

# ***Ybx2 Cas9-KO Strategy***

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# Project Overview

**Project Name**

***Ybx2***

**Project type**

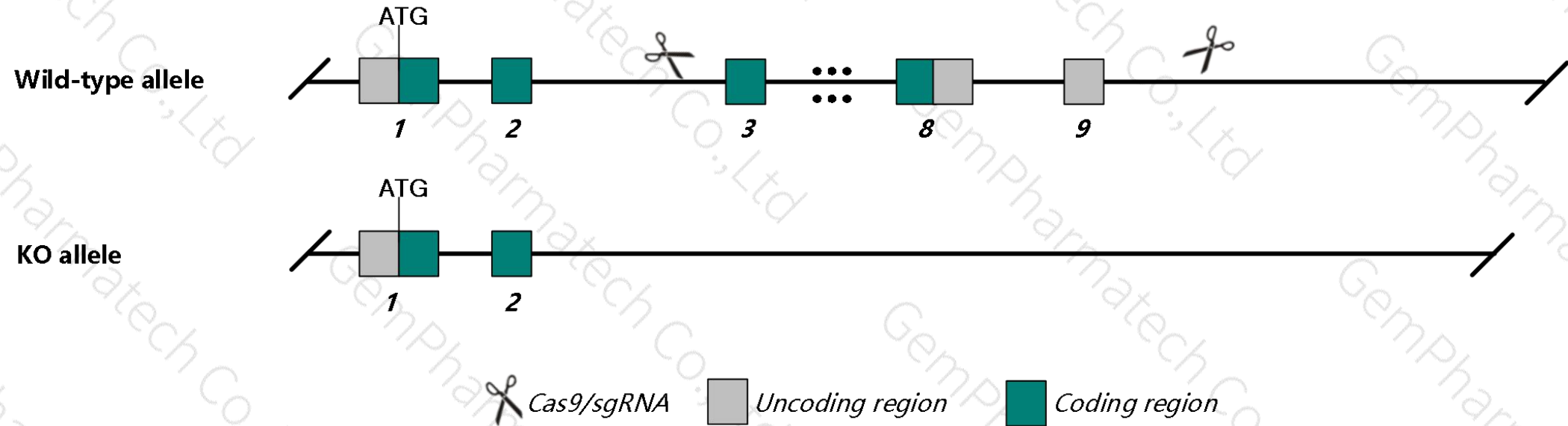
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ybx2* gene. The schematic diagram is as follows:



# Technical routes

- The *Ybx2* gene has 5 transcripts. According to the structure of *Ybx2* gene, exon3-exon9 of *Ybx2*-201(ENSMUST00000018698.11) transcript is recommended as the knockout region. The region contains most of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ybx2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, homozygous disruption of this gene leads to both male and female infertility. Spermatogenesis terminates in postmeiotic germ cells with no sperm seen in the epididymis and a marked increase of apoptosis during meiosis. Adult females exhibit a few growing follicles and no corpora lutea.
- The *Ybx2* gene is located on the Chr11. 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)

## Ybx2 Y box protein 2 [ *Mus musculus* (house mouse) ]

Gene ID: 53422, updated on 26-Jun-2020

### Summary

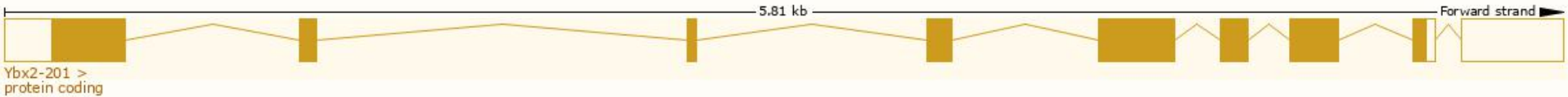
Official Symbol	Ybx2 provided by <a href="#">MGI</a>
Official Full Name	Y box protein 2 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1096372</a>
See related	<a href="#">Ensembl:ENSMUSG00000018554</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Msy2
Expression	Biased expression in testis adult (RPKM 508.1) and colon adult (RPKM 19.1) <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

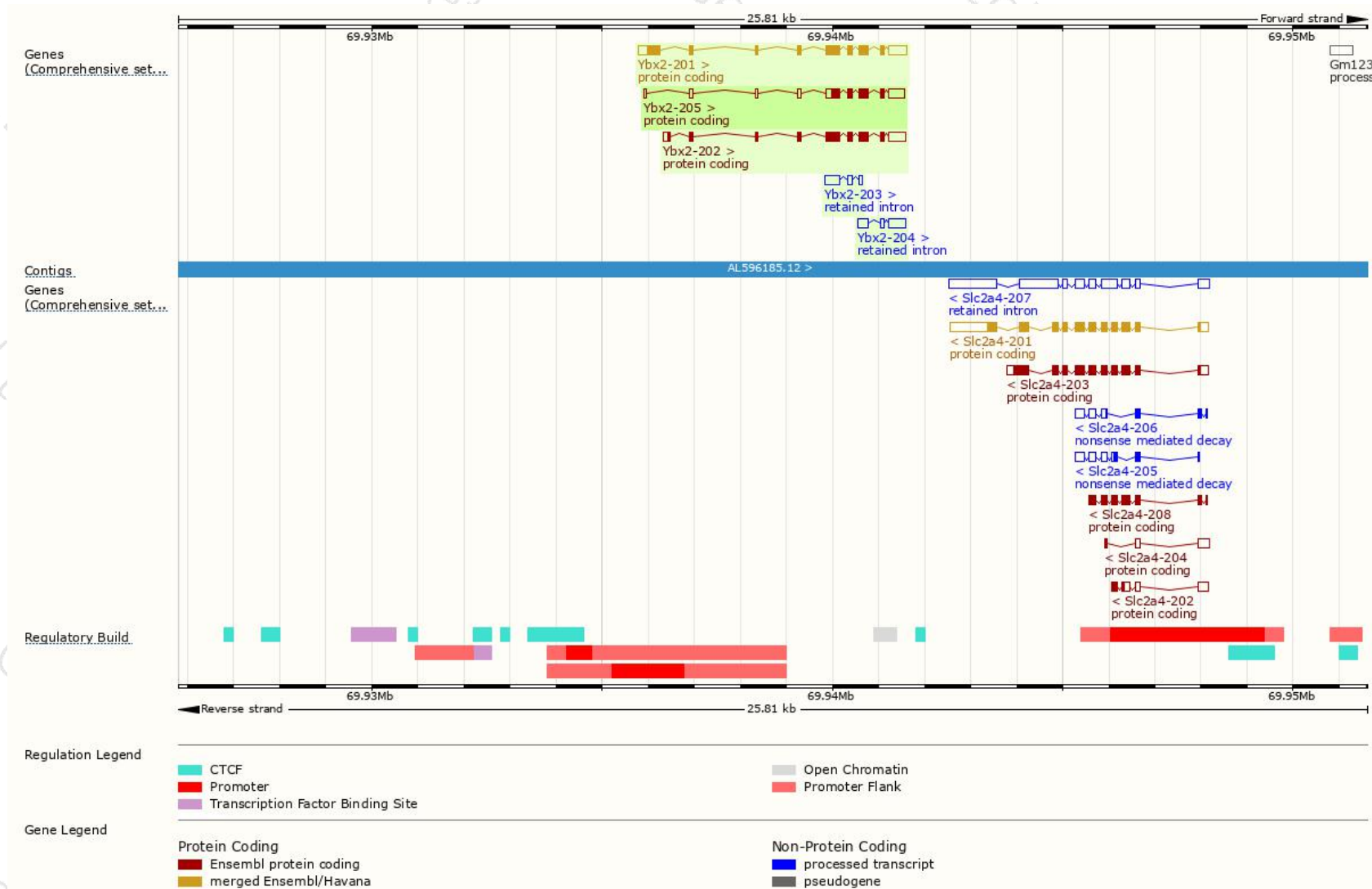
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ybx2-205	<a href="#">ENSMUST00000149194.7</a>	1235	<a href="#">164aa</a>	Protein coding	-	<a href="#">J3QNB9</a>	TSL:5 GENCODE basic
Ybx2-202	<a href="#">ENSMUST00000108601.2</a>	1351	<a href="#">282aa</a>	Protein coding	<a href="#">CCDS83830</a>	<a href="#">A0A0A0MQD2</a>	TSL:1 GENCODE basic APPRIS ALT2
Ybx2-201	<a href="#">ENSMUST00000018698.11</a>	1673	<a href="#">359aa</a>	Protein coding	<a href="#">CCDS36200</a>	<a href="#">B2RUF0</a>	TSL:1 GENCODE basic APPRIS P3
Ybx2-204	<a href="#">ENSMUST00000148395.1</a>	679	No protein	Retained intron	-	-	TSL:1
Ybx2-203	<a href="#">ENSMUST00000130377.1</a>	489	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Ybx2-201* transcript,the transcription is shown below:

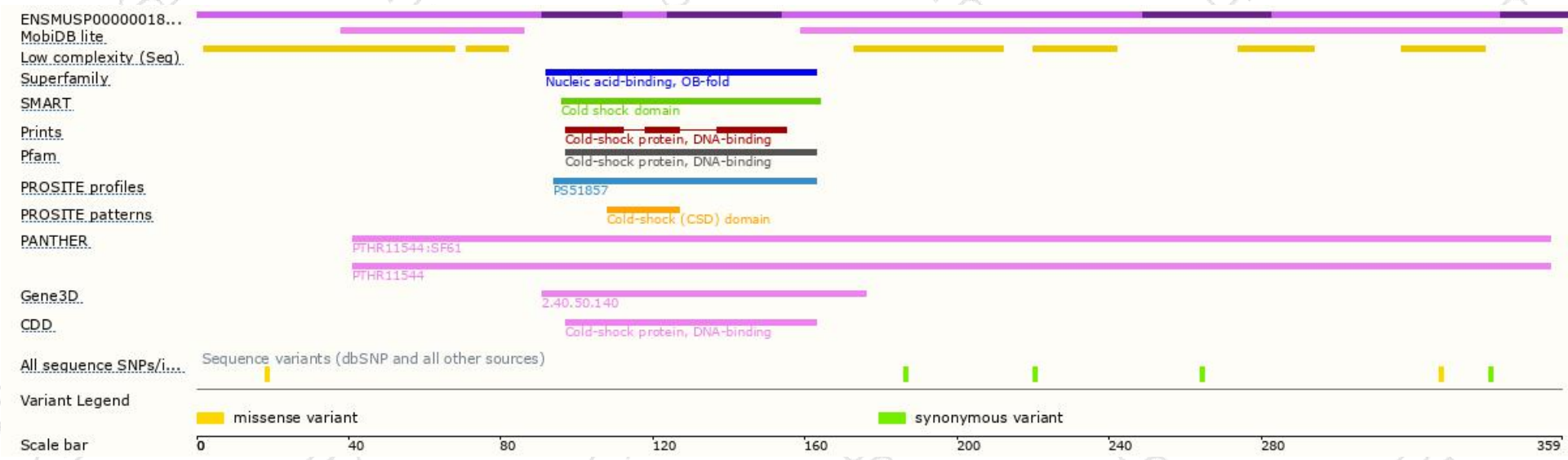


# Genomic location distribution

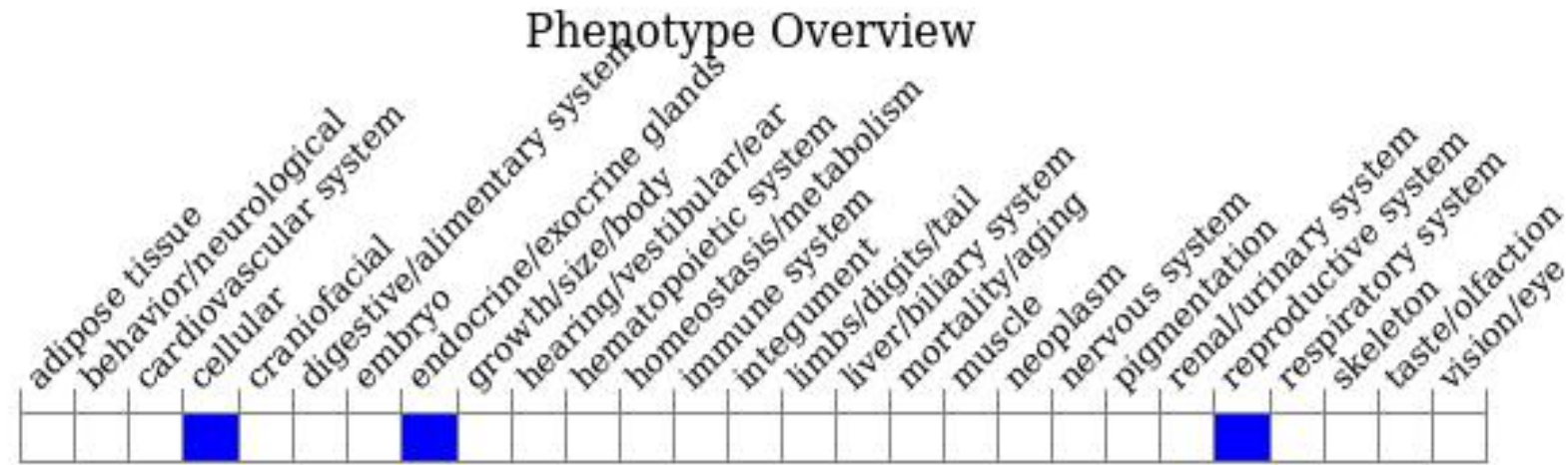




# Protein domain



# 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 disruption of this gene leads to both male and female infertility.

Spermatogenesis terminates in postmeiotic germ cells with no sperm seen in the epididymis and a marked increase of apoptosis during meiosis. Adult females exhibit a few growing follicles and no corpora lutea.

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

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