

***Kash5* Cas9-KO Strategy**

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Project Overview

Project Name

Kash5

Project type

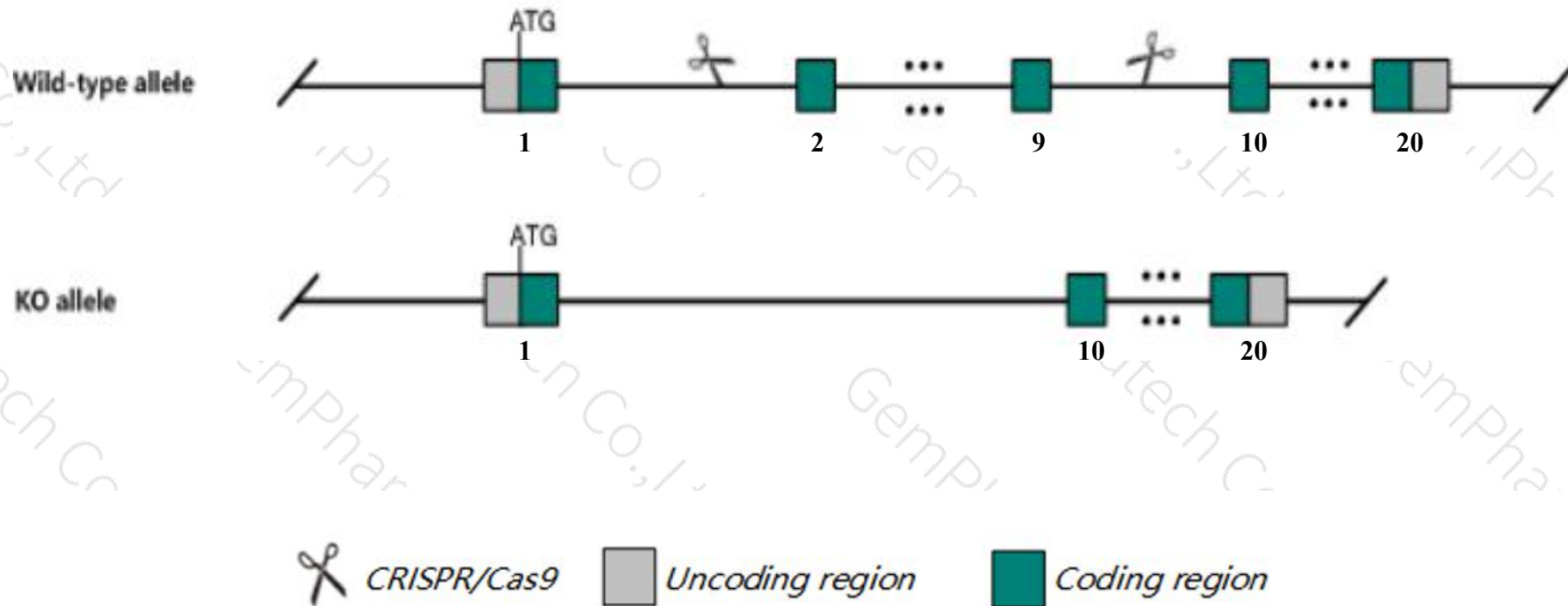
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kash5* gene. The schematic diagram is as follows:



- The *Kash5* gene has 2 transcripts. According to the structure of *Kash5* gene, exon2-exon9 of *Kash5*-201(ENSMUST00000121017.4) transcript is recommended as the knockout region. The region contains 896bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kash5* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, homozygous null mice are infertile. Females have small ovaries and lack ovarian follicles. Males exhibit small testes and seminiferous tubules, lack of mature sperm, increased testis apoptosis, and meiotic arrest along with limited homologous chromosome pairing and unresolved double-strand breaks.
- The *Kash5* gene is located on the Chr7. 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)

Kash5 KASH domain containing 5 [Mus musculus (house mouse)]

Gene ID: 384619, updated on 13-Mar-2020

Summary



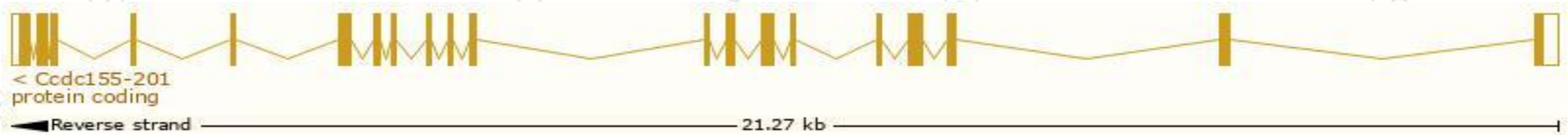
Official Symbol	Kash5 provided by MGI
Official Full Name	KASH domain containing 5 provided by MGI
Primary source	MGI:MGI:2687329
See related	Ensembl:ENSMUSG00000038292
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ccdc155, Gm1434
Expression	Biased expression in testis adult (RPKM 31.9) and lung adult (RPKM 1.5) See more
Orthologs	human all

Transcript information (Ensembl)

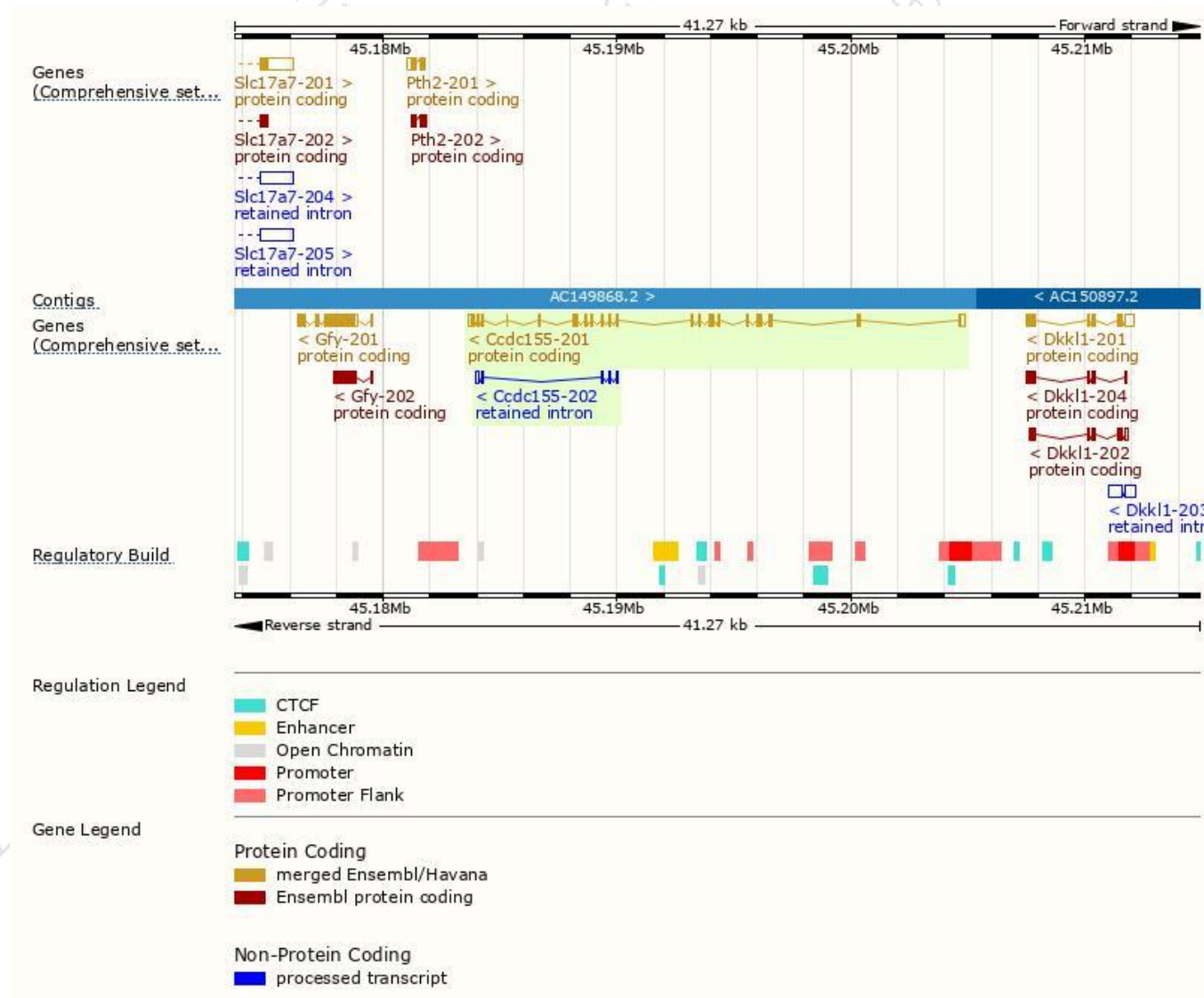
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccdc155-201	ENSMUST00000121017.4	2262	648aa	Protein coding	CCDS21234	Q80VJ8	TSL:1 GENCODE basic APPRIS P1
Ccdc155-202	ENSMUST00000211277.1	480	No protein	Retained intron	-	-	TSL:2

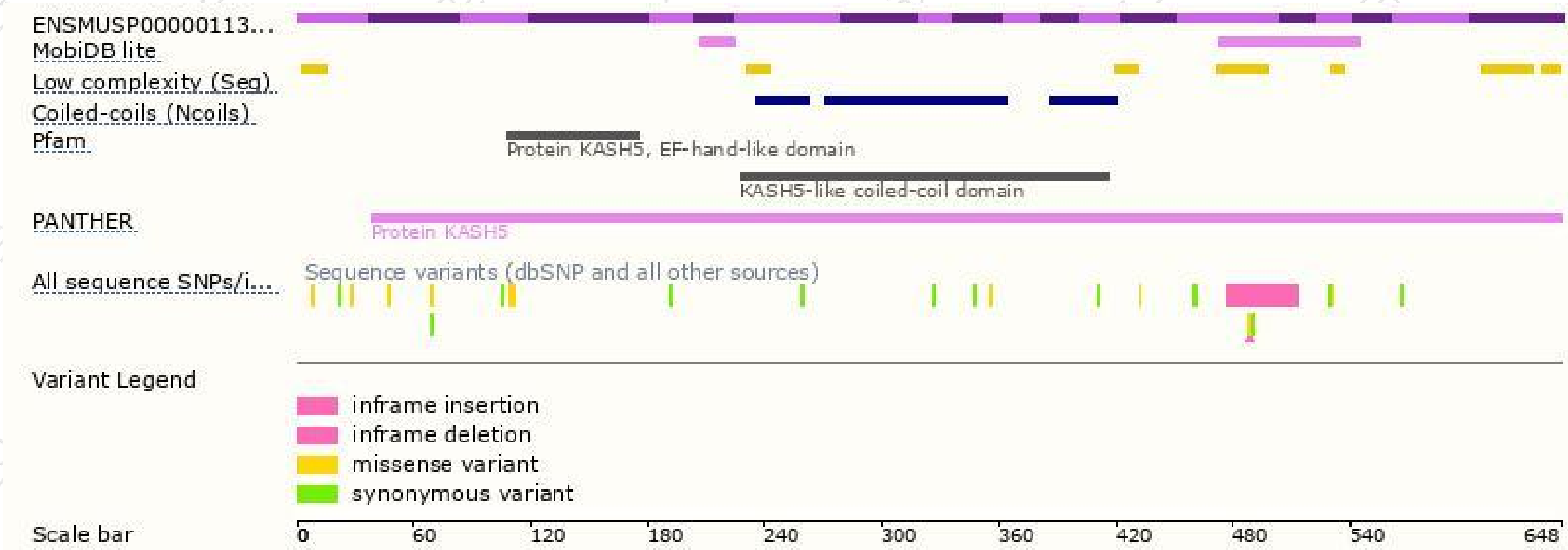
The strategy is based on the design of *Kash5-201* transcript,the transcription is shown below:



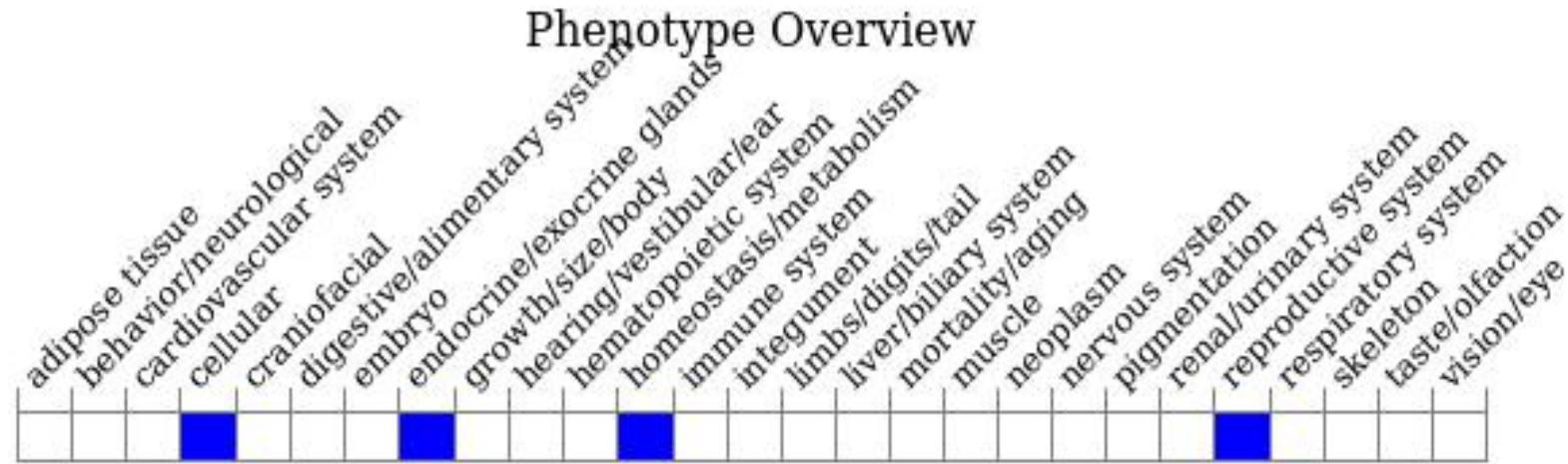
Genomic location distribution



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, homozygous null mice are infertile. Females have small ovaries and lack ovarian follicles. Males exhibit small testes and seminiferous tubules, lack of mature sperm, increased testis apoptosis, and meiotic arrest along with limited homologous chromosome pairing and unresolved double-strand breaks.

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

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