Hsp90ab1 Cas9-CKO Strategy

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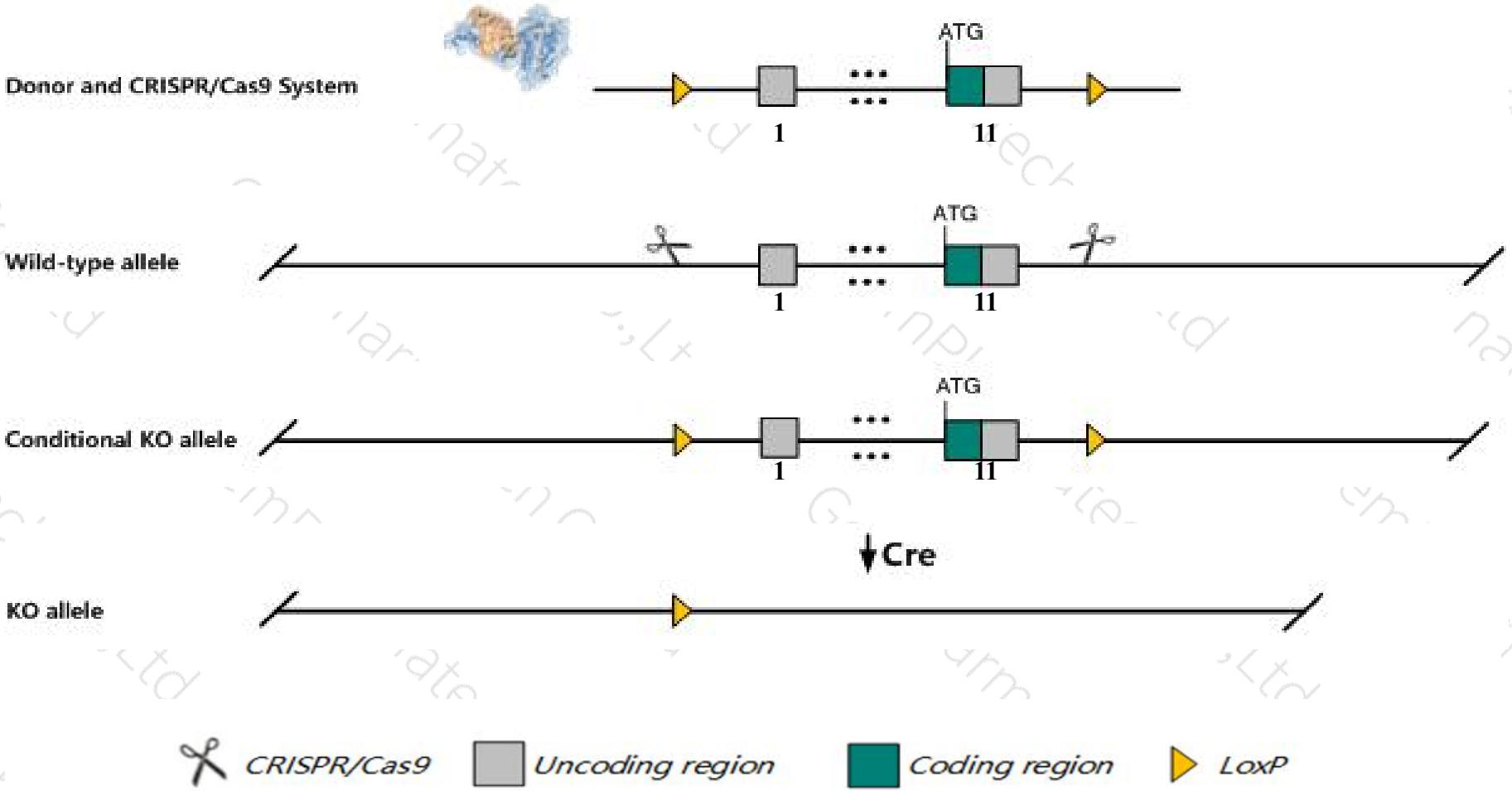
Project Overview

Project Name	***Hsp90ab1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hsp90ab1* gene. The schematic diagram is as follows:



Technical routes

- The *Hsp90ab1* gene has 8 transcripts. According to the structure of *Hsp90ab1* gene, exon1-exon11 of *Hsp90ab1-201* (ENSMUST00000024739.13) transcript is recommended as the knockout region.The region contains most 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 *Hsp90ab1* 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.

Notice

- According to the existing MGI data,Homozygotes for a gene-trapped null mutation exhibit placental defects including failure to form a placental labyrinth and lack of expansion of allantoic blood vessels. Mutants die around mid-gestation.

- The *Hsp90ab1* gene is located on the Chr17. 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）

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Hsp90ab1 heat shock protein 90 alpha (cytosolic), class B member 1 [Mus musculus (house mouse)]

Gene ID: 15516, updated on 7-Apr-2019

Summary

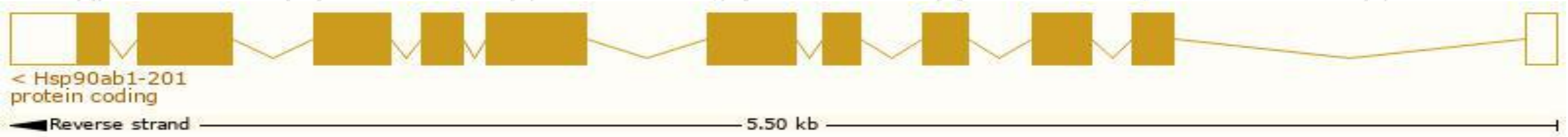
Official Symbol	Hsp90ab1 provided by MGI
Official Full Name	heat shock protein 90 alpha (cytosolic), class B member 1 provided by MGI
Primary source	MGI:MGI:96247
See related	Ensembl:ENSMUSG00000023944
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	90kDa, AL022974, C81438, Hsp84, Hsp84-1, Hsp90, Hspcb
Expression	Ubiquitous expression in CNS E11.5 (RPKM 511.2), placenta adult (RPKM 332.7) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

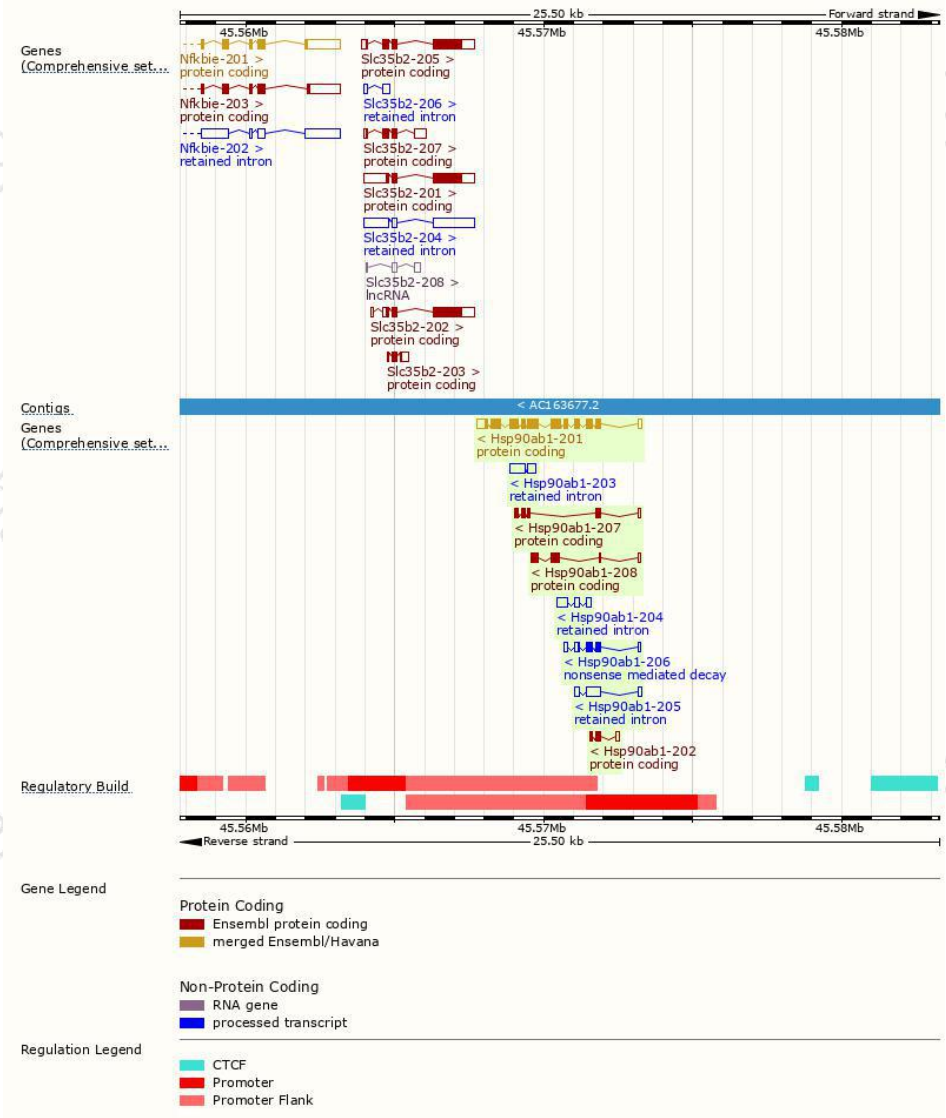
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hsp90ab1-201	ENSMUST00000024739.13	2520	724aa	Protein coding	CCDS28812	P11499 Q71LX8	TSL:1 GENCODE basic APPRIS P1
Hsp90ab1-208	ENSMUST00000166469.7	656	189aa	Protein coding	-	E9Q3D6	CDS 3' incomplete TSL:5
Hsp90ab1-207	ENSMUST00000165127.7	572	161aa	Protein coding	-	E9Q0C3	CDS 3' incomplete TSL:5
Hsp90ab1-202	ENSMUST00000130406.1	351	76aa	Protein coding	-	D3Z1R1	CDS 3' incomplete TSL:3
Hsp90ab1-206	ENSMUST00000163966.7	703	112aa	Nonsense mediated decay	-	E9PX27	TSL:5
Hsp90ab1-203	ENSMUST00000145205.1	797	No protein	Retained intron	-	-	TSL:1
Hsp90ab1-205	ENSMUST00000151306.1	764	No protein	Retained intron	-	-	TSL:3
Hsp90ab1-204	ENSMUST00000146770.7	685	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Hsp90ab1-201* transcript,The transcription is shown below

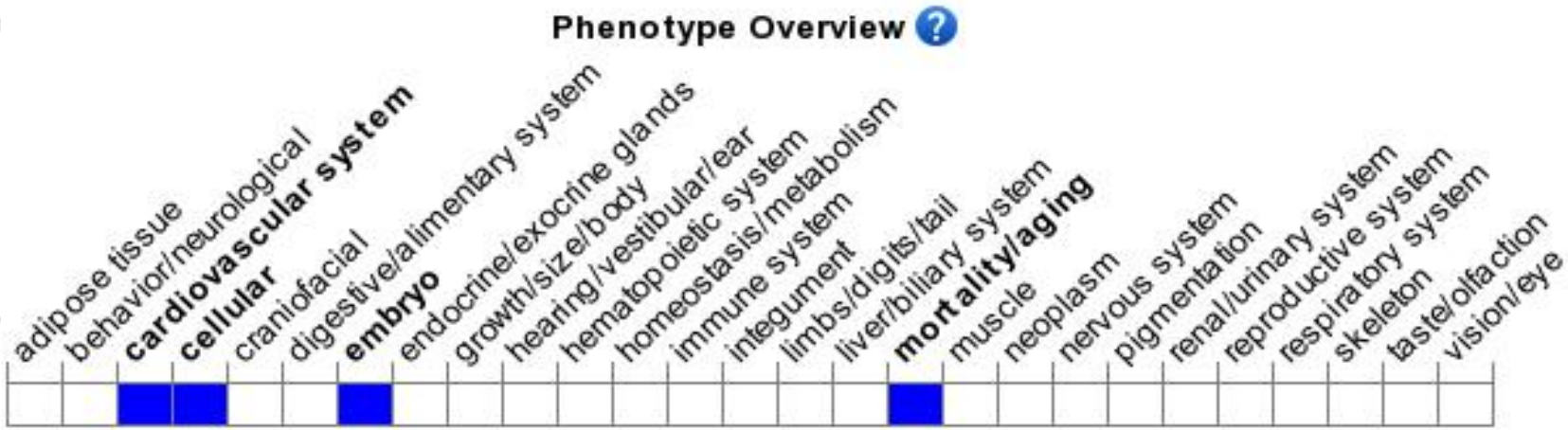


Genomic location distribution



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/).

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

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