

Jup Cas9-CKO Strategy

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Design Date:

2019-12-11

Project Overview

Project Name

Jup

Project type

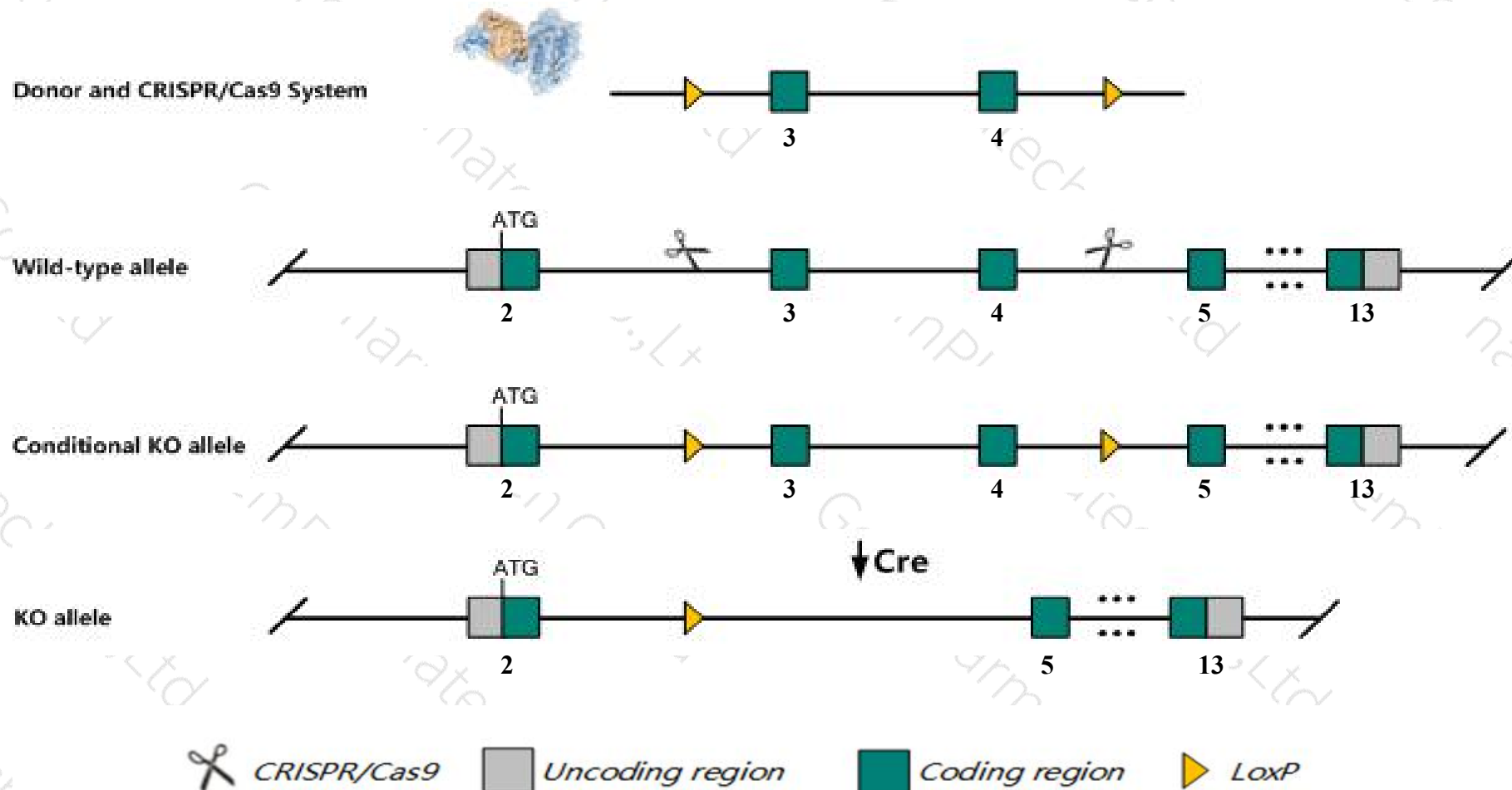
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Jup* gene has 9 transcripts. According to the structure of *Jup* gene, exon3-exon4 of *Jup*-201 (ENSMUST00000001592.14) transcript is recommended as the knockout region. The region contains 499bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Jup* 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, Homozygous null mutants die with severe heart defects at embryonic day 10.5-16, depending on genetic background. Mutants that survive to birth exhibit skin blistering and subcorneal acantholysis associated with reduced number of desmosomes.
- The *Jup* gene is located on the Chr11. 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)

Jup junction plakoglobin [Mus musculus (house mouse)]

Gene ID: 16480, updated on 31-Jan-2019

Summary



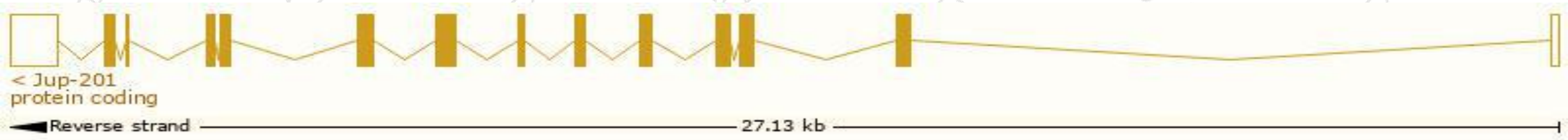
Official Symbol	Jup provided by MGI
Official Full Name	junction plakoglobin provided by MGI
Primary source	MGI:MGI:96650
See related	Ensembl:ENSMUSG000000001552
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ctnng, D930025P04Rik, PG
Expression	Broad expression in lung adult (RPKM 160.5), stomach adult (RPKM 151.6) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

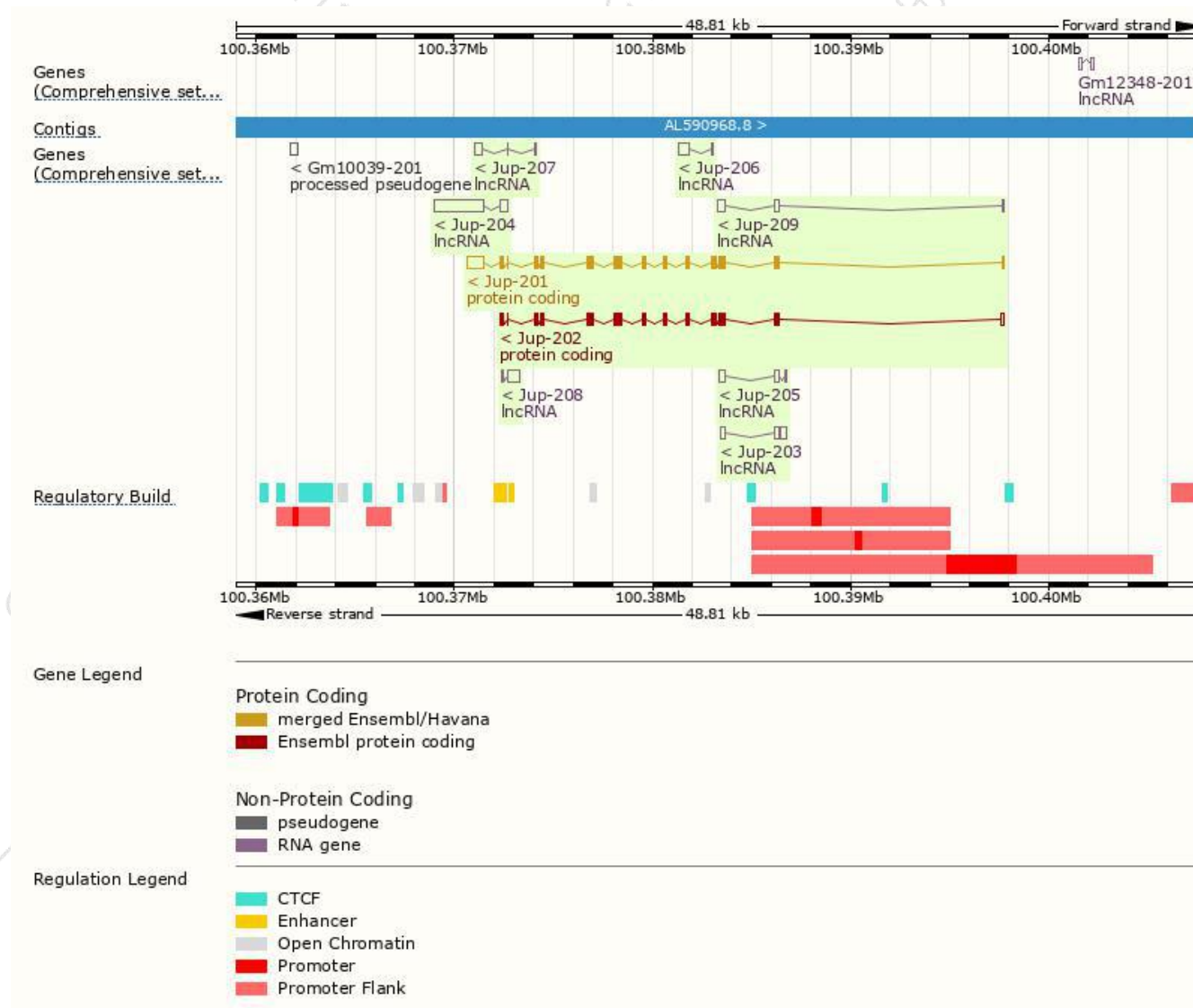
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Jup-201	ENSMUST00000001592.14	3205	745aa	Protein coding	CCDS25420	Q02257	TSL:1 GENCODE basic APPRIS P1
Jup-202	ENSMUST00000107403.1	2386	745aa	Protein coding	CCDS25420	Q02257	TSL:5 GENCODE basic APPRIS P1
Jup-204	ENSMUST00000124659.1	2913	No protein	lncRNA	-	-	TSL:2
Jup-208	ENSMUST00000152774.1	758	No protein	lncRNA	-	-	TSL:2
Jup-203	ENSMUST00000123903.1	742	No protein	lncRNA	-	-	TSL:3
Jup-209	ENSMUST00000155746.7	684	No protein	lncRNA	-	-	TSL:2
Jup-206	ENSMUST00000149798.1	667	No protein	lncRNA	-	-	TSL:3
Jup-205	ENSMUST00000128268.7	502	No protein	lncRNA	-	-	TSL:5
Jup-207	ENSMUST00000151476.1	441	No protein	lncRNA	-	-	TSL:5

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



Genomic location distribution



Protein domain

ENSMUSP000000001...

Low complexity (Seq)

Superfamily

SMART

Prints

Pfam

PROSITE profiles

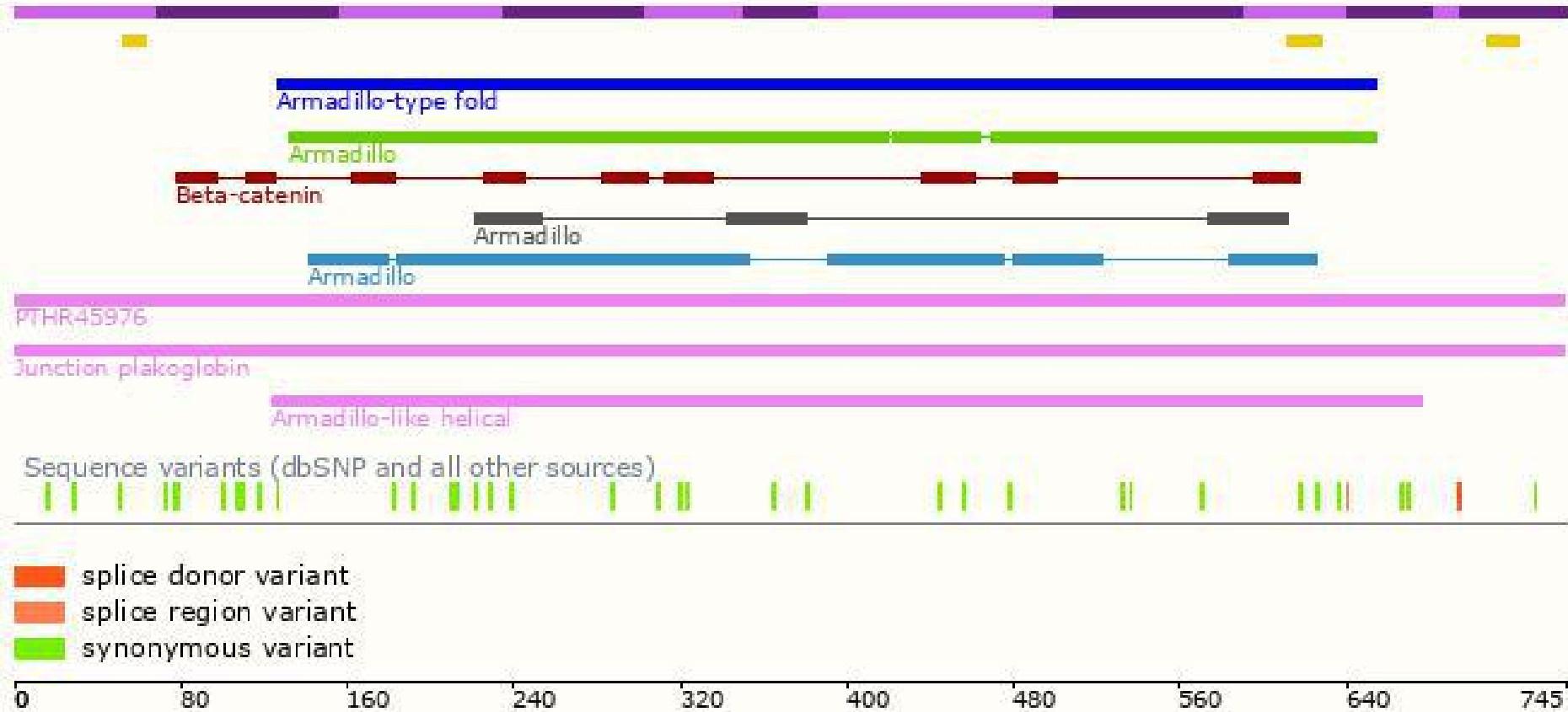
PANTHER

Gene3D

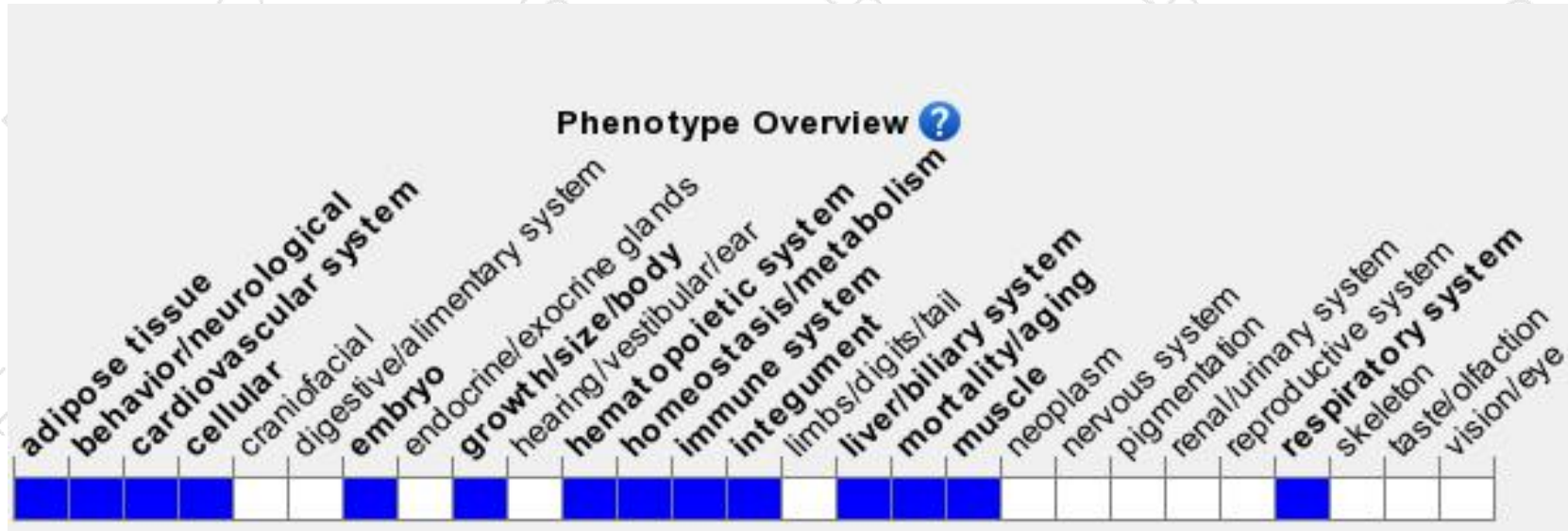
All sequence SNPs/i...

Variant Legend

Scale bar



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, Homozygous null mutants die with severe heart defects at embryonic day 10.5-16, depending on genetic background. Mutants that survive to birth exhibit skin blistering and subcorneal acantholysis associated with reduced number of desmosomes.

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

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