

# *Paxip1* Cas9-CKO Strategy

**Designer:**

**Daohua Xu**

**Design Date:**

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# Project Overview

**Project Name**

*Paxip1*

**Project type**

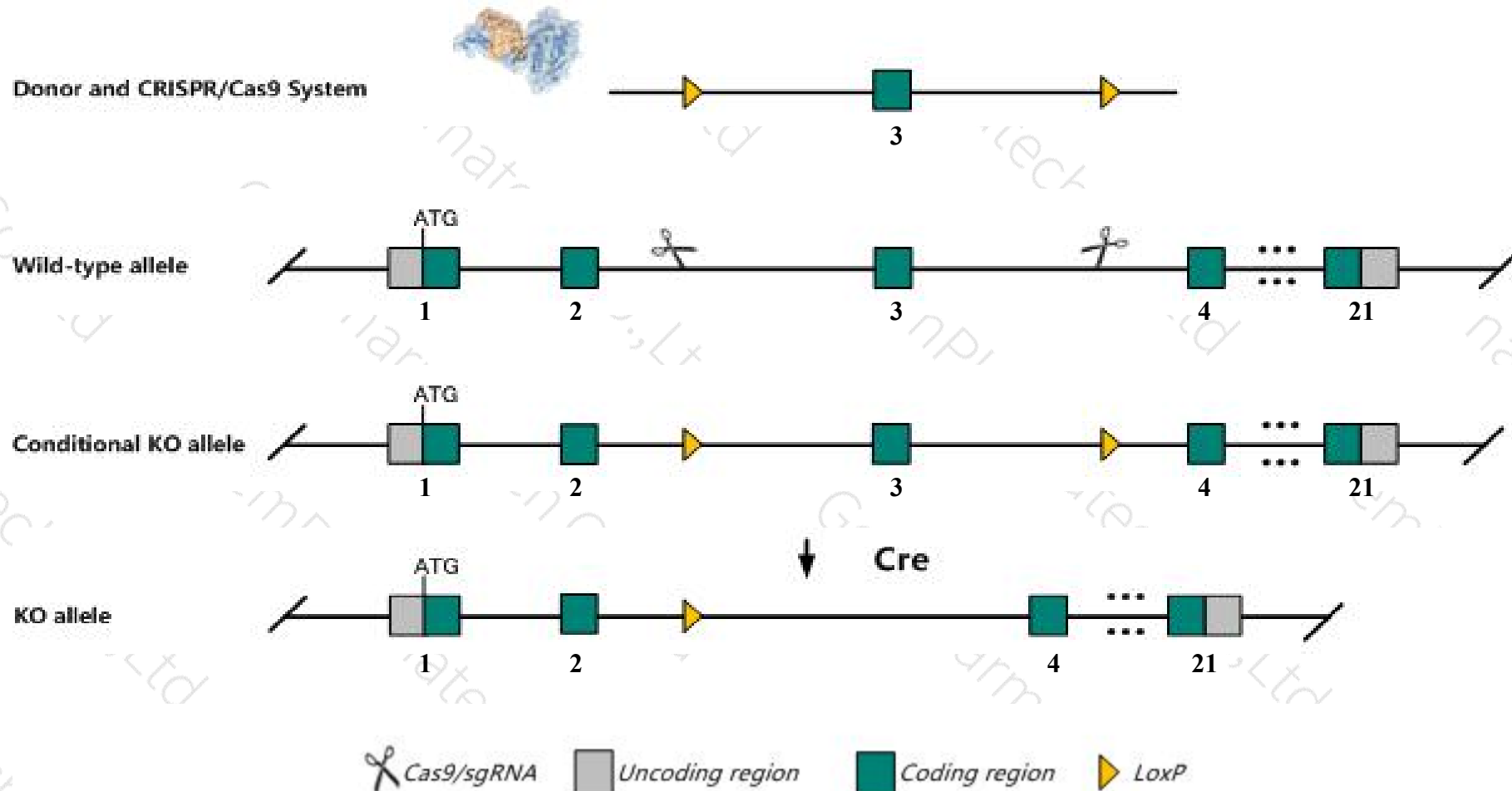
**Cas9-CKO**

**Strain background**

**C57BL/6J**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Paxip1* gene. The schematic diagram is as follows:



# Technical routes

- The *Paxip1* gene has 7 transcripts. According to the structure of *Paxip1* gene, exon3 of *Paxip1-201* (ENSMUST00000002291.11) transcript is recommended as the knockout region. The region contains 44bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Paxip1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.
- The flox mice was 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, Homozygous mutant mice are developmentally retarded and embryonic lethal by E9.5.
- The *Paxip1* gene is located on the Chr5. 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.



## Paxip1 PAX interacting (with transcription-activation domain) protein 1 [Mus musculus (house mouse)]

Gene ID: 55982, updated on 31-Jan-2019

### Summary



**Official Symbol** Paxip1 provided by [MGI](#)

**Official Full Name** PAX interacting (with transcription-activation domain) protein 1 provided by [MGI](#)

**Primary source** [MGI:MGI:1890430](#)

**See related** [Ensembl:ENSMUSG00000002221](#)

**Gene type** protein coding

**RefSeq status** REVIEWED

**Organism** [Mus musculus](#)

**Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

**Also known as** D5Ert149e, PTIP

**Summary** This gene encodes a nuclear-localized protein that contains six BRCT1 (C-terminal of breast cancer susceptibility protein) domains. The encoded protein is involved in the repair of DNA double-strand breaks and is necessary for progression through cell division. The protein also functions in the regulation of transcription by recruiting histone methyltransferases to gene promoters bound by the sequence-specific transcription factor paired box protein 2 (Pax2). [provided by RefSeq, Mar 2013]

**Expression** Ubiquitous expression in thymus adult (RPKM 12.1), ovary adult (RPKM 11.4) and 28 other tissues [See more](#)

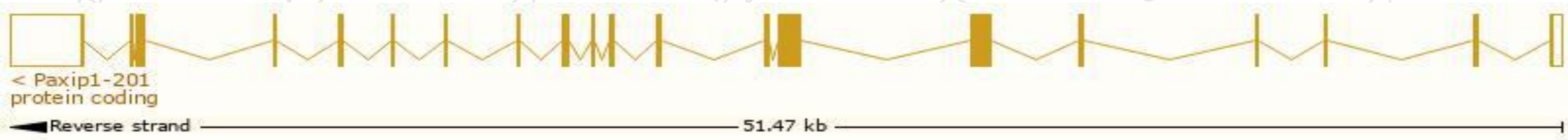
**Orthologs** [human](#) [all](#)

# Transcript information (Ensembl)

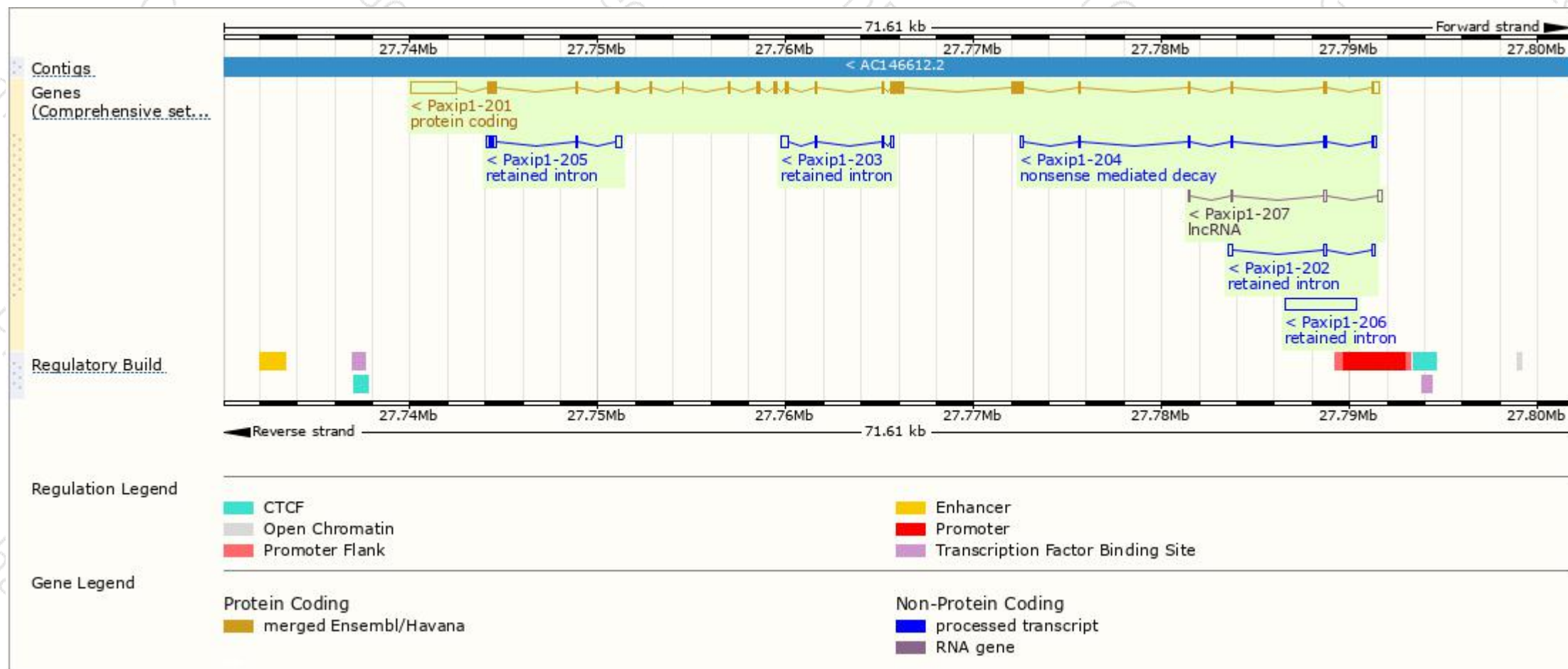
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Paxip1-201	<a href="#">ENSMUST00000002291.11</a>	5850	<a href="#">1056aa</a>	Protein coding	<a href="#">CCDS39039</a>	<a href="#">Q6NZQ4</a>	TSL:1 GENCODE basic APPRIS P1
Paxip1-204	<a href="#">ENSMUST00000196734.1</a>	749	<a href="#">92aa</a>	Nonsense mediated decay	-	<a href="#">A0A0G2JE02</a>	TSL:3
Paxip1-206	<a href="#">ENSMUST00000199714.1</a>	3829	No protein	Retained intron	-	-	TSL:NA
Paxip1-205	<a href="#">ENSMUST00000197625.1</a>	736	No protein	Retained intron	-	-	TSL:2
Paxip1-203	<a href="#">ENSMUST00000196641.1</a>	717	No protein	Retained intron	-	-	TSL:2
Paxip1-202	<a href="#">ENSMUST00000196605.1</a>	515	No protein	Retained intron	-	-	TSL:2
Paxip1-207	<a href="#">ENSMUST00000199993.4</a>	381	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Paxip1-201* transcript,The transcription is shown below

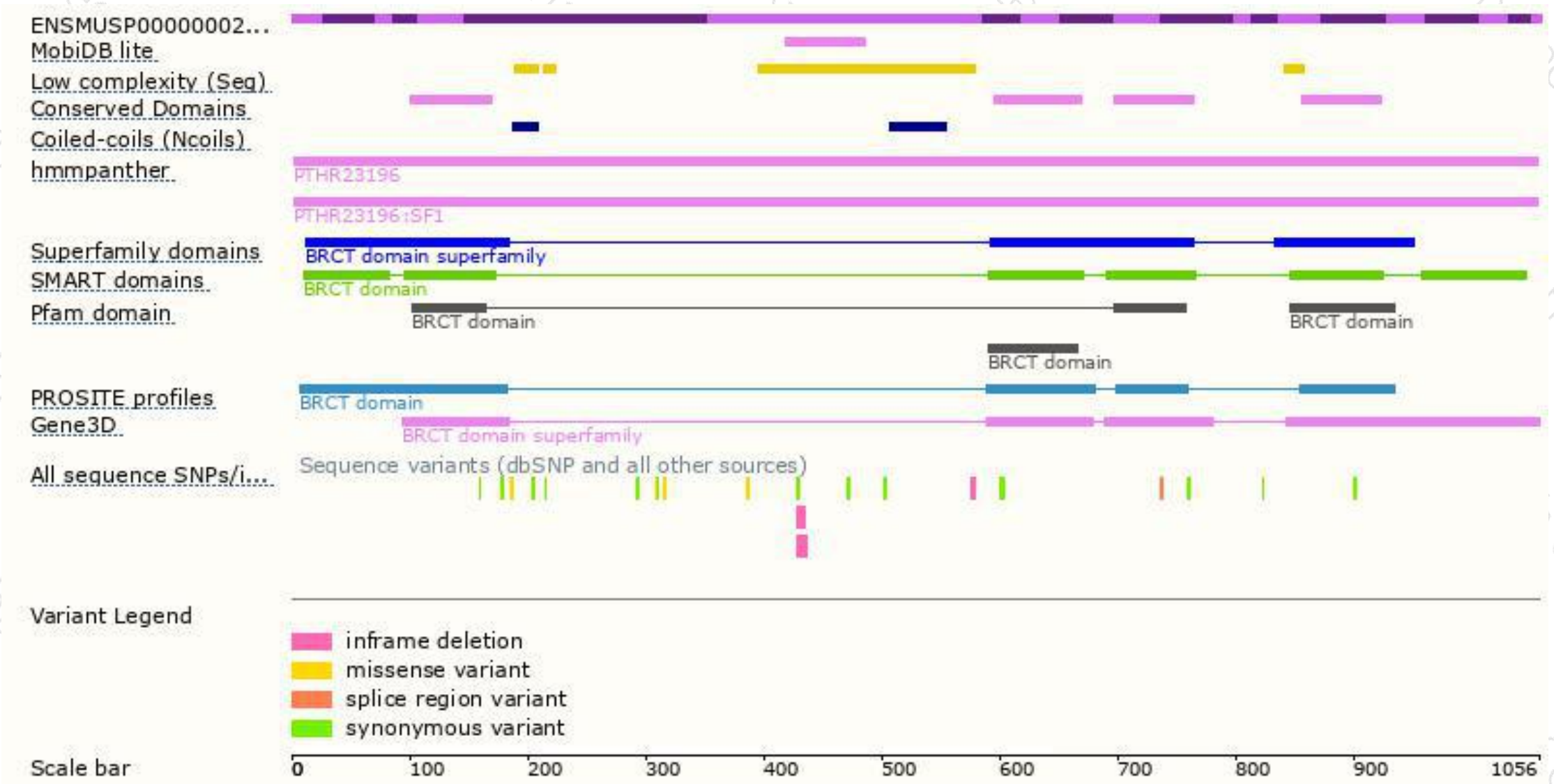


# Genomic location distribution

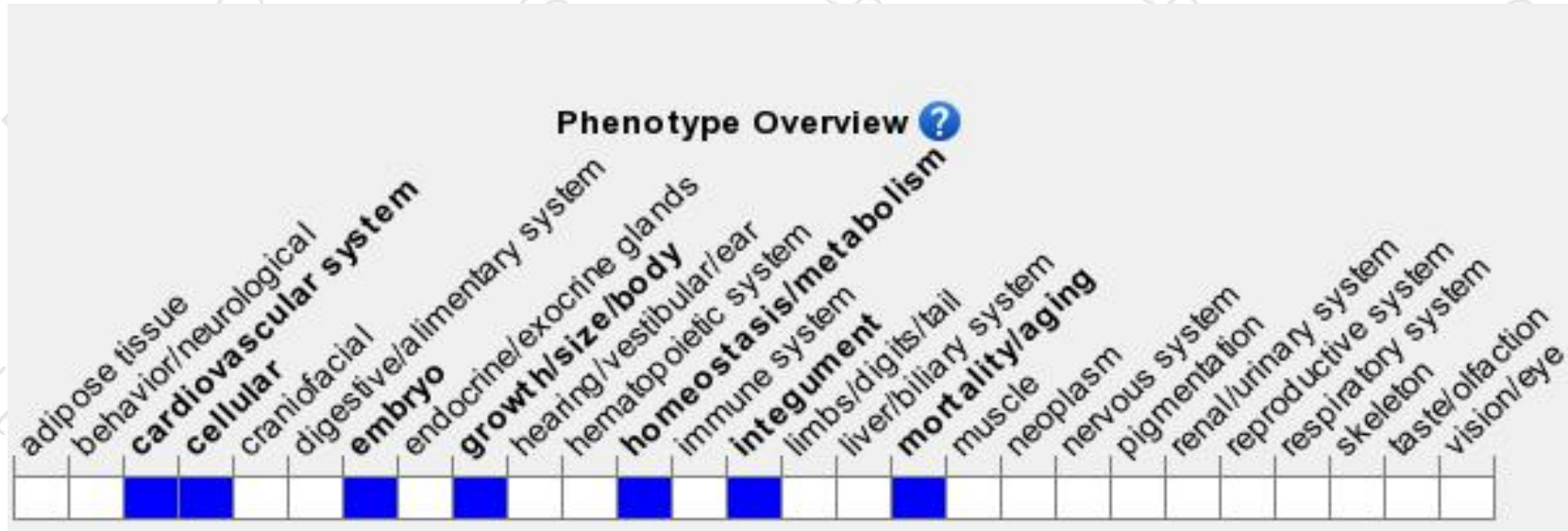




# Protein domain



# 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, Homozygous mutant mice are developmentally retarded and embryonic lethal by E9.5.

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

Tel: 025-5864 1534

