

# Zyx Cas9-CKO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

**Zyx**

**Project type**

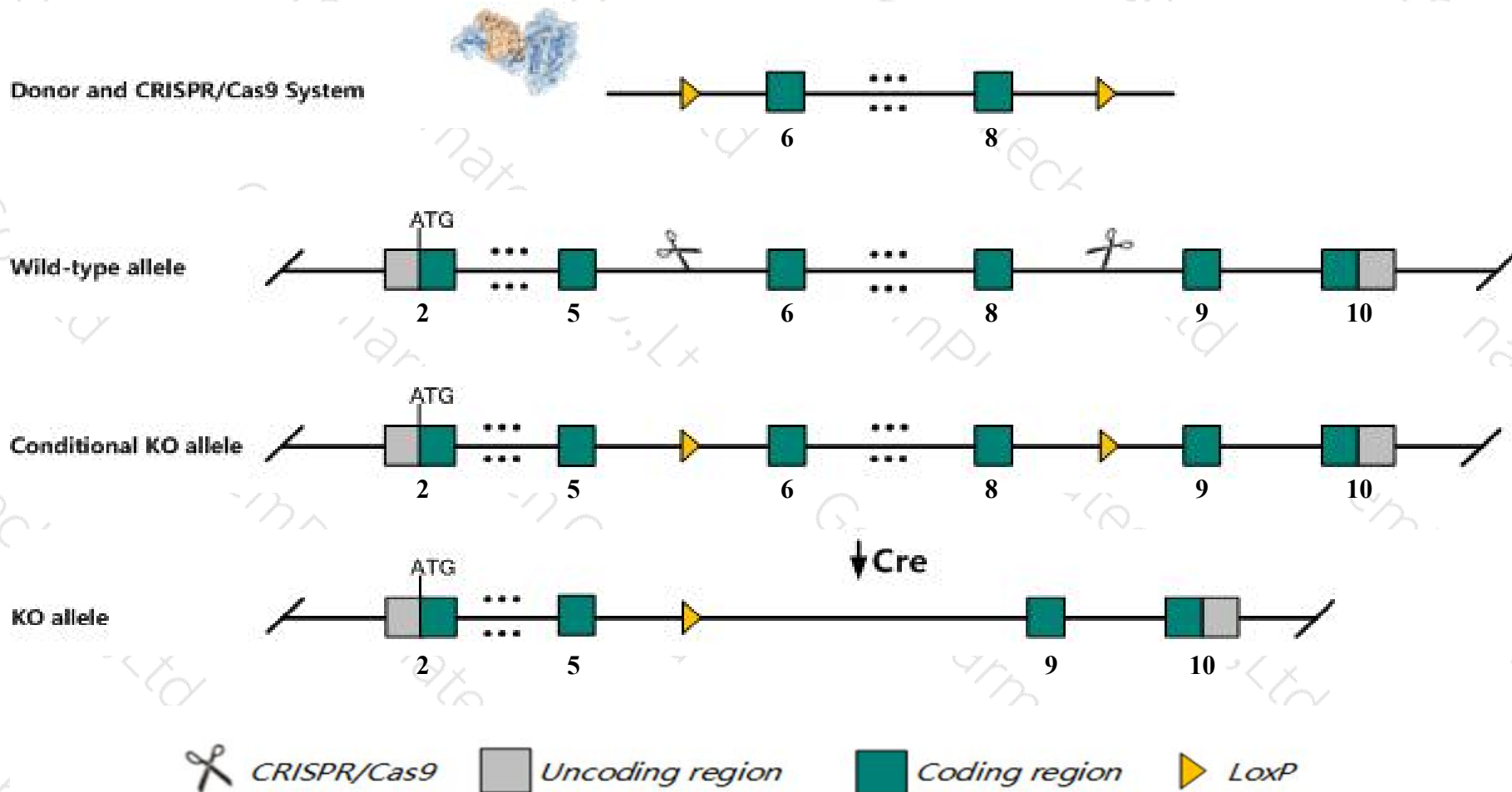
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

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



# Technical routes

- The *Zyx* gene has 11 transcripts. According to the structure of *Zyx* gene, exon6-exon8 of *Zyx*-202 (ENSMUST00000164375.3) transcript is recommended as the knockout region. The region contains 470bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zyx* 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, Mice lacking functional copies of this gene are viable, fertile, and develop normally.
- Transcript Zyx-204/206/ 208/209 may not be affected. The KO region is close to *Ephal* gene, Knockout the region may affect the regulatory function of *Ephal* gene.
- The Zyx gene is located on the Chr6. 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.

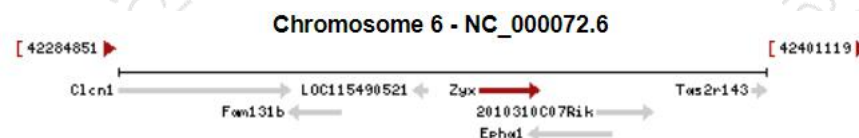
# Gene information (NCBI)

## Zyx zyxin [ *Mus musculus* (house mouse) ]

Gene ID: 22793, updated on 3-Sep-2019

### Summary

<b>Official Symbol</b>	Zyx provided by <a href="#">MGI</a>
<b>Official Full Name</b>	zyxin provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:103072</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000029860</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>	R75157; 9530098H06Rik
<b>Expression</b>	Ubiquitous expression in lung adult (RPKM 88.7), ovary adult (RPKM 71.5) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>



# Transcript information (Ensembl)

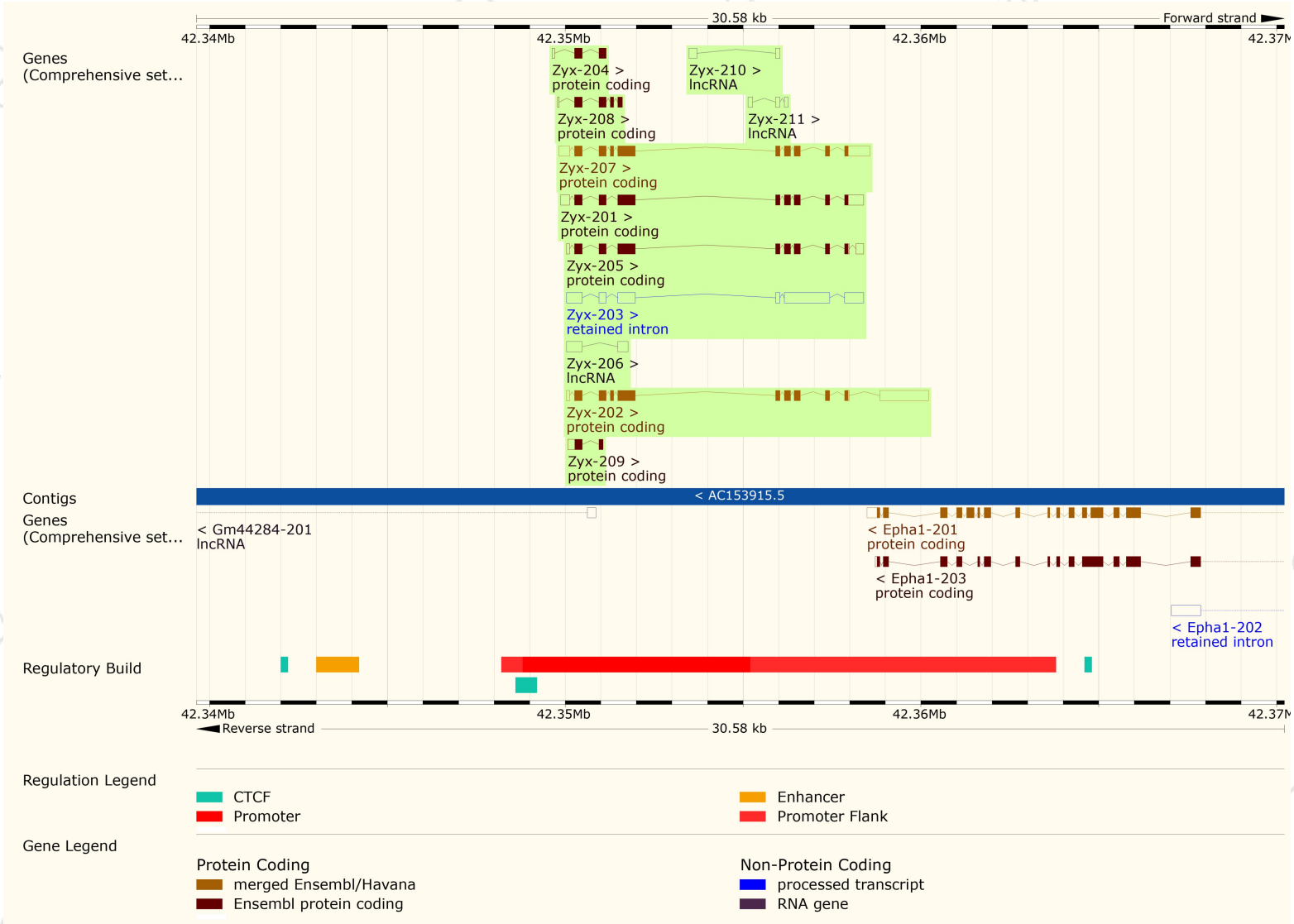
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Zyx-202	<a href="#">ENSMUST00000164375.3</a>	3188	<a href="#">564aa</a>	<a href="#">ENSMUSP00000126622.1</a>	Protein coding	<a href="#">CCDS20066</a>	<a href="#">Q62523</a>	TSL:1 GENCODE basic APPRIS P3
Zyx-207	<a href="#">ENSMUST00000203652.2</a>	2605	<a href="#">564aa</a>	<a href="#">ENSMUSP00000145451.1</a>	Protein coding	<a href="#">CCDS20066</a>	<a href="#">Q62523</a>	TSL:1 GENCODE basic APPRIS P3
Zyx-201	<a href="#">ENSMUST00000070635.12</a>	2301	<a href="#">533aa</a>	<a href="#">ENSMUSP00000070427.7</a>	Protein coding	<a href="#">CCDS85034</a>	<a href="#">Q7TQE2</a>	TSL:1 GENCODE basic APPRIS ALT2
Zyx-205	<a href="#">ENSMUST00000203401.2</a>	1954	<a href="#">533aa</a>	<a href="#">ENSMUSP00000145236.1</a>	Protein coding	<a href="#">CCDS85034</a>	<a href="#">Q7TQE2</a>	TSL:1 GENCODE basic APPRIS ALT2
Zyx-208	<a href="#">ENSMUST00000203846.2</a>	695	<a href="#">212aa</a>	<a href="#">ENSMUSP00000145189.1</a>	Protein coding	-	<a href="#">A0A0N4SVP4</a>	CDS 3' incomplete TSL:3
Zyx-209	<a href="#">ENSMUST00000203849.1</a>	525	<a href="#">109aa</a>	<a href="#">ENSMUSP00000145052.1</a>	Protein coding	-	<a href="#">A0A0N4SVD2</a>	CDS 3' incomplete TSL:2
Zyx-204	<a href="#">ENSMUST00000203329.2</a>	499	<a href="#">137aa</a>	<a href="#">ENSMUSP00000144863.1</a>	Protein coding	-	<a href="#">A0A0N4SUX7</a>	CDS 3' incomplete TSL:3
Zyx-203	<a href="#">ENSMUST00000203290.2</a>	3076	No protein	-	Retained intron	-	-	TSL:2
Zyx-206	<a href="#">ENSMUST00000203626.1</a>	729	No protein	-	lncRNA	-	-	TSL:2
Zyx-211	<a href="#">ENSMUST00000204480.1</a>	351	No protein	-	lncRNA	-	-	TSL:3
Zyx-210	<a href="#">ENSMUST00000204270.2</a>	344	No protein	-	lncRNA	-	-	TSL:2

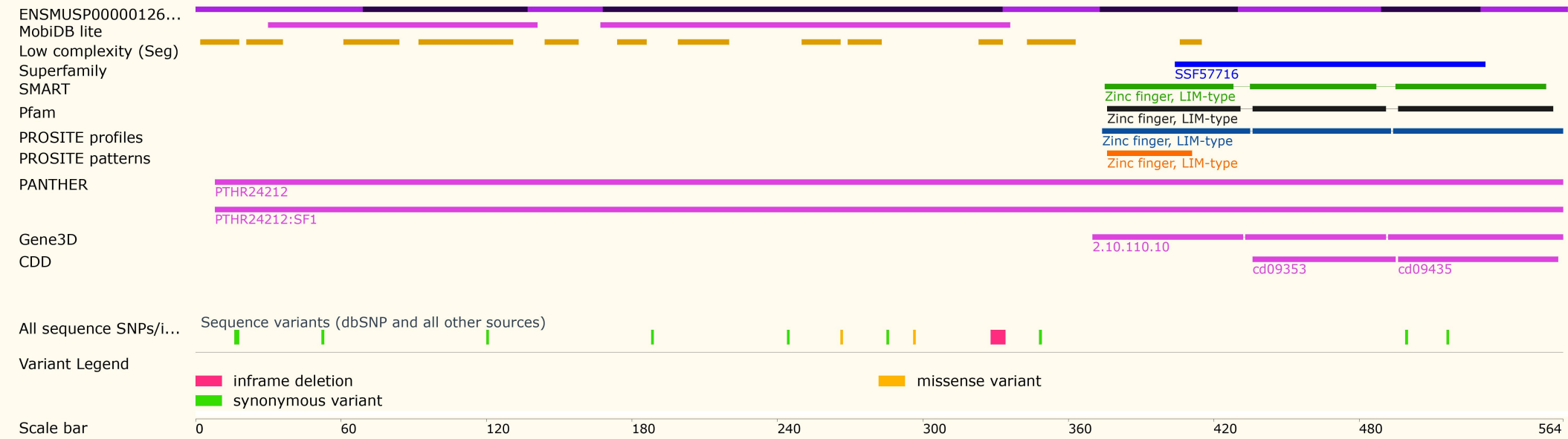
The strategy is based on the design of Zyx-202 transcript,The transcription is shown below



# Genomic location distribution

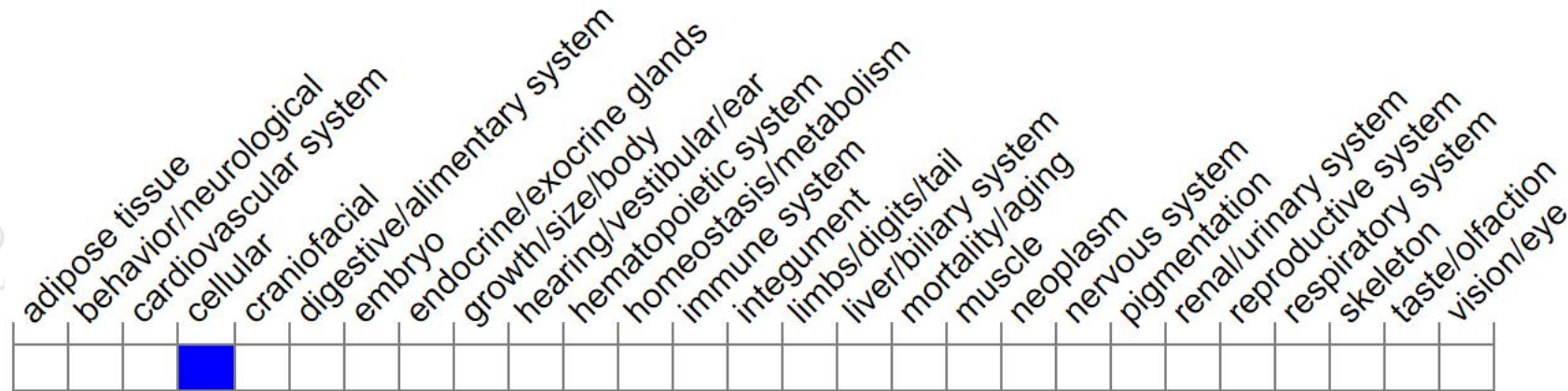


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



*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 lacking functional copies of this gene are viable, fertile, and develop normally.

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

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