Foxo4 Cas9-CKO Strategy

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Design Date: **2019-9-30**

Project Overview

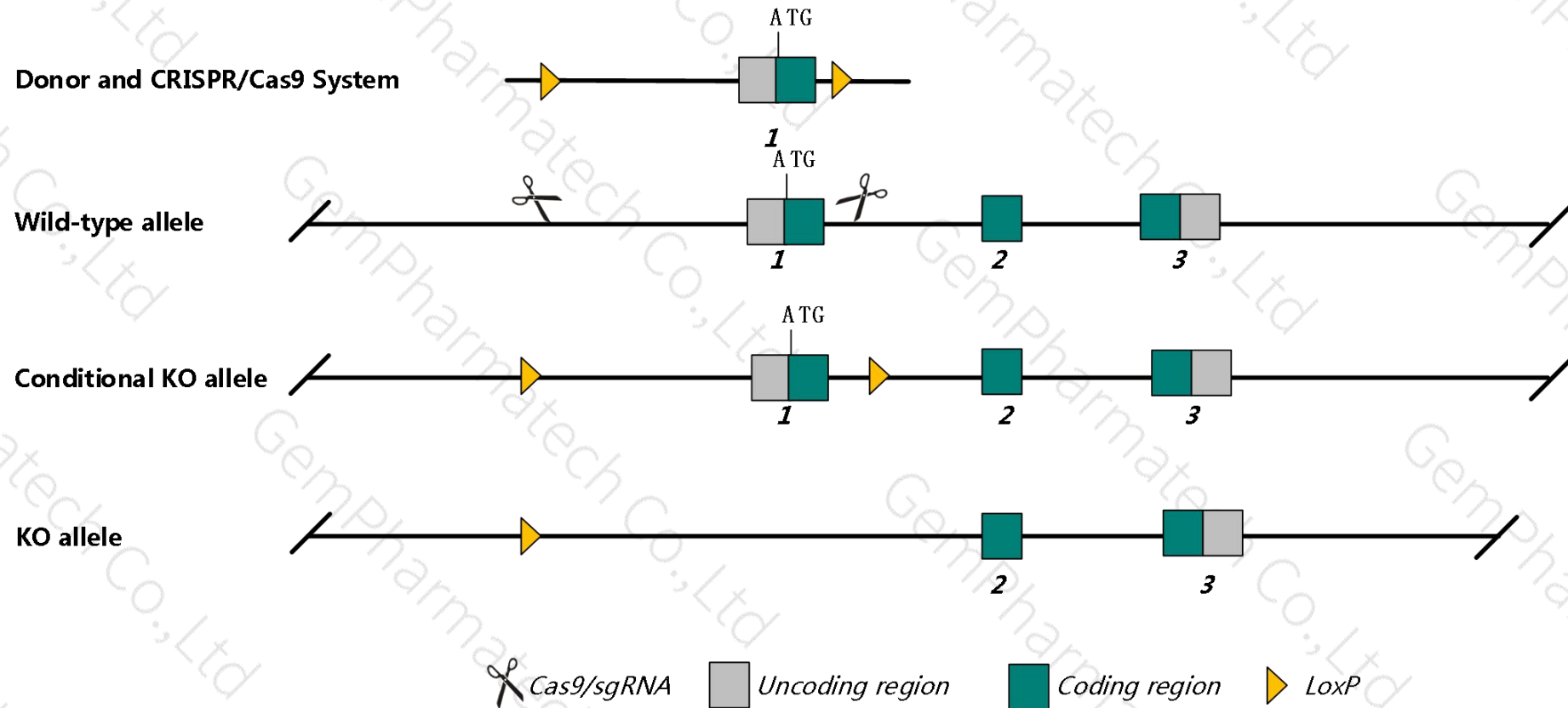|	
Project Name	*Foxo4*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Foxo4* gene. The schematic diagram is as follows:

Technical routes

➢ The *Foxo4* gene has 3 transcripts. According to the structure of *Foxo4* gene, exon1 of *Foxo4-201* (ENSMUST00000062000.5) transcript is recommended as the knockout region.The region contains the predicted promoter sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Foxo4* 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 hemizygous and homozygous for a knock-out allele are viable, fertile and grossly normal with no detectable histological abnormalities in most tissues.

➢ The Foxo4 gene is located on the ChrX. 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）
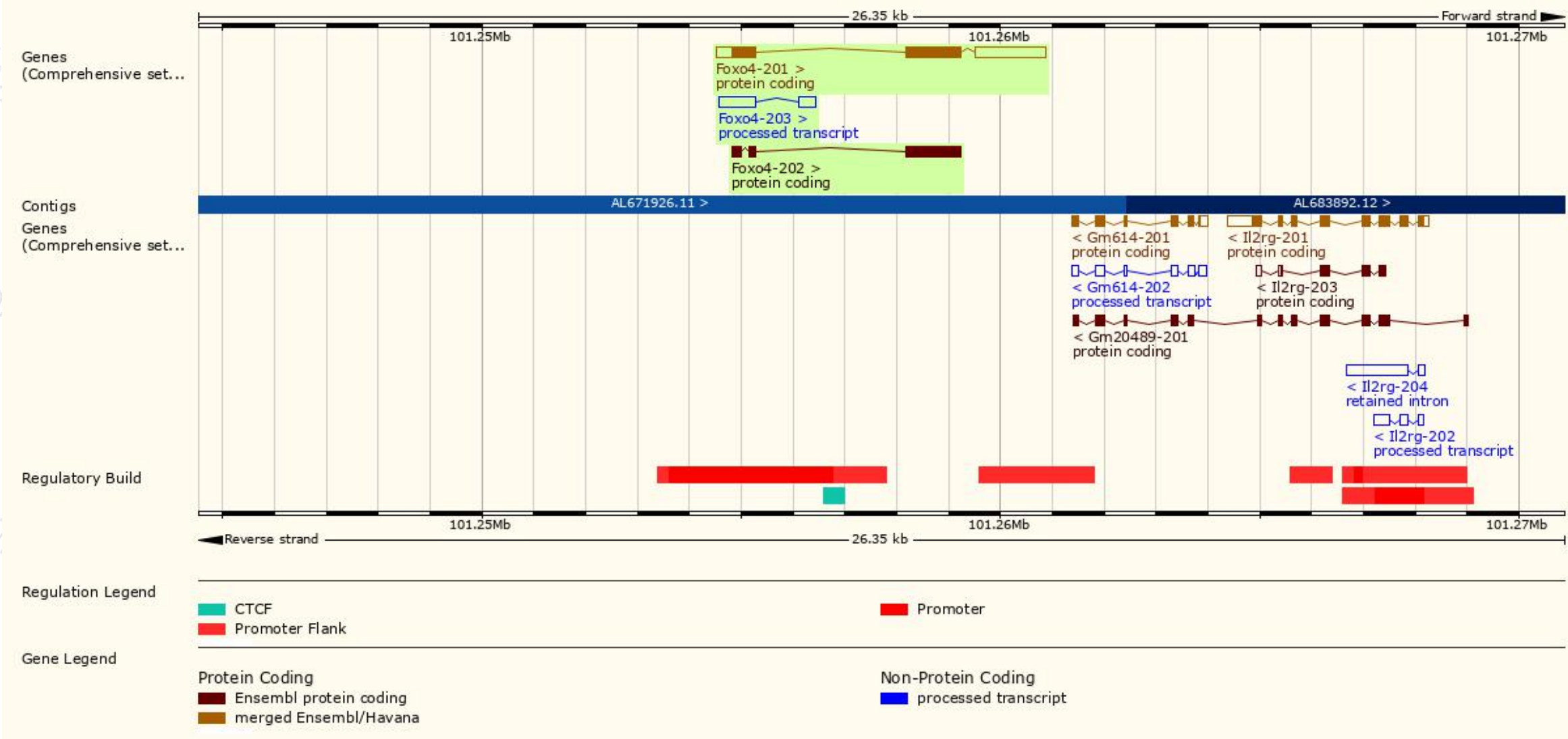
Foxo4 forkhead box O4 [*Mus musculus* (house mouse)]
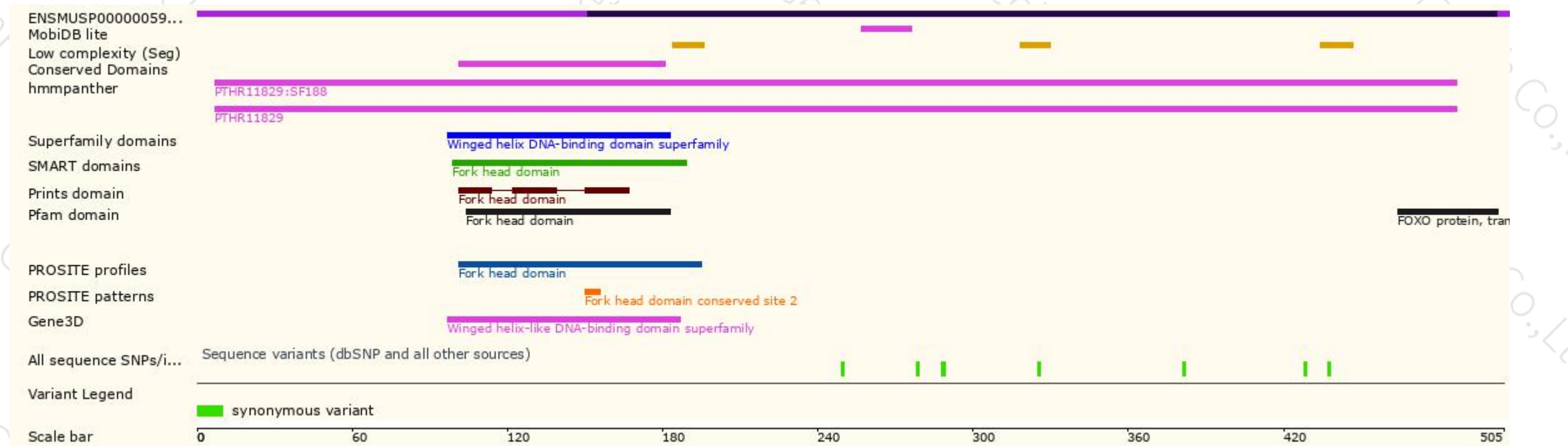
Gene ID: 54601, updated on 17-Oct-2018

▲ Summary

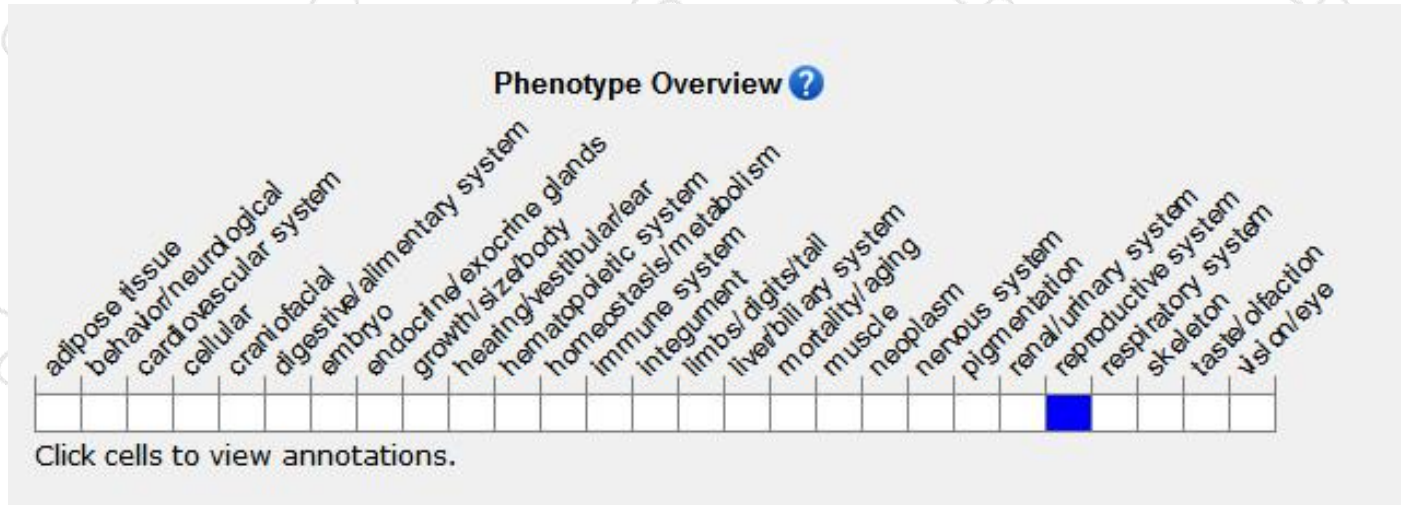|	
Official Symbol	Foxo4 provided by MGI
Official Full Name	forkhead box O4 provided by MGI
Primary source	MGI:MGI:1891915
See related	Ensembl:ENSMUSG00000042903 Vega:OTTMUSG00000018205
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	afx; Afxh; Mllt7
Expression	Broad expression in placenta adult (RPKM 68.4), limb E14.5 (RPKM 10.1) and 21 other tissues See more
Orthologs	human all

Genomic location distribution

Protein domain

ENSMUSP00000059...								
MobiDB lite								
Low complexity (Seg)								
Conserved Domains								
hmmpanther	PTHR11829:SF188							
	PTHR11829							
Superfamily domains	Winged helix DNA-binding domain superfamily							
SMART domains	Fork head domain							
Prints domain	Fork head domain							
Pfam domain	Fork head domain						FOXO protein, tran	
PROSITE profiles	Fork head domain							
PROSITE patterns	Fork head domain conserved site 2							
Gene3D	Winged helix-like DNA-binding domain superfamily							
All sequence SNPs/i...	Sequence variants (dbSNP and all other sources)							
Variant Legend	synonymous variant							
Scale bar	0	60	120	180	240	300	360	420	505

Mouse phenotype description(MGI)

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).

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