Bcas2 Cas9-KO Strategy

Designer: Daohua Xu
Reviewer: Huimin Su

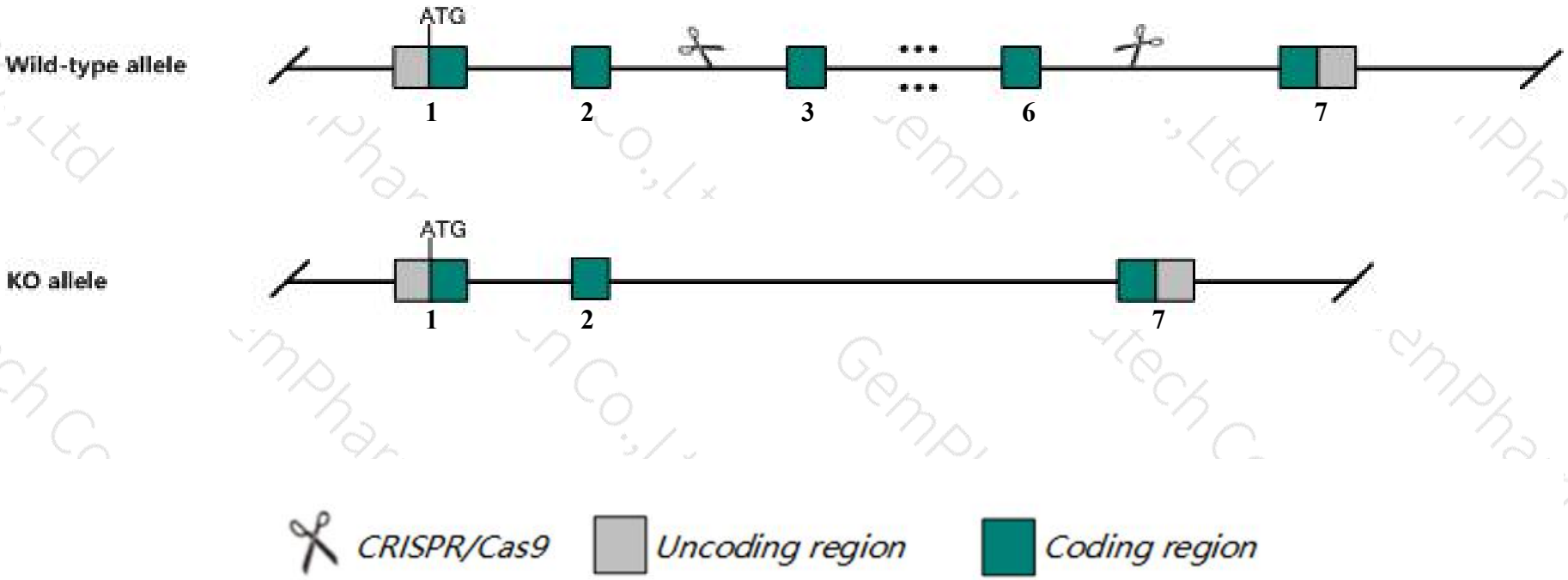
Design Date: 2020-1-15

Project Overview

Project Name	***Bcas2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bcas2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Bcas2* gene has 6 transcripts. According to the structure of *Bcas2* gene, exon3-exon6 of *Bcas2-201* (ENSMUST00000005830.14) transcript is recommended as the knockout region.The region contains 365bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Bcas2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Mice homozygous for a knock-out allele exhibit complete lethality.
Pups of dams homozygous for a conditional allele activated in oocytes exhibit lethality of pups associated with defects in DNA damage repair and DNA replication.

➢ The *Bcas2* gene is located on the Chr3. 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）

集萃药康 GemPharmatech

Bcas2 breast carcinoma amplified sequence 2 [Mus musculus (house mouse)]

Gene ID: 68183, updated on 31-Jan-2019

Summary

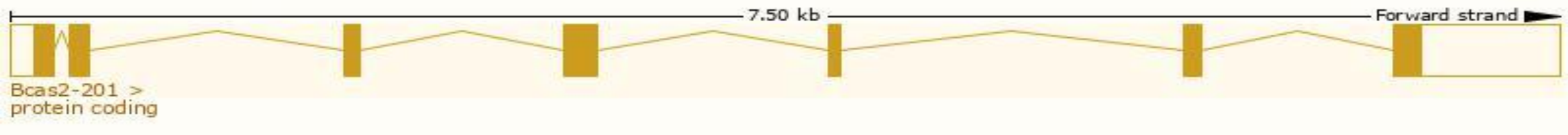
Official Symbol	Bcas2 provided by MGI
Official Full Name	breast carcinoma amplified sequence 2 provided by MGI
Primary source	MGI:MGI:1915433
See related	Ensembl:ENSMUSG00000005687
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	6430539P16Rik, AI132645, C76366, C80030
Expression	Ubiquitous expression in liver E14 (RPKM 58.9), liver E14.5 (RPKM 49.6) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

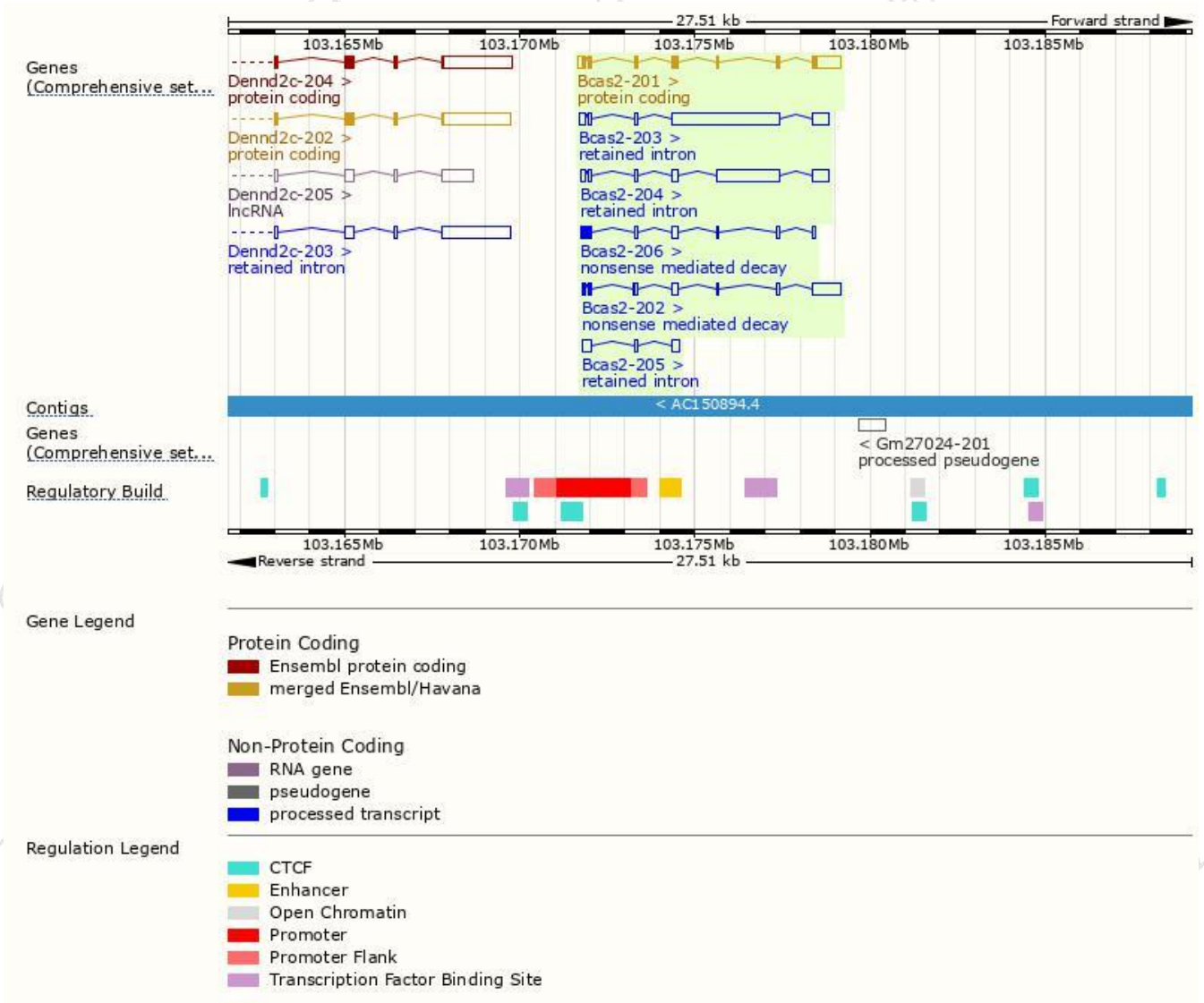
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bcas2-201	ENSMUST00000005830.14	1467	225aa	Protein coding	CCDS17691	Q9D287	TSL:1 GENCODE basic APPRIS P1
Bcas2-202	ENSMUST00000135017.1	1405	78aa	Nonsense mediated decay	-	D6RGA5	TSL:1
Bcas2-206	ENSMUST00000155520.7	737	88aa	Nonsense mediated decay	-	D6RHR7	TSL:2
Bcas2-203	ENSMUST00000136937.7	3878	No protein	Retained intron	-	-	TSL:2
Bcas2-204	ENSMUST00000139489.7	2717	No protein	Retained intron	-	-	TSL:2
Bcas2-205	ENSMUST00000147042.1	535	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Bcas2-201* transcript,The transcription is shown below

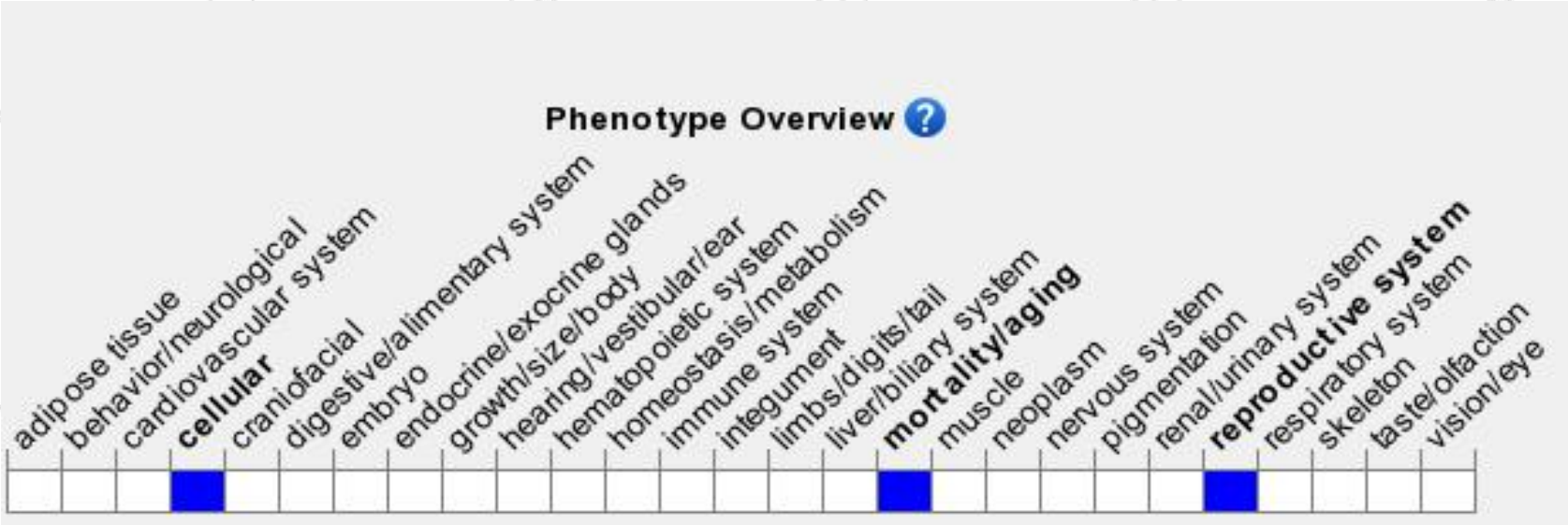


Genomic location distribution



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 knock-out allele exhibit complete lethality. Pups of dams homozygous for a conditional allele activated in oocytes exhibit lethality of pups associated with defects in DNA damage repair and DNA replication.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd