

# ***Foxd2 Cas9-KO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

***Foxd2***

**Project type**

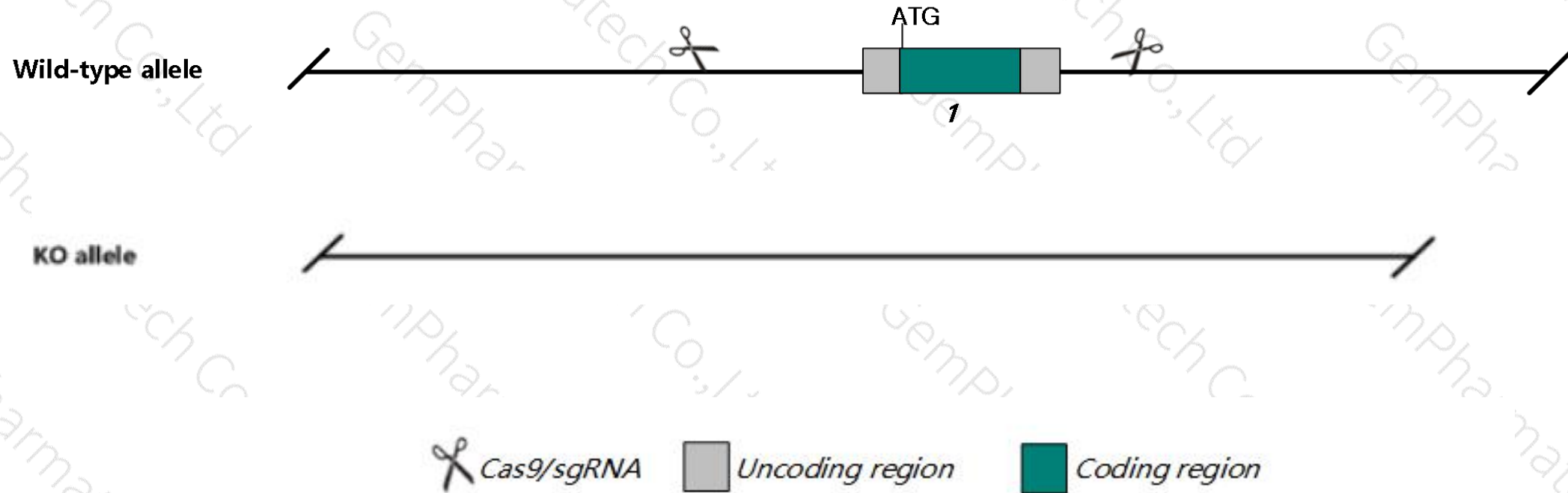
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Foxd2* gene. The schematic diagram is as follows:



- The *Foxd2* gene has 1 transcript. According to the structure of *Foxd2* gene, exon1 of *Foxd2-201* (ENSMUST00000068654.4) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Foxd2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for a targeted null mutation exhibit renal abnormalities including kidney hypoplasia and hydroureter. Penetrance is reduced, and dependent upon the genetic background.
- The flox region overlap with part of the *Foxd2os* gene, which may affect the regulation of this gene.
- The *Foxd2* gene is located on the Chr4. 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)

## Foxd2 forkhead box D2 [ *Mus musculus* (house mouse) ]

Gene ID: 17301, updated on 13-Mar-2020

### Summary

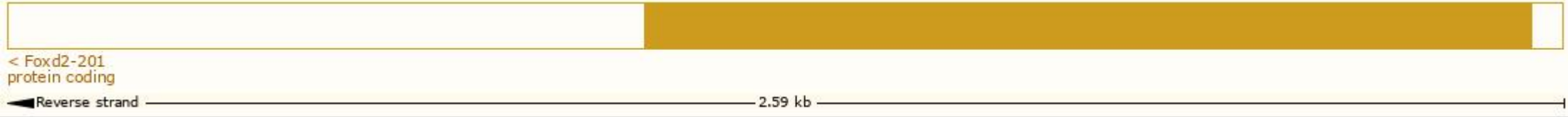
Official Symbol	Foxd2 provided by <a href="#">MGI</a>
Official Full Name	forkhead box D2 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1347471</a>
See related	<a href="#">Ensembl:ENSMUSG00000055210</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Mf2; AI426778
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

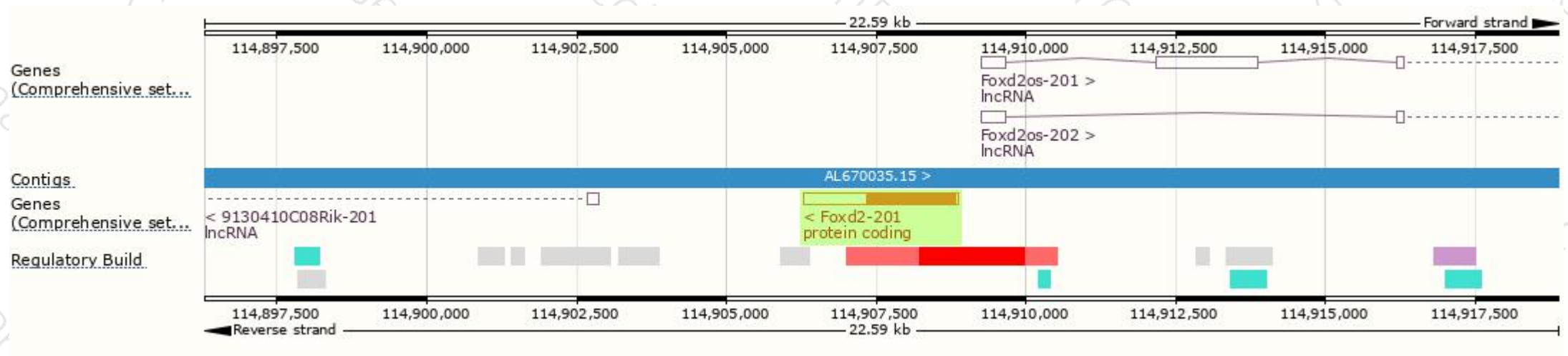
The gene has 1 transcript,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Foxd2-201	<a href="#">ENSMUST00000068654.4</a>	2592	<a href="#">492aa</a>	Protein coding	<a href="#">CCDS18482</a>	<a href="#">O35392</a>	TSL:NA GENCODE basic APPRIS P1

The strategy is based on the design of *Foxd2-201* transcript,The transcription is shown below

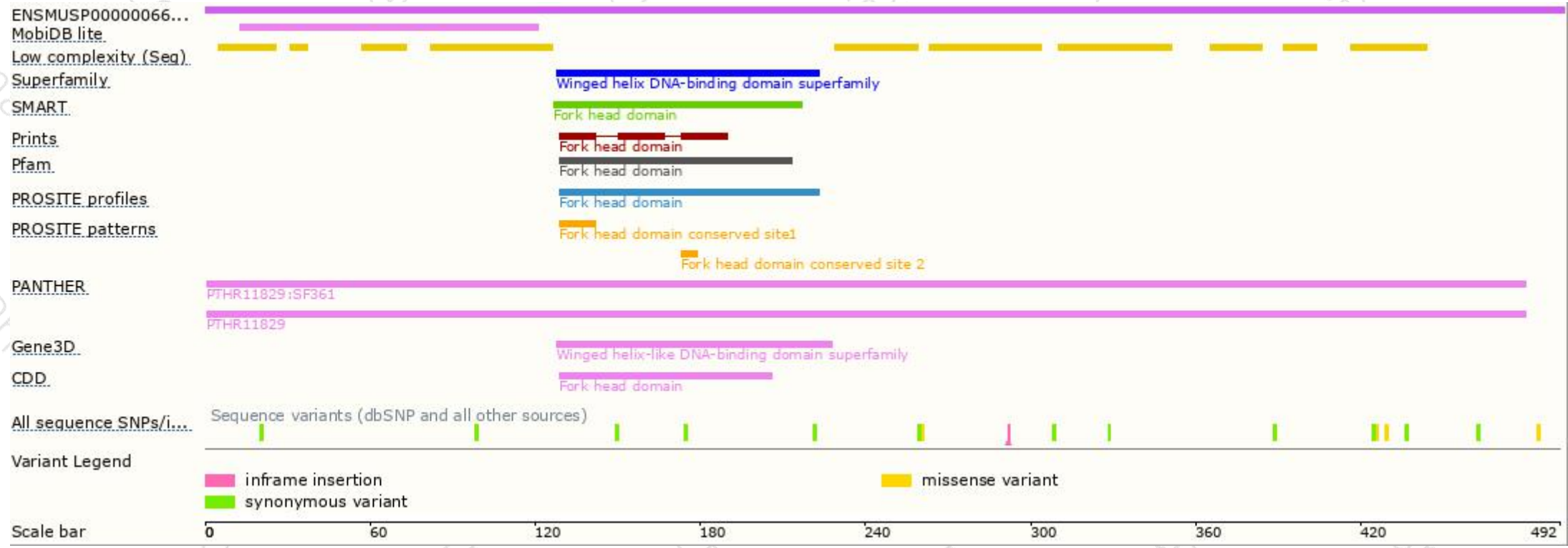


# Genomic location distribution

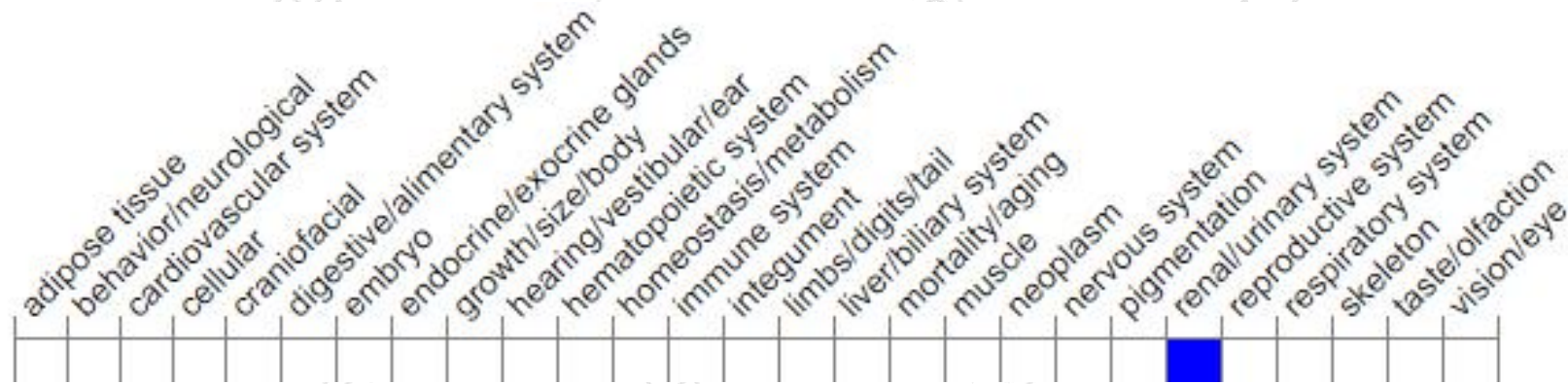




# Protein domain



# 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, Homozygotes for a targeted null mutation exhibit renal abnormalities including kidney hypoplasia and hydroureter. Penetrance is reduced, and dependent upon the genetic background.

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

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