

# *Hsp90aa1* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Hsp90aa1*

**Project type**

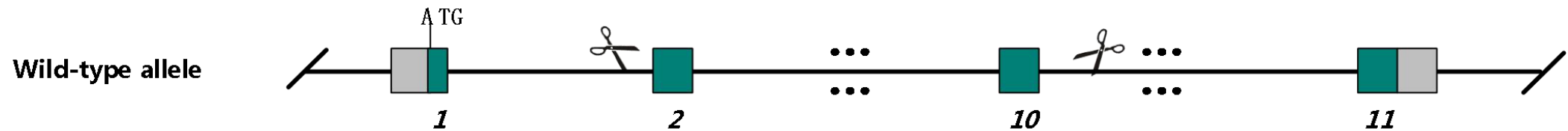
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- 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 sys

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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



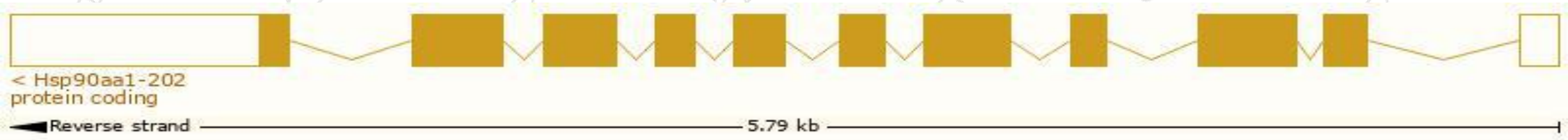
|                           |                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------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

# Transcript information (Ensembl)

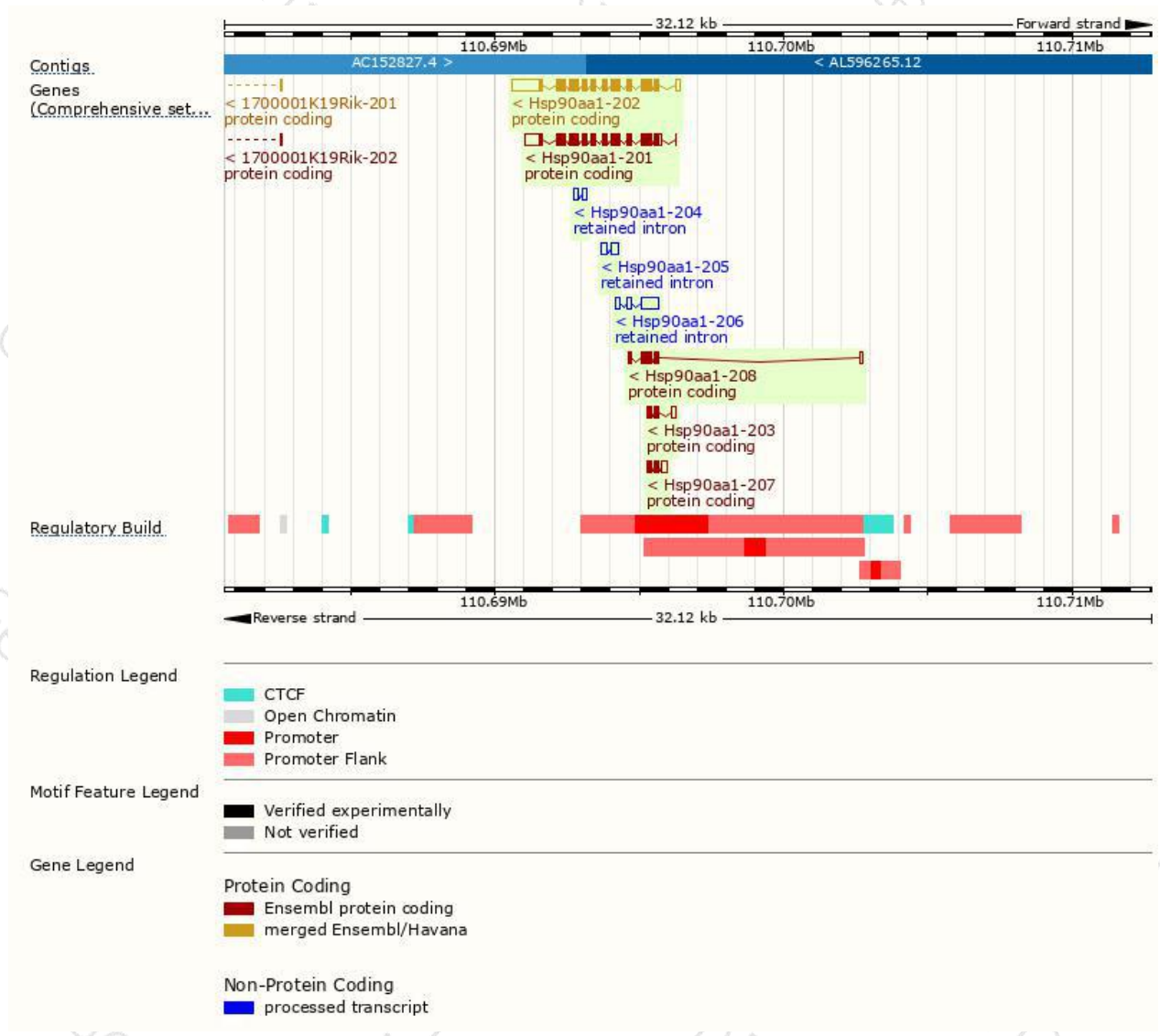
The gene has 8 transcripts,all transcripts are shown below:

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

The strategy is based on the design of *Hsp90aa1-202* transcript,The transcription is shown below

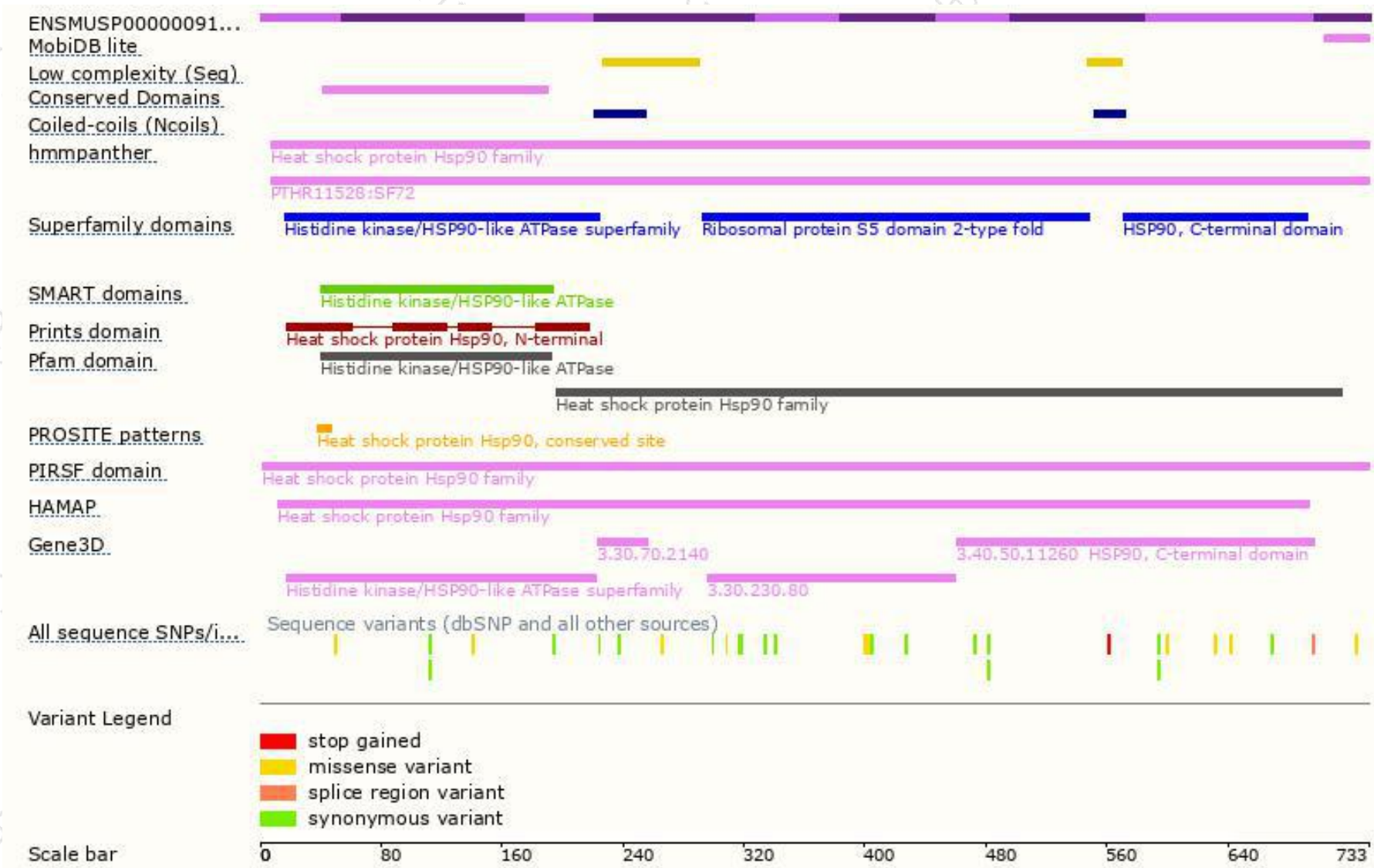


# Genomic location distribution

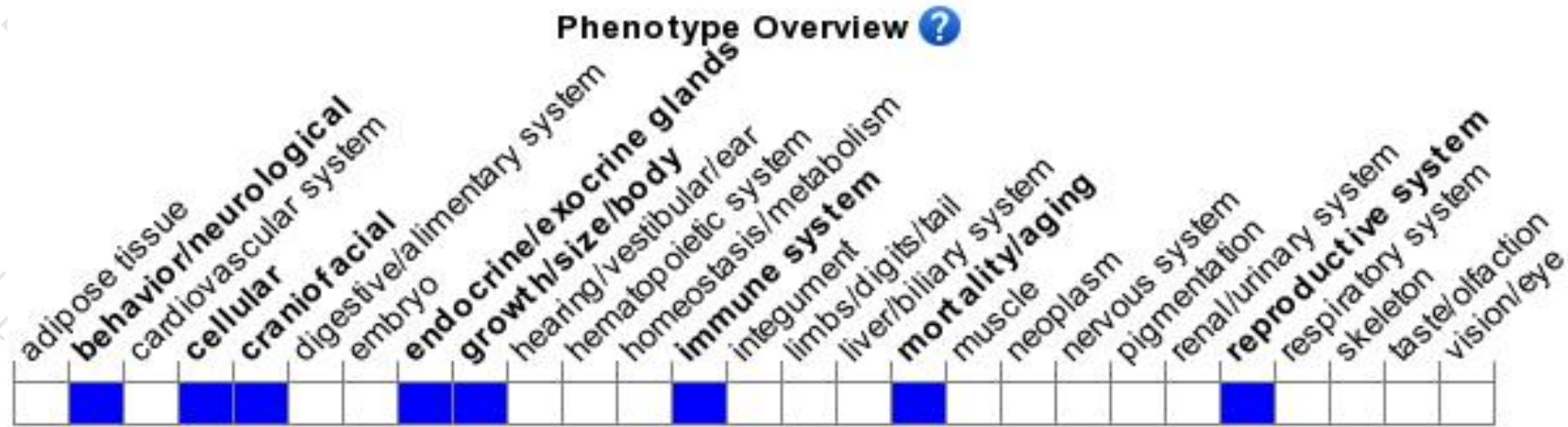




# Protein domain



# 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.

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