

# ***Mib2 Cas9-CKO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

*Mib2*

**Project type**

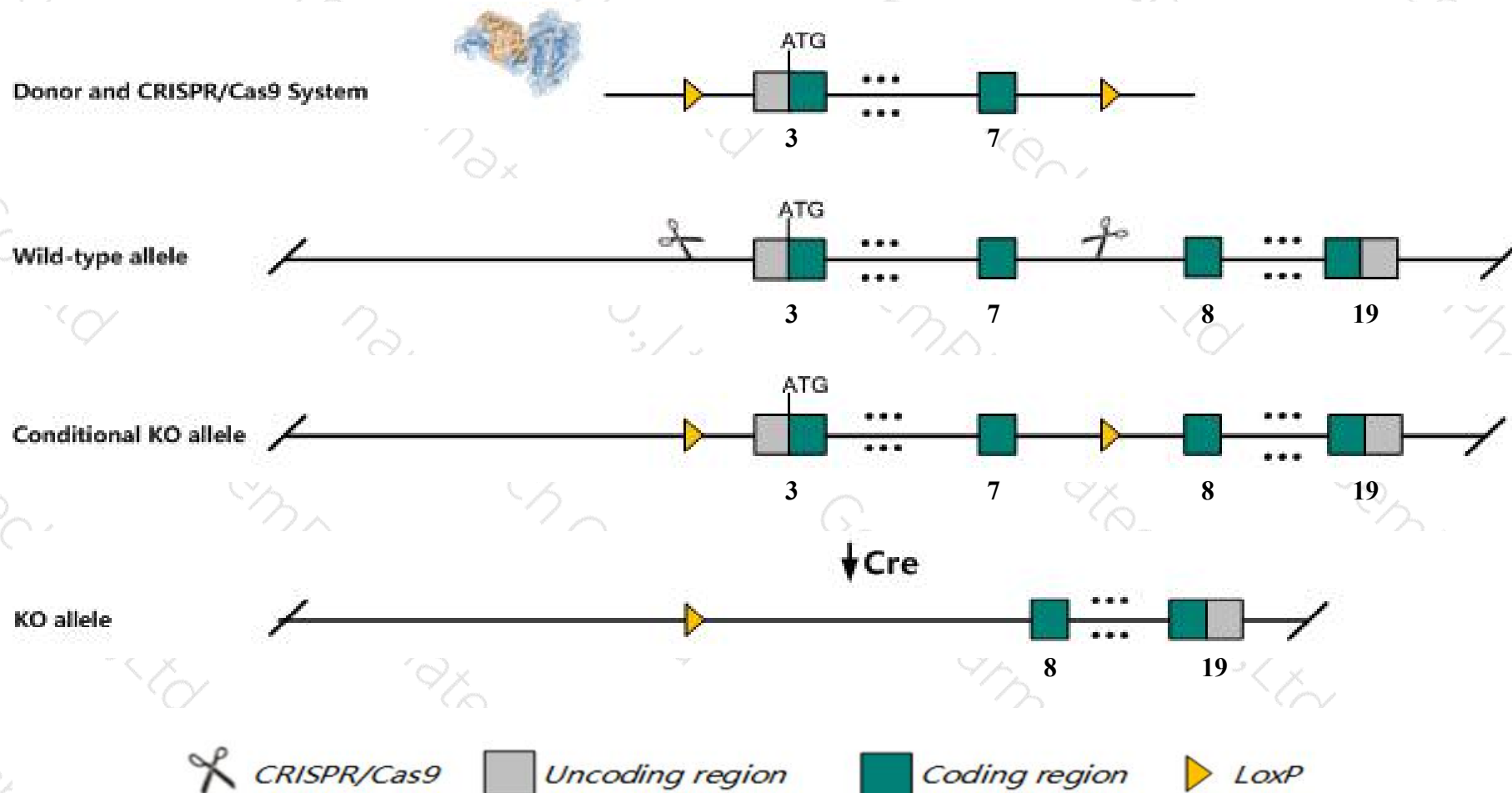
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

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



- 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 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 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.



# Gene information (NCBI)

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

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

### Summary



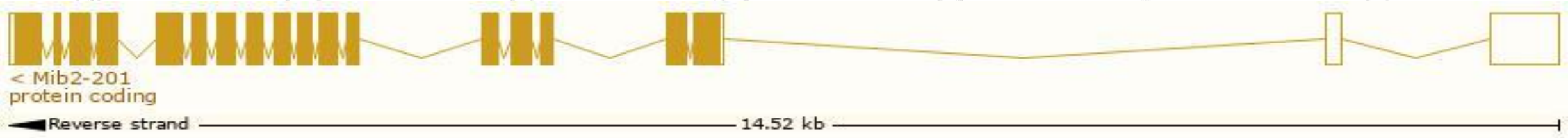
<b>Official Symbol</b>	Mib2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	mindbomb E3 ubiquitin protein ligase 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2679684</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000029060</a>
<b>Gene type</b>	protein coding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

# Transcript information (Ensembl)

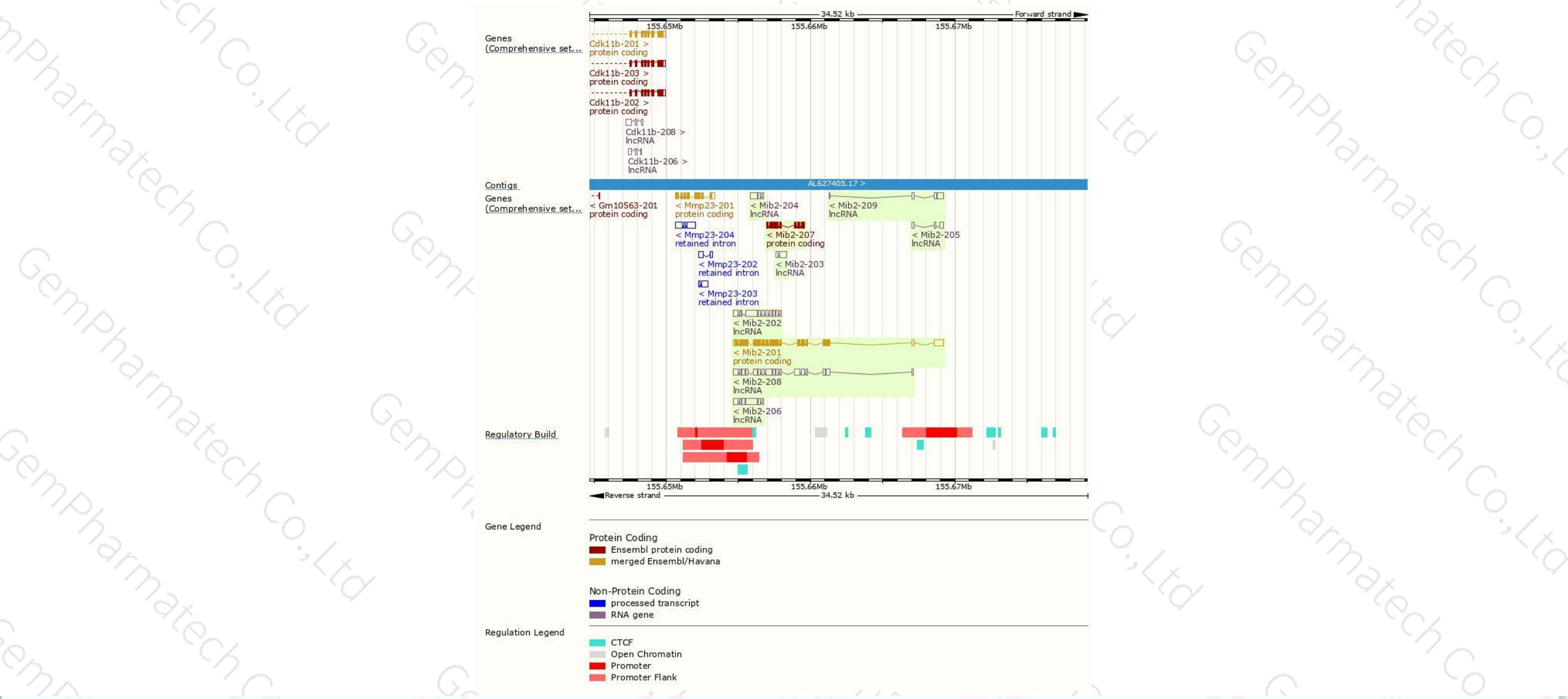
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mib2-201	<a href="#">ENSMUST00000103176.9</a>	3642	<a href="#">921aa</a>	Protein coding	<a href="#">CCDS19035</a>	<a href="#">Q8R516</a>	TSL:1 GENCODE basic APPRIS P1
Mib2-207	<a href="#">ENSMUST00000141108.1</a>	1125	<a href="#">375aa</a>	Protein coding	-	<a href="#">A2A9P8</a>	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	<a href="#">ENSMUST00000151843.7</a>	3282	No protein	lncRNA	-	-	TSL:1
Mib2-202	<a href="#">ENSMUST00000128204.7</a>	2202	No protein	lncRNA	-	-	TSL:2
Mib2-206	<a href="#">ENSMUST00000139788.7</a>	1558	No protein	lncRNA	-	-	TSL:2
Mib2-209	<a href="#">ENSMUST00000155189.1</a>	751	No protein	lncRNA	-	-	TSL:3
Mib2-204	<a href="#">ENSMUST00000139134.1</a>	677	No protein	lncRNA	-	-	TSL:2
Mib2-203	<a href="#">ENSMUST00000130237.1</a>	622	No protein	lncRNA	-	-	TSL:3
Mib2-205	<a href="#">ENSMUST00000139289.1</a>	470	No protein	lncRNA	-	-	TSL:5

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

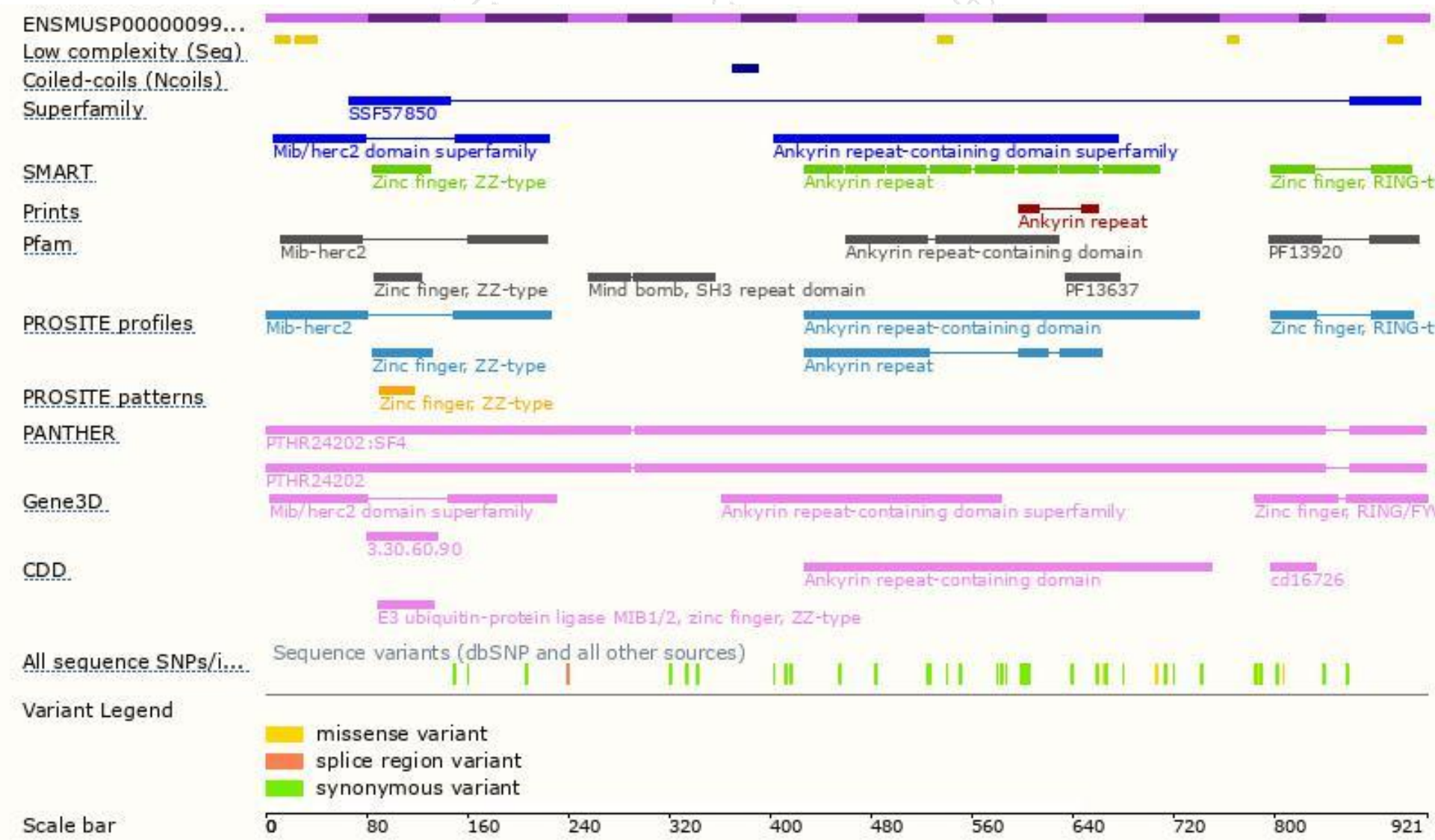


# Genomic location distribution

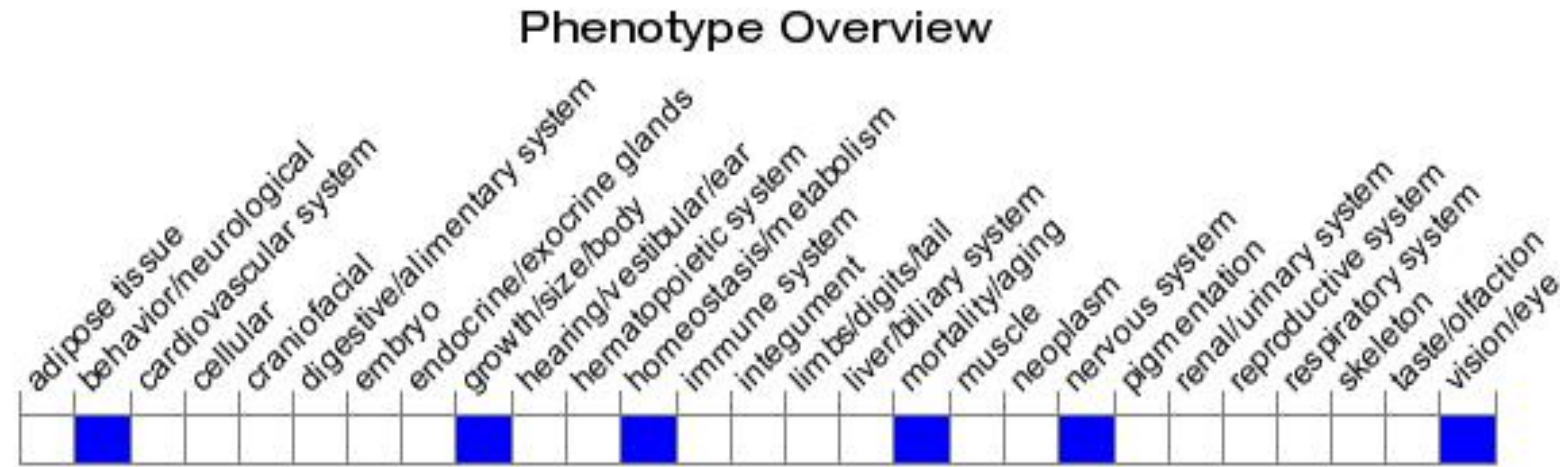




# Protein domain



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

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.

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

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