Setd2 Cas9-CKO Strategy

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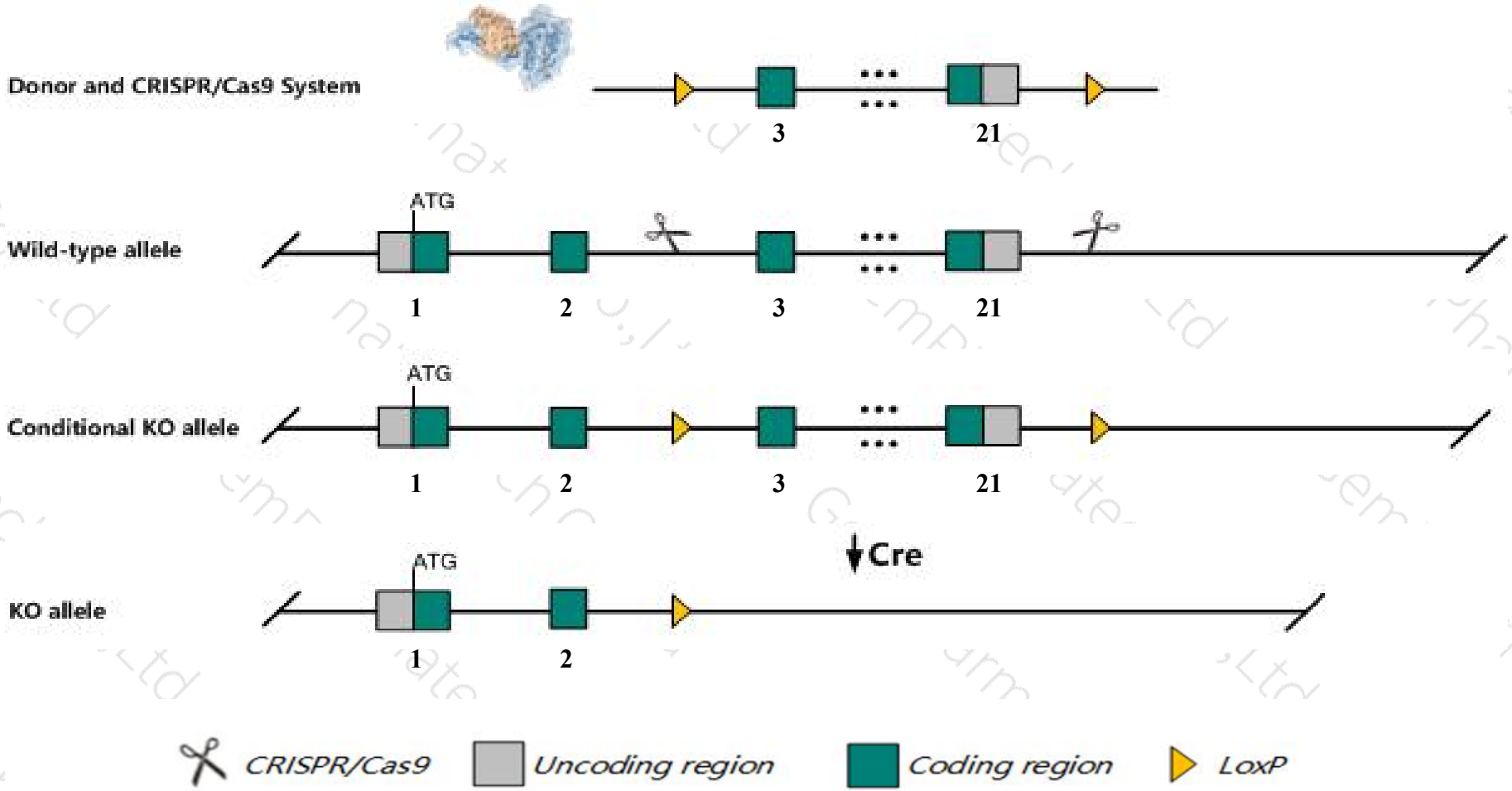
Project Overview

Project Name	***Setd2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Setd2* gene. The schematic diagram is as follows:



Technical routes

- The *Setd2* gene has 10 transcripts. According to the structure of *Setd2* gene, exon3-exon21 of *Setd2-201* (ENSMUST00000153838.7) 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 *Setd2* gene. The brief process is as follows:CRISPR/Cas9 system and Donor 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.

- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit impaired embryonic vascular remodeling in the embryo proper, yolk sac, and placenta that leads to death around E10.5.

- The *Setd2* gene is located on the Chr9. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Setd2 SET domain containing 2 [Mus musculus (house mouse)]

Gene ID: 235626, updated on 24-Feb-2019

Summary

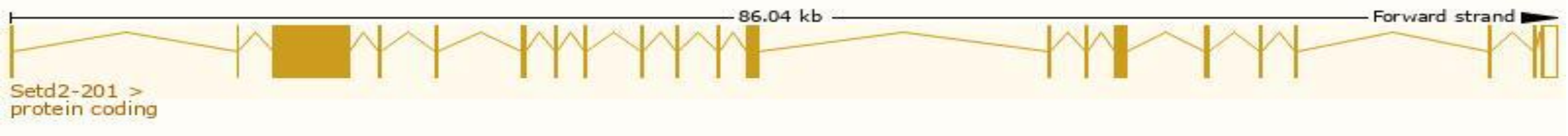
Official Symbol	Setd2 provided by MGI
Official Full Name	SET domain containing 2 provided by MGI
Primary source	MGI:MGI:1918177
See related	Ensembl:ENSMUSG00000044791
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4921524K10Rik, BC031601, KMT3A
Expression	Ubiquitous expression in CNS E11.5 (RPKM 11.9), CNS E14 (RPKM 11.1) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

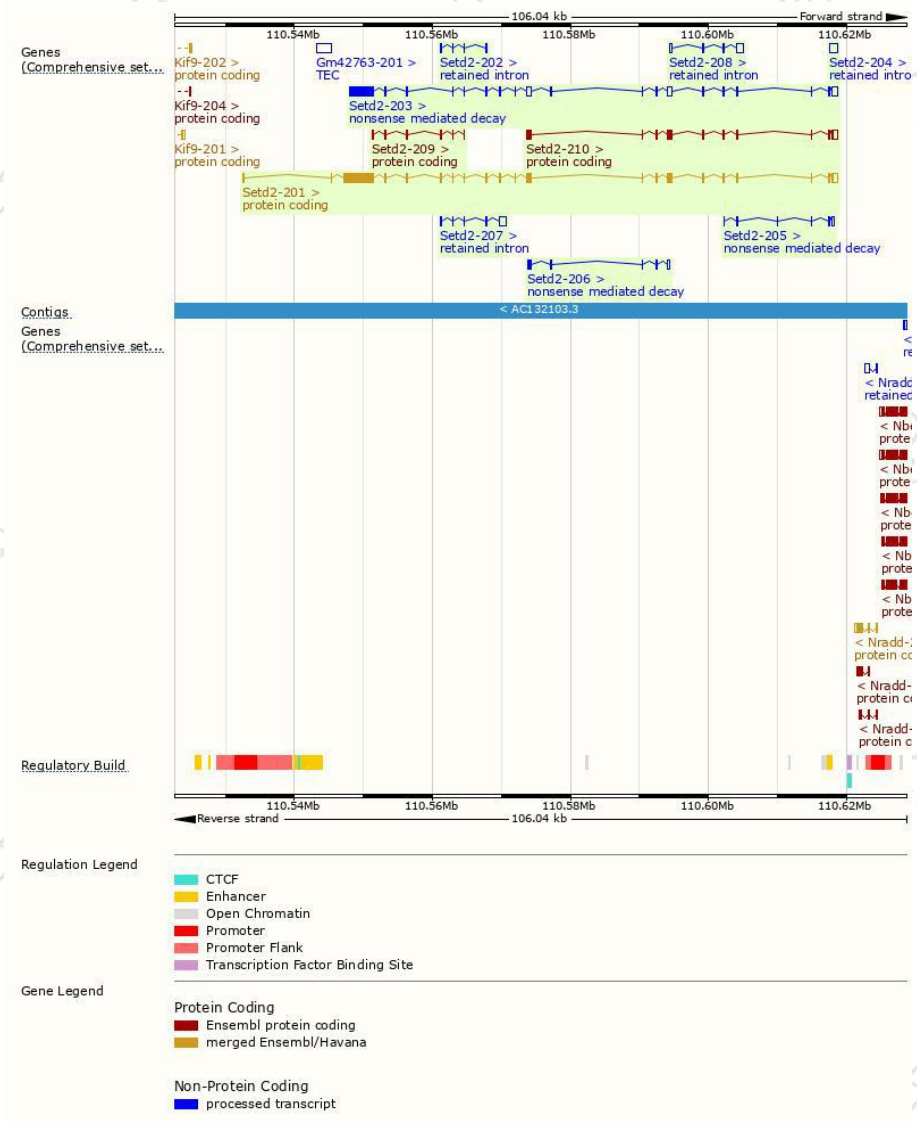
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Setd2-201	ENSMUST00000153838.7	8350	2537aa	Protein coding	CCDS40781	E9Q5F9	TSL:5 GENCODE basic APPRIS P1
Setd2-210	ENSMUST00000200460.4	2910	760aa	Protein coding	-	A0A0G2JEZ4	CDS 5' incomplete TSL:1
Setd2-209	ENSMUST00000198823.1	713	238aa	Protein coding	-	A0A0G2JDY1	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Setd2-203	ENSMUST00000196814.4	7442	1263aa	Nonsense mediated decay	-	A0A0G2JH06	CDS 5' incomplete TSL:5
Setd2-206	ENSMUST00000197655.1	1173	169aa	Nonsense mediated decay	-	A0A0G2JEW8	CDS 5' incomplete TSL:5
Setd2-205	ENSMUST00000197399.1	767	72aa	Nonsense mediated decay	-	A0A0G2JDZ6	CDS 5' incomplete TSL:5
Setd2-208	ENSMUST00000198697.1	1735	No protein	Retained intron	-	-	TSL:2
Setd2-207	ENSMUST00000198587.1	1398	No protein	Retained intron	-	-	TSL:1
Setd2-204	ENSMUST00000197260.1	1007	No protein	Retained intron	-	-	TSL:NA
Setd2-202	ENSMUST00000195911.4	529	No protein	Retained intron	-	-	TSL:2

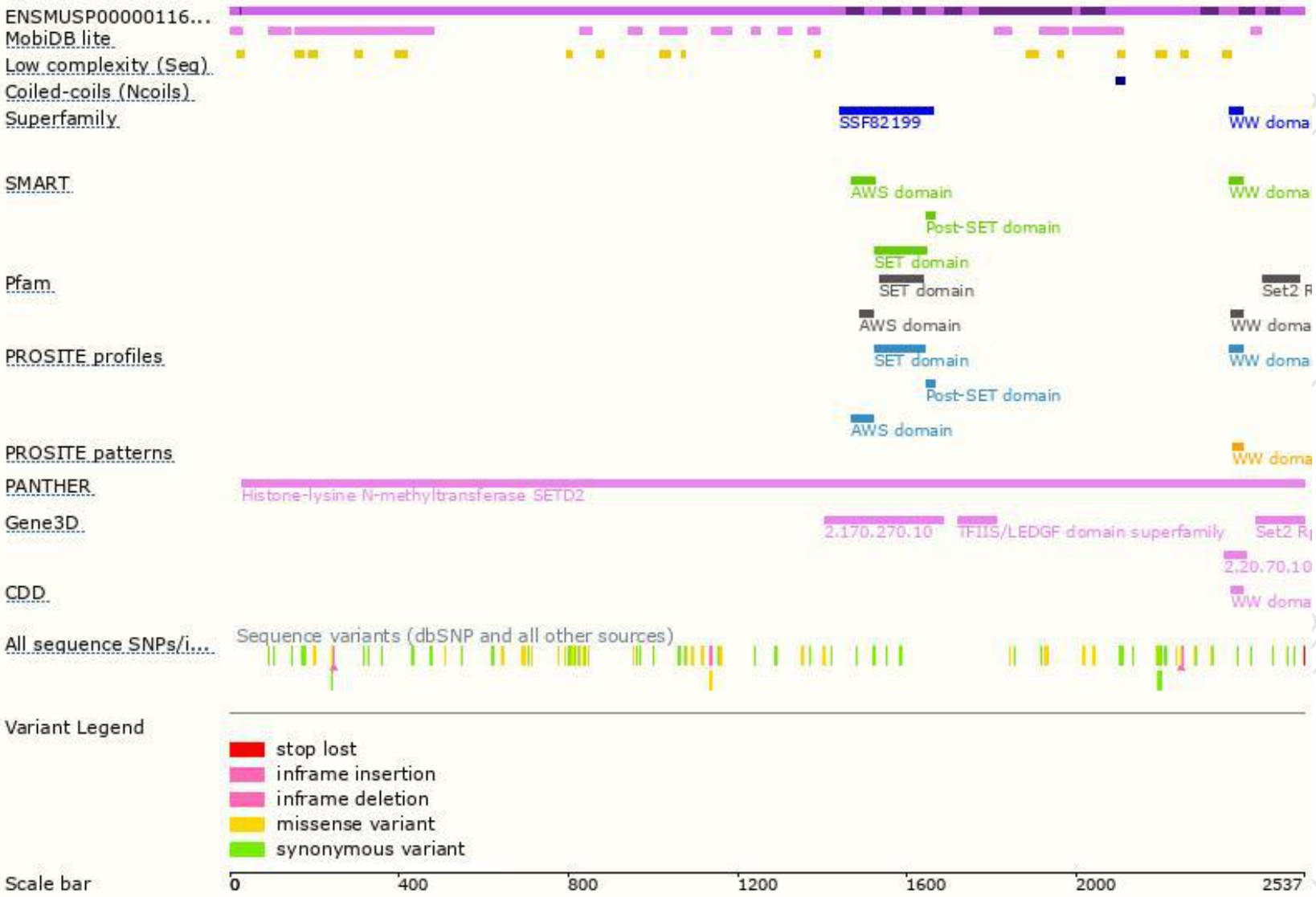
The strategy is based on the design of *Setd2-201* transcript,The transcription is shown below



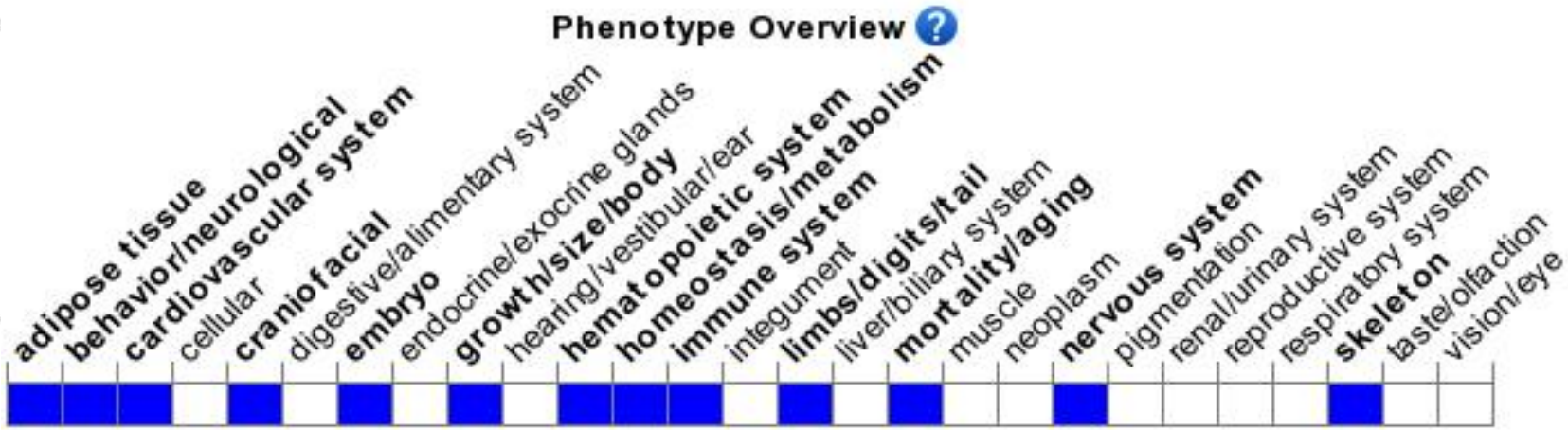
Genomic location distribution



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,Mice homozygous for a knock-out allele exhibit impaired embryonic vascular remodeling in the embryo proper, yolk sac, and placenta that leads to death around E10.5.

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

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