

U2af1 Cas9-KO Strategy

Designer: Xueting Zhang

Reviwer:Yanhua Shen

Date:2019-10-17

Project Overview

Project Name

U2af1

Project type

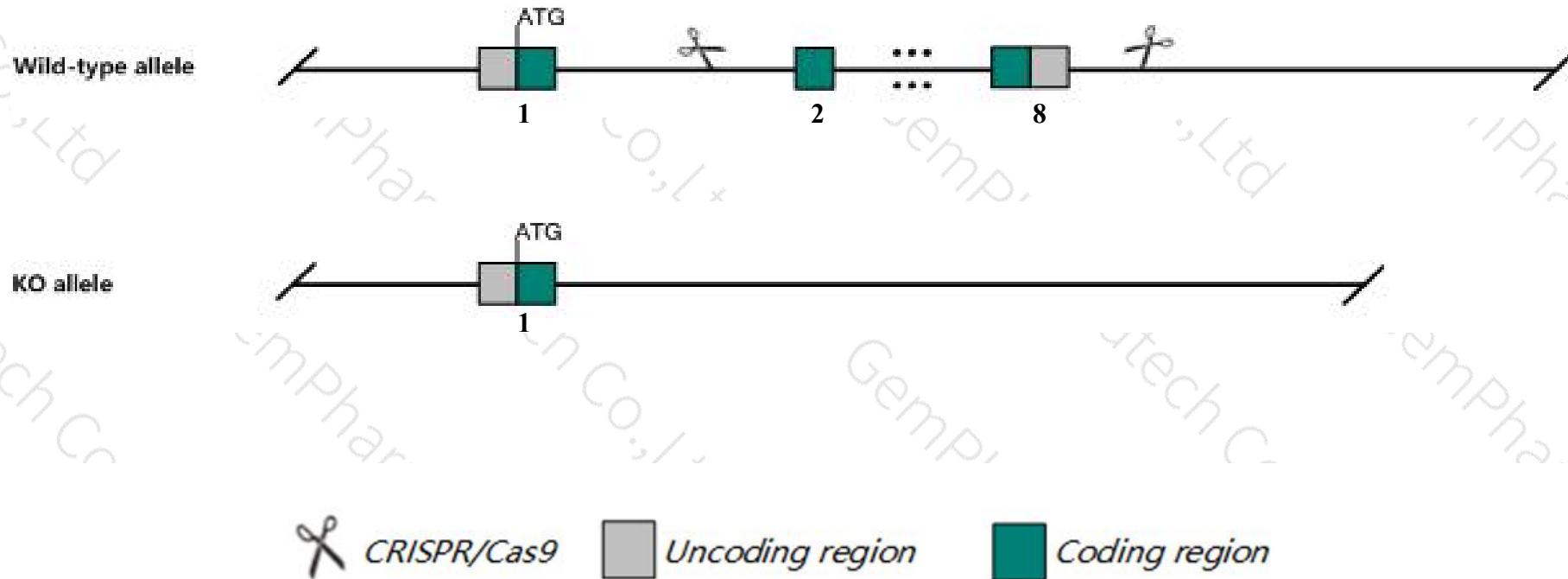
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *U2af1* gene. The schematic diagram is as follows:



- The *U2af1* gene has 9 transcripts. According to the structure of *U2af1* gene, exon2-exon8 of *U2af1-201* (ENSMUST00000014684.5) transcript is recommended as the knockout region. The region contains most of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *U2af1* gene. The brief process is as follows: CRISPR/Cas9 system

- The knockout region is near to the N-terminal of *Rps2-ps8* gene, this strategy may influence the regulatory function of the N-terminal of *Rps2-ps8* gene.
- The effect on transcript *U2af1*-207 is unknown.
- The *U2af1* gene is located on the Chr17. 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)

U2af1 U2 small nuclear ribonucleoprotein auxiliary factor (U2AF) 1 [*Mus musculus* (house mouse)]

Gene ID: 108121, updated on 12-Aug-2019

Summary

- Official Symbol

U2af1 provided by MGI
- Official Full Name

U2 small nuclear ribonucleoprotein auxiliary factor (U2AF) 1 provided by MGI
- Primary source

MGI:MGI:98884
- See related

Ensembl:ENSMUSG00000061613
- 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

2010107D16Rik
- Expression

Broad expression in CNS E11.5 (RPKM 119.0), placenta adult (RPKM 69.8) and 23 other tissues See more
- Orthologs

human all

Genomic context

Location: 17; 17 B1

Exon count: 10

See U2af1 in [Genome Data Viewer](#)

| Annotation release | Status | Assembly | Chr | Location |
|---------------------|-------------------|--|-----|--|
| 108 | current | GRCm38.p6 (GCF_000001635.26) | 17 | NC_000083.6 (31647081..31659148, complement) |
| Build 37.2 | previous assembly | MGSCv37 (GCF_000001635.18) | 17 | NC_000083.5 (31784027..31795699, complement) |

Transcript information (Ensembl)

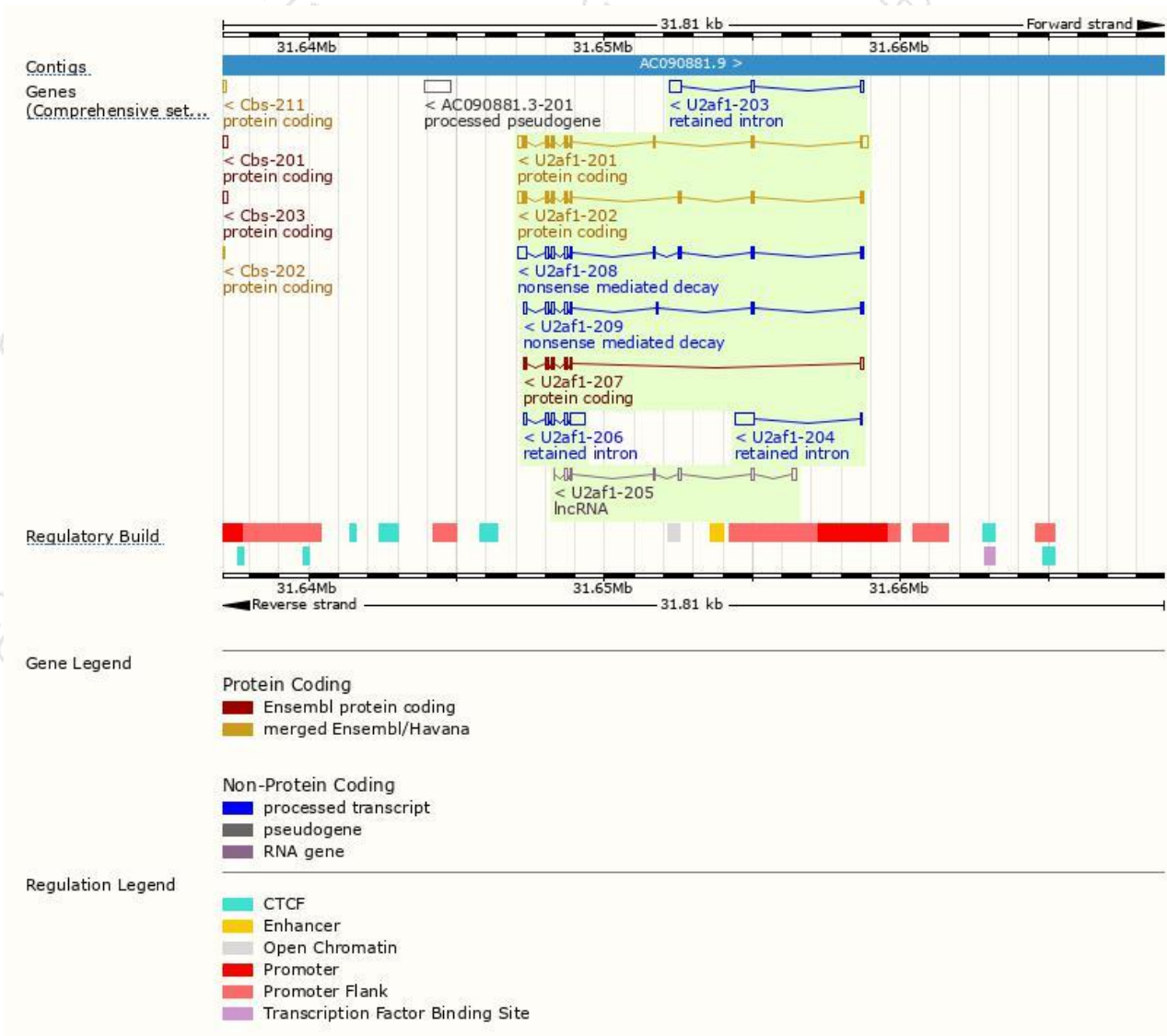
The gene has 9 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|-----------|--------------------------------------|------|-----------------------|-------------------------|---------------------------|-------------------------------|---------------------------------|
| U2af1-201 | ENSMUST00000014684.5 | 1046 | 239aa | Protein coding | CCDS28611 | Q14C24 Q9D883 | TSL:1 GENCODE basic APPRIS P3 |
| U2af1-202 | ENSMUST00000166526.8 | 923 | 239aa | Protein coding | CCDS50055 | G3UW94 | TSL:2 GENCODE basic APPRIS ALT2 |
| U2af1-207 | ENSMUST00000236475.1 | 532 | 126aa | Protein coding | - | - | CDS 3' incomplete |
| U2af1-208 | ENSMUST00000237323.1 | 975 | 75aa | Nonsense mediated decay | - | - | |
| U2af1-209 | ENSMUST00000238046.1 | 722 | 45aa | Nonsense mediated decay | - | - | |
| U2af1-206 | ENSMUST00000236293.1 | 861 | No protein | Retained intron | - | - | |
| U2af1-204 | ENSMUST00000235969.1 | 703 | No protein | Retained intron | - | - | |
| U2af1-203 | ENSMUST00000235600.1 | 541 | No protein | Retained intron | - | - | |
| U2af1-205 | ENSMUST00000236260.1 | 539 | No protein | lncRNA | - | - | |

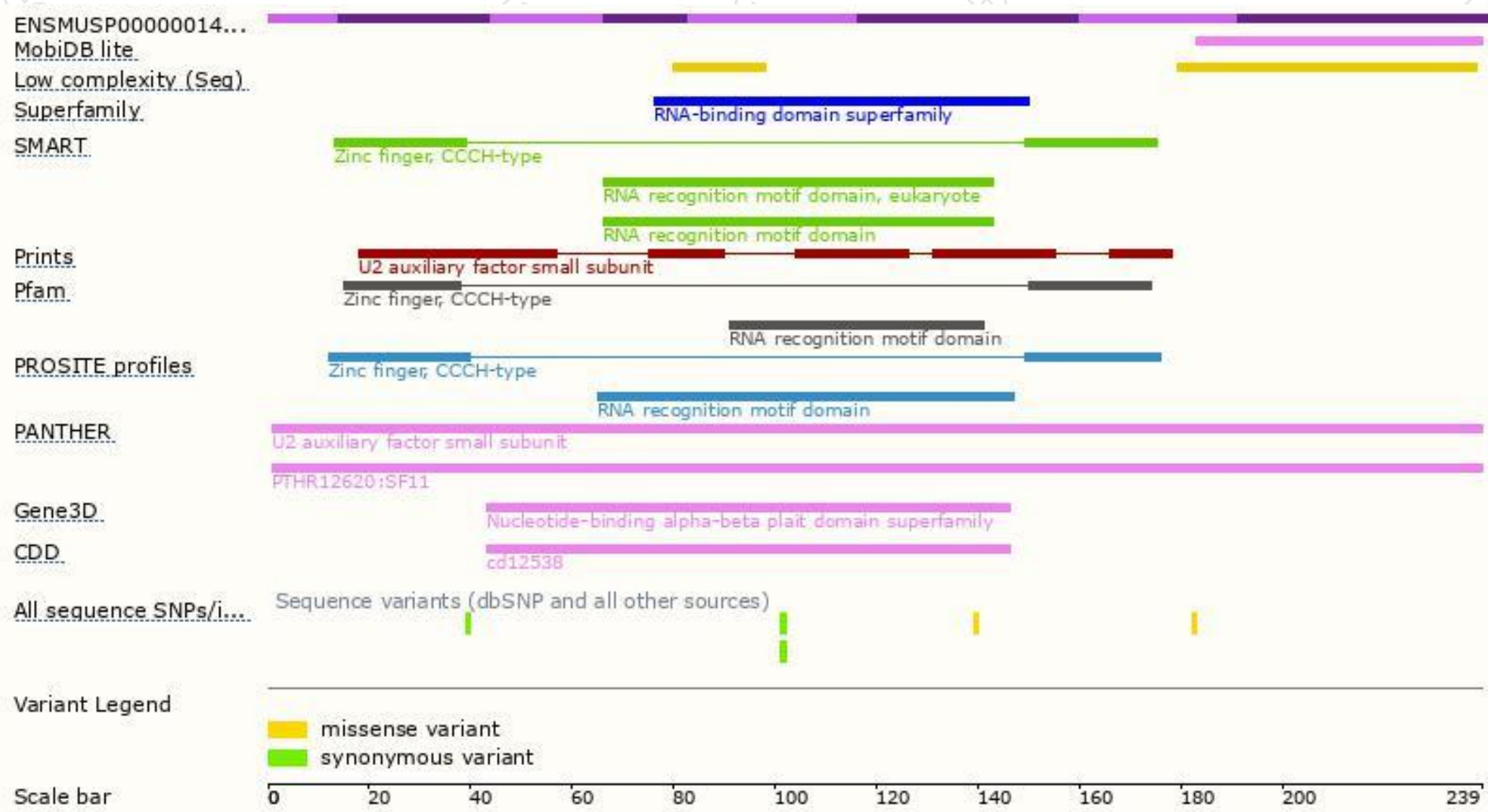
The strategy is based on the design of *U2af1-201* transcript,The transcription is shown below



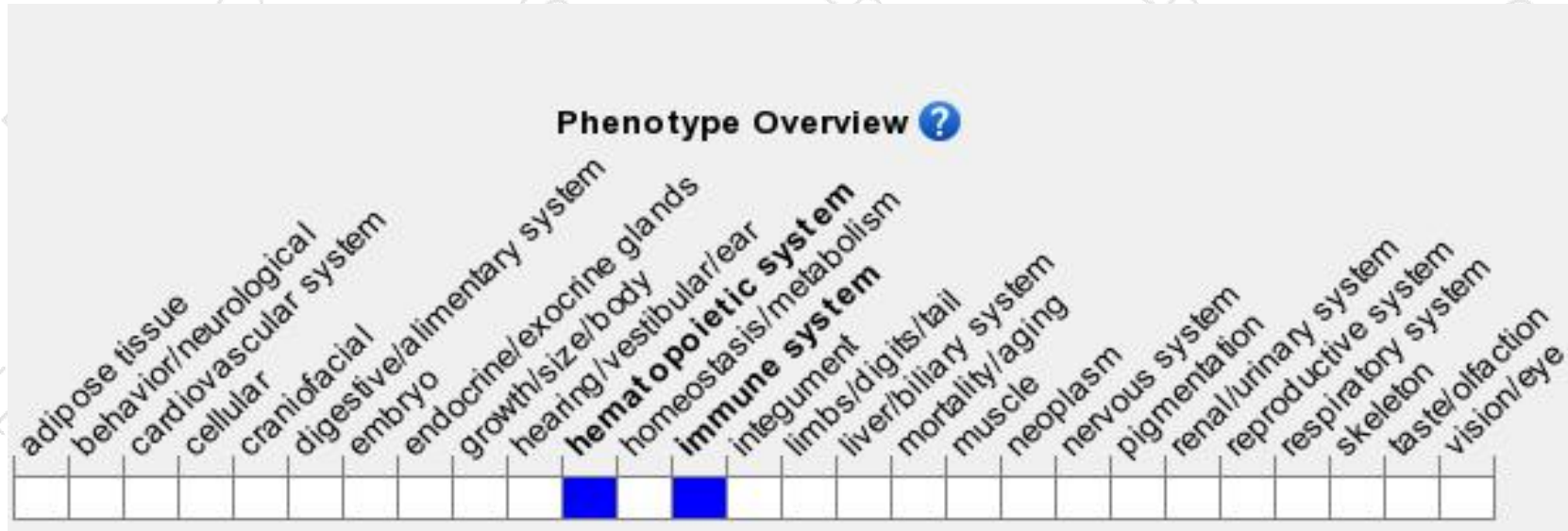
Genomic location distribution



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/>).

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

Tel: 400-9660890

