

Hsp90aa1 Cas9-CKO Strategy

Designer: Shilei Zhu

Project Overview

Project Name

Hsp90aa1

Project type

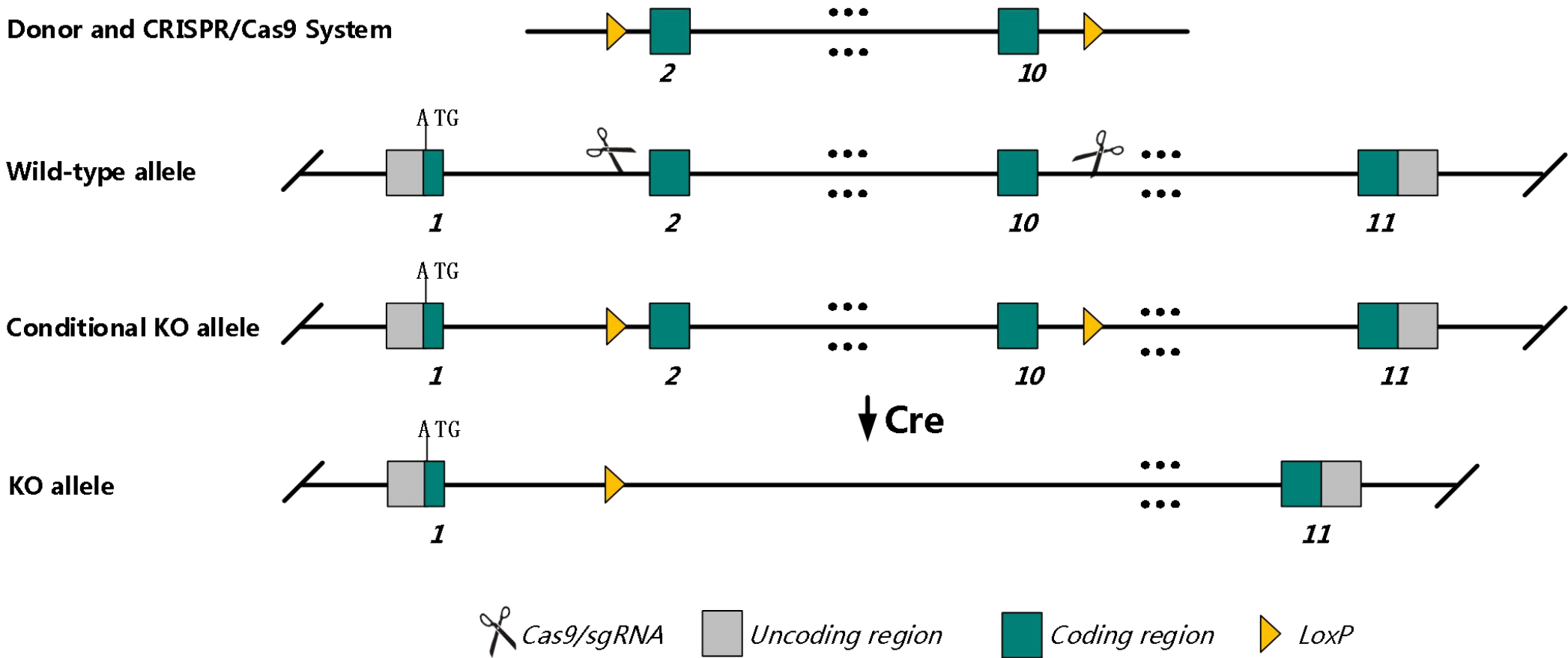
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hsp90aa1* gene. The schematic diagram is as follows:



Technical routes

- The *Hsp90aa1* gene has 8 transcripts. According to the structure of *Hsp90aa1* gene, exon2-exon10 of *Hsp90aa1*-202 (ENSMUST00000094361.10) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hsp90aa1* 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 gene trap allele exhibit male sterility associated with arrested male meiosis and male germ cell apoptosis. Mice homozygous for a transgenic gene disruption exhibit male sterility and small testis.
- The *Hsp90aa1* gene is located on the Chr12. 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)

Hsp90aa1 heat shock protein 90, alpha (cytosolic), class A member 1 [Mus musculus (house mouse)]

Gene ID: 15519, updated on 7-Apr-2019

Summary



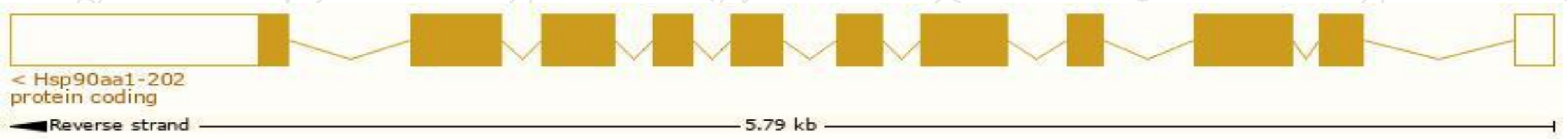
Official Symbol	Hsp90aa1 provided by MGI
Official Full Name	heat shock protein 90, alpha (cytosolic), class A member 1 provided by MGI
Primary source	MGI:MGI:96250
See related	Ensembl:ENSMUSG000000021270
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	86kDa, 89kDa, AL024080, AL024147, Hsp86-1, Hsp89, Hsp90, Hspca, hsp4
Expression	Broad expression in placenta adult (RPKM 235.9), CNS E11.5 (RPKM 213.3) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

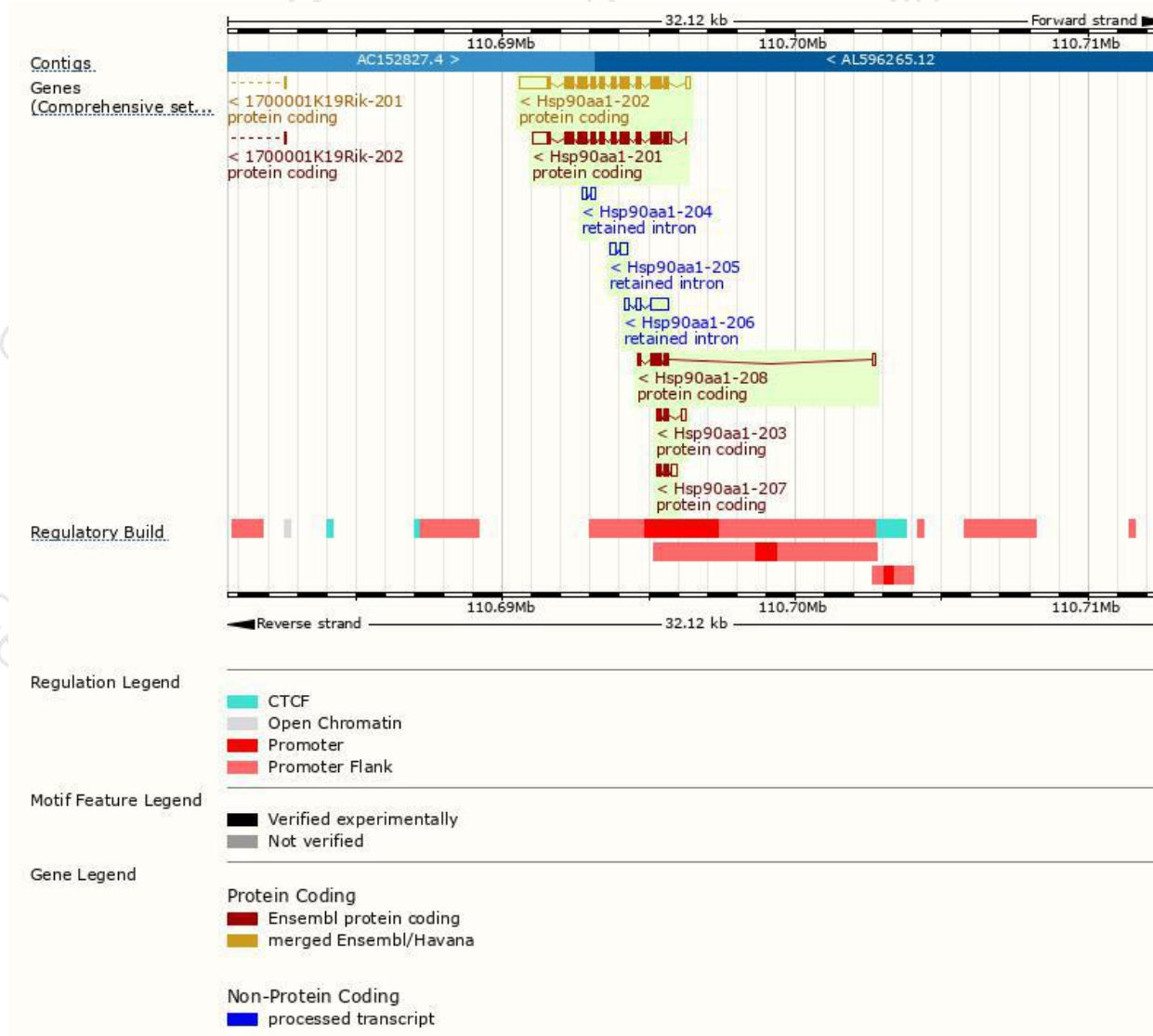
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hsp90aa1-202	ENSMUST00000094361.10	3281	733aa	Protein coding	CCDS26172	P07901 Q80Y52	TSL:1 GENCODE basic APPRIS P1
Hsp90aa1-201	ENSMUST00000021698.12	2852	733aa	Protein coding	CCDS26172	P07901 Q80Y52	TSL:5 GENCODE basic APPRIS P1
Hsp90aa1-208	ENSMUST00000155242.7	711	201aa	Protein coding	-	B7ZC50	CDS 3' incomplete TSL:3
Hsp90aa1-207	ENSMUST00000149189.1	481	98aa	Protein coding	-	A2A6A2	CDS 3' incomplete TSL:2
Hsp90aa1-203	ENSMUST00000124156.7	427	103aa	Protein coding	-	B7ZC49	CDS 3' incomplete TSL:2
Hsp90aa1-206	ENSMUST00000145255.1	924	No protein	Retained intron	-	-	TSL:1
Hsp90aa1-205	ENSMUST00000134967.1	487	No protein	Retained intron	-	-	TSL:2
Hsp90aa1-204	ENSMUST00000129005.1	325	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Hsp90aa1-202* 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 gene trap allele exhibit male sterility associated with arrested male meiosis and male germ cell apoptosis. Mice homozygous for a transgenic gene disruption exhibit male sterility and small testis.

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

Tel: 400-9660890

