

# *Foxp4* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview



**Project Name**

***Foxp4***

**Project type**

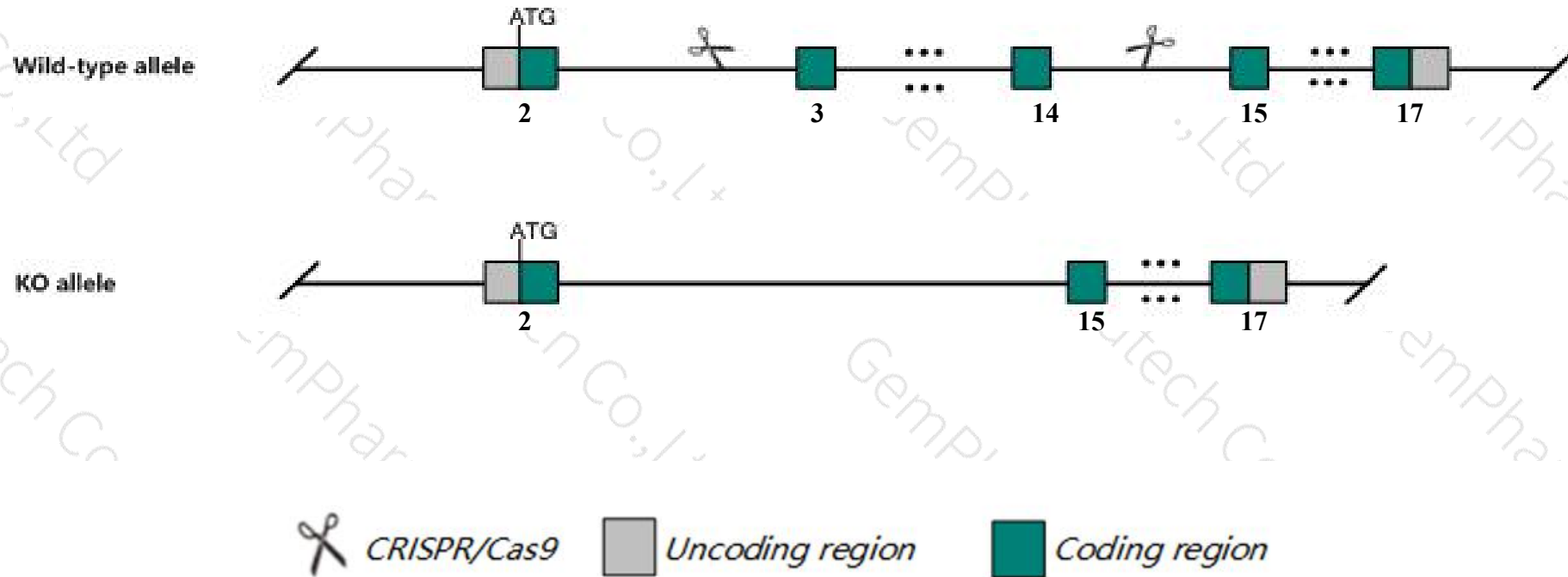
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Foxp4* gene. The schematic diagram is as follows:



- The *Foxp4* gene has 8 transcripts. According to the structure of *Foxp4* gene, exon3-exon14 of *Foxp4-204* (ENSMUST00000113265.7) transcript is recommended as the knockout region. The region contains 1412bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Foxp4* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for disruptions in this gene usually die before E12.5. Foregut closure is delayed leading to the development of two beating hearts and to the failure of the trachea and esophagus to separate.
- The *Foxp4* gene is located on the Chr17. 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)

## Foxp4 forkhead box P4 [ *Mus musculus* (house mouse) ]

Gene ID: 74123, updated on 12-Aug-2019

### Summary

<b>Official Symbol</b>	Foxp4 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	forkhead box P4 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1921373</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000023991</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>	mFKHLA; 1200010K03Rik; 2310007G05Rik
<b>Expression</b>	Ubiquitous expression in stomach adult (RPKM 50.9), colon adult (RPKM 45.3) and 27 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

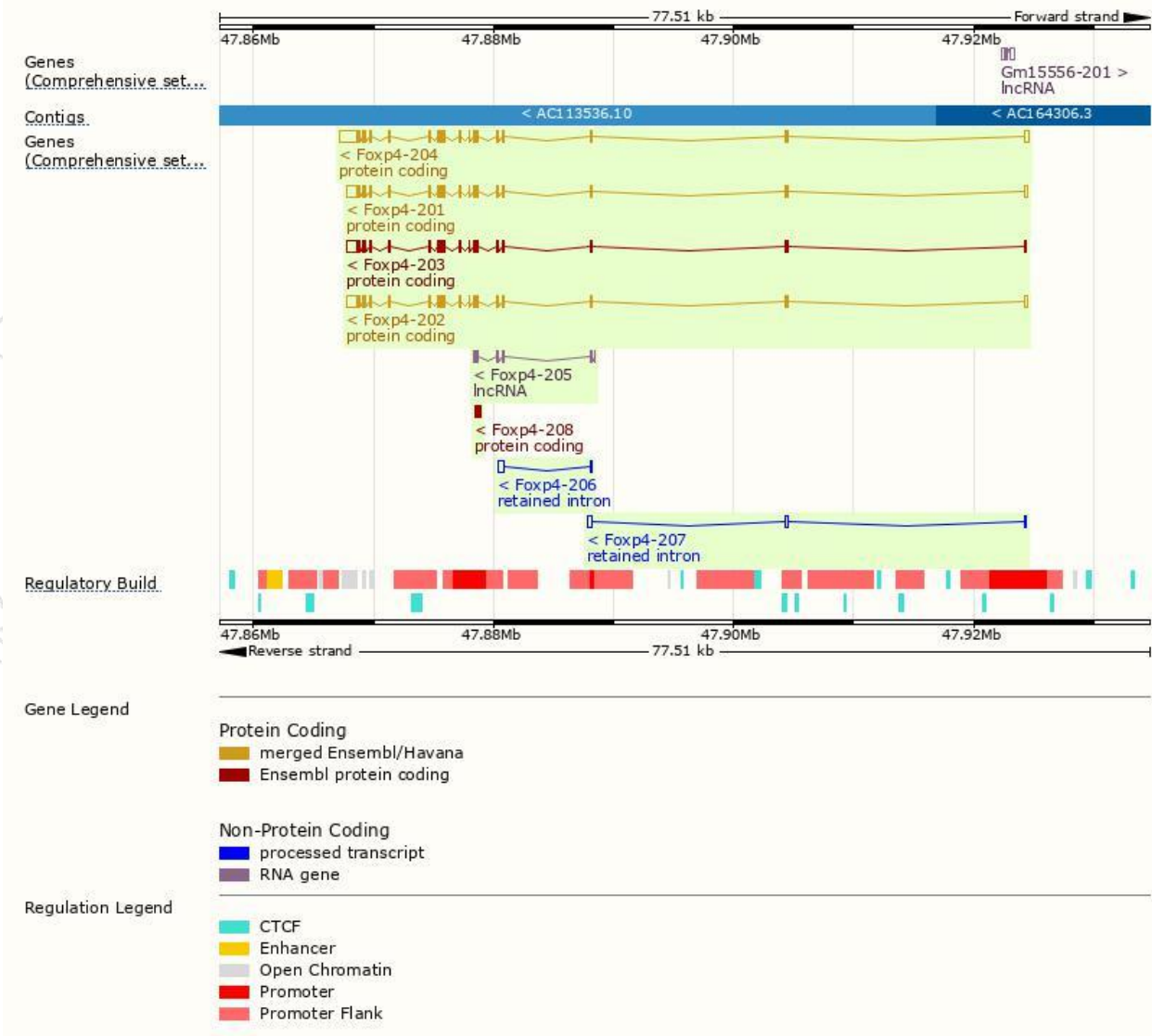
The gene has 8 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Foxp4-204	<a href="#">ENSMUST00000113265.7</a>	3999	<a href="#">672aa</a>	Protein coding	<a href="#">CCDS50135</a>	<a href="#">Q9DBY0</a>	TSL:1 GENCODE basic APPRIS ALT2
Foxp4-202	<a href="#">ENSMUST00000113262.1</a>	3198	<a href="#">673aa</a>	Protein coding	<a href="#">CCDS50136</a>	<a href="#">A0A0R4J1I5</a>	TSL:1 GENCODE basic APPRIS ALT2
Foxp4-201	<a href="#">ENSMUST00000097311.8</a>	3197	<a href="#">685aa</a>	Protein coding	<a href="#">CCDS50137</a>	<a href="#">A0A0R4J161</a>	TSL:1 GENCODE basic APPRIS P4
Foxp4-203	<a href="#">ENSMUST00000113263.7</a>	3156	<a href="#">683aa</a>	Protein coding	-	<a href="#">D3Z726</a>	TSL:5 GENCODE basic APPRIS ALT2
Foxp4-208	<a href="#">ENSMUST00000154108.1</a>	365	<a href="#">113aa</a>	Protein coding	-	-	CDS 3' incomplete TSL:5
Foxp4-207	<a href="#">ENSMUST00000153752.1</a>	788	No protein	Retained intron	-	-	TSL:2
Foxp4-206	<a href="#">ENSMUST00000137039.1</a>	579	No protein	Retained intron	-	-	TSL:5
Foxp4-205	<a href="#">ENSMUST00000136314.1</a>	701	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Foxp4-204* transcript, The transcription is shown below



# Genomic location distribution

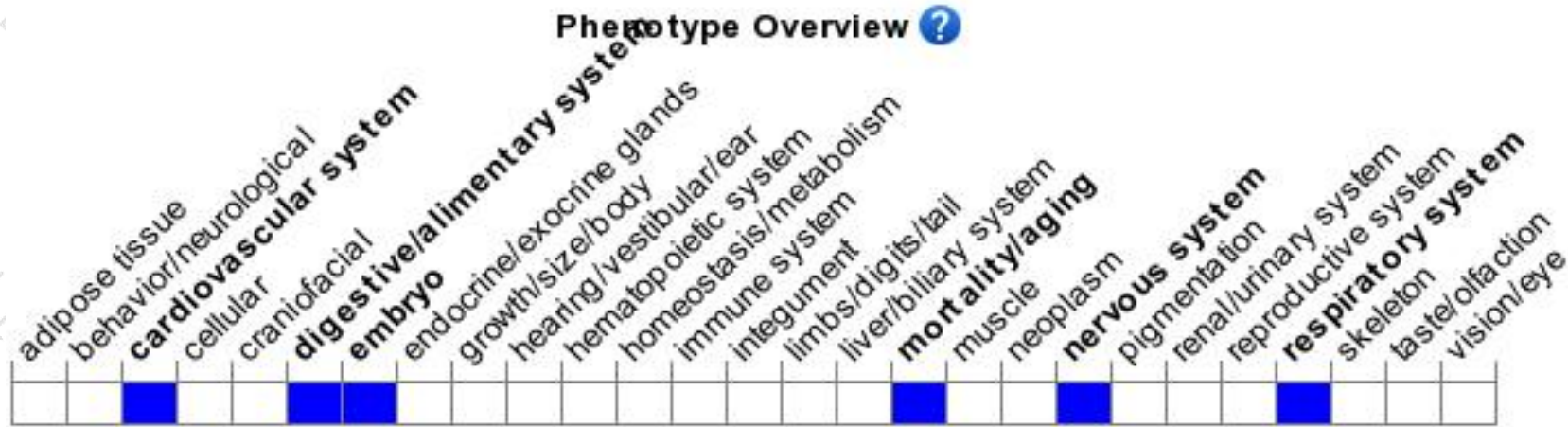




# Protein domain



# 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 disruptions in this gene usually die before E12.5. Foregut closure is delayed leading to the development of two beating hearts and to the failure of the trachea and esophagus to separate.

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

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