

Avil Cas9-KO Strategy

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Project Overview

Project Name

Avil

Project type

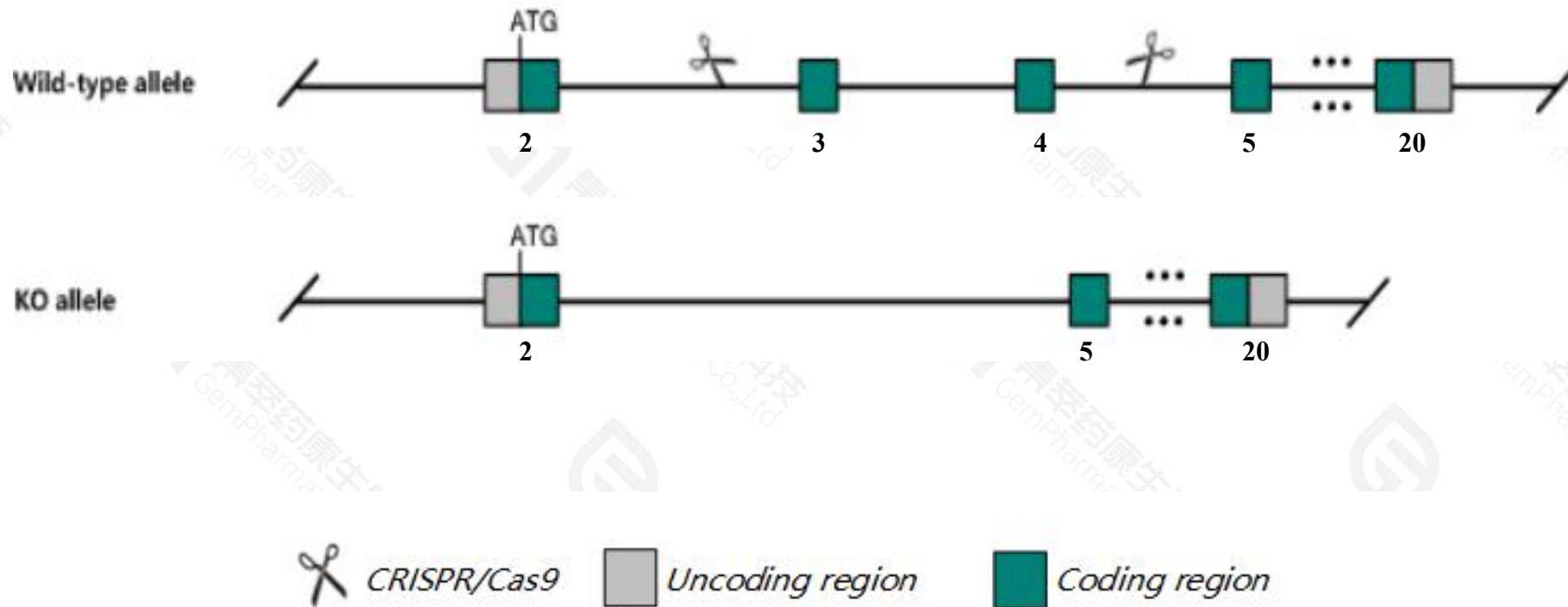
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Avil* gene has 4 transcripts. According to the structure of *Avil* gene, exon3-exon4 of *Avil-201*(ENSMUST00000026500.12) transcript is recommended as the knockout region. The region contains 272bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Avil* 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, homozygotes null mice show partial embryonic lethality before E10.5, but surviving mice are fertile and exhibit no abnormal behavior into adult. The regenerative axon growth and remodeling of sensory nerves are abnormal in homozygous null mice.
- The *Avil* gene is located on the Chr10. 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)

Avil advillin [Mus musculus (house mouse)]

Gene ID: 11567, updated on 26-Jan-2021

Summary



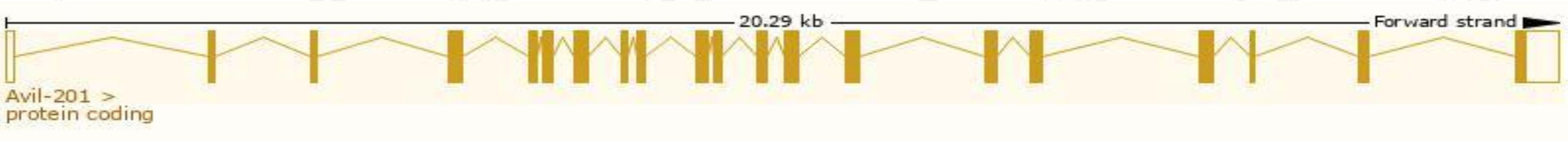
Official Symbol	Avil provided by MGI
Official Full Name	advillin provided by MGI
Primary source	MGI:MGI:1333798
See related	Ensembl:ENSMUSG00000025432
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Advil, DOC, DOC6
Expression	Biased expression in stomach adult (RPKM 6.0), small intestine adult (RPKM 1.4) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

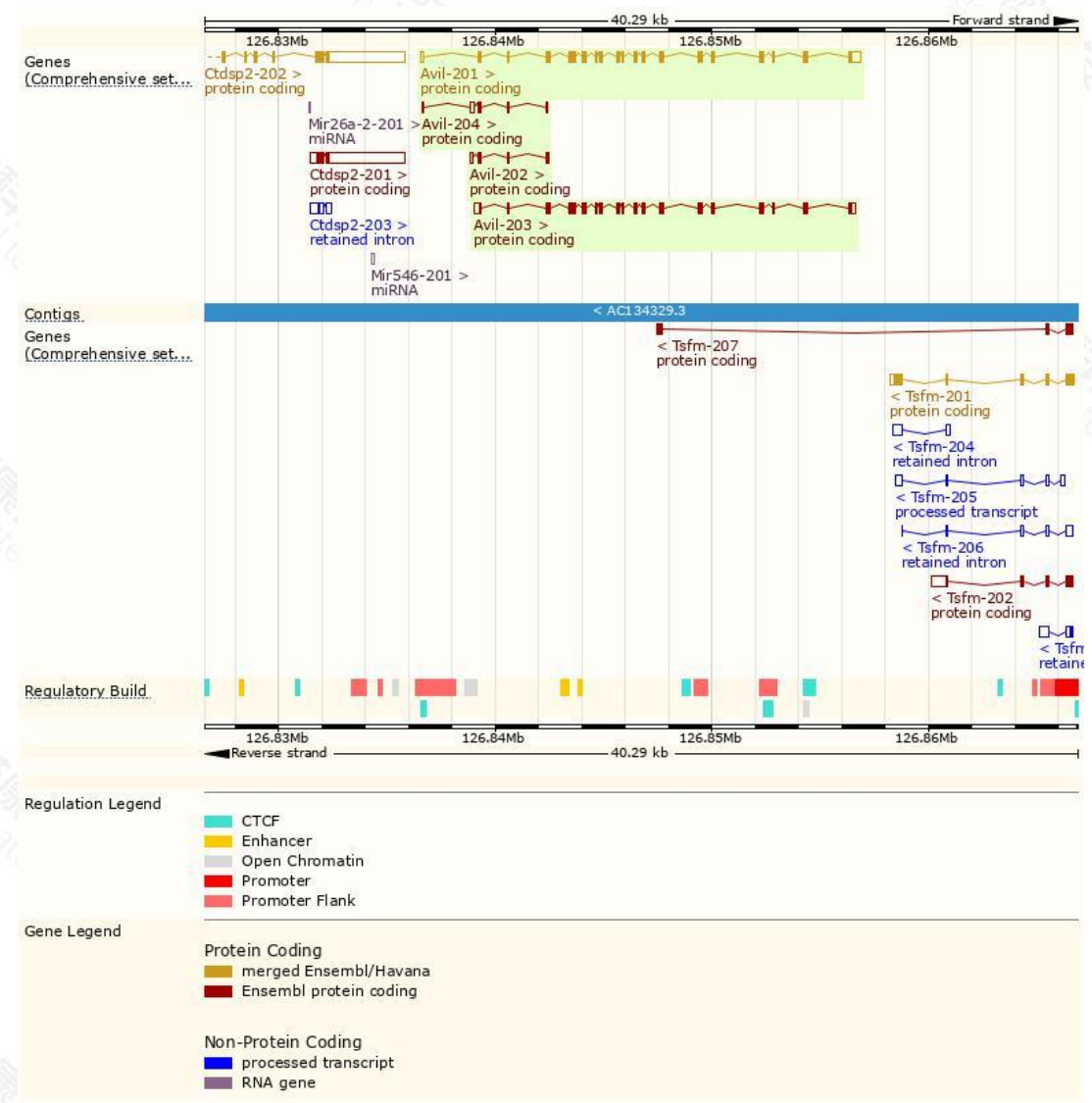
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Avil-201	ENSMUST00000026500.12	3033	819aa	Protein coding	CCDS24221		TSL:1 , GENCODE basic , APPRIS P1 ,
Avil-203	ENSMUST00000129173.2	2925	819aa	Protein coding	CCDS24221		TSL:5 , GENCODE basic , APPRIS P1 ,
Avil-204	ENSMUST00000142698.8	419	54aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Avil-202	ENSMUST00000126816.8	350	78aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,

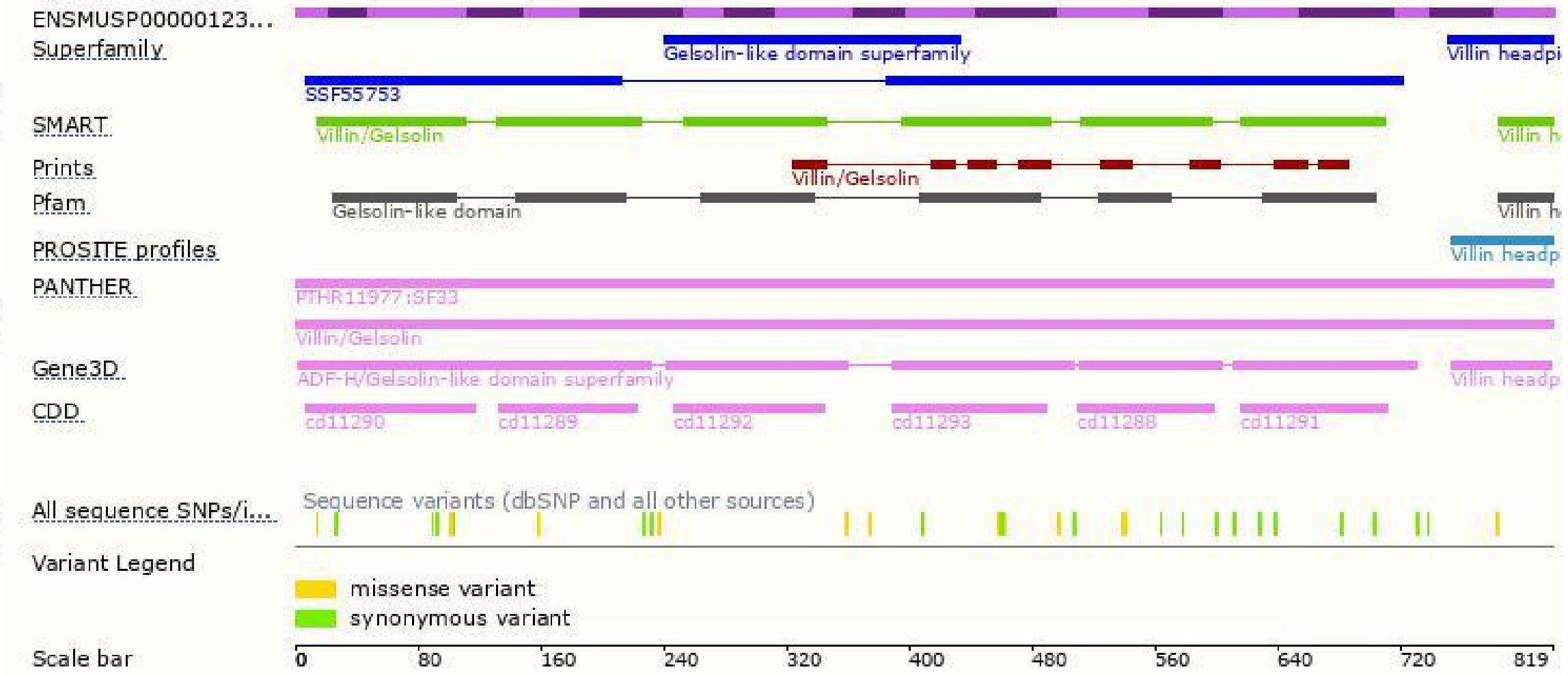
The strategy is based on the design of *Avil-201* transcript,the transcription is shown below:



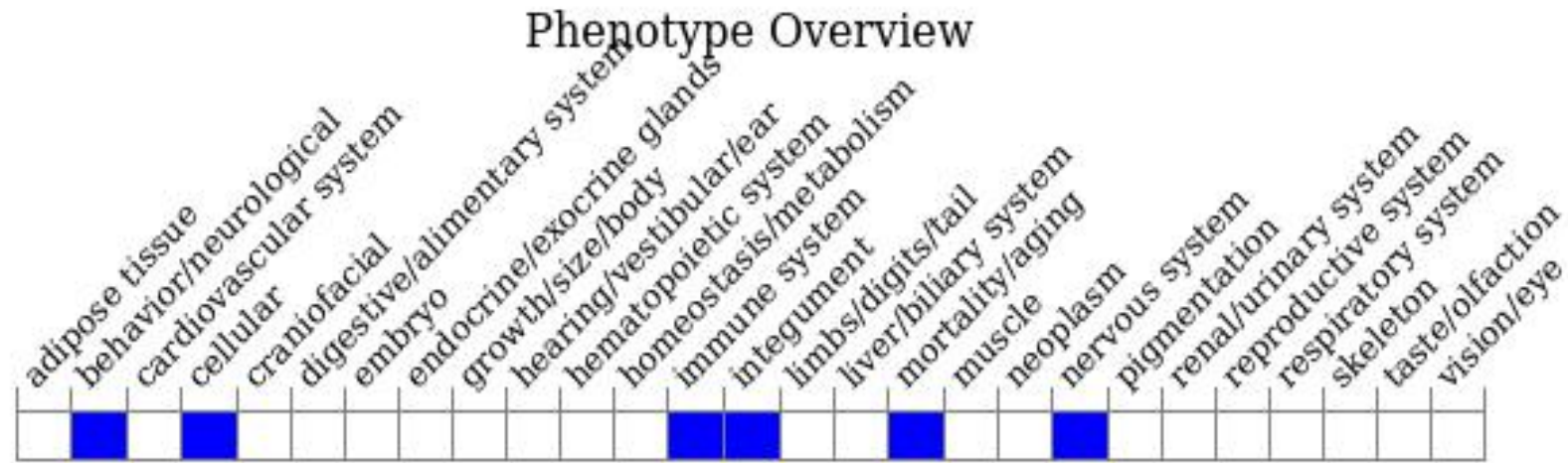
Genomic location distribution



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, homozygotes null mice show partial embryonic lethality before E10.5, but surviving mice are fertile and exhibit no abnormal behavior into adult. The regenerative axon growth and remodeling of sensory nerves are abnormal in homozygous null mice.

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