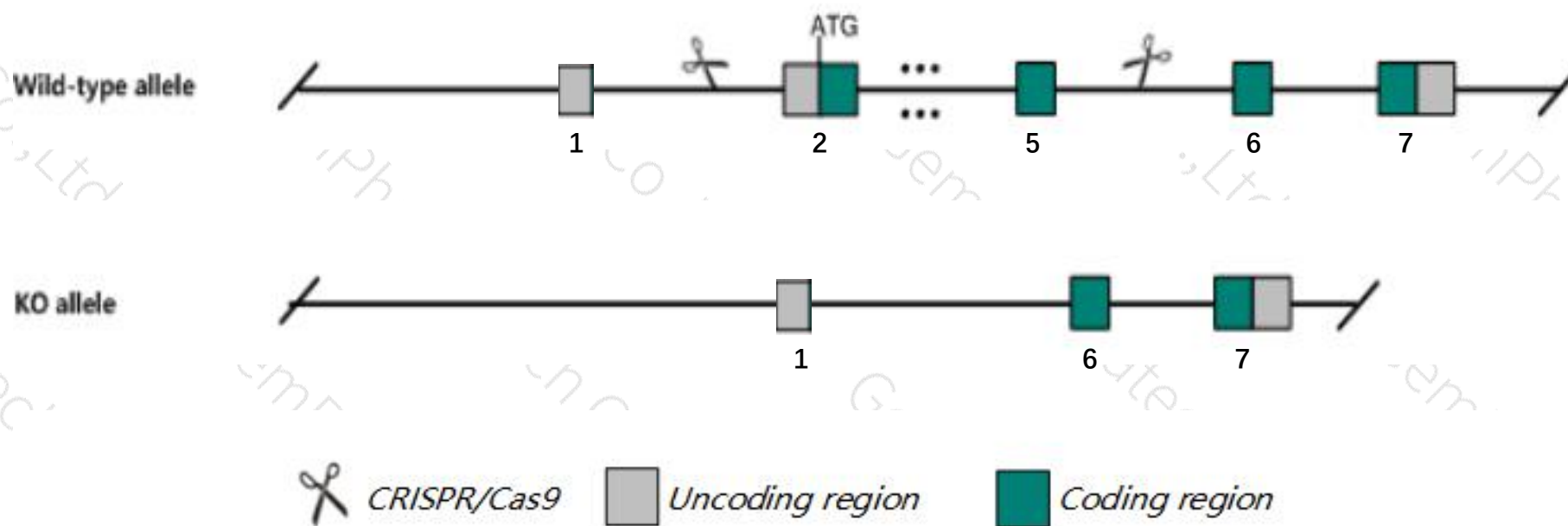
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

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



- The *Ibsp* gene has 1 transcript. According to the structure of *Ibsp* gene, exon2~exon5 of *Ibsp*-201 (ENSMUST00000031246.8) transcript is recommended as the knockout region. The region contains the start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ibsp* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, mice homozygous for a knock-out allele show reduced body weight/size, delayed long bone growth and mineralization with low bone turn over due to reduced osteoclast formation, delayed intramembranous ossification, progressive periodontal breakdown, and severe alveolar and mandibular bone loss.
- The *Ibsp* gene is located on the Chr5. 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)

lbsp integrin binding sialoprotein [*Mus musculus* (house mouse)]

Gene ID: 15891, updated on 13-Mar-2020

Summary

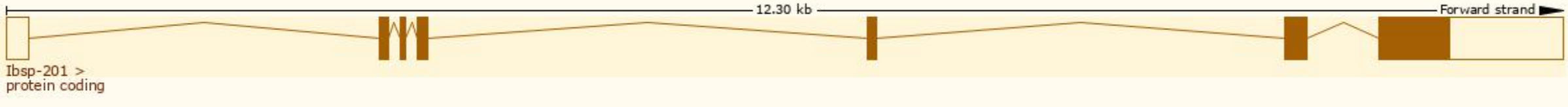
Official Symbol	lbsp provided by MGI
Official Full Name	integrin binding sialoprotein provided by MGI
Primary source	MGI:MGI:96389
See related	Ensembl:ENSMUSG00000029306
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BSP; Bsp2; BSPII; BSP II
Expression	Biased expression in limb E14.5 (RPKM 37.3), CNS E14 (RPKM 11.6) and 2 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

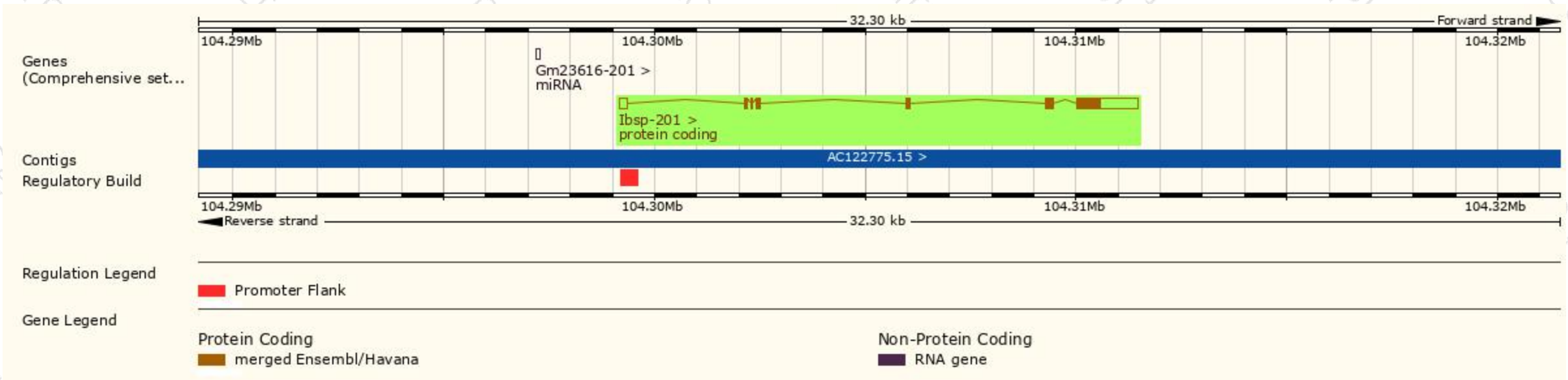
The gene has 1 transcript, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ibsp-201	ENSMUST00000031246.8	2068	324aa	Protein coding	CCDS19485	Q61711	TSL:1 Gencode basic APPRIS P1

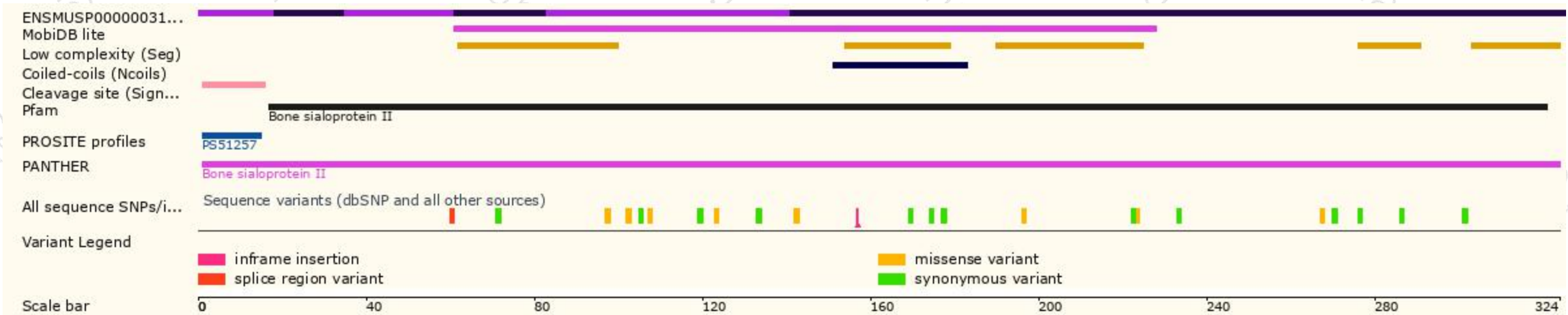
The strategy is based on the design of *Ibsp-201* transcript,the transcription is shown below:



Genomic location (Ensembl)

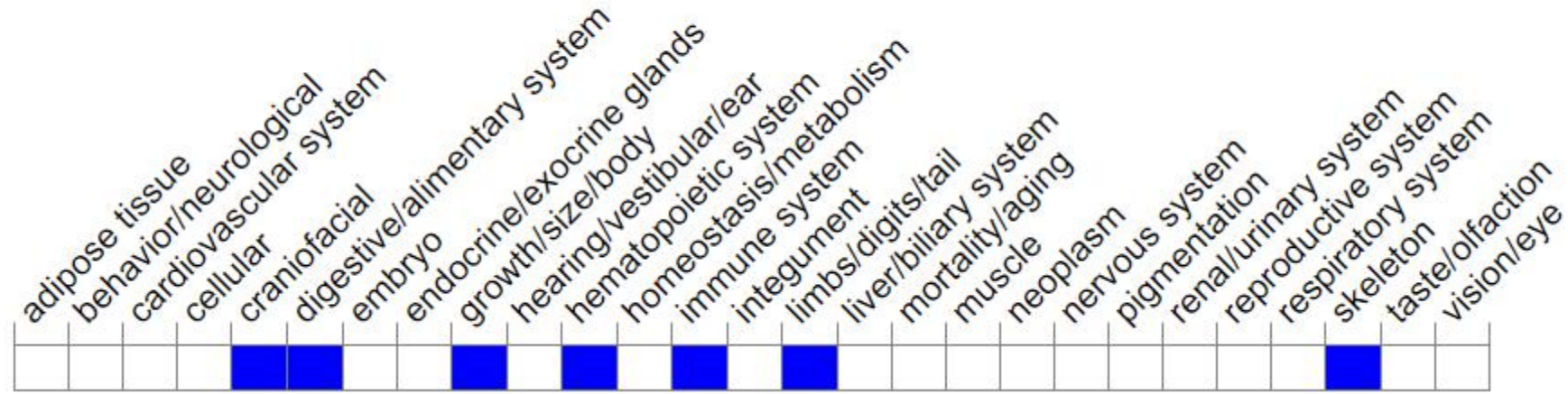


Protein domain (Ensembl)



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/>) .

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

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