

Adgra2 Cas9-CKO Strategy

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Project Overview

Project Name

Adgra2

Project type

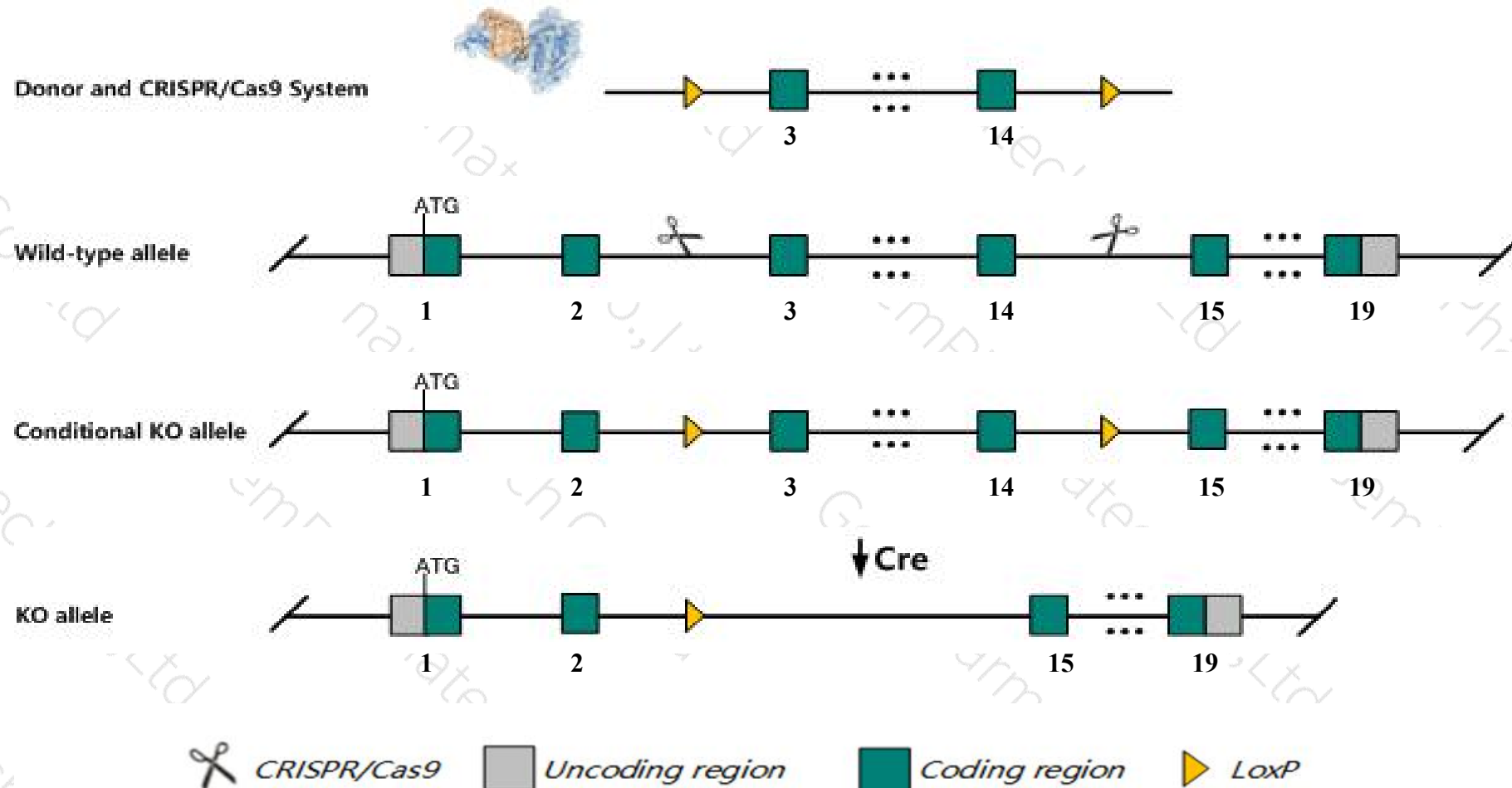
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adgra2* gene. The schematic diagram is as follows:



- The *Adgra2* gene has 4 transcripts. According to the structure of *Adgra2* gene, exon3-exon14 of *Adgra2-201*(ENSMUST00000033876.13) transcript is recommended as the knockout region. The region contains 1915bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adgra2* 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.

- According to the existing MGI data, mice homozygous for null mutations display fetal or perinatal lethality with CNS hemorrhage and angiogenic arrest in the CNS.
- The *Adgra2* gene is located on the Chr8. 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)

Adgra2 adhesion G protein-coupled receptor A2 [Mus musculus (house mouse)]

Gene ID: 78560, updated on 13-Mar-2020

Summary



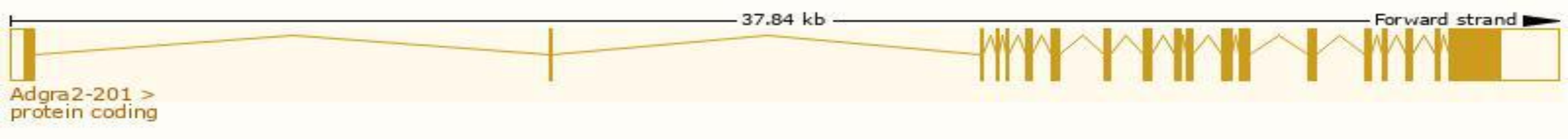
Official Symbol	Adgra2 provided by MGI
Official Full Name	adhesion G protein-coupled receptor A2 provided by MGI
Primary source	MGI:MGI:1925810
See related	Ensembl:ENSMUSG00000031486
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	8430414O08Rik, 9530074E10Rik, Gpr124, Tem5, mKIAA1531
Expression	Broad expression in ovary adult (RPKM 39.8), limb E14.5 (RPKM 26.2) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

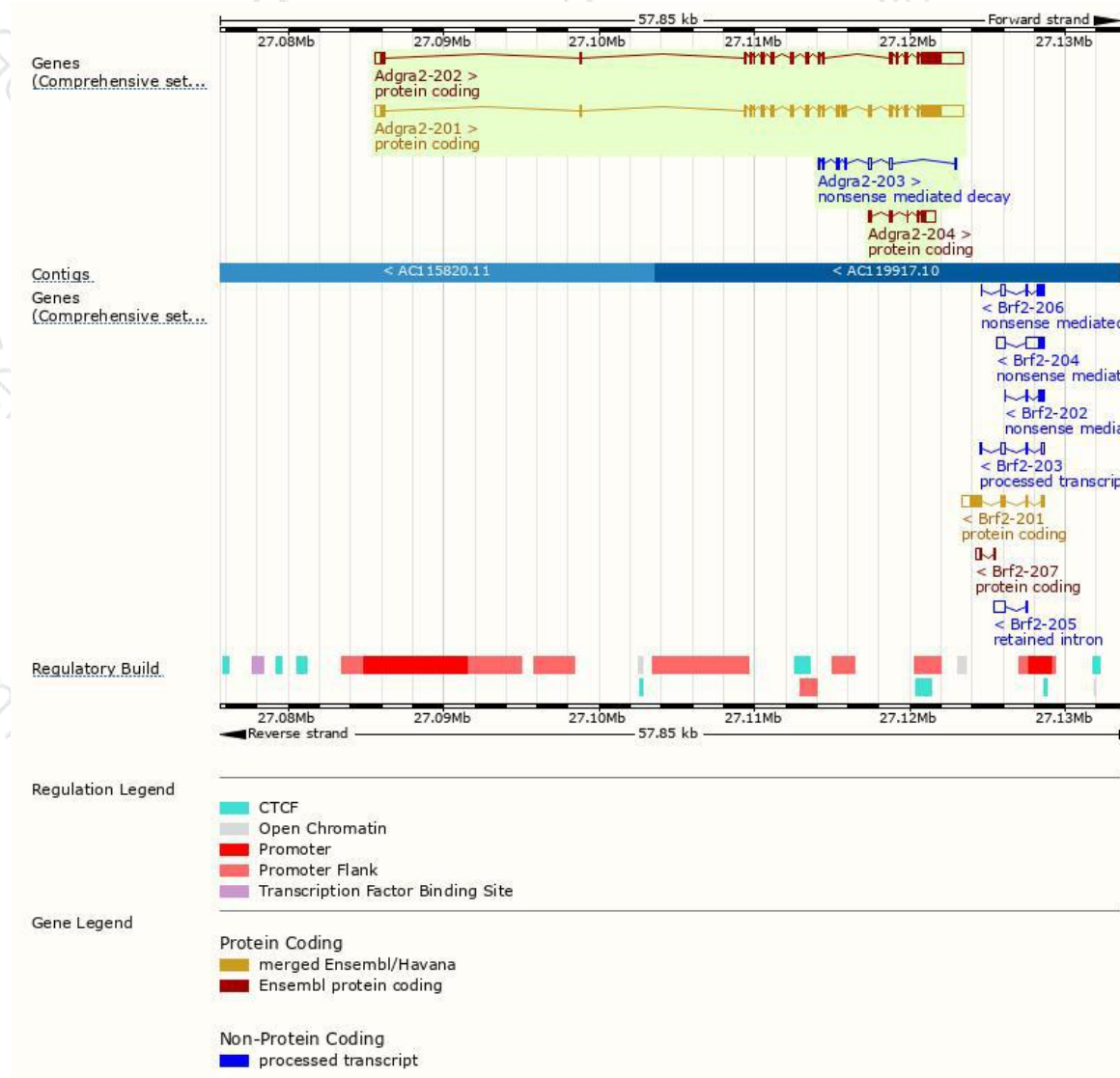
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adgra2-201	ENSMUST00000033876.13	5760	1336aa	Protein coding	CCDS22210	Q91ZV8	TSL:1 GENCODE basic APPRIS P1
Adgra2-202	ENSMUST00000178514.7	5129	1121aa	Protein coding	-	J3QMG7	TSL:5 GENCODE basic
Adgra2-204	ENSMUST00000179351.1	1149	176aa	Protein coding	-	J3QPS6	CDS 5' incomplete TSL:3
Adgra2-203	ENSMUST00000179207.2	971	210aa	Nonsense mediated decay	-	J3QPB6	CDS 5' incomplete TSL:5

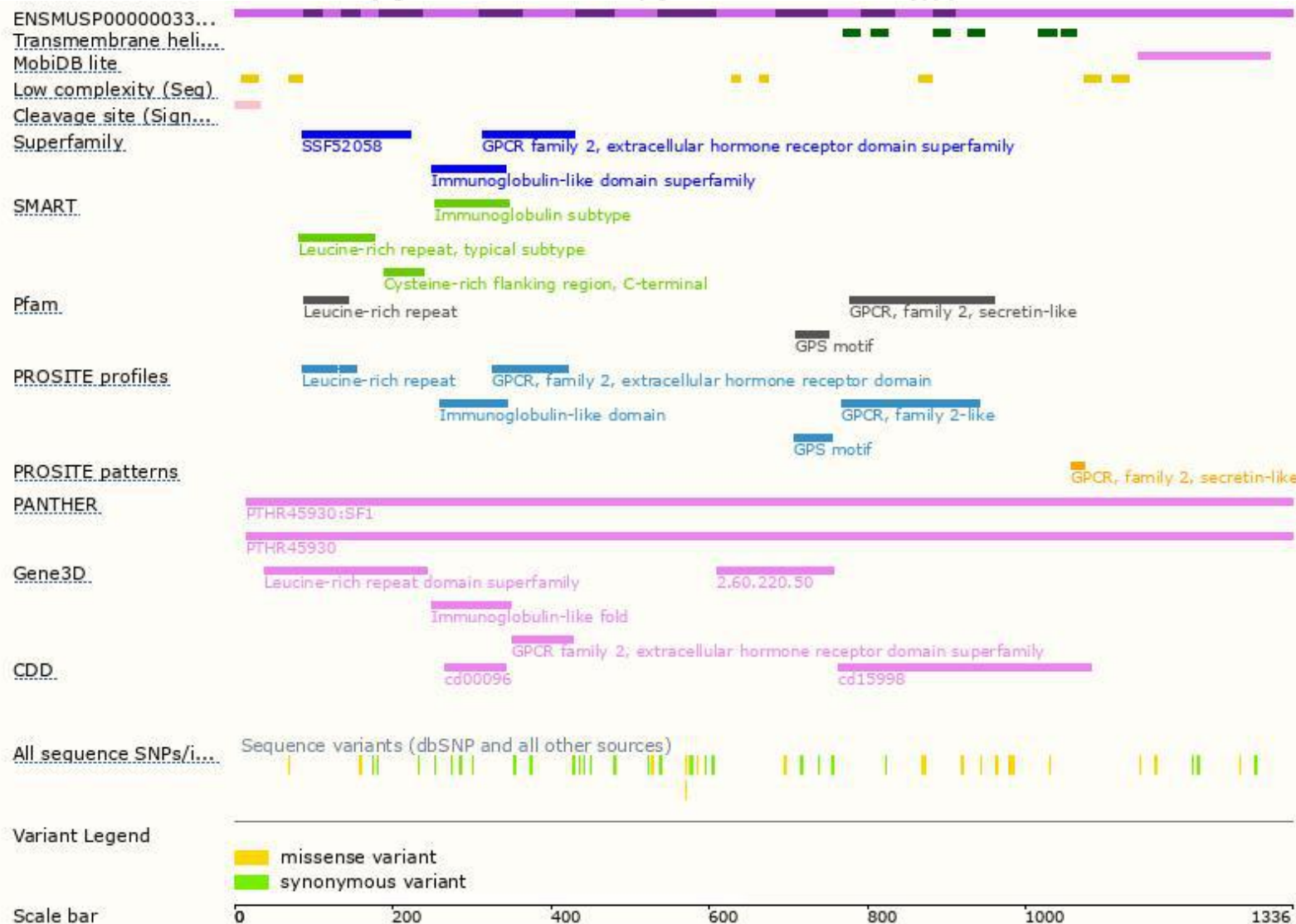
The strategy is based on the design of *Adgra2-201* transcript,the transcription is shown below:



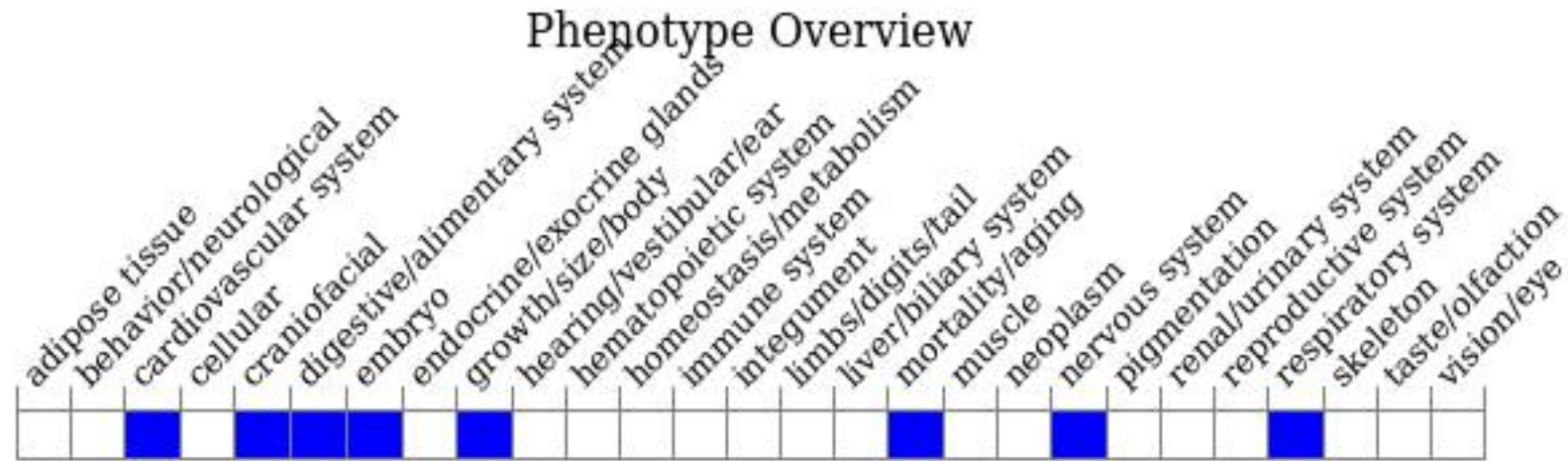
Genomic location distribution



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 null mutations display fetal or perinatal lethality with CNS hemorrhage and angiogenic arrest in the CNS.

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

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