

As3mt Cas9-CKO Strategy

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Project Overview

Project Name

As3mt

Project type

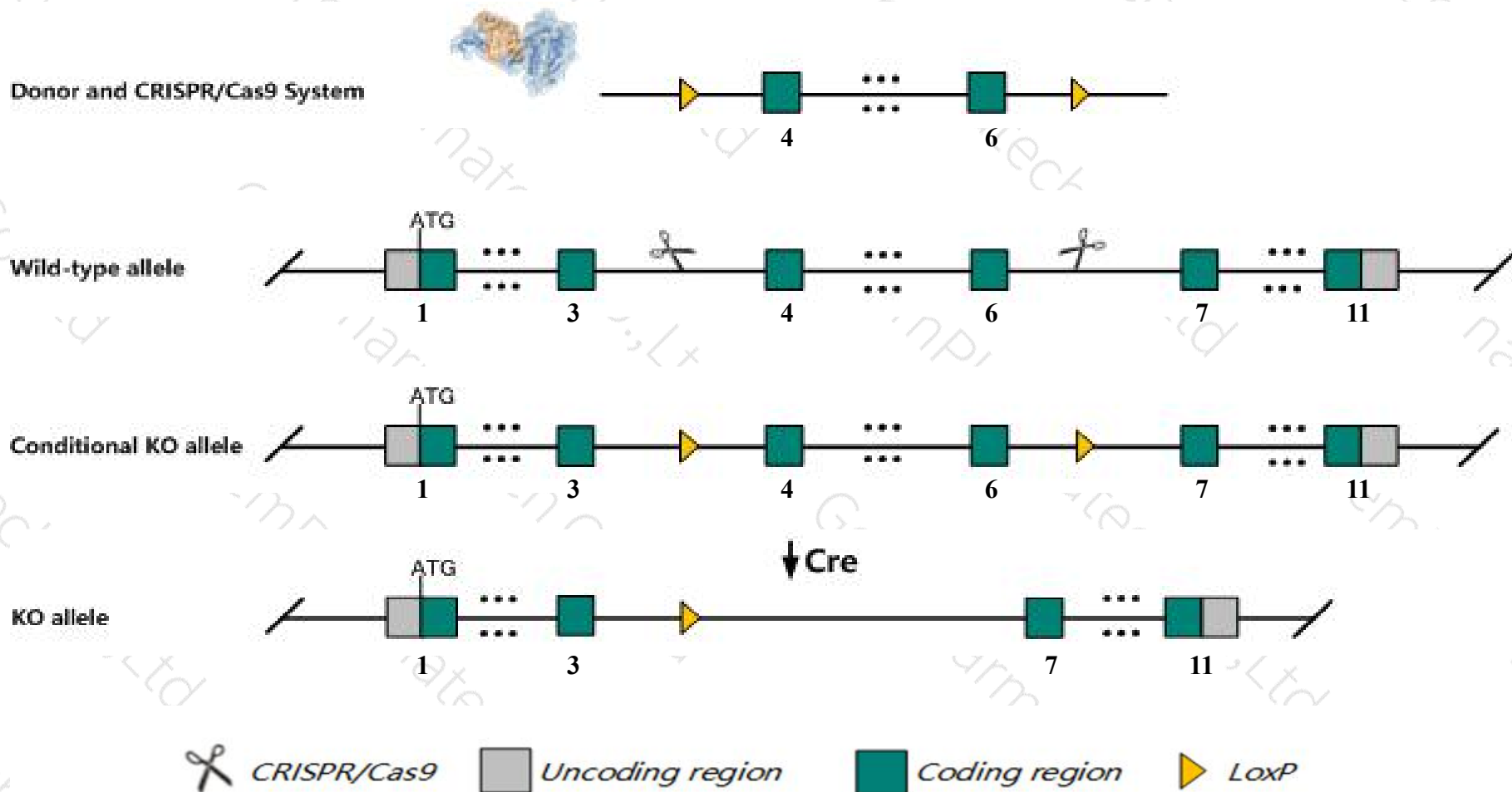
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *As3mt* gene. The schematic diagram is as follows:



Technical routes

- The *As3mt* gene has 7 transcripts. According to the structure of *As3mt* gene, exon4-exon6 of *As3mt*-201 (ENSMUST00000003655.8) transcript is recommended as the knockout region. The region contains 358bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *As3mt* 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, Mice homozygous for a null allele have abnormalities in arsenic methylation and in the distribution/retention of orally administered arsenate.
- The *As3mt* gene is located on the Chr19. 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)

As3mt arsenic (+3 oxidation state) methyltransferase [Mus musculus (house mouse)]

Gene ID: 57344, updated on 31-Jan-2019

Summary



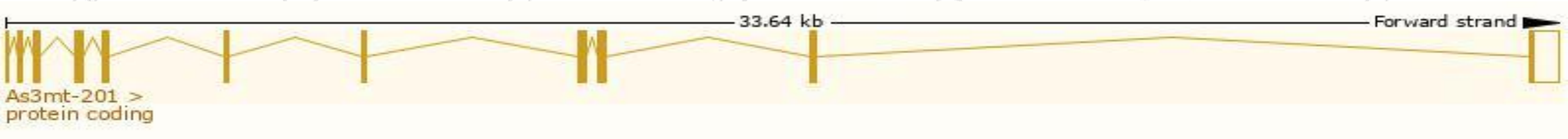
Official Symbol	As3mt provided by MGI
Official Full Name	arsenic (+3 oxidation state) methyltransferase provided by MGI
Primary source	MGI:MGI:1929882
See related	Ensembl:ENSMUSG000000003559
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310045H08Rik, Cyt19
Expression	Ubiquitous expression in placenta adult (RPKM 19.2), heart adult (RPKM 12.7) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

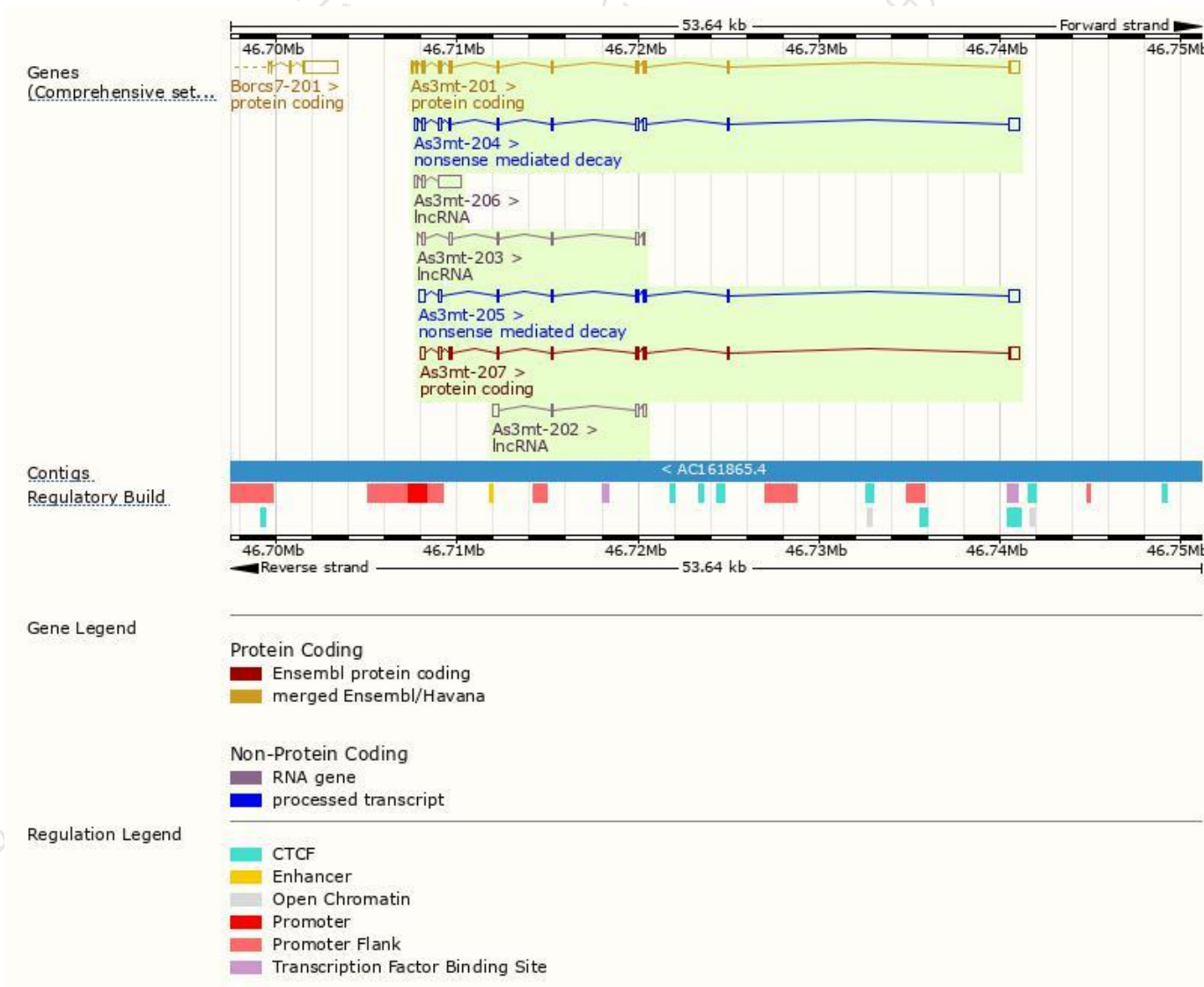
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
As3mt-201	ENSMUST00000003655.8	1736	376aa	Protein coding	CCDS50458	Q91WU5	TSL:1 GENCODE basic APPRIS P1
As3mt-207	ENSMUST00000237219.1	1719	273aa	Protein coding	-	-	GENCODE basic
As3mt-204	ENSMUST00000236063.1	1659	65aa	Nonsense mediated decay	-	-	
As3mt-205	ENSMUST00000236465.1	1620	99aa	Nonsense mediated decay	-	-	
As3mt-206	ENSMUST00000236473.1	1529	No protein	lncRNA	-	-	
As3mt-203	ENSMUST00000235842.1	642	No protein	lncRNA	-	-	
As3mt-202	ENSMUST00000235266.1	641	No protein	lncRNA	-	-	

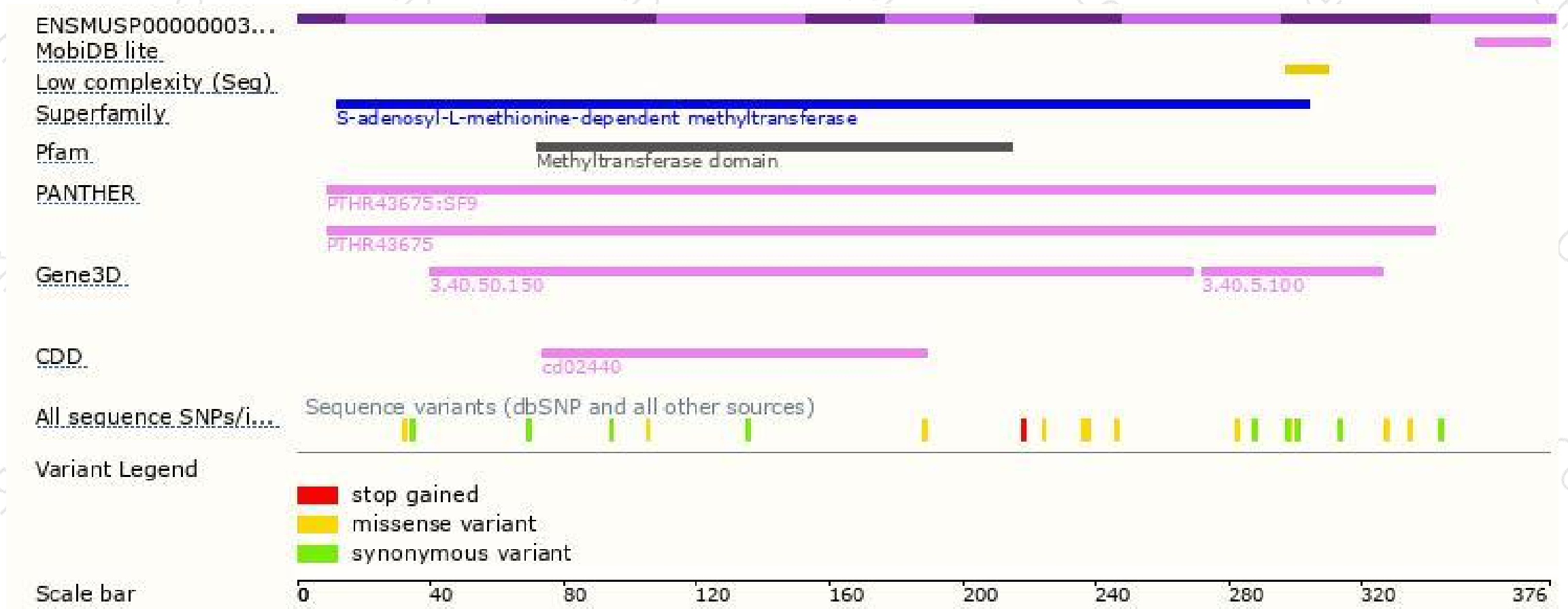
The strategy is based on the design of *As3mt-201* transcript,The transcription is shown below



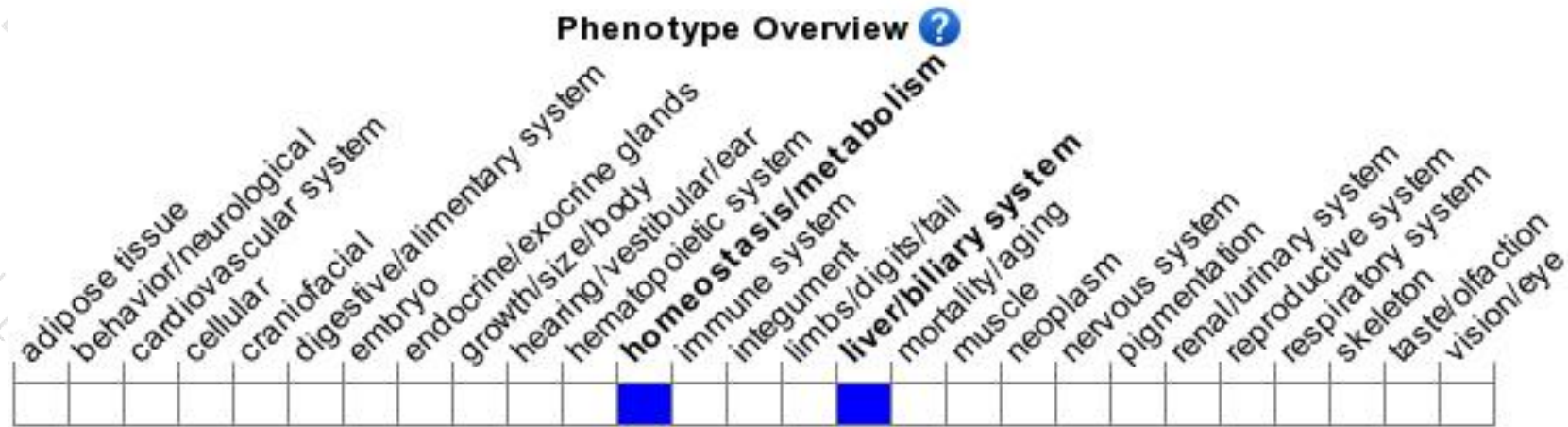
Genomic location distribution



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 null allele have abnormalities in arsenic methylation and in the distribution/retention of orally administered arsenate.

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

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