

B2M Cas9-KO Strategy

Designer: Daohua Xu

Project Overview

Project Name

B2M

Project type

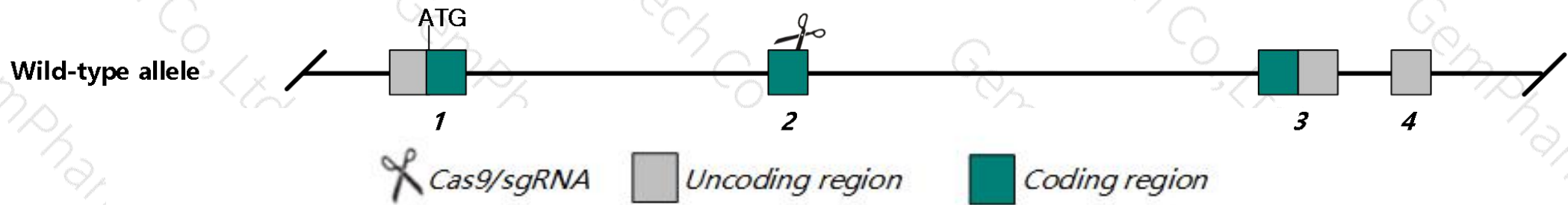
Cas9-KO

Strain background

NOD/ShiLtJ

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *B2M* gene. The schematic diagram is as follows:



- The *B2M* gene has 1 transcript. According to the structure of *B2M* gene, exon2 part of the coding area of MGP_NODShiLtJ_T0056959.1 transcript is recommended as the knockout region. The region contains key coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *B2M* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of NOD/ShiLtJ 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 NOD/ShiLtJ mice.

- According to the existing MGI data, Homozygotes lacking B2m appear normal, but have no detectable MHC class I antigen on their cells and are deficient in CD4- CD8+ T cells which mediate cytotoxic T cell function. Mutant mice are also subject to systemic iron loading.
- The *B2M* gene is located on the Chr2. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

B2m beta-2 microglobulin [*Mus musculus* (house mouse)]

Gene ID: 12010, updated on 28-May-2019

Summary

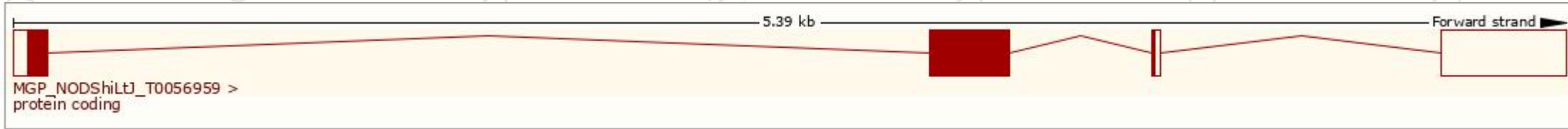
Official Symbol	B2m provided by MGI
Official Full Name	beta-2 microglobulin provided by MGI
Primary source	MGI:MGI:88127
See related	Ensembl:ENSMUSG00000060802
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ly-m11; beta2m; beta2-m
Expression	Broad expression in liver adult (RPKM 838.6), mammary gland adult (RPKM 675.3) and 20 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

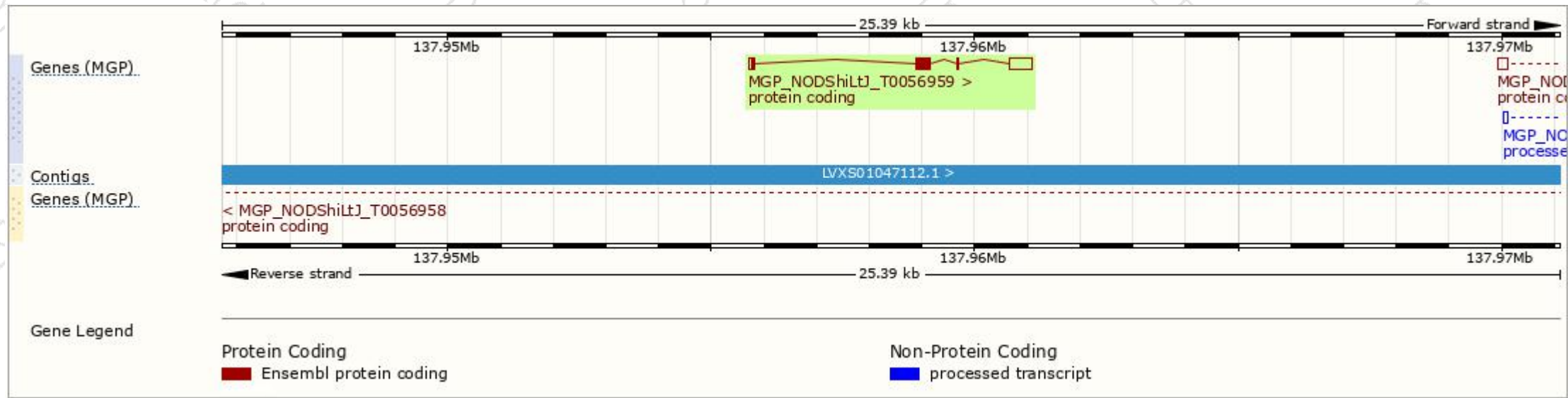
The gene has 1 transcript,all transcripts are shown below:

Show/hide columns (1 hidden)					Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
-	MGP_NODShiLtJ_T0056959.1	859	119aa	Protein coding	CCDS16654	P01887	-

The strategy is based on the design of *MGP_NODShiLtJ_T0056959.1* transcript,The transcription is shown below



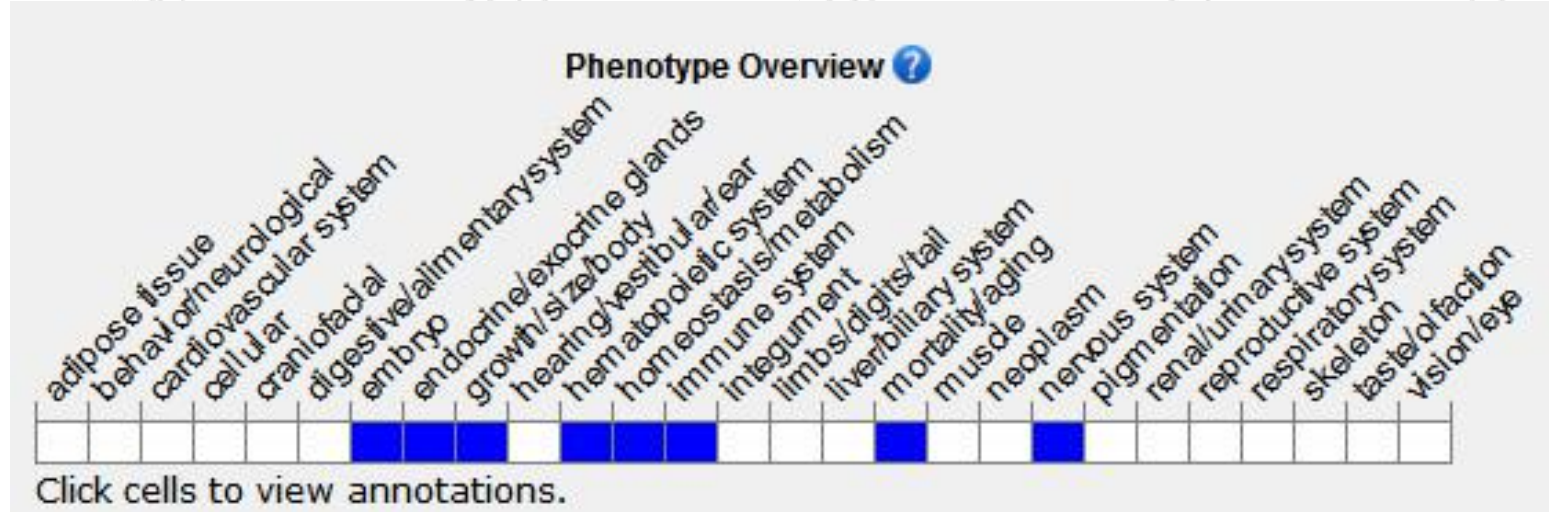
Genomic location distribution



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, Homozygotes lacking B2m appear normal, but have no detectable MHC class I antigen on their cells and are deficient in CD4⁻ CD8⁺ T cells which mediate cytotoxic T cell function. Mutant mice are also subject to systemic iron loading.

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

Tel: 025-5864 1534

