Aurkb Cas9-KO Strategy

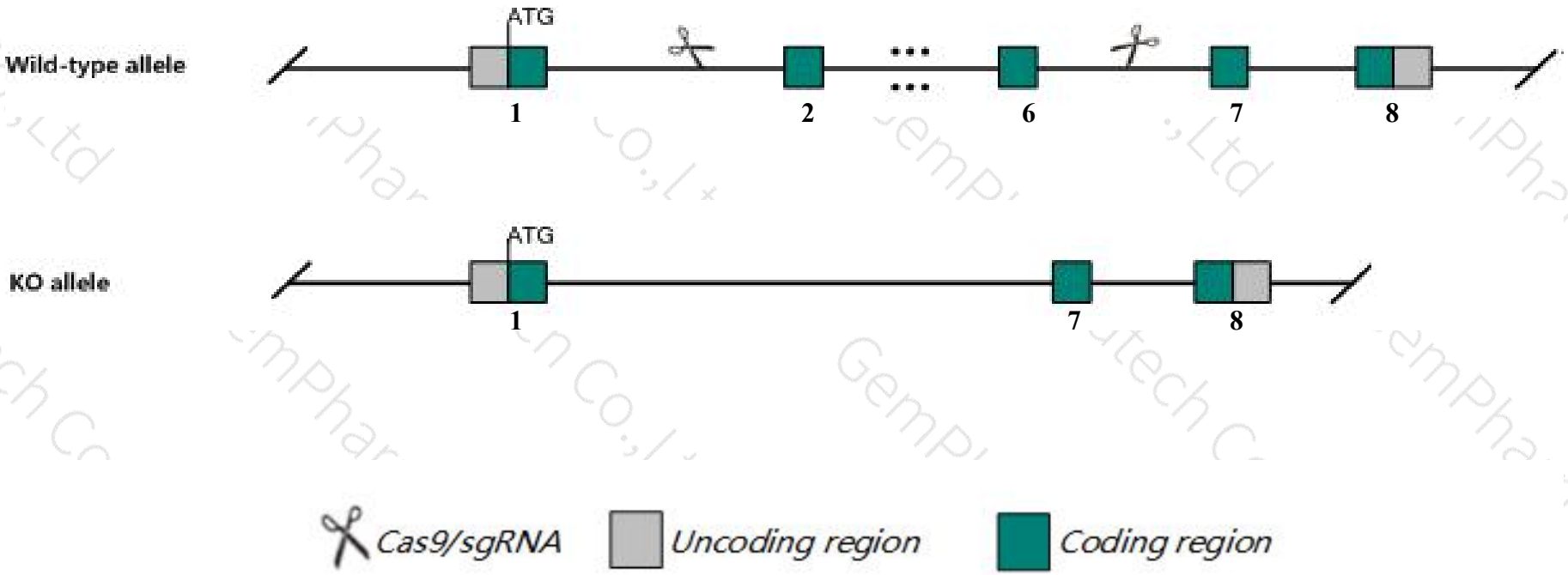
Designer: Yanhua Shen

Project Overview

Project Name	***Aurkb***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

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



Technical routes

- The *Aurkb* gene has 8 transcripts. According to the structure of *Aurkb* gene, exon2-exon6 of *Aurkb-201* (ENSMUST00000021277.5) transcript is recommended as the knockout region.The region contains 653bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Aurkb* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,Heterozygous null mice may develop oligospermia and show premature death and increased tumor incidence. Homozygous null embryos are small and die post-implantation showing reduced inner cell mass outgrowth, mitotic defects, aberrant trophoblast giant cells, edema, hemorrhage and increased apoptosis.

- Transcript *Aurkb-206* may be unaffected.

- The *Aurkb* 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）

Aurkb aurora kinase B [Mus musculus (house mouse)]

Gene ID: 20877, updated on 9-Apr-2019

Summary

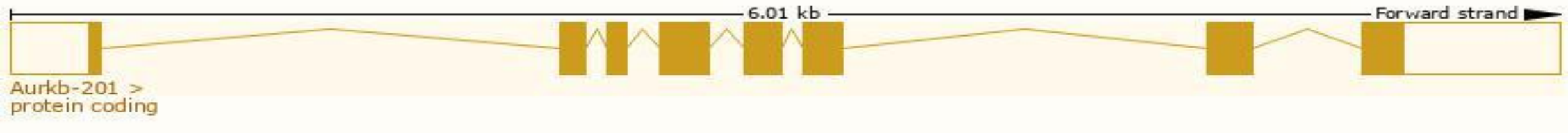
Official Symbol	Aurkb provided by MGI
Official Full Name	aurora kinase B provided byMGI
Primary source	MGI:MGI:107168
See related	Ensembl:ENSMUSG00000020897
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AIM-1, AIRK2, AL022959, Aik2, Aim1, Ark2, AurB, IPL1, STK-1, Stk12, Stk5
Summary	This gene encodes a member of the aurora kinase subfamily of serine/threonine kinases. The genes encoding the other two members of this subfamily are located on chromosomes 2 and 7. These kinases participate in the regulation of alignment and segregation of chromosomes during mitosis and meiosis through association with microtubules. [provided by RefSeq, Sep 2015]
Expression	Broad expression in thymus adult (RPKM 36.3), liver E14.5 (RPKM 33.6) and 19 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

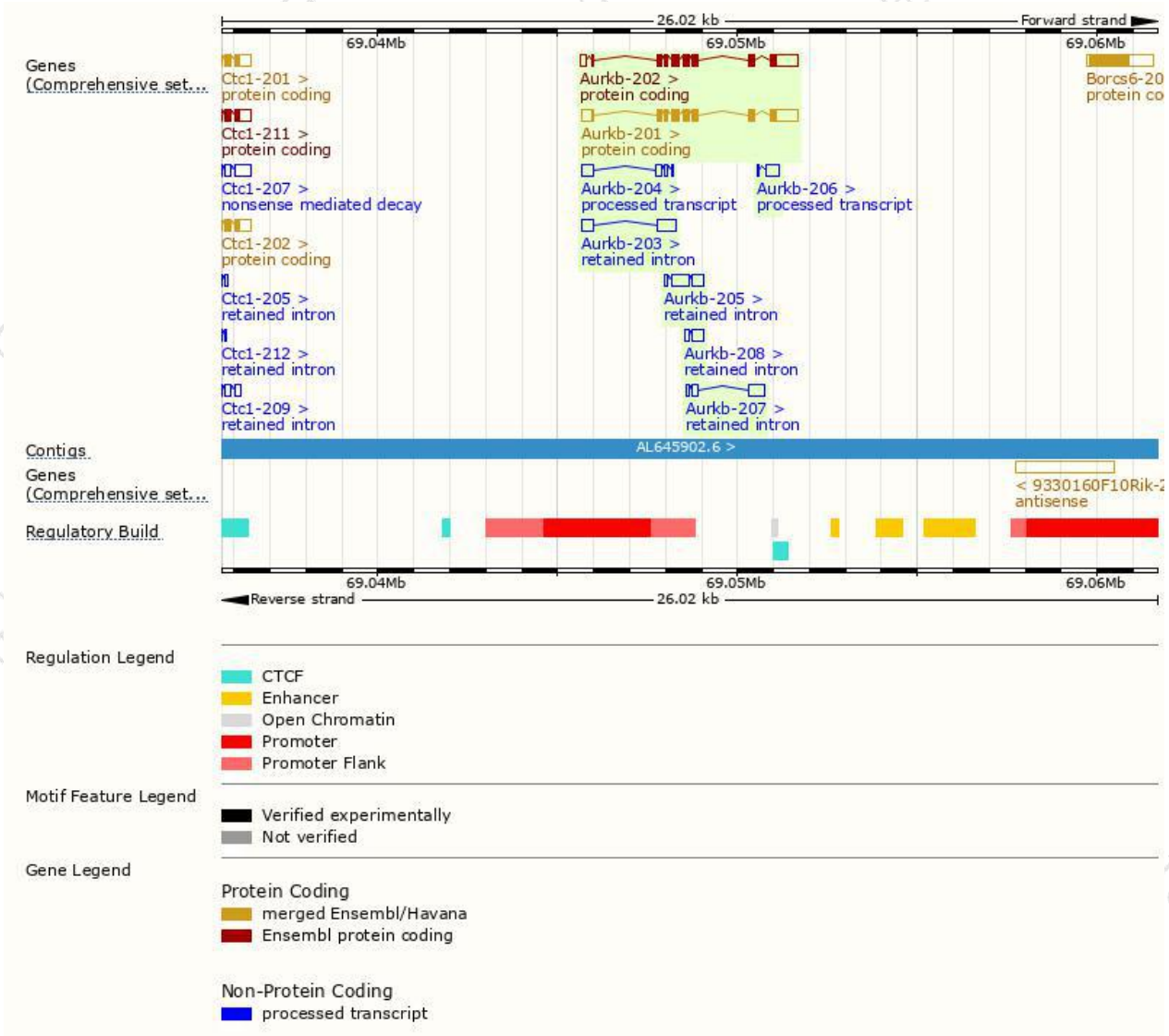
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aurkb-201	ENSMUST00000021277.5	1950	345aa	Protein coding	CCDS24877	O70126	TSL:1 GENCODE basic APPRIS P1
Aurkb-202	ENSMUST00000108666.7	1831	345aa	Protein coding	CCDS24877	O70126	TSL:5 GENCODE basic APPRIS P1
Aurkb-204	ENSMUST00000139457.1	615	No protein	Processed transcript	-	-	TSL:3
Aurkb-206	ENSMUST00000140531.1	393	No protein	Processed transcript	-	-	TSL:3
Aurkb-205	ENSMUST00000139594.1	879	No protein	Retained intron	-	-	TSL:3
Aurkb-203	ENSMUST00000126576.1	831	No protein	Retained intron	-	-	TSL:2
Aurkb-207	ENSMUST00000149018.1	661	No protein	Retained intron	-	-	TSL:2
Aurkb-208	ENSMUST00000156373.1	462	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Aurkb-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,Heterozygous null mice may develop oligospermia and show premature death and increased tumor incidence. Homozygous null embryos are small and die post-implantation showing reduced inner cell mass outgrowth, mitotic defects, aberrant trophoblast giant cells, edema, hemorrhage and increased apoptosis.

集萃药康
GemPharmatech

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

Tel: 025-5864 1534

集萃药康生物科技
GemPharmatech Co.,Ltd