Birc2 Cas9-KO Strategy

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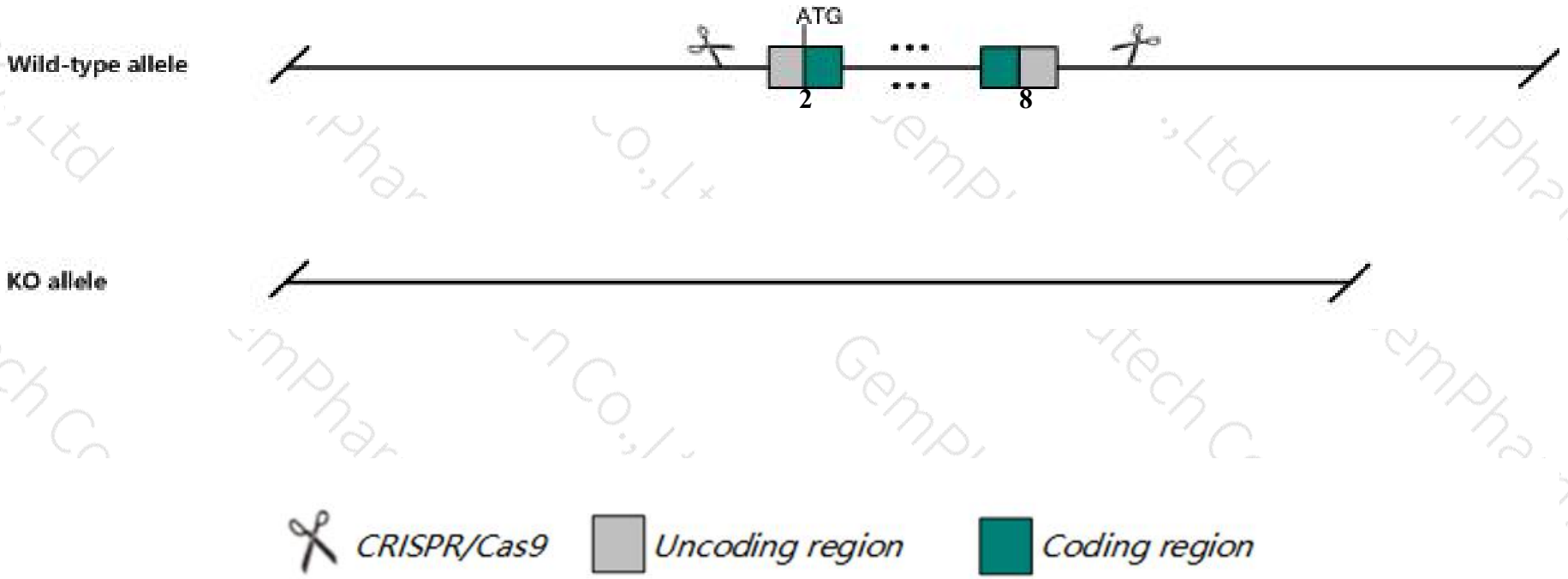
Design Date: 2019-8-1

Project Overview

Project Name	***Birc2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Birc2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Birc2* gene has 5 transcripts. According to the structure of *Birc2* gene, exon2-exon8 of *Birc2-204* (ENSMUST00000190341.6) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Birc2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous null mice showed a modest reduction in the number of lymphocytes. Mice homozygous for a knock-in allele exhibit increased T cell poliferation and IFNG secretion in response to anti-CD3 stimulation.

- Transcript *Birc2*-201&203 may not be affected .

- The *Birc2* gene is located on the Chr9. 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）

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Birc2 baculoviral IAP repeat-containing 2 [Mus musculus (house mouse)]

Gene ID: 11797, updated on 31-Jan-2019

Summary

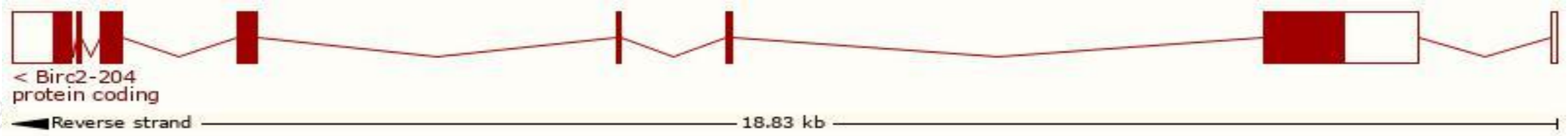
Official Symbol	Birc2 provided by MGI
Official Full Name	baculoviral IAP repeat-containing 2 provided by MGI
Primary source	MGI:MGI:1197009
See related	Ensembl:ENSMUSG00000057367
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW146227, Api1, Api2, Birc3, C-IAP1, C330006D17Rik, HIAP1, HIAP2, IAP1, IAP2, MIAP1, MIAP2, MIHB, MIHC, RNF48, cIAP1, cIAP2, mcIAP1
Expression	Ubiquitous expression in CNS E11.5 (RPKM 9.0), CNS E14 (RPKM 8.3) and 26 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

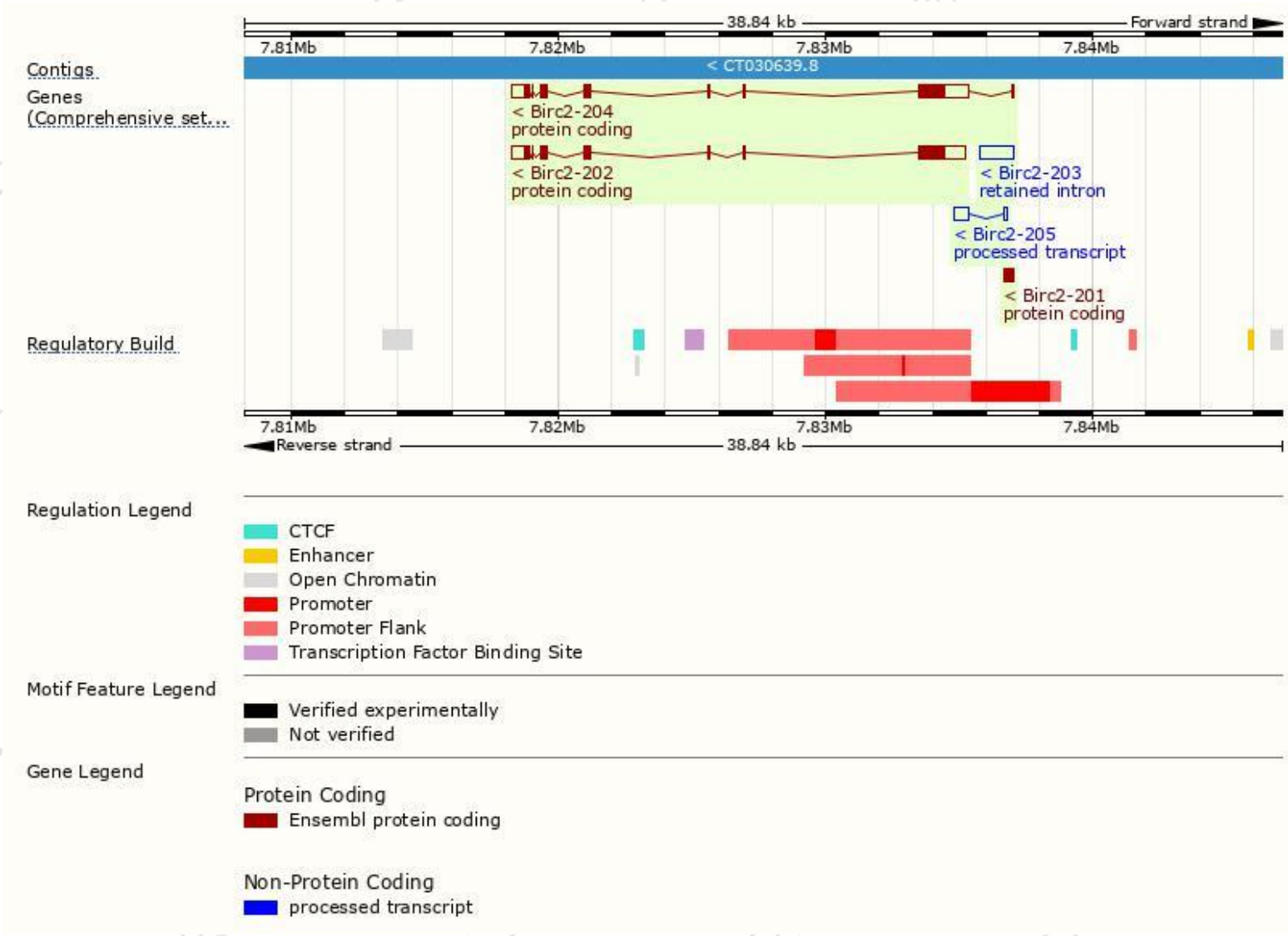
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Birc2-204	ENSMUST00000190341.6	3331	612aa	Protein coding	CCDS22811	Q62210	TSL:5 GENCODE basic APPRIS P1
Birc2-202	ENSMUST00000074246.6	3130	612aa	Protein coding	CCDS22811	Q62210	TSL:1 GENCODE basic APPRIS P1
Birc2-201	ENSMUST00000054878.5	378	125aa	Protein coding	-	F6X8Q0	TSL:NA GENCODE basic
Birc2-205	ENSMUST00000191248.1	707	No protein	Processed transcript	-	-	TSL:3
Birc2-203	ENSMUST00000189935.1	1316	No protein	Retained intron	-	-	TSL:NA

The strategy is based on the design of *Birc2-204* transcript,The transcription is shown below

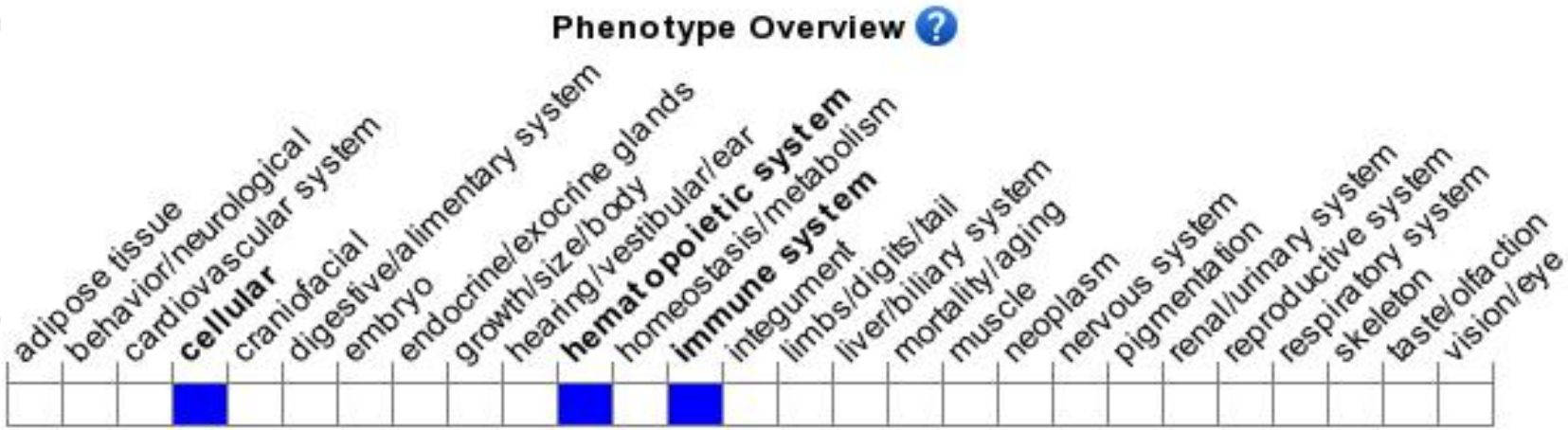


Genomic location distribution



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/).

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

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