Kat2a Cas9-KO *Strategy*

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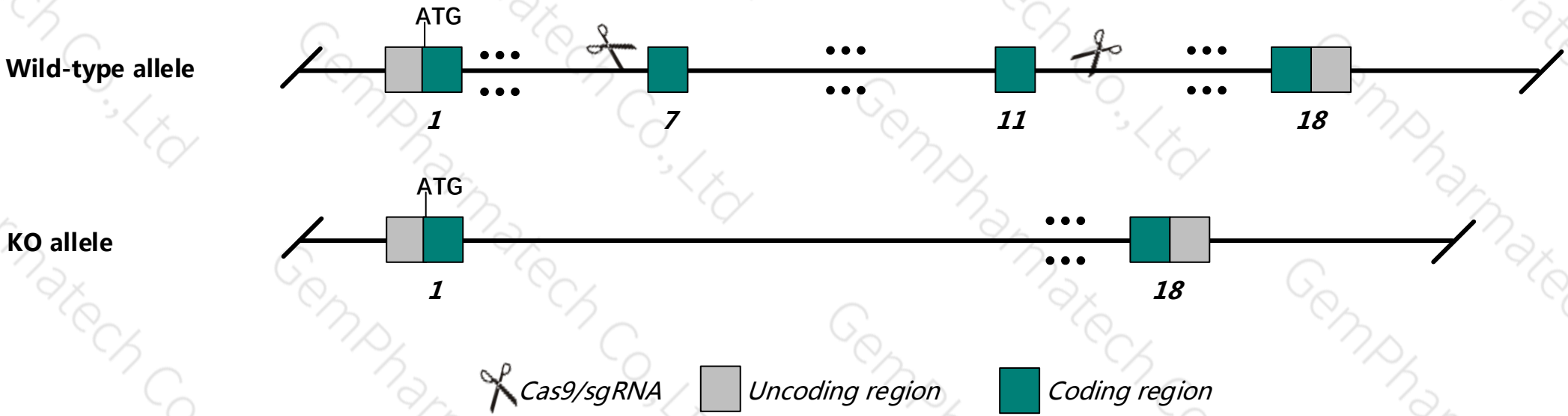
Project Overview

Project Name	***Kat2a***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kat2a* gene. The schematic diagram is as follows:



Technical routes

- The *Kat2a* gene has 4 transcripts.According to the structure of *Kat2a* gene, exon7-exon11 of *Kat2a*-202 (ENSMUST00000103118.3) transcript is recommended as the knockout region.The region contains 685bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Kat2a* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9, sgRNA 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.

Notice

- According to the existing MGI data，Homozygotes for targeted null mutations exhibit poorly developed yolk sac blood vessels, retarded growth, absence of dorsal mesoderm lineages, failure to form somites, and lethality between embryonic days 9.5-11.5.
- The target gene of this strategy will retain 1/3 of the protein at the N-terminus.
- The *Kat2a* 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 knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Kat2a K(lysine) acetyltransferase 2A [*Mus musculus* (house mouse)]

Gene ID: 14534, updated on 11-Sep-2019

Summary

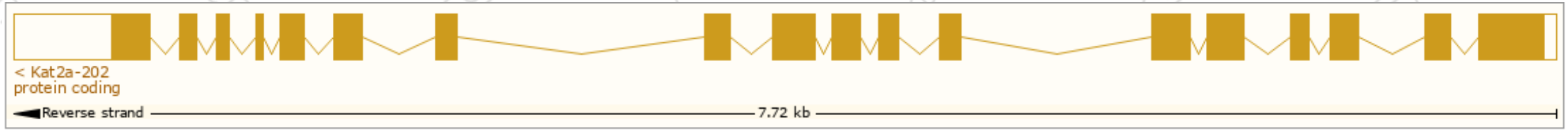
Official Symbol	Kat2a provided by MGI
Official Full Name	K(lysine) acetyltransferase 2A provided by MGI
Primary source	MGI:MGI:1343101
See related	Ensembl:ENSMUSG00000020918
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gcn5; Gcn5l2; mmGCN5; AW212720; 1110051E14Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 33.5), ovary adult (RPKM 29.4) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

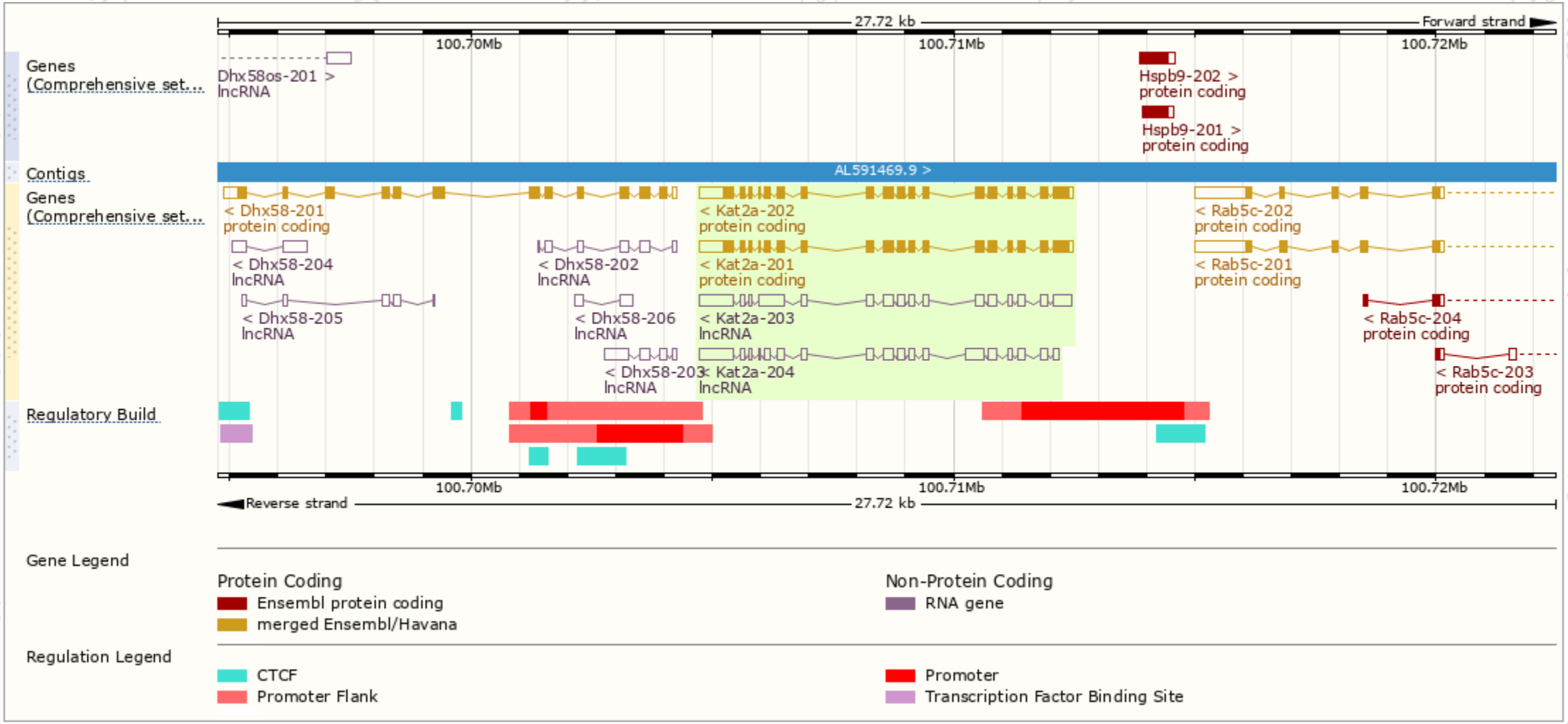
The gene has 4 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kat2a-202	ENSMUST00000103118.3	3046	830aa	Protein coding	CCDS25433	Q9JHD2	TSL:1 GENCODE basic APPRIS P4
Kat2a-201	ENSMUST00000006973.11	3043	829aa	Protein coding	CCDS25432	Q6P3Z8	TSL:1 GENCODE basic APPRIS ALT2
Kat2a-203	ENSMUST00000126299.1	3269	No protein	lncRNA	-	-	TSL:1
Kat2a-204	ENSMUST00000153526.7	2946	No protein	lncRNA	-	-	TSL:2

The strategy is based on the design of *Kat2a*-202 transcript,The transcription is shown below

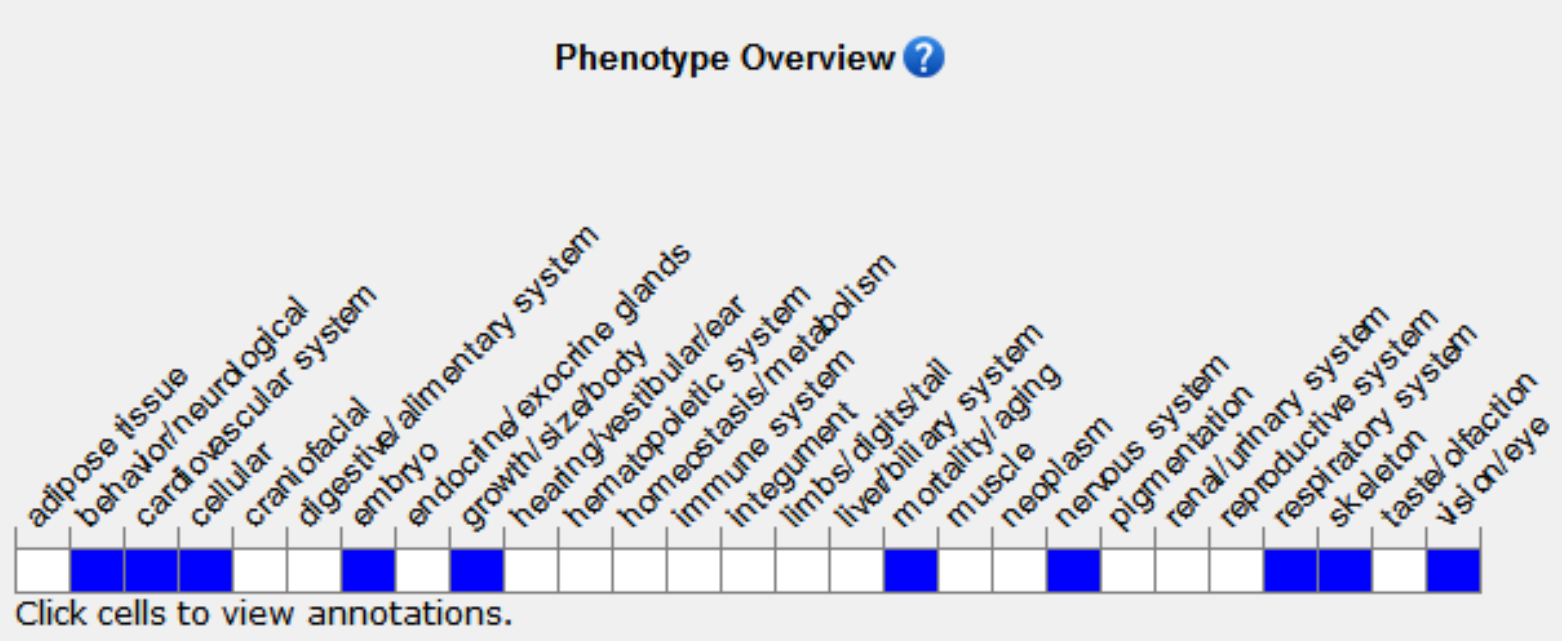


Genomic location distribution



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/) .

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

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