Tob2 Cas9-KO Strategy

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Project Overview

Project Name	***Tob2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tob2* gene. The schematic diagram is as follows:

Technical routes

➢ The *Tob2* gene has 4 transcripts. According to the structure of *Tob2* gene, exon2 of *Tob2-201* (ENSMUST00000050467.8) 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 *Tob2* gene. The brief process is as follows: CRISPR/Cas9 system w

Notice

- According to the existing MGI data,Mice homozygous for a targeted mutation display reduced bone mass due to increased osteoclast numbers and acceleration of the bone resorption rate.
- The knockout region is near to the N-terminal of *Gm49476* and *Gm8444* gene,this strategy may influence the regulatory function of the N-terminal of these genes.
- Transcript *Tob2*-202&203 may not be affected.
- The *Tob2* gene is located on the Chr15. 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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Tob2 transducer of ERBB2, 2 [*Mus musculus* (house mouse)]

Gene ID: 57259, updated on 12-Aug-2019

Summary

Official Symbol	Tob2 provided by MGI
Official Full Name	transducer of ERBB2, 2 provided by MGI
Primary source	MGI:MGI:1888525
See related	Ensembl:ENSMUSG00000048546
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	AV071822; mKIAA1663; 2900090N22Rik; 4930545K18Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 33.9), thymus adult (RPKM 22.3) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 15; 15 E1

See Tob2 in Genome Data Viewer

Exon count: 2

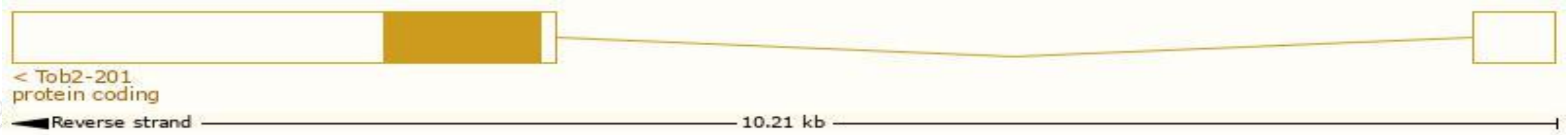
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (81848270..81858326, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (81678700..81688756, complement)

Transcript information（Ensembl）

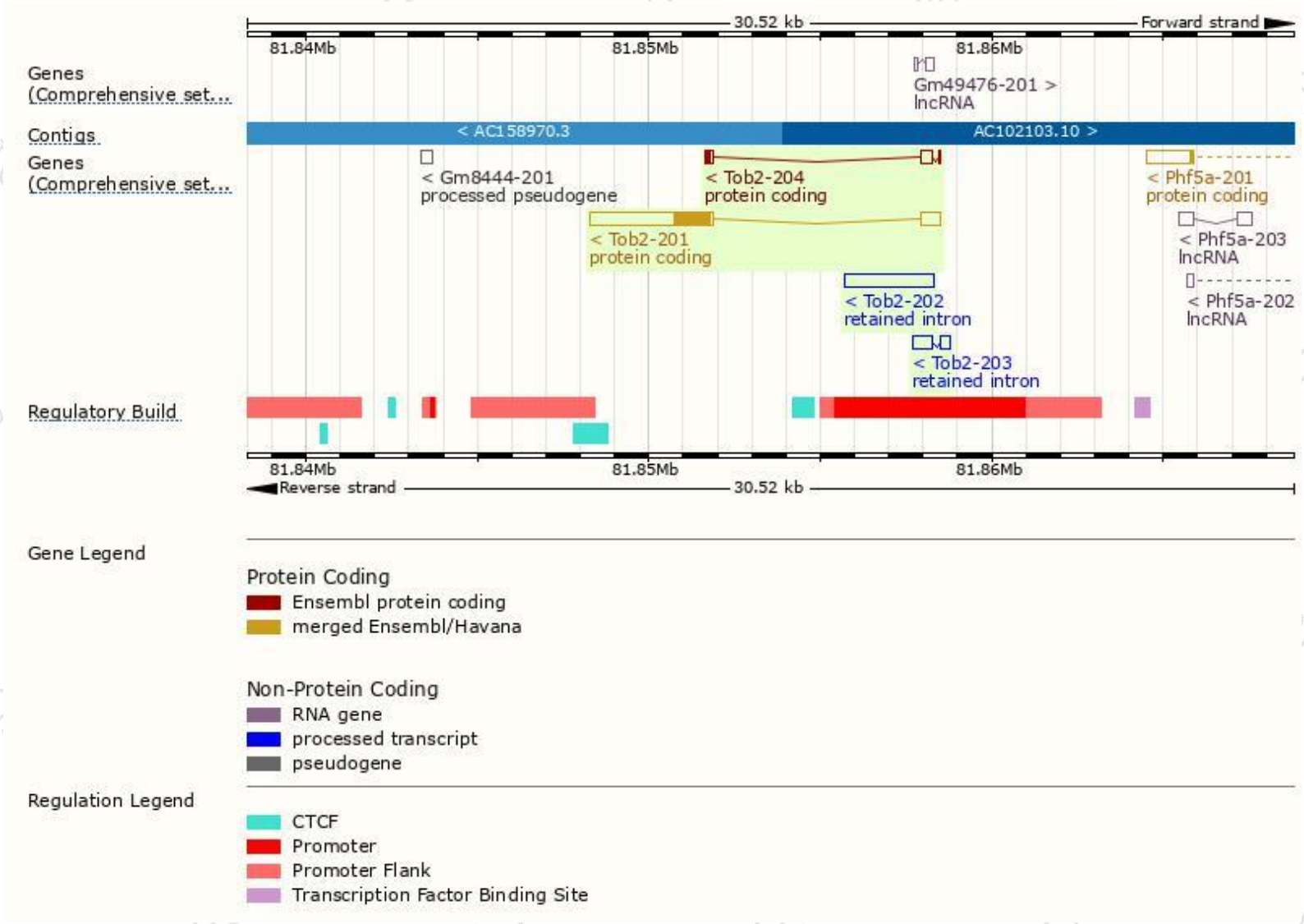
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tob2-201	ENSMUST00000050467.8	4151	345aa	Protein coding	CCDS27673	Q543X9 Q9JM55	TSL:1 GENCODE basic APPRIS P1
Tob2-204	ENSMUST00000231000.1	615	44aa	Protein coding	-	A0A2R8W6W6	CDS 3' incomplete
Tob2-202	ENSMUST00000229500.1	2590	No protein	Retained intron	-	-	
Tob2-203	ENSMUST00000230448.1	858	No protein	Retained intron	-	-	

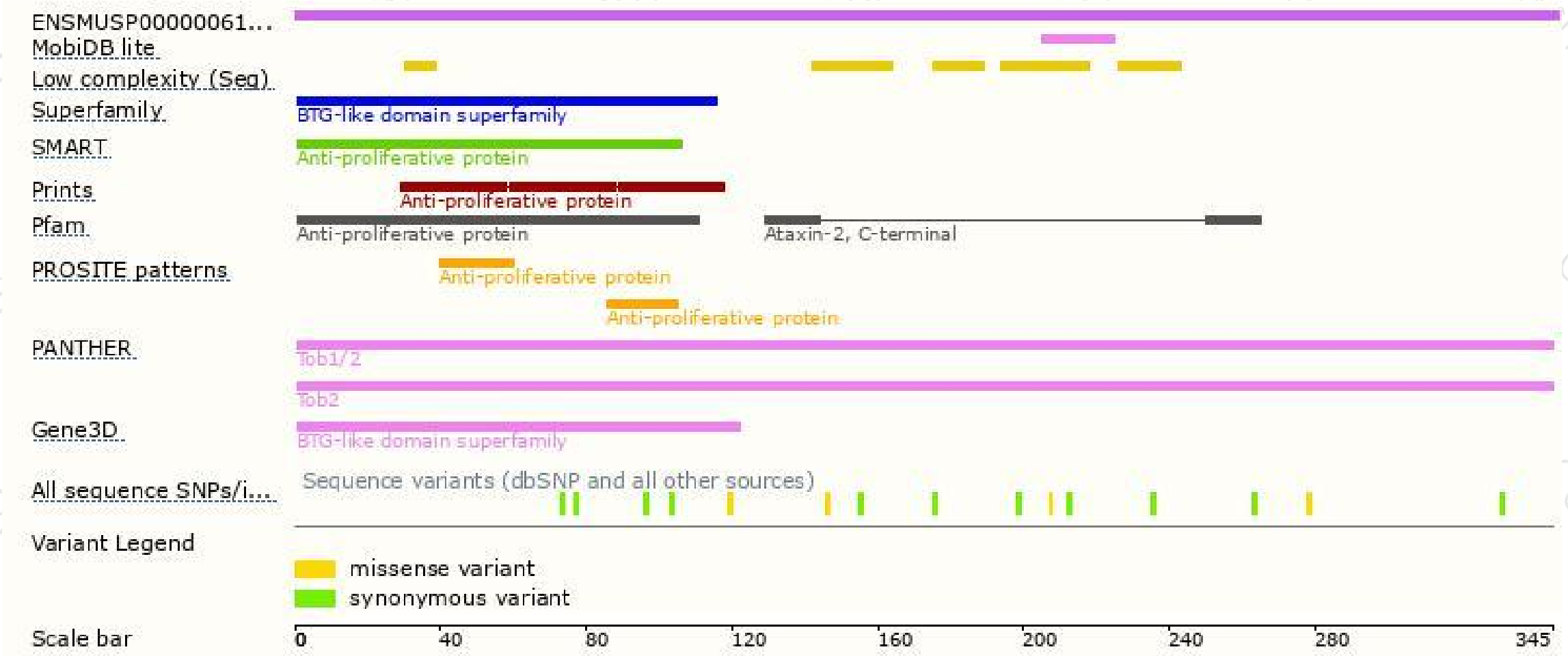
The strategy is based on the design of *Tob2-201* transcript,The transcription is shown below



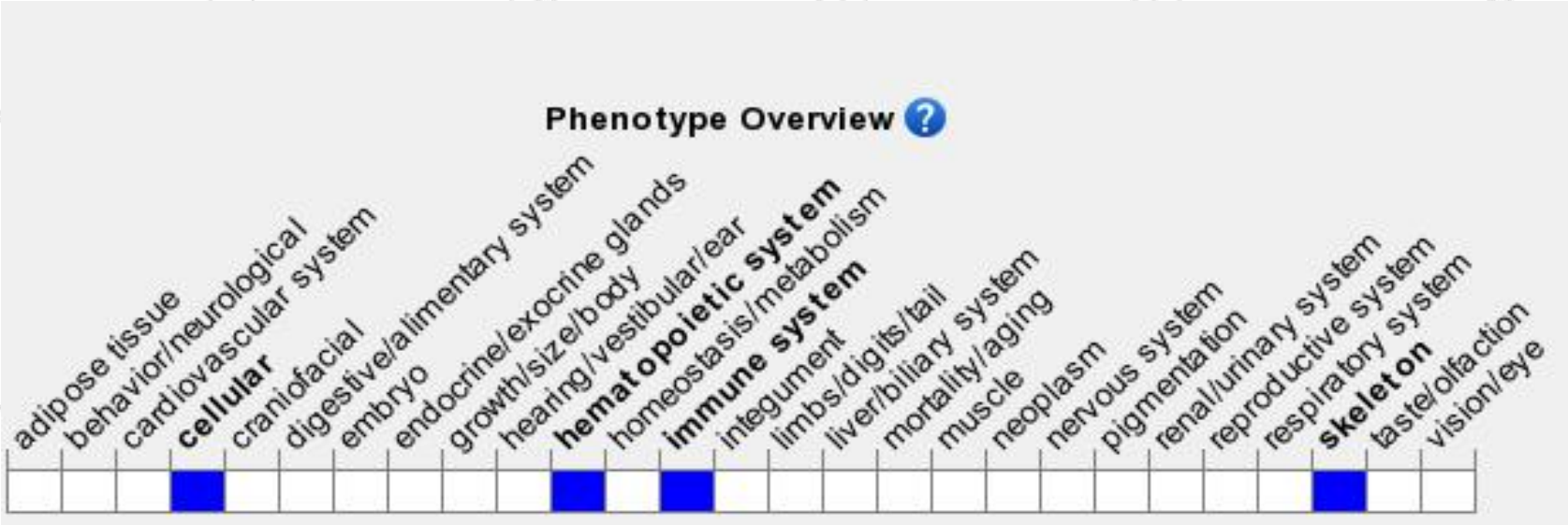
Genomic location distribution



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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