Itgb2 Cas9-CKO Strategy

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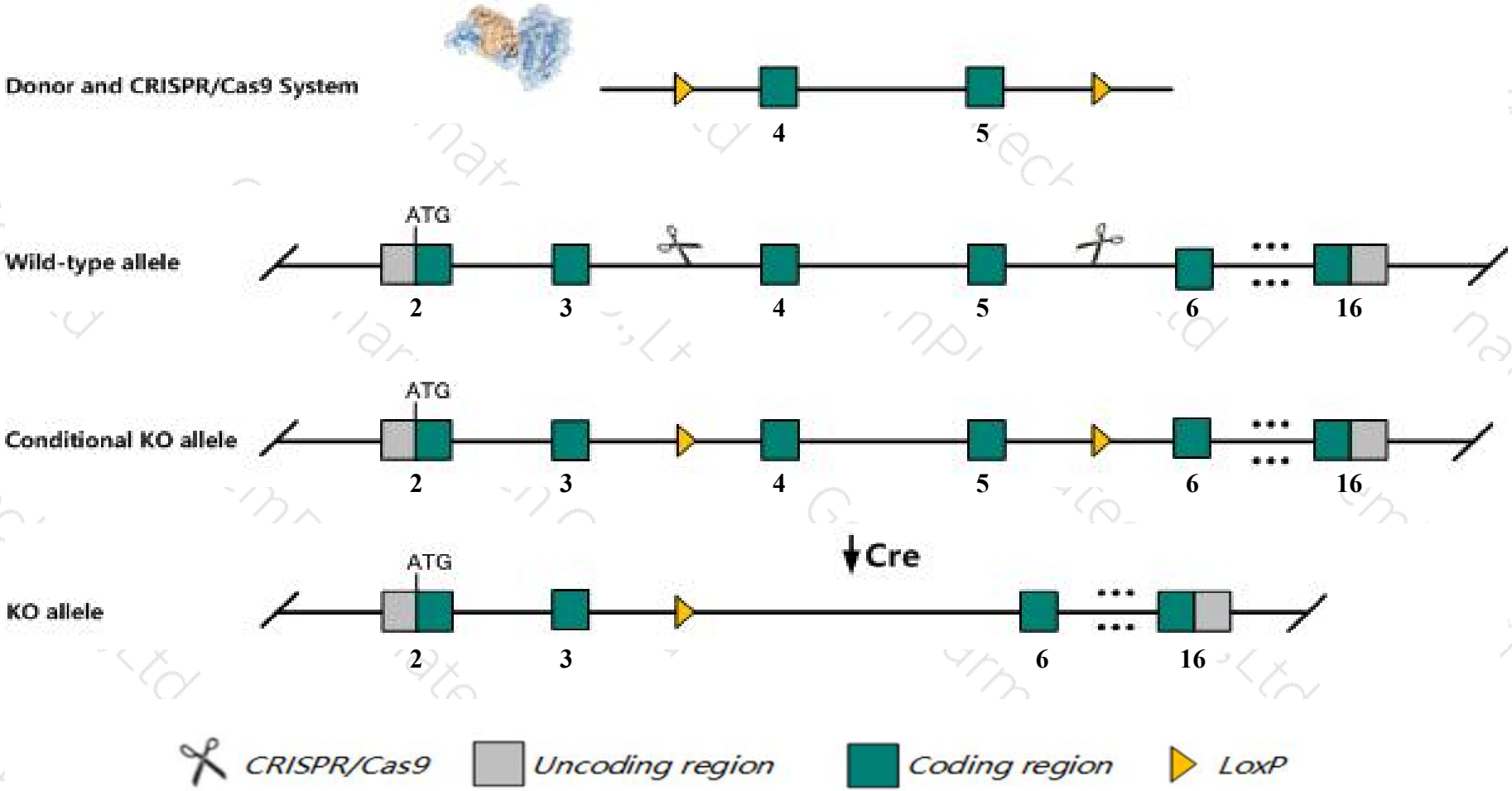
Project Overview

Project Name	***Itgb2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Itgb2* gene. The schematic diagram is as follows:



Technical routes

- The *Itgb2* gene has 5 transcripts. According to the structure of *Itgb2* gene, exon4-exon5 of *Itgb2-201* (ENSMUST00000000299.13) transcript is recommended as the knockout region.The region contains 352bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Itgb2* 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,Homozygotes for targeted null and hypomorphic mutations are subject to granulocytosis, impaired inflammatory and immune responses, and chronic dermatitis.

- The *Itgb2* gene is located on the Chr10. 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）

集萃药康 GemPharmatech

Itgb2 integrin beta 2 [Mus musculus (house mouse)]

Gene ID: 16414, updated on 3-Feb-2019

Summary

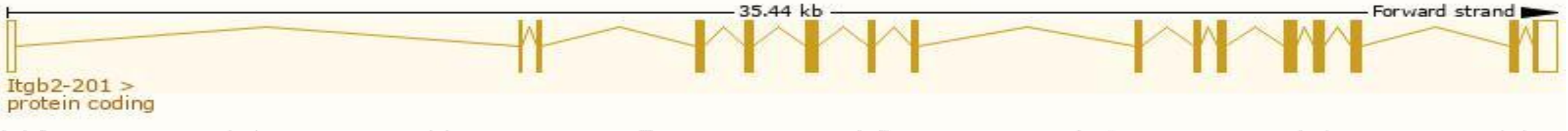
Official Symbol	Itgb2 provided by MGI
Official Full Name	integrin beta 2 provided by MGI
Primary source	MGI:MGI:96611
See related	Ensembl:ENSMUSG00000000290
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2E6, AI528527, Cd18, LAD, LCAMB, Lfa1, MF17
Expression	Biased expression in thymus adult (RPKM 72.3), spleen adult (RPKM 63.3) and 12 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

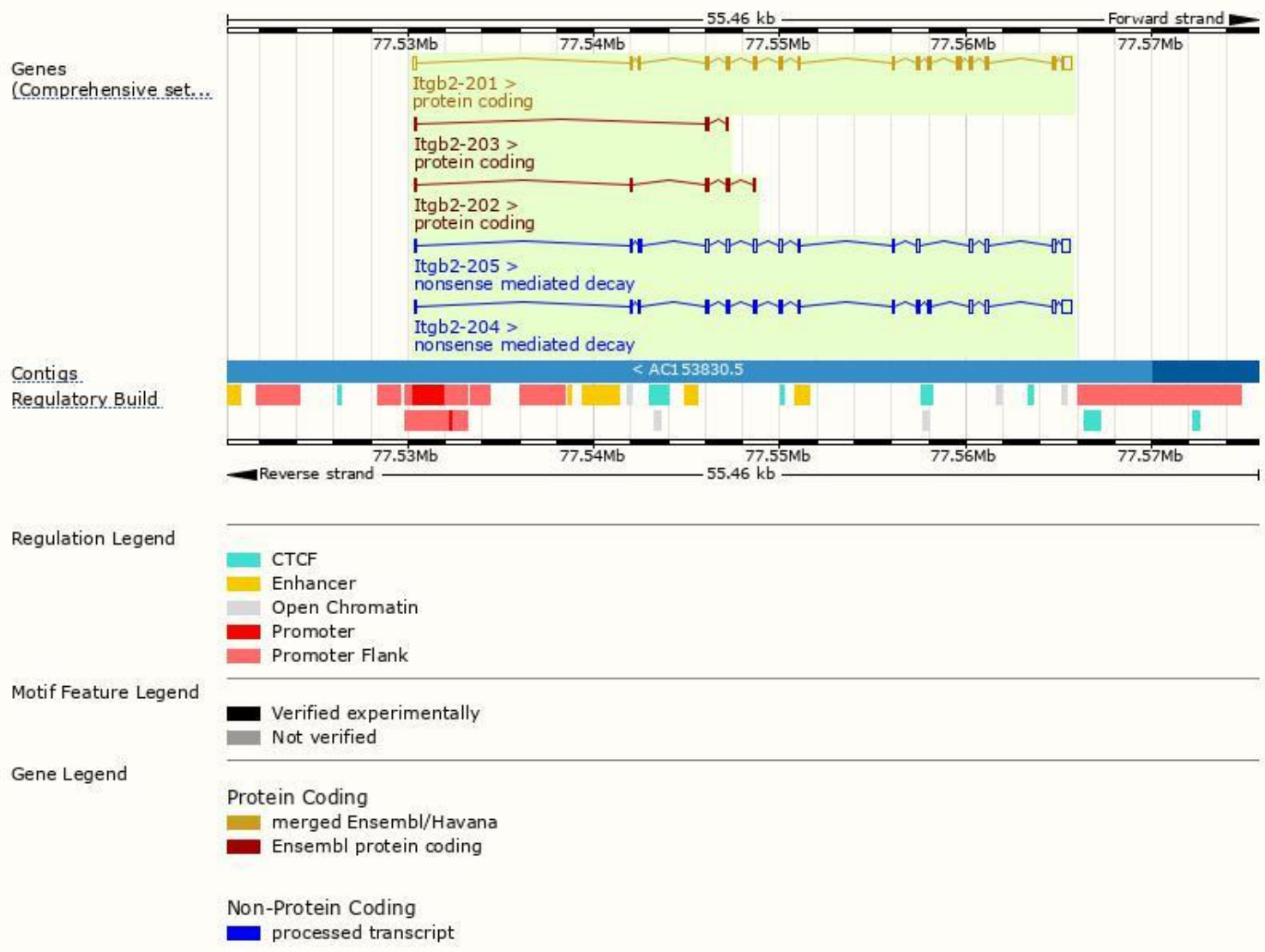
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Itgb2-201	ENSMUST00000000299.13	2970	770aa	Protein coding	CCDS23956	Q54218	TSL:1 GENCODE basic APPRIS P1
Itgb2-202	ENSMUST00000130059.7	630	130aa	Protein coding	-	D3YYP8	CDS 3' incomplete TSL:3
Itgb2-203	ENSMUST00000131023.7	364	54aa	Protein coding	-	D3Z1S4	CDS 3' incomplete TSL:3
Itgb2-204	ENSMUST00000153541.1	2619	480aa	Nonsense mediated decay	-	M0QWA7	TSL:1
Itgb2-205	ENSMUST00000156644.7	2411	56aa	Nonsense mediated decay	-	M0QWJ6	TSL:1

The strategy is based on the design of *Itgb2-201* transcript,The transcription is shown below

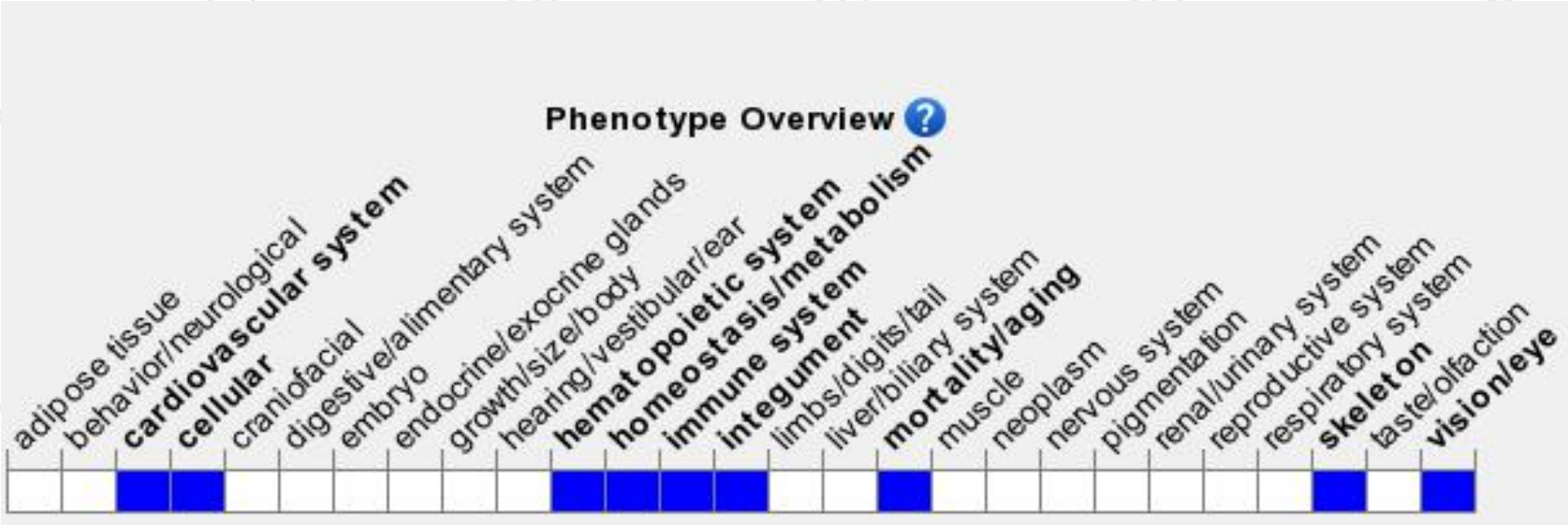


Genomic location distribution



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,Homozygotes for targeted null and hypomorphic mutations are subject to granulocytosis, impaired inflammatory and immune responses, and chronic dermatitis.

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

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