

Hspbp1 Cas9-CKO Strategy

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Design Date: 2020-8-6

Project Overview

Project Name

Hspbp1

Project type

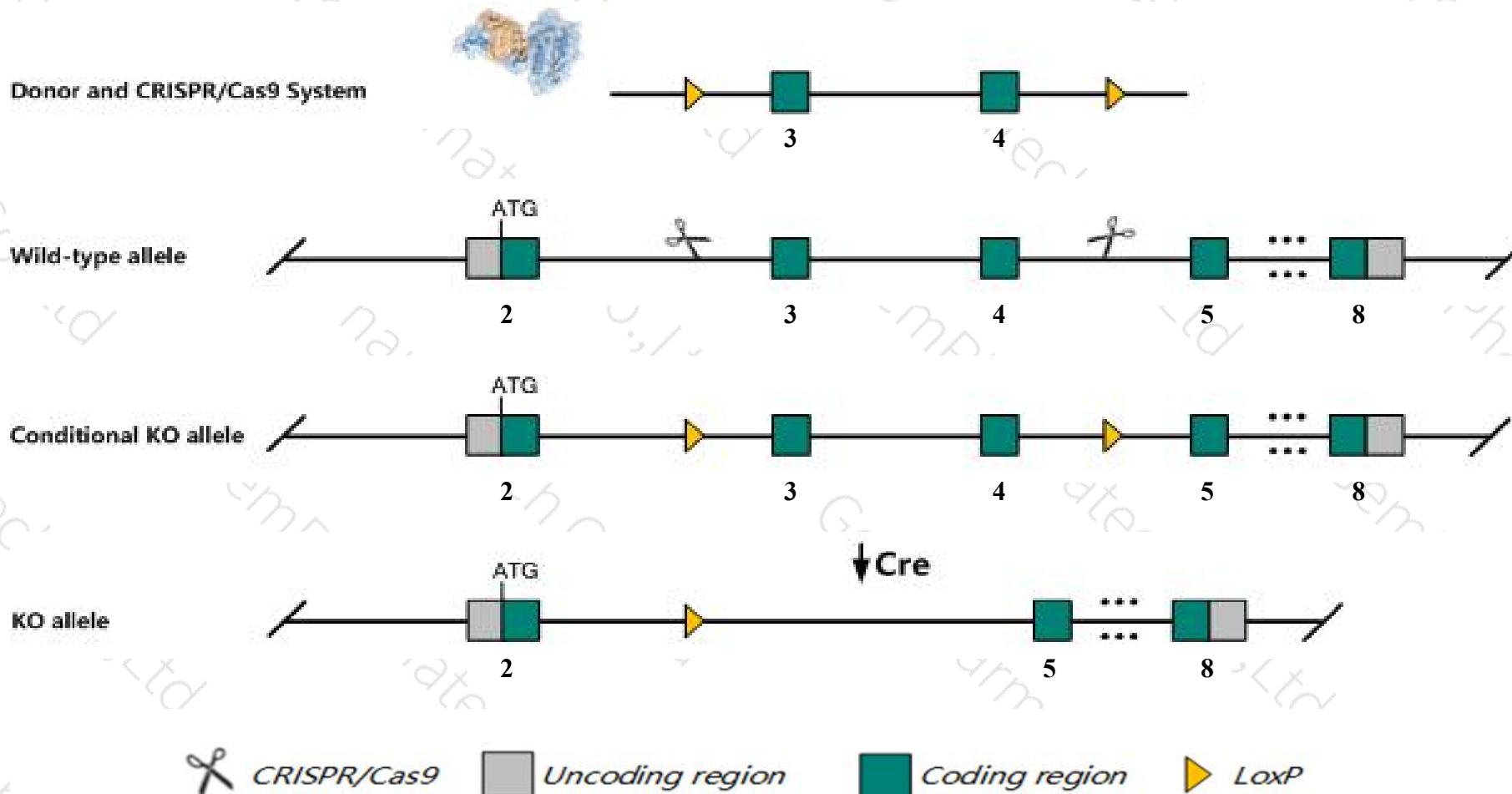
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hspbp1* gene. The schematic diagram is as follows:



- The *Hspbp1* gene has 6 transcripts. According to the structure of *Hspbp1* gene, exon3-exon4 of *Hspbp1*-201(ENSMUST00000079970.5) transcript is recommended as the knockout region. The region contains 430bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hspbp1* gene. The brief process is as follows: CRISPR/Cas9 system 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 will be 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.

- According to the existing MGI data, mice homozygous for a null mutation show male infertility with an arrest of male meiosis, increased male germ cell apoptosis and azoospermia.
- Transcript 202 CDS 5' incomplete the influences is unknown.
- The *Hspbp1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Hspbp1 HSPA (heat shock 70kDa) binding protein, cytoplasmic cochaperone 1 [Mus musculus (house mouse)]

Gene ID: 66245, updated on 13-Mar-2020

Summary



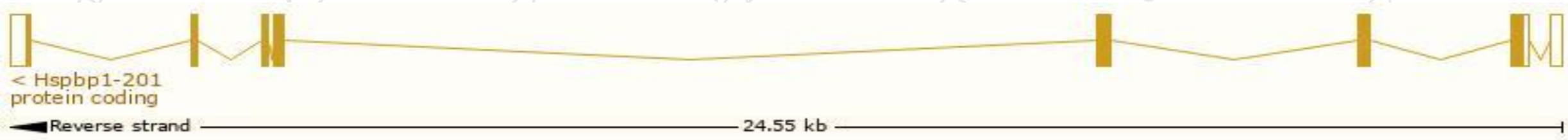
Official Symbol	Hspbp1 provided by MGI
Official Full Name	HSPA (heat shock 70kDa) binding protein, cytoplasmic cochaperone 1 provided by MGI
Primary source	MGI:MGI:1913495
See related	Ensembl:ENSMUSG00000063802
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1500019G21Rik
Expression	Ubiquitous expression in ovary adult (RPKM 24.7), adrenal adult (RPKM 23.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

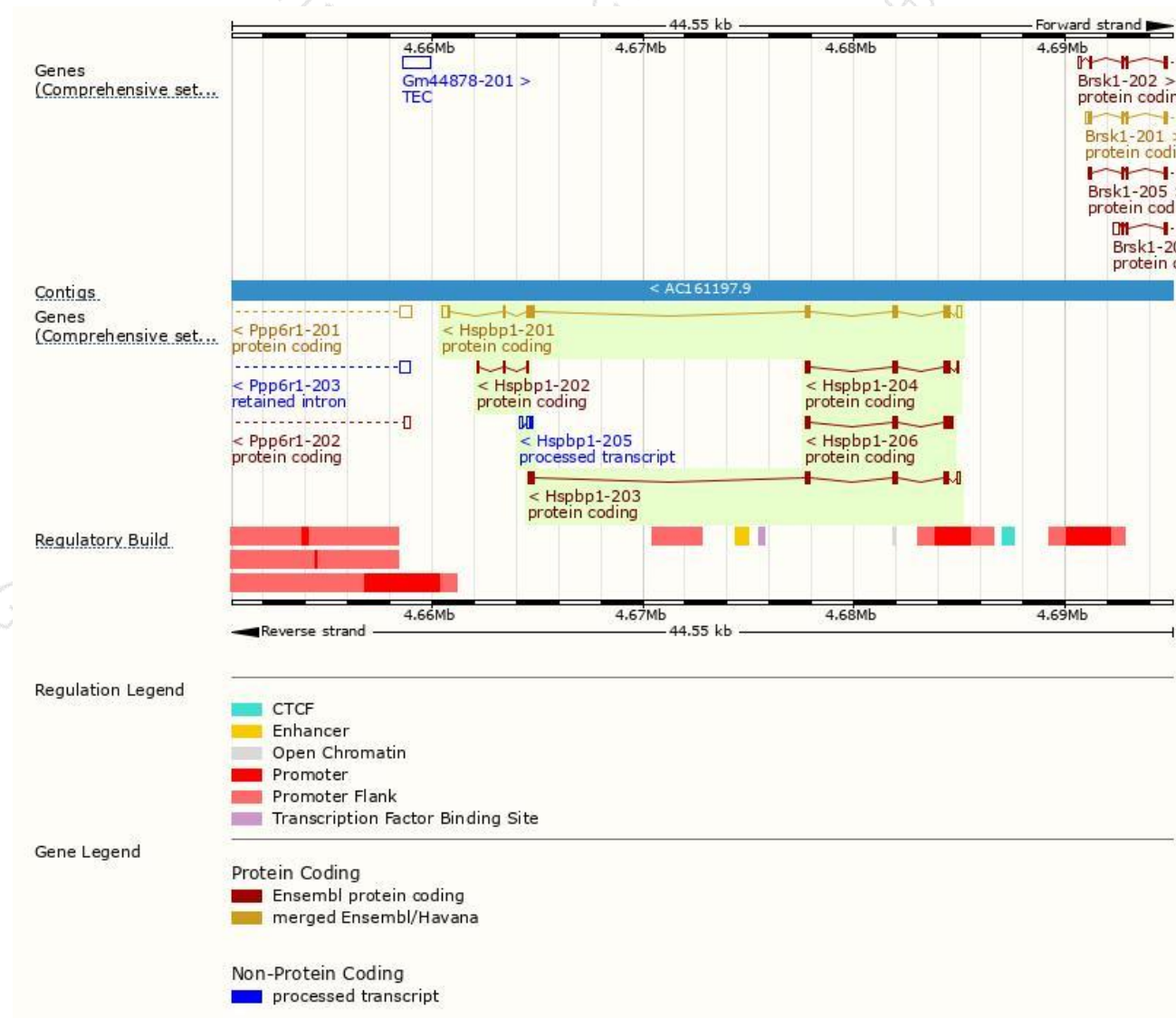
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hspbp1-201	ENSMUST00000079970.5	1593	357aa	Protein coding	CCDS20740	Q99P31	TSL:1 GENCODE basic APPRIS P1
Hspbp1-203	ENSMUST00000205952.1	933	275aa	Protein coding	-	A0A0U1RPF2	CDS 3' incomplete TSL:5
Hspbp1-206	ENSMUST00000206946.1	820	256aa	Protein coding	-	A0A0U1RQ49	CDS 3' incomplete TSL:2
Hspbp1-204	ENSMUST00000206306.1	813	211aa	Protein coding	-	A0A0U1RPE7	CDS 3' incomplete TSL:2
Hspbp1-202	ENSMUST00000205474.1	306	97aa	Protein coding	-	A0A0U1RNL5	CDS 5' incomplete TSL:5
Hspbp1-205	ENSMUST00000206708.1	262	No protein	Processed transcript	-	-	TSL:5

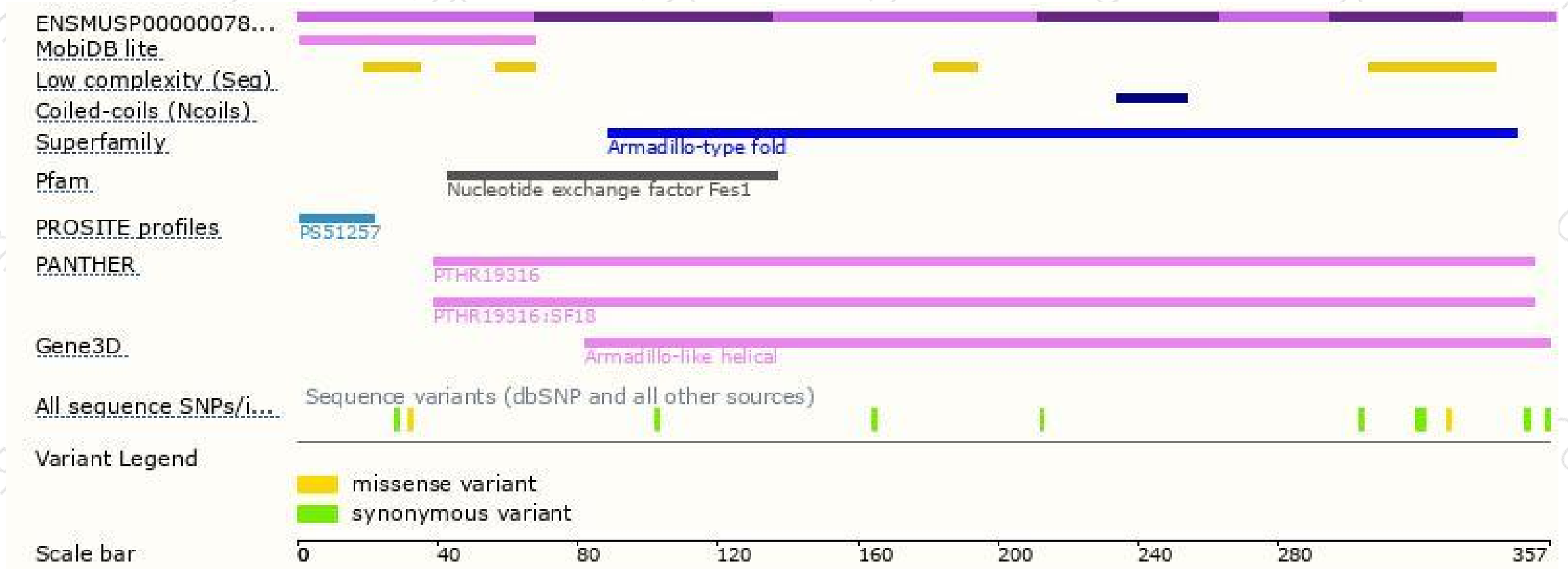
The strategy is based on the design of *Hspbp1-201* transcript,the transcription is shown below:



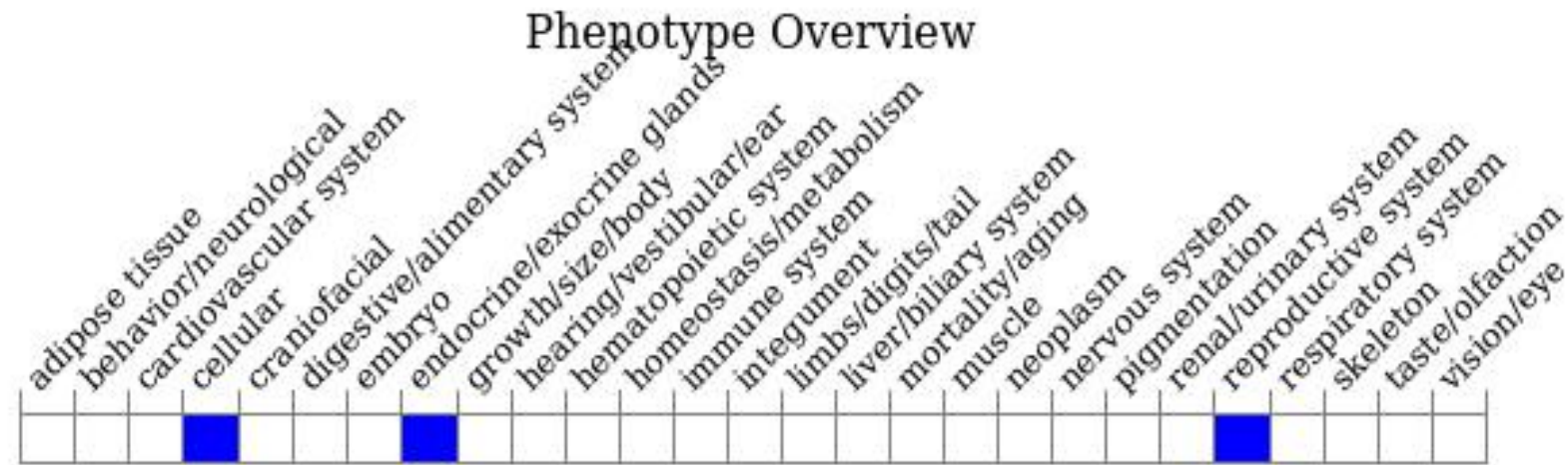
Genomic location distribution



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, mice homozygous for a null mutation show male infertility with an arrest of male meiosis, increased male germ cell apoptosis and azoospermia.

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

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