

Cdkn2c Cas9-KO Strategy

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Project Overview



Project Name

Cdkn2c

Project type

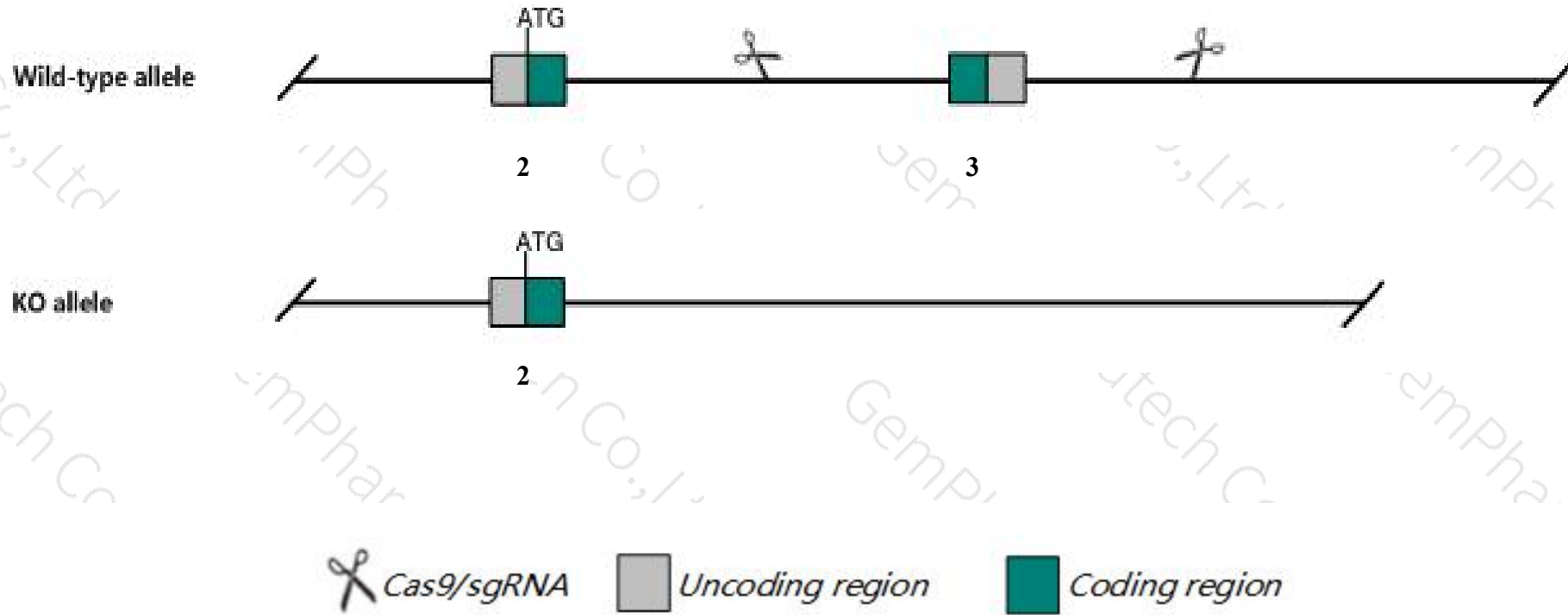
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdkn2c* gene. The schematic diagram is as follows:



- The *Cdkn2c* gene has 2 transcripts. According to the structure of *Cdkn2c* gene, exon3 of *Cdkn2c-202* (ENSMUST00000097921.9) transcript is recommended as the knockout region. The region contains most 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 *Cdkn2c* 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.

- According to the existing MGI data, Homozygotes for targeted null mutations exhibit kidney and mammary gland cortical cysts, Leydig cell hyperplasia, reduced testosterone levels, late developing thymic lymphomas and pituitary tumors, gigantism, and organomegaly.
- The *Cdkn2c* 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)

Cdkn2c cyclin dependent kinase inhibitor 2C [Mus musculus (house mouse)]

Gene ID: 12580, updated on 31-Jan-2019

Summary



Official Symbol Cdkn2c provided by [MGI](#)

Official Full Name cyclin dependent kinase inhibitor 2C provided by [MGI](#)

Primary source [MGI:MGI:105388](#)

See related [Ensembl:ENSMUSG00000028551](#)

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 C77269, INK4c, p18, p18-INK4c, p18-INK6, p18INK4c

Summary The protein encoded by this gene is a member of the INK4 family of cyclin-dependent kinase (cdk) inhibitors, and contains five ankyrin repeats. This protein interacts with both Cdk4 and Cdk6 to inhibit their kinase activities, and prevent their interactions with D-type cyclins, thereby negatively regulating cell division. This gene is differentially expressed in a variety of tissues, and is cell cycle regulated. Deletion of this gene can lead to tumor growth. Maximal expression is observed at the G2/M phase. Alternative splicing and promoter usage results in multiple transcript variants. [provided by RefSeq, Aug 2014]

Expression Broad expression in testis adult (RPKM 24.9), subcutaneous fat pad adult (RPKM 21.7) and 24 other tissues [See more](#)

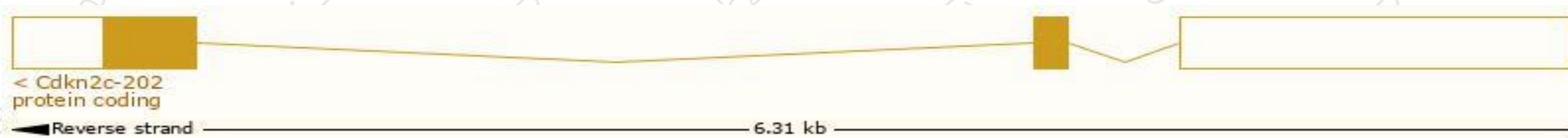
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

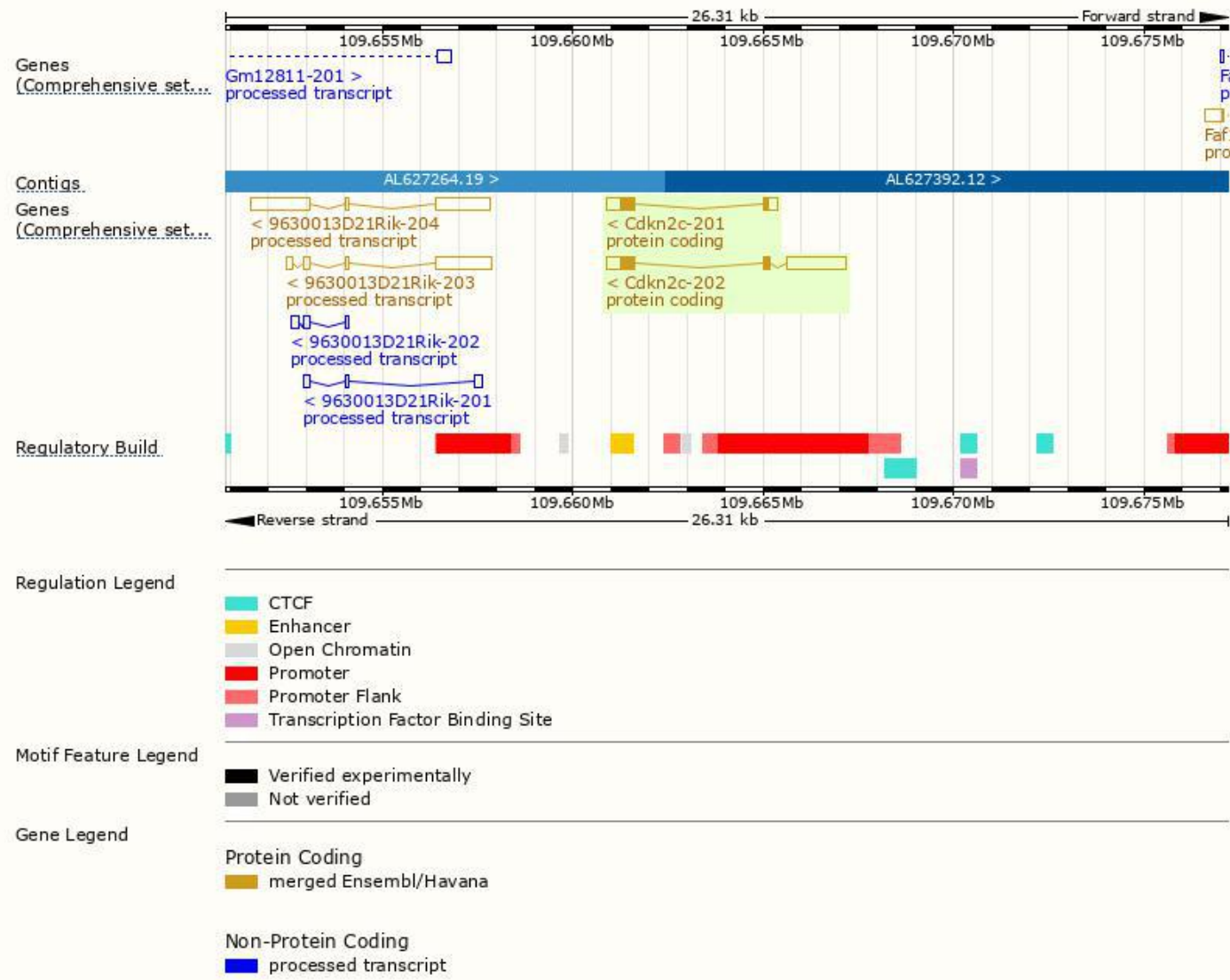
The gene has 2 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdkn2c-202	ENSMUST00000097921.9	2471	168aa	Protein coding	CCDS18467	Q60772	TSL:1 GENCODE basic APPRIS P1
Cdkn2c-201	ENSMUST00000063531.4	1106	168aa	Protein coding	CCDS18467	Q60772	TSL:1 GENCODE basic APPRIS P1

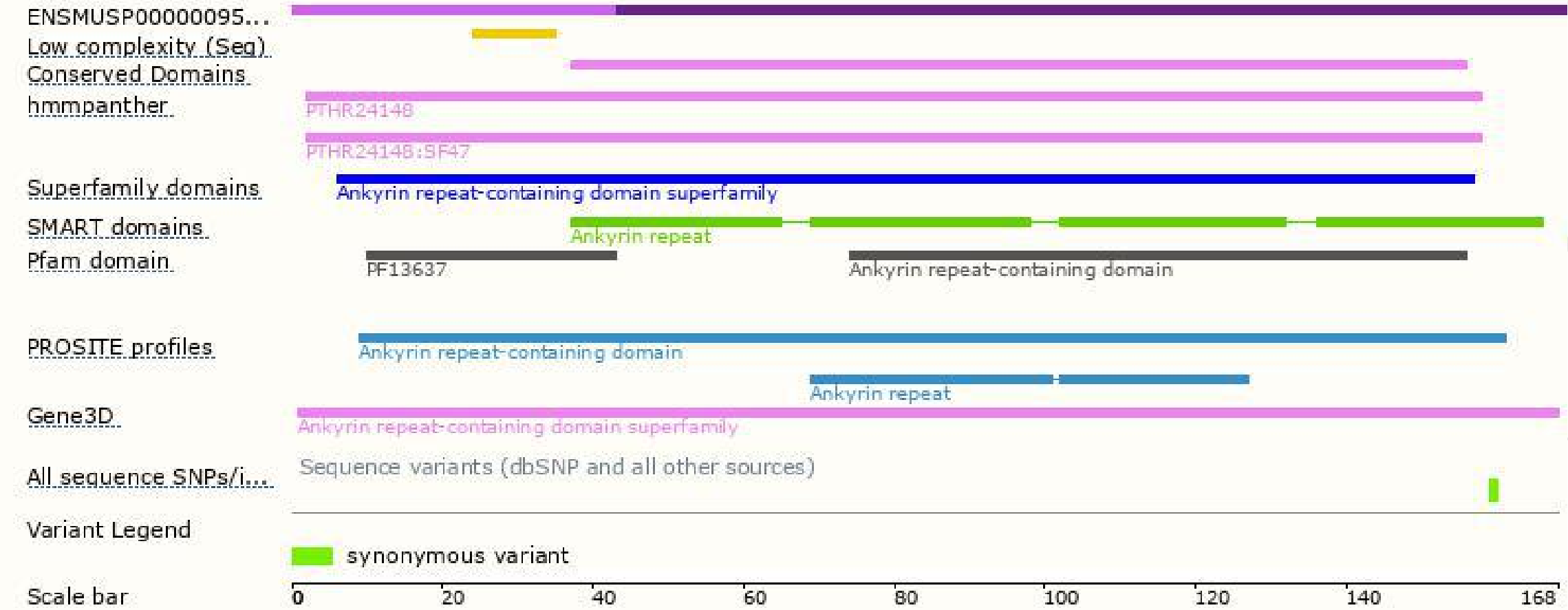
The strategy is based on the design of *Cdkn2c-202* transcript, The transcription is shown below



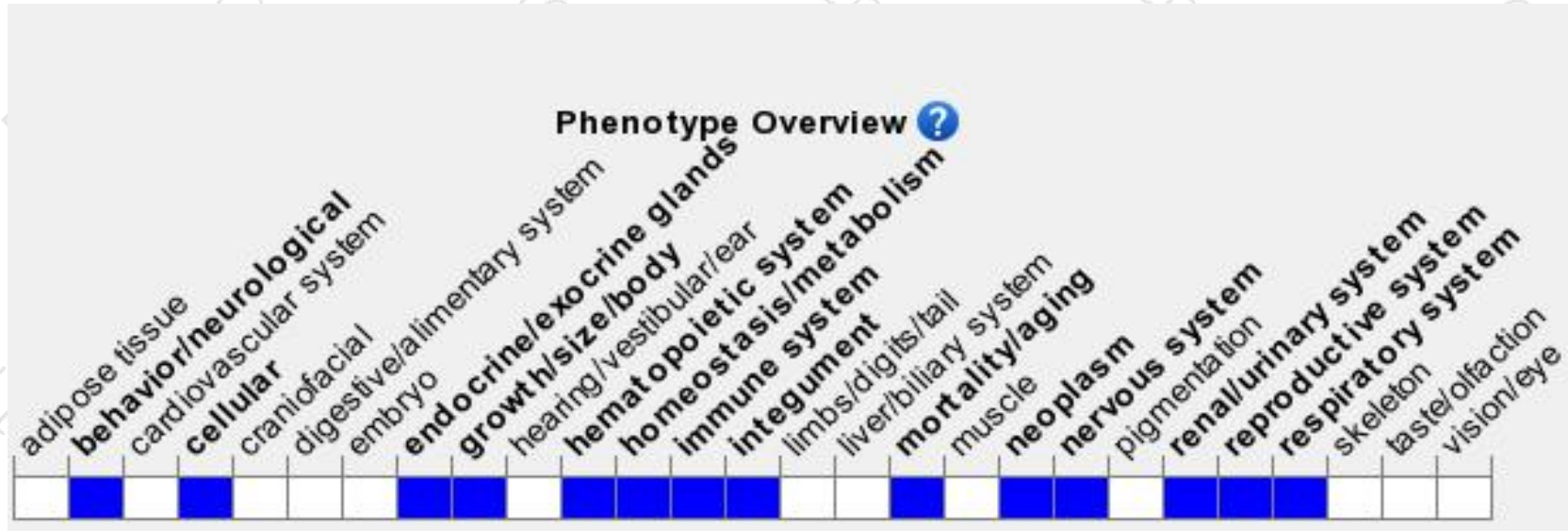
Genomic location distribution



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 targeted null mutations exhibit kidney and mammary gland cortical cysts, Leydig cell hyperplasia, reduced testosterone levels, late developing thymic lymphomas and pituitary tumors, gigantism, and organomegaly.

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

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