Ube2d2a Cas9-CKO Strategy

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Project Overview

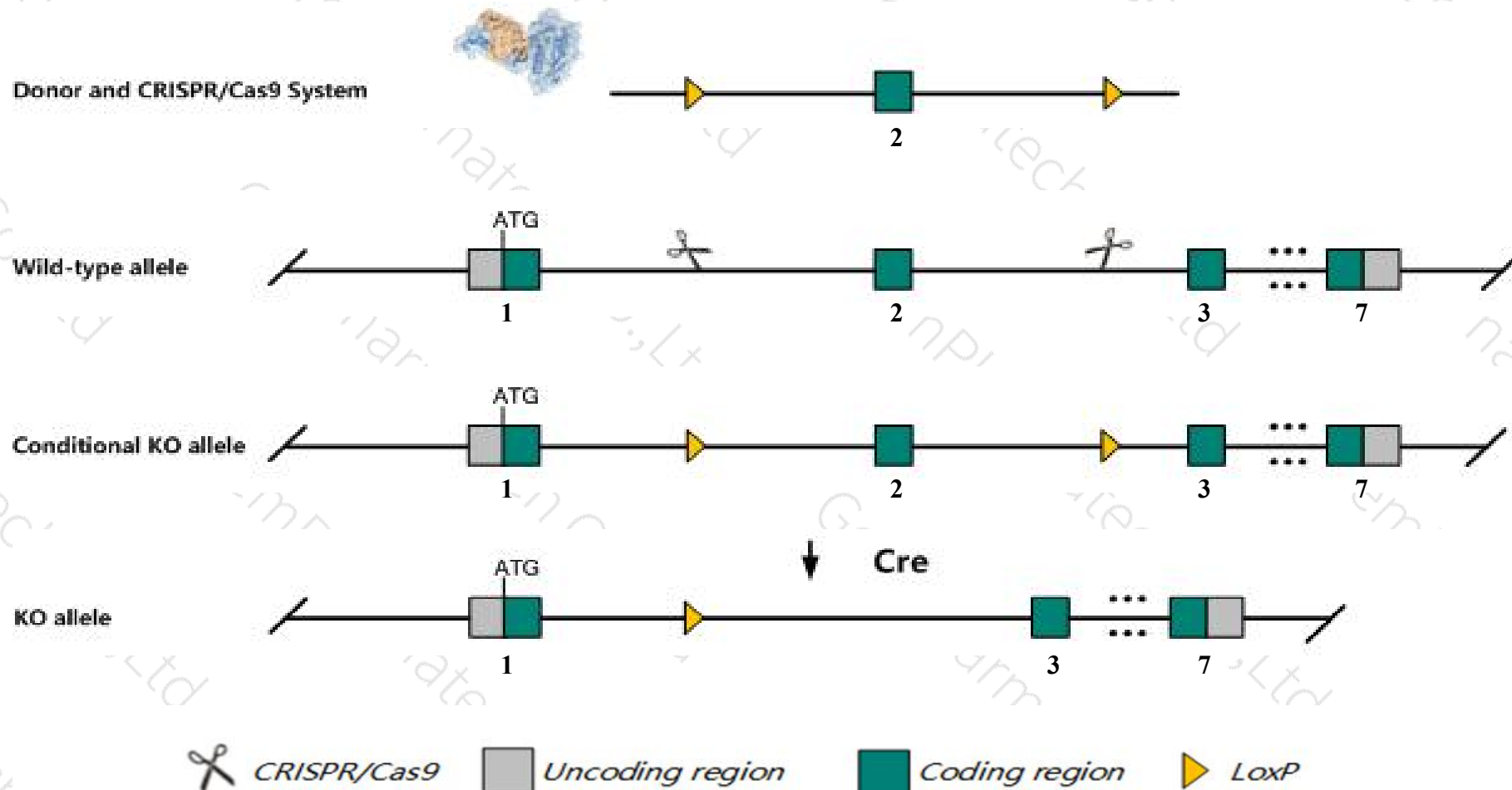|	
Project Name	*Ube2d2a*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ube2d2a* gene. The schematic diagram is as follows:

Technical routes

➤ The *Ube2d2a* gene has 10 transcripts. According to the structure of *Ube2d2a* gene, exon2 of *Ube2d2a-202* (ENSMUST00000170693.8) transcript is recommended as the knockout region.The region contains Ens 64bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Ube2d2a* 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.

Notice

➤ According to the existing MGI data,Homozygous null mice display a delay in testis maturation but have normal spermatogenesis, sperm motility, and fertility.

➤ The *Ube2d2a* gene is located on the Chr18. 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）

Ube2d2a ubiquitin-conjugating enzyme E2D 2A [Mus musculus (house mouse)]

Gene ID: 56550, updated on 31-Jan-2019

▲Summary

|	
Official Symbol	Ube2d2a provided by MGI
Official Full Name	ubiquitin-conjugating enzyme E2D 2A provided by MGI
Primary source	MGI:MGI:1930715
See related	Ensembl:ENSMUSG00000091896
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	1500034D03Rik, Ubc2e, Ube2d2, ubc4
Expression	Ubiquitous expression in CNS E14 (RPKM 16.9), CNS E11.5 (RPKM 16.3) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ube2d2a-201	ENSMUST00000167406.1	2393	147aa	Protein coding	CCDS50254	P62838 Q3UT95	TSL:5 GENCODE basic APPRIS P1
Ube2d2a-202	ENSMUST00000170693.8	2480	147aa	Protein coding	CCDS50254	P62838 Q3UT95	TSL:1 GENCODE basic APPRIS P1
Ube2d2a-203	ENSMUST00000235170.1	632	No protein	Retained intron	-	-	-
Ube2d2a-204	ENSMUST00000235351.1	3457	No protein	Retained intron	-	-	-
Ube2d2a-205	ENSMUST00000235516.1	884	No protein	Retained intron	-	-	-
Ube2d2a-206	ENSMUST00000236235.1	8159	No protein	Retained intron	-	-	-
Ube2d2a-207	ENSMUST00000236484.1	535	92aa	Protein coding	-	-	CDS 5' incomplete
Ube2d2a-208	ENSMUST00000236550.1	335	93aa	Protein coding	-	-	CDS 5' incomplete
Ube2d2a-209	ENSMUST00000237482.1	348	No protein	lncRNA	-	-	-
Ube2d2a-210	ENSMUST00000237984.1	553	50aa	Protein coding	-	-	CDS 3' incomplete

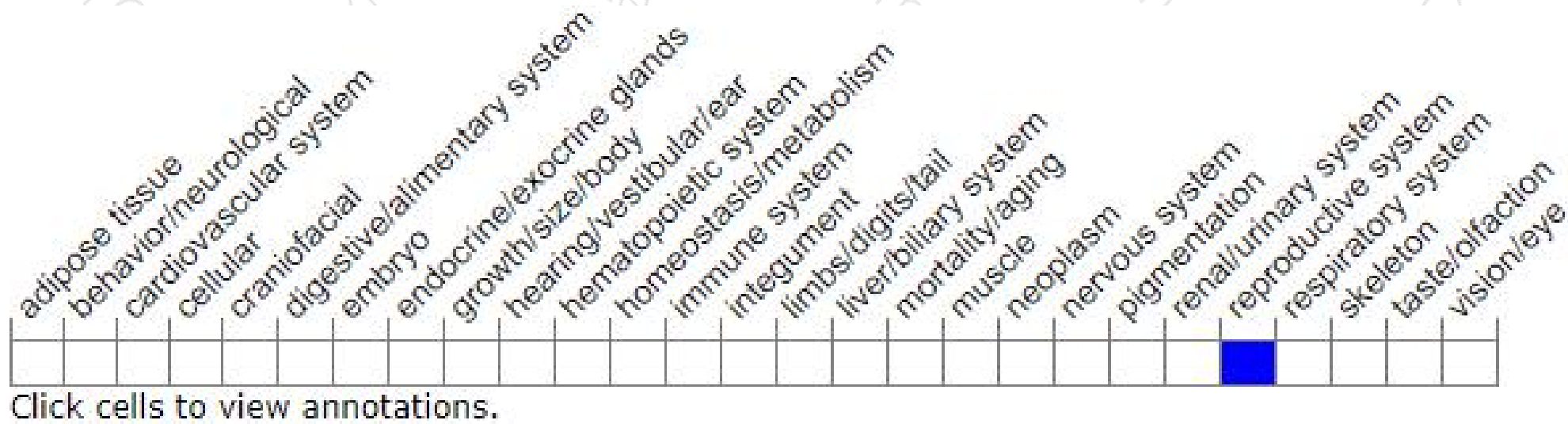The strategy is based on the design of *Ube2d2a-202* transcript,The transcription is shown below

35.61 kb — Forward strand

Ube2d2a-202 >
protein coding
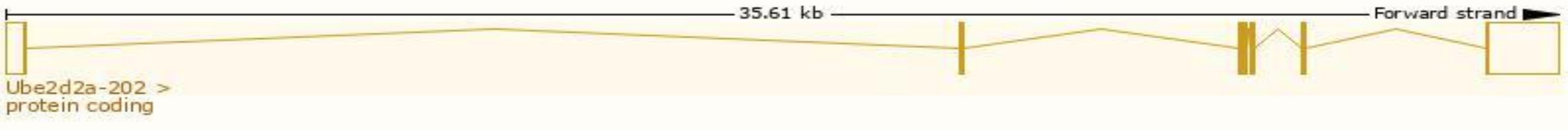
Genomic location distribution
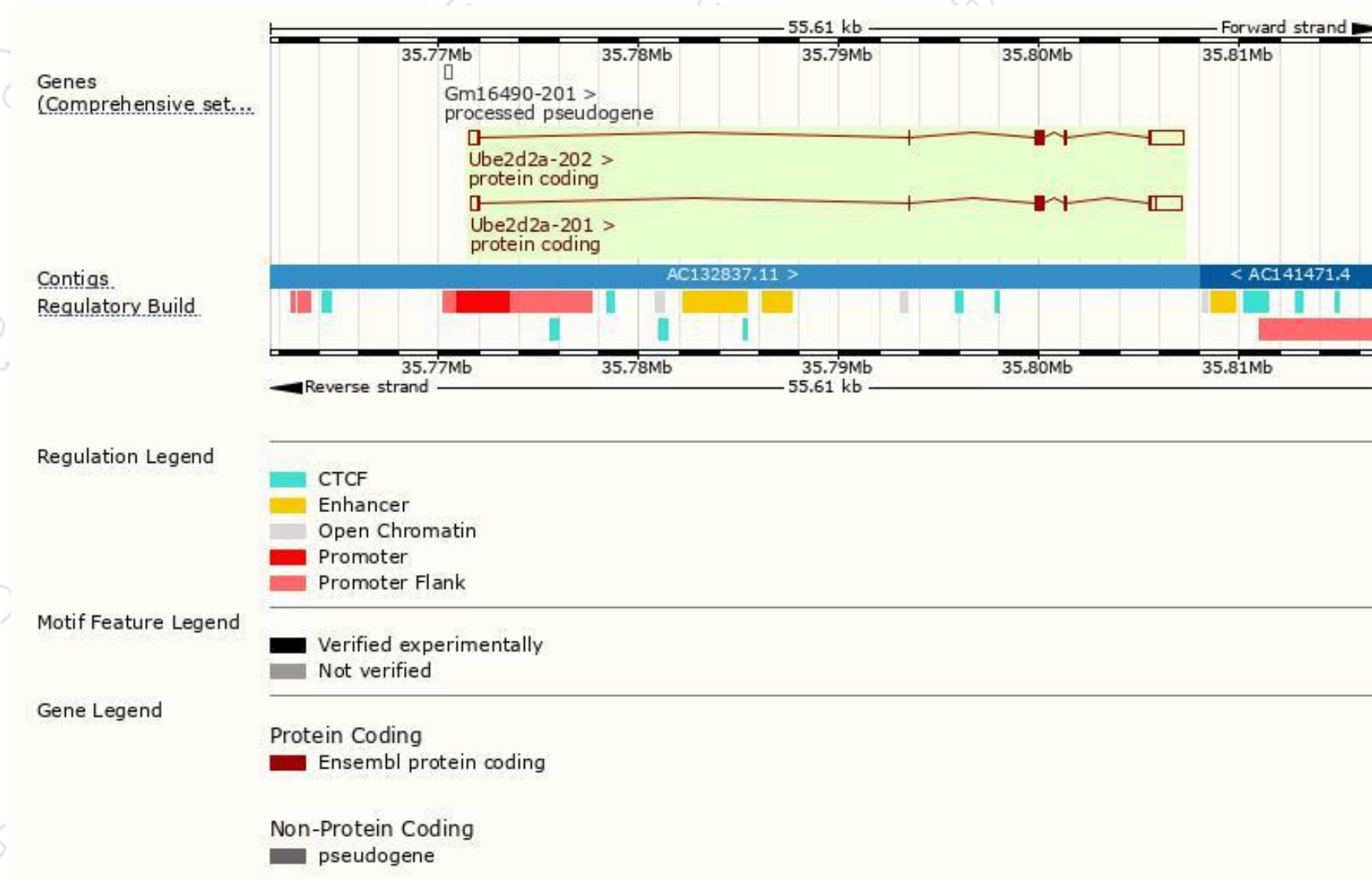
Protein domain
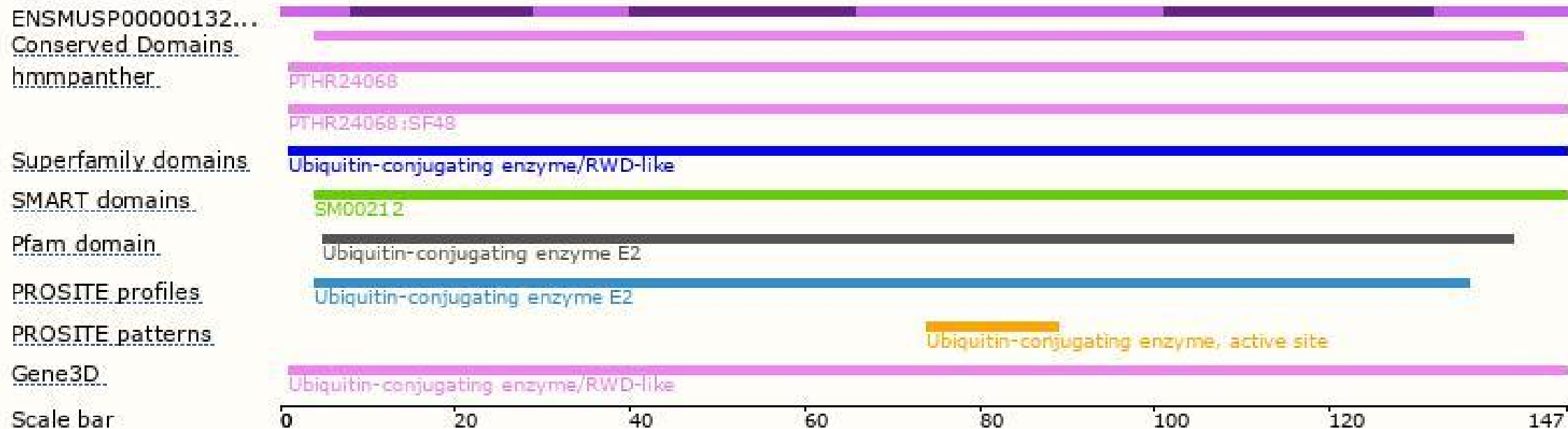
Mouse phenotype description(MGI)

Click cells to view annotations.

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 null mice display a delay in testis maturation but have normal spermatogenesis, sperm motility, and fertility.

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