

Ica1l Cas9-KO Strategy

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Design Date: 2020-9-25

Project Overview

Project Name

Ica11

Project type

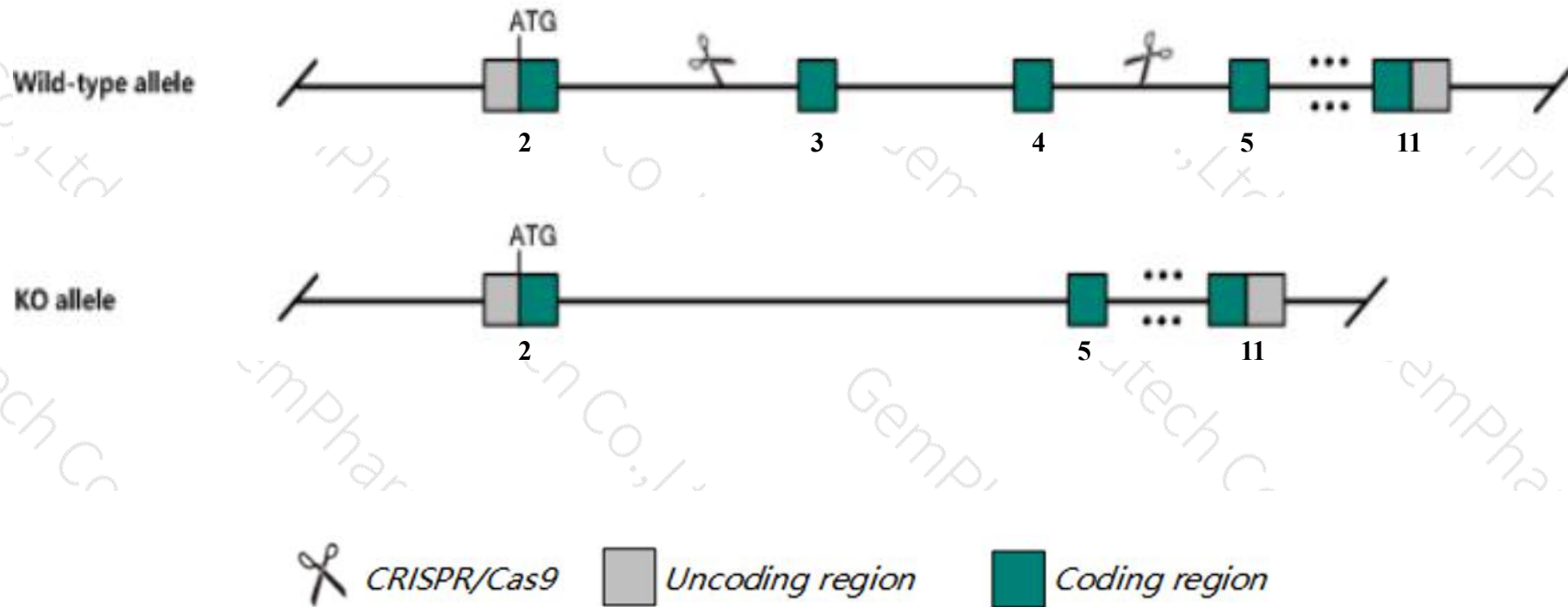
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ical1* gene. The schematic diagram is as follows:



Technical routes

- The *Ic11* gene has 6 transcripts. According to the structure of *Ic11* gene, exon3-exon4 of *Ic11-201*(ENSMUST00000027172.12) transcript is recommended as the knockout region. The region contains 197bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ic11* 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, mice homozygous for a hypomorphic allele exhibit reduced male fertility with oligospermia, globospermia, and abnormal spermiogenesis, sperm nucleus and mitochondrial sheath morphology.
- The *Ic11* gene is located on the Chr1. 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)

Ica1l islet cell autoantigen 1-like [Mus musculus (house mouse)]

Gene ID: 70375, updated on 20-Mar-2020

Summary



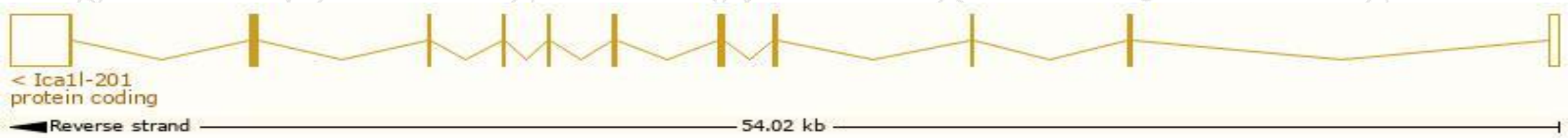
Official Symbol	Ica1l provided by MGI
Official Full Name	islet cell autoantigen 1-like provided by MGI
Primary source	MGI:MGI:1917625
See related	Ensembl:ENSMUSG00000026018
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700030B17Rik, Als2cr15, b2b3465Clo
Expression	Biased expression in testis adult (RPKM 8.3), CNS E18 (RPKM 6.5) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

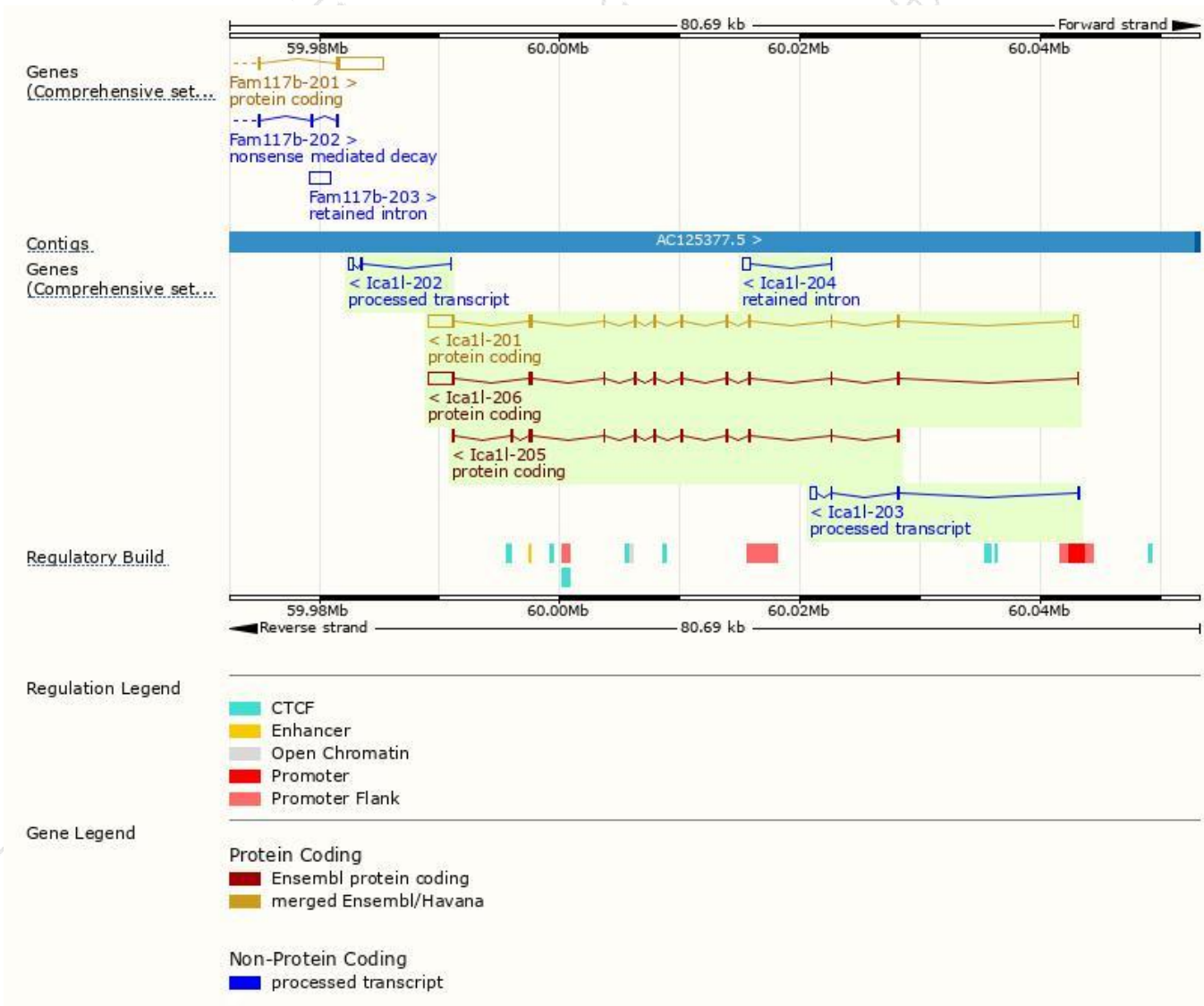
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ica1l-201	ENSMUST00000027172.12	3650	431aa	Protein coding	CCDS14987	Q3TY65	TSL:1 GENCODE basic APPRIS P2
Ica1l-206	ENSMUST00000191251.6	3415	431aa	Protein coding	CCDS14987	Q3TY65	TSL:1 GENCODE basic APPRIS P2
Ica1l-205	ENSMUST00000189776.1	1320	439aa	Protein coding	-	A0A087WSM1	TSL:5 GENCODE basic APPRIS ALT2
Ica1l-203	ENSMUST00000186970.1	951	No protein	Processed transcript	-	-	TSL:1
Ica1l-202	ENSMUST00000185891.1	516	No protein	Processed transcript	-	-	TSL:3
Ica1l-204	ENSMUST00000187364.1	619	No protein	Retained intron	-	-	TSL:3

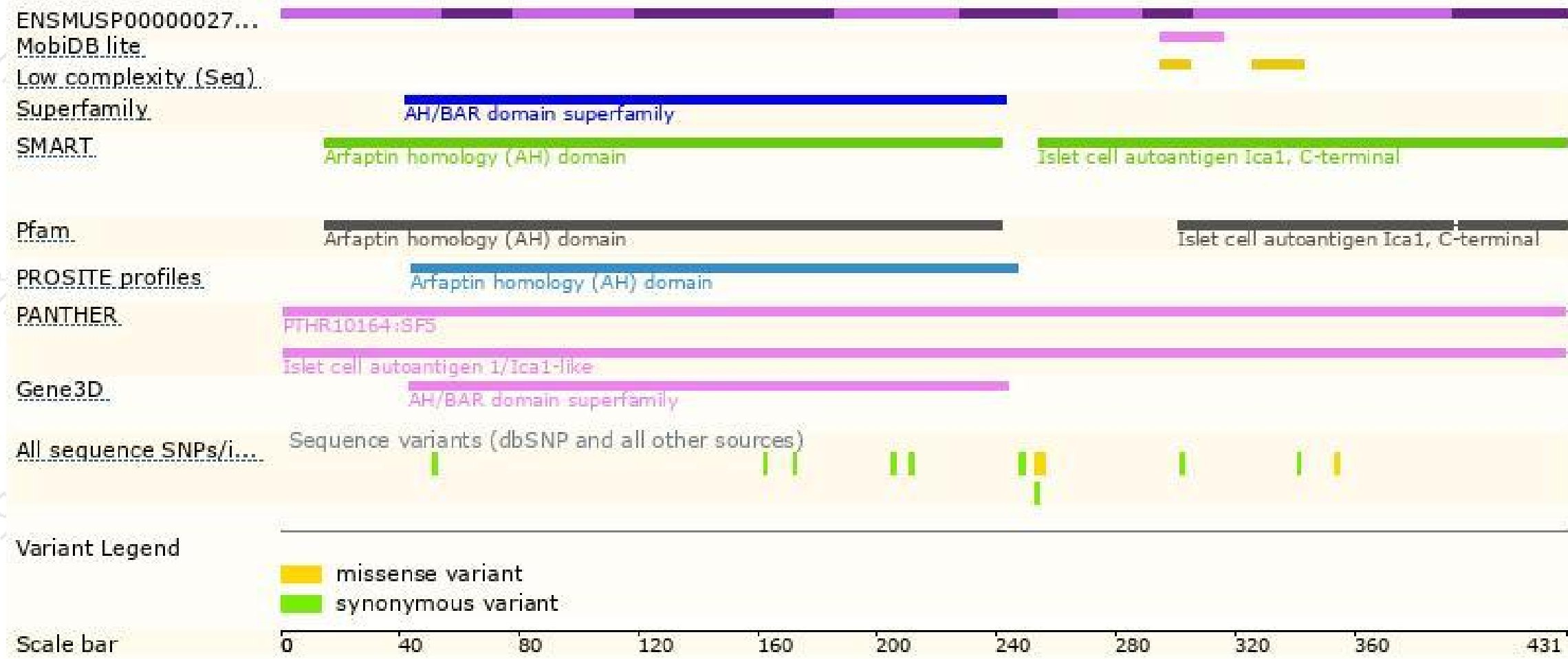
The strategy is based on the design of *Ica1l-201* transcript,the transcription is shown below:



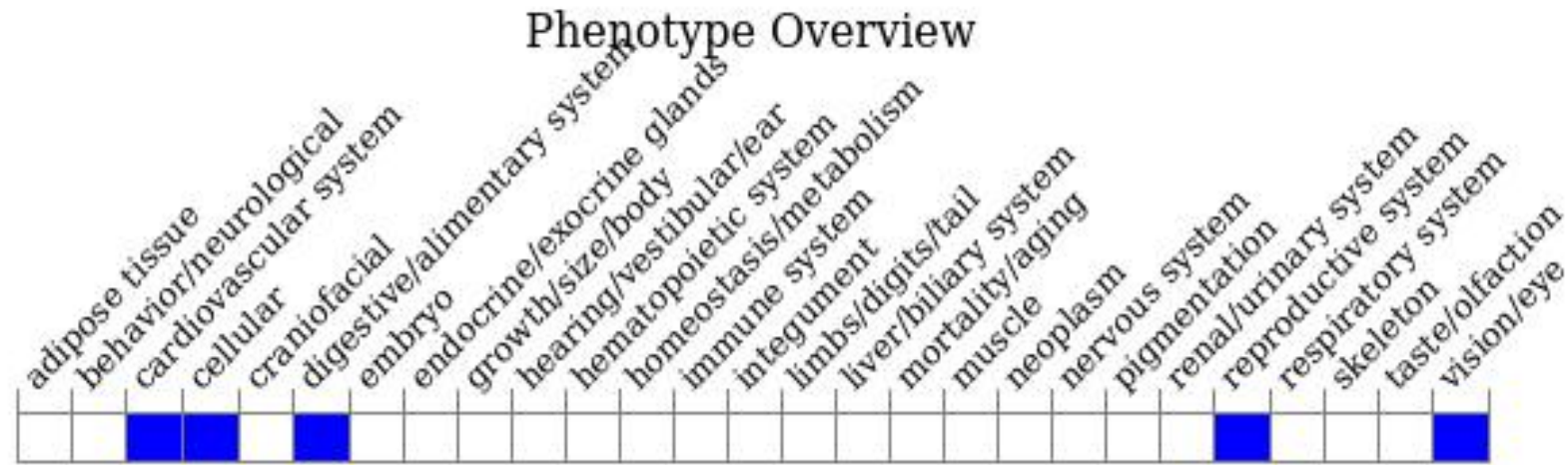
Genomic location distribution



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 hypomorphic allele exhibit reduced male fertility with oligospermia, globospermia, and abnormal spermiogenesis, sperm nucleus and mitochondrial sheath morphology.

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

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