Mib2 Cas9-KO Strategy

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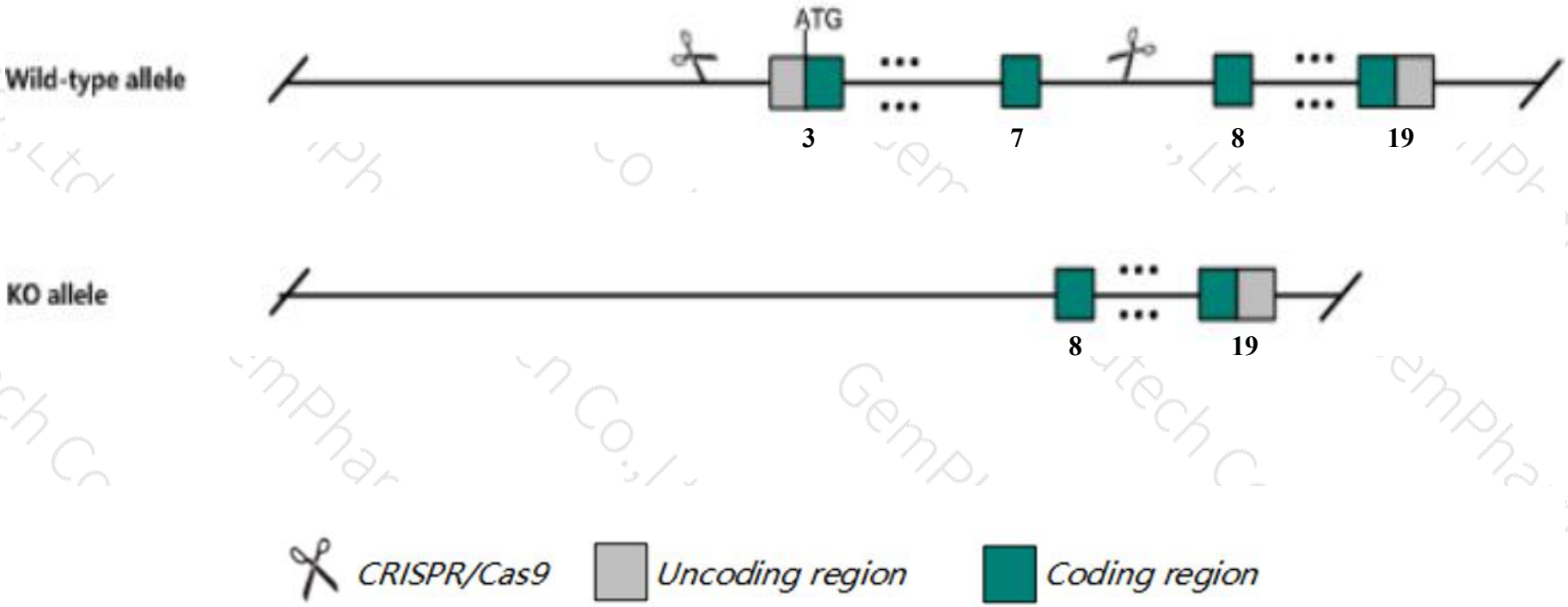
Design Date: 2020-3-4

Project Overview

Project Name	***Mib2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mib2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Mib2* gene has 9 transcripts. According to the structure of *Mib2* gene, exon3-exon7 of *Mib2-201* (ENSMUST00000103176.9) 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 *Mib2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Mice homozygous for a knock-out allele display exencephaly with a variable penetrance that depends on the genetic background. Mice homozygous for a reporter/null allele are viable, fertile and show normal growth, body weight and brain morphology.

➢Transcript 207 CDS 5' and 3' incomplete the influences is unknown.

➢ The *Mib2* gene is located on the Chr4. 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）

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Mib2 mindbomb E3 ubiquitin protein ligase 2 [Mus musculus (house mouse)]

Gene ID: 76580, updated on 22-Mar-2019

Summary

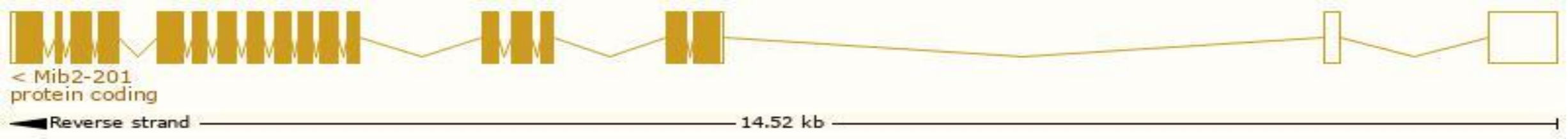
Official Symbol	Mib2 provided by MGI
Official Full Name	mindbomb E3 ubiquitin protein ligase 2 provided by MGI
Primary source	MGI:MGI:2679684
See related	Ensembl:ENSMUSG00000029060
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2210008I11Rik, Zzank1, skd
Expression	Ubiquitous expression in ovary adult (RPKM 36.2), adrenal adult (RPKM 23.1) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

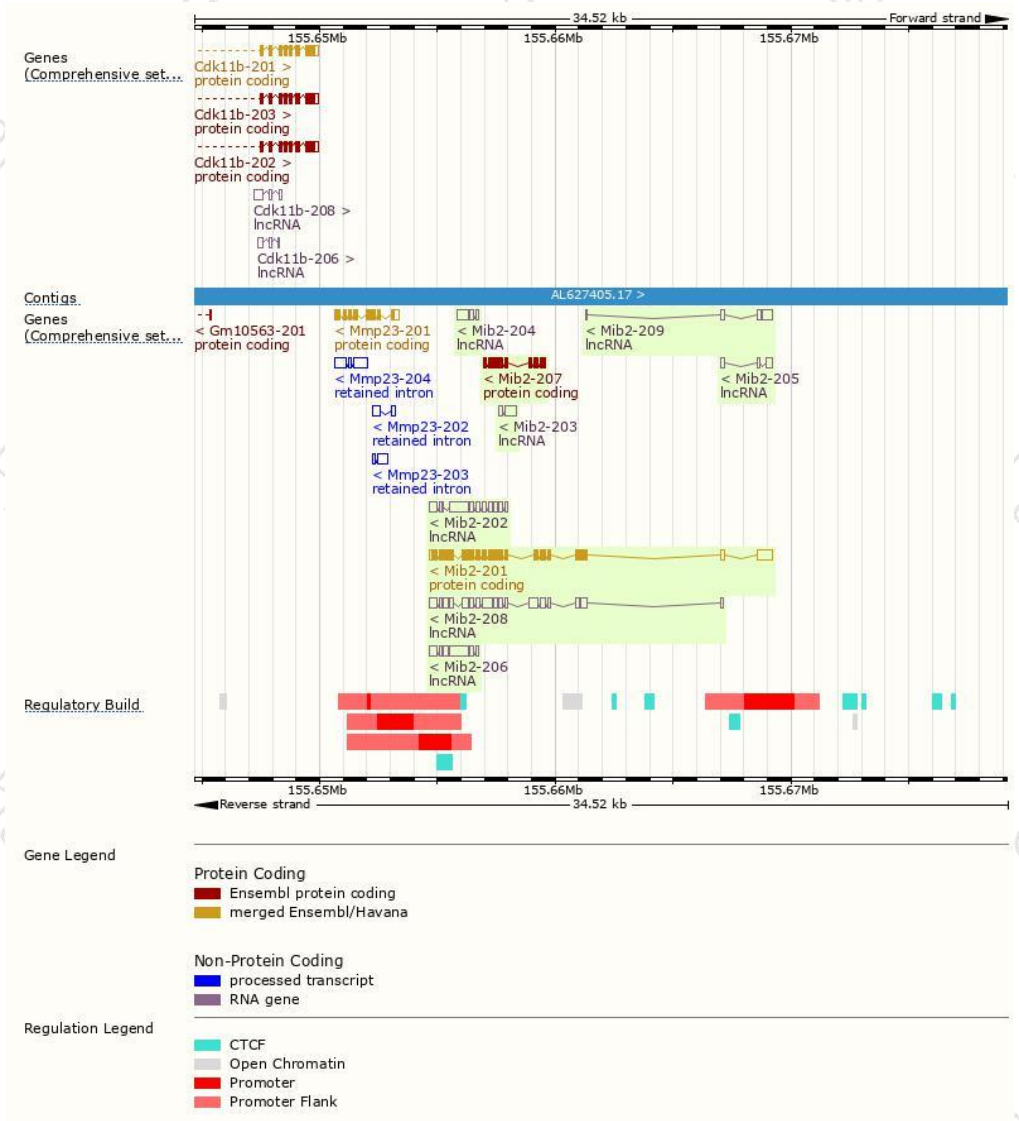
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mib2-201	ENSMUST00000103176.9	3642	921aa	Protein coding	CCDS19035	Q8R516	TSL:1 GENCODE basic APPRIS P1
Mib2-207	ENSMUST00000141108.1	1125	375aa	Protein coding	-	A2A9P8	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Mib2-208	ENSMUST00000151843.7	3282	No protein	lncRNA	-	-	TSL:1
Mib2-202	ENSMUST00000128204.7	2202	No protein	lncRNA	-	-	TSL:2
Mib2-206	ENSMUST00000139788.7	1558	No protein	lncRNA	-	-	TSL:2
Mib2-209	ENSMUST00000155189.1	751	No protein	lncRNA	-	-	TSL:3
Mib2-204	ENSMUST00000139134.1	677	No protein	lncRNA	-	-	TSL:2
Mib2-203	ENSMUST00000130237.1	622	No protein	lncRNA	-	-	TSL:3
Mib2-205	ENSMUST00000139289.1	470	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Mib2-201* transcript,The transcription is shown below

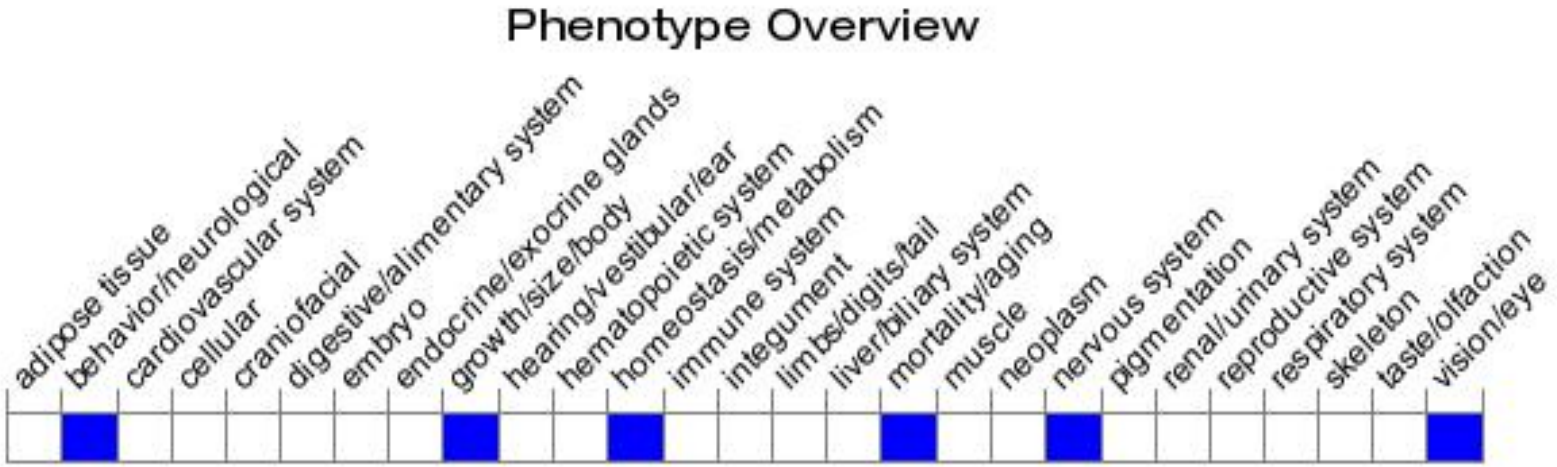


Genomic location distribution



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/).

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

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