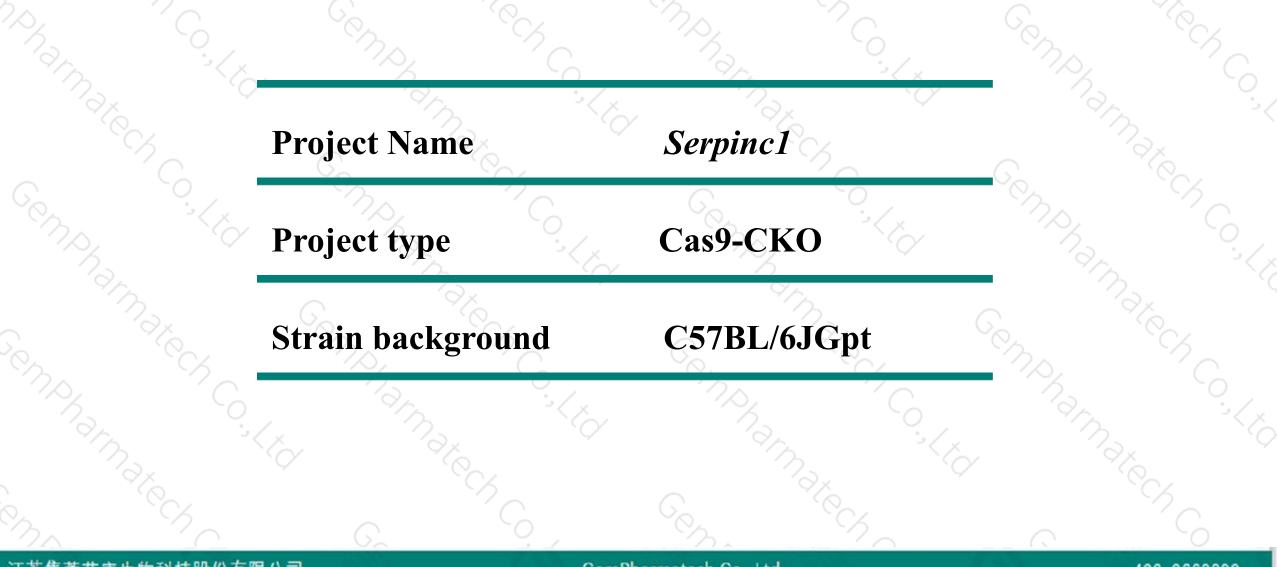


Serpinc1 Cas9-CKO Strategy

Designer: Reviewer: Design Date: Huimin Su Ruirui Zhang 2019/9/5

Project Overview





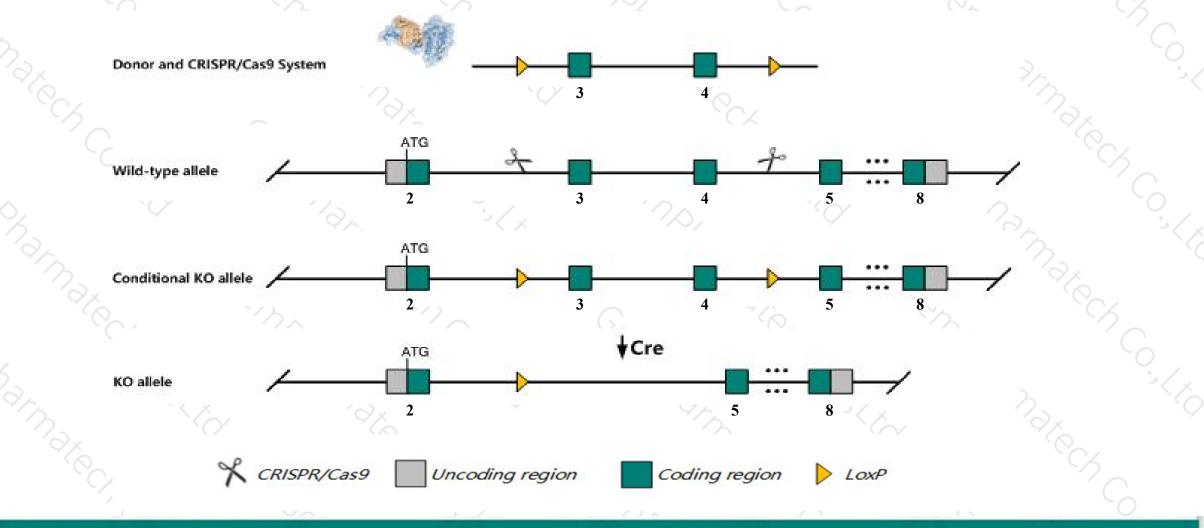
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Conditional Knockout strategy



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



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The Serpinc1 gene has 8 transcripts. According to the structure of Serpinc1 gene, exon3-exon4 of Serpinc1-201 (ENSMUST00000064725.10) transcript is recommended as the knockout region. The region contains 586bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify Serpinc1 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, Homozygotes for a targeted null mutation exhibit extensive subcutaneous hemorrhage, fibrin deposits in the myocardium and liver, and lethality by embryonic day 16.5. Heterozygotes challenged with lipopolysaccharide show increased fibrin deposits.
- The Serpinc1 gene is located on the Chr1. 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)



☆ ?

Serpinc1 serine (or cysteine) peptidase inhibitor, clade C (antithrombin), member 1 [*Mus musculus* (house mouse)] Gene ID: 11905, updated on 12-Aug-2019

Summary

Official SymbolSerpinc1 provided by MGIOfficial Full Nameserine (or cysteine) peptidase inhibitor, clade C (antithrombin), member 1 provided by MGIPrimary sourceMGI:MGI:88095See relatedEnsembl:ENSMUSG0000026715Gene typeprotein codingRefSeq statusVALIDATEDOrganismMus musculusLineageEukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae;
Murinae; Mus; MusAlso known asAt3; At-3; ATIII; AI114908ExpressionBiased expression in liver adult (RPKM 699.7), liver E18 (RPKM 396.3) and 2 other tissues See more
human all

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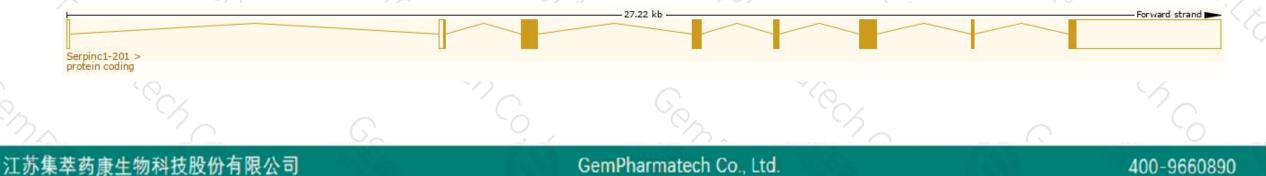
Transcript information (Ensembl)



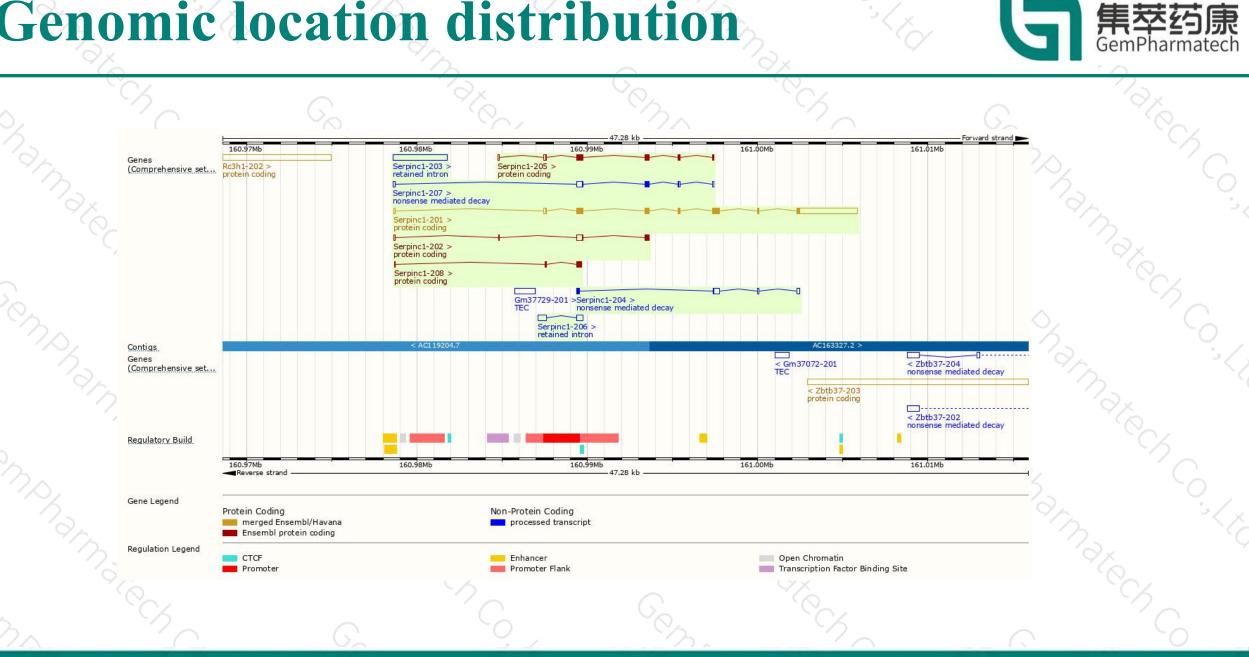
The gene has 8 transcripts, all transcripts are shown below:

Name 🍦	Transcript ID 🍦	bp 🛔	Protein 🖕	Biotype .	CCDS 🖕	UniProt 🖕	Flags		
Serpinc1-201	ENSMUST0000064725.10	4970	<u>465aa</u>	Protein coding	<u>CCDS15411</u> 교	P32261@Q543J5@	TSL:1 GENCODE basic APPRIS P1		
Serpinc1-205	ENSMUST00000194592.1	1044	<u>286aa</u>	Protein coding	1050	<u>A0A0A6YWH7</u> &	CDS 3' incomplete TSL:5		
Serpinc1-202	ENSMUST00000191936.1	725	<u>92aa</u>	Protein coding	1751	A0A0A6YXS8	TSL:3 GENCODE basic		
Serpinc1-208	ENSMUST00000195760.1	360	<u>107aa</u>	Protein coding	1050	A0A0A6YX70	CDS 3' incomplete TSL:3		
Serpinc1-207	ENSMUST00000195438.5	900	<u>103aa</u>	Nonsense mediated decay	1.059	A0A0A6YX49	TSL:5		
Serpinc1-204	ENSMUST00000194455.1	742	<u>65aa</u>	Nonsense mediated decay	1050	A0A0A6YX85	CDS 5' incomplete TSL:5		
Serpinc1-203	ENSMUST00000193477.1	3186	No protein	Retained intron	659	-	TSL:NA		
Serpinc1-206	ENSMUST00000194777.1	867	No protein	Retained intron	175	-	TSL:2		

The strategy is based on the design of *Serpinc1-201* transcript, The transcription is shown below



Genomic location distribution



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Protein domain



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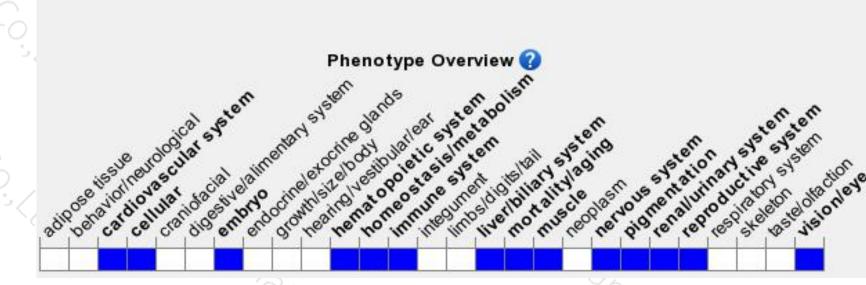
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400-9660890

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, Homozygotes for a targeted null mutation exhibit extensive subcutaneous hemorrhage, fibrin deposits in the myocardium and liver, and lethality by embryonic day 16.5. Heterozygotes challenged with lipopolysaccharide show increased fibrin deposits.

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If you have any questions, you are welcome to inquire. Tel: 400-9660890



