Bcl2 Cas9-KO Strategy

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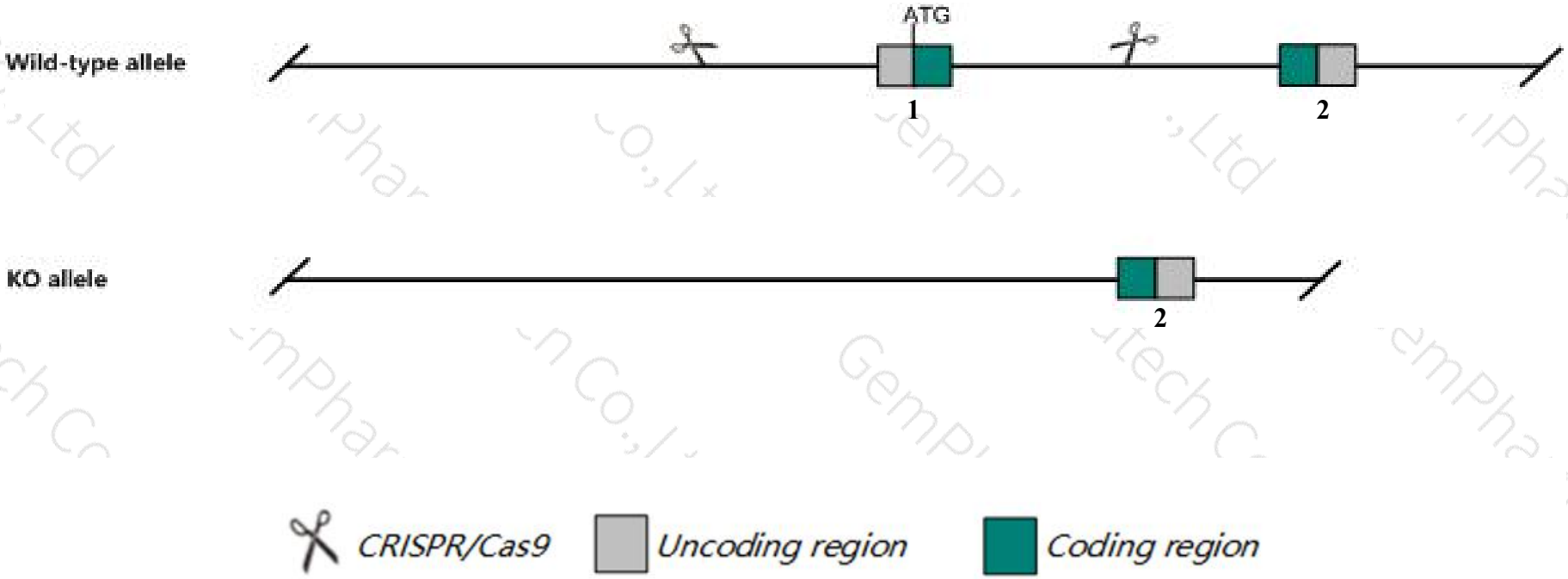
Design Date: 2019-7-25

Project Overview

Project Name	***Bcl2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bcl2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Bcl2* gene has 2 transcripts. According to the structure of *Bcl2* gene, exon1 of *Bcl2-201* (ENSMUST00000112751.1) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Bcl2* gene. The brief process is as follows: CRISPR/Cas9 system w

Notice

- According to the existing MGI data,Homozygous null mutants show pleiotropic abnormalities including small size, increased postnatal mortality, polycystic kidneys, apoptotic involution of thymus and spleen, graying in the second hair follicle cycle, and reduced numbers of motor, sympathetic and sensory neurons.

- The *Bcl2* 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）

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Bcl2 B cell leukemia/lymphoma 2 [Mus musculus (house mouse)]

Gene ID: 12043, updated on 17-Feb-2019

Summary

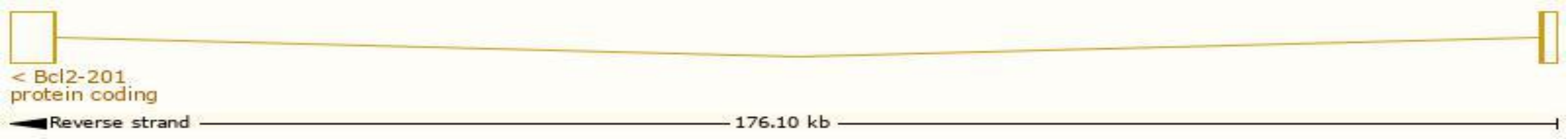
Official Symbol	Bcl2 provided by MGI
Official Full Name	B cell leukemia/lymphoma 2 provided by MGI
Primary source	MGI:MGI:88138
See related	Ensembl:ENSMUSG00000057329
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW986256, Bcl-2, C430015F12Rik, D630044D05Rik, D830018M01Rik
Summary	This gene encodes a member of the B cell lymphoma 2 protein family. Members of this family regulate cell death in multiple cell types and can have either proapoptotic or antiapoptotic activities. The protein encoded by this gene inhibits mitochondrial-mediated apoptosis. This protein is an integral outer mitochondrial membrane protein that functions as part of signaling pathway that controls mitochondrial permeability in response to apoptotic stimuli. This protein may also play a role in neuron cell survival and autophagy. Abnormal expression and chromosomal translocations of this gene are associated with cancer progression in numerous tissues. Alternate splicing results in multiple transcript variants. [provided by RefSeq, Sep 2015]
Expression	Ubiquitous expression in spleen adult (RPKM 4.5), limb E14.5 (RPKM 2.8) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

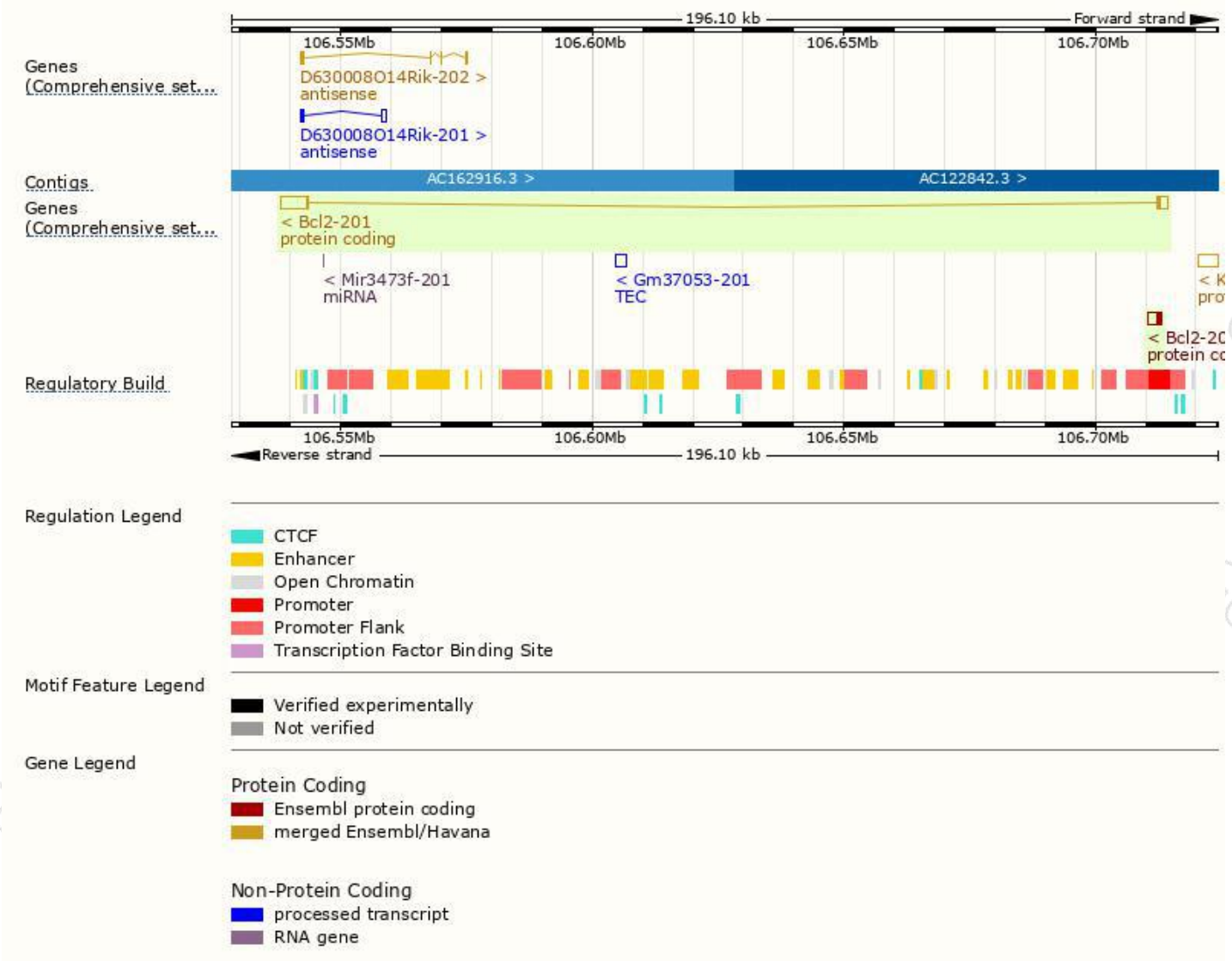
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bcl2-201	ENSMUST00000112751.1	7191	236aa	Protein coding	CCDS15209	P10417	TSL:1 GENCODE basic APPRIS P3
Bcl2-202	ENSMUST00000189999.1	2841	199aa	Protein coding	CCDS78667	P10417 Q6NTH7	TSL:NA GENCODE basic APPRIS ALT2

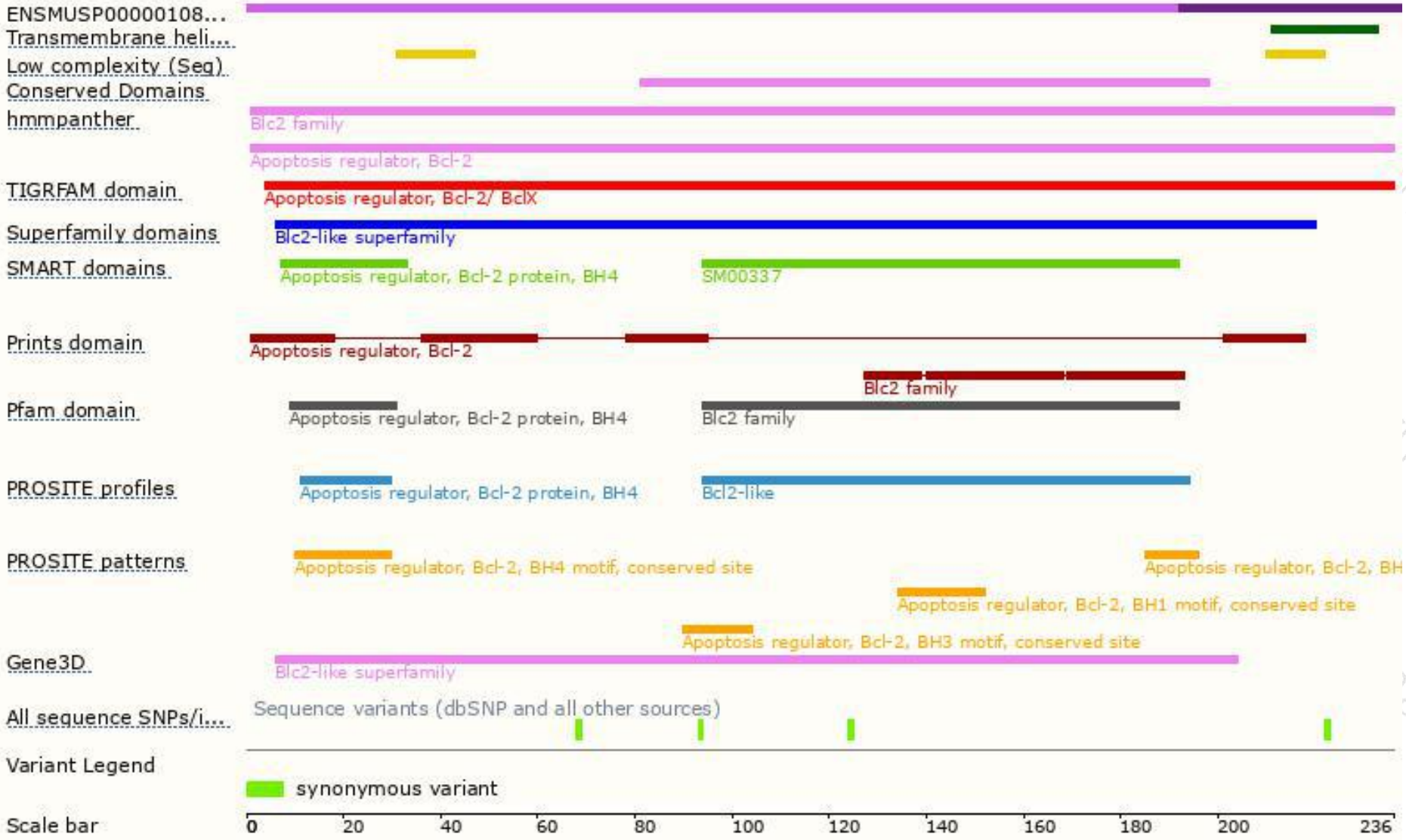
The strategy is based on the design of *Bcl2-201* transcript,The transcription is shown below



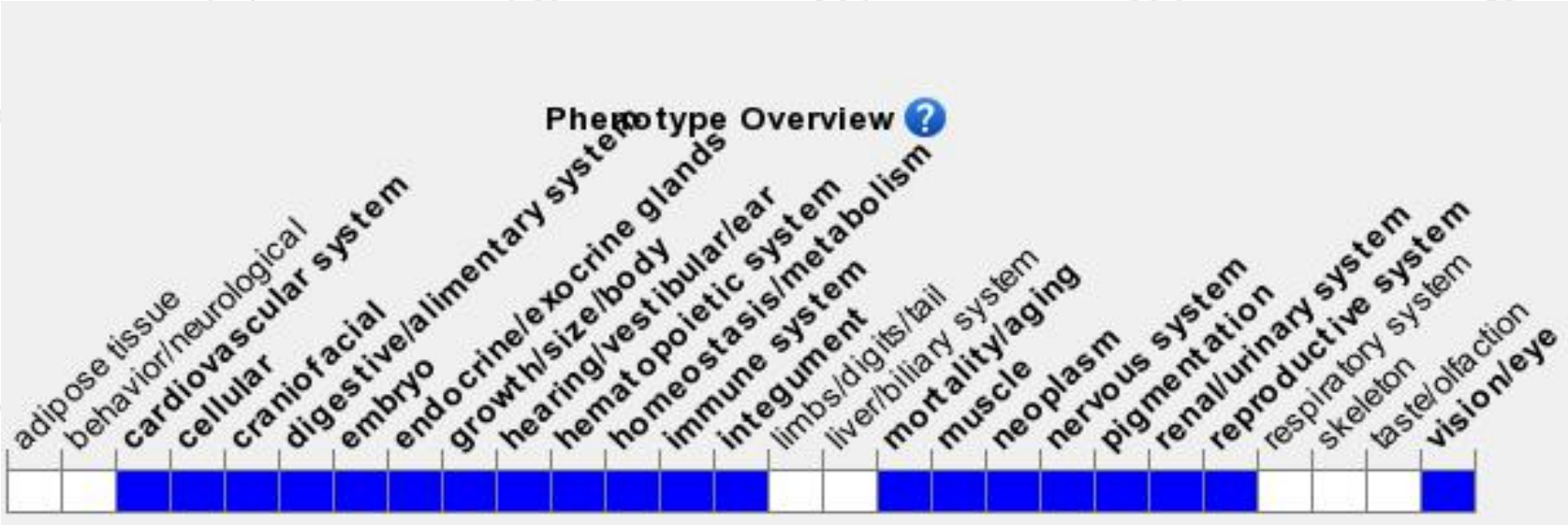
Genomic location distribution



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/).

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

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