

***Creb3l1* Cas9-CKO Strategy**

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Date: 2019-12-13

Project Overview

Project Name

Creb3l1

Project type

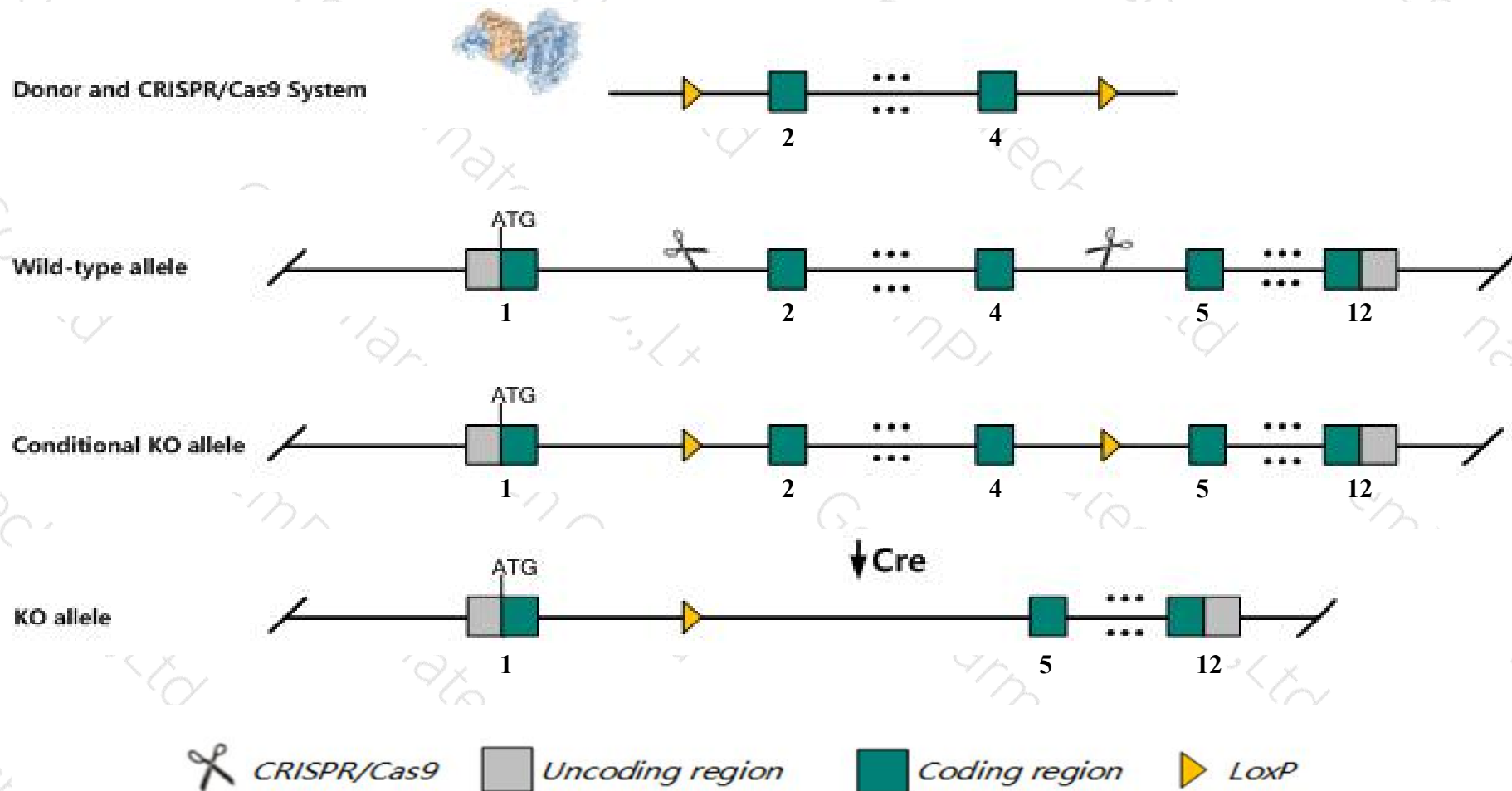
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Creb3l1* gene. The schematic diagram is as follows:



Technical routes

- The *Creb3l1* gene has 1 transcript. According to the structure of *Creb3l1* gene, exon2-exon4 of *Creb3l1-201* (ENSMUST00000028663.4) transcript is recommended as the knockout region. The region contains 493bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Creb3l1* 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, Mice homozygous for a knock-out allele exhibit postnatal growth retardation, fragile skeleton, and decreased bone density, cortical and trabecular thickness, and osteoblast maturation.
- The *Creb3l1* gene is located on the Chr2. 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)

Creb3l1 cAMP responsive element binding protein 3-like 1 [*Mus musculus* (house mouse)]

Gene ID: 26427, updated on 12-Aug-2019

Summary

Official Symbol Creb3l1 provided by [MGI](#)
Official Full Name cAMP responsive element binding protein 3-like 1 provided by [MGI](#)
Primary source [MGI:MGI:1347062](#)
See related [Ensembl:ENSMUSG00000027230](#)
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 Oasis
Expression Biased expression in colon adult (RPKM 61.2), stomach adult (RPKM 22.6) and 12 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 2; 2 E1

See Creb3l1 in [Genome Data Viewer](#)

Exon count: 12

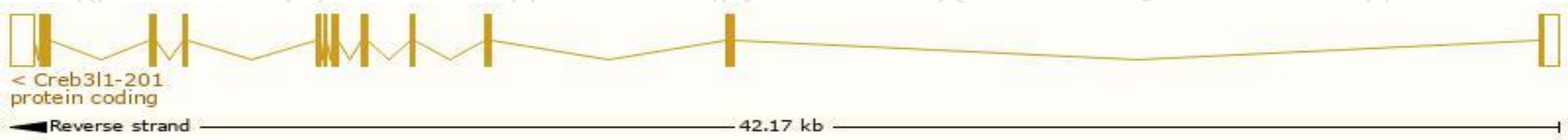
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (91982328..92024170, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (91822485..91864327, complement)

Transcript information (Ensembl)

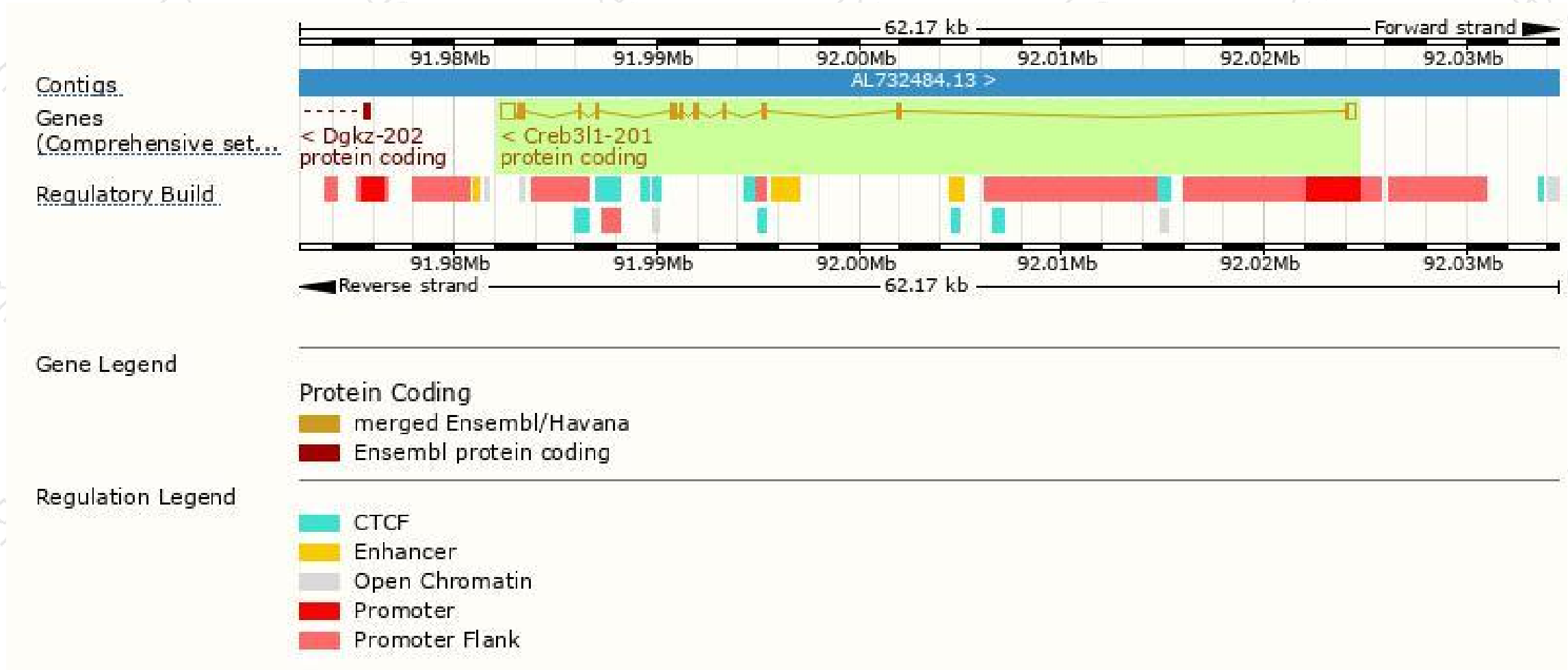
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Creb3l1-201	ENSMUST00000028663.4	2603	520aa	Protein coding	CCDS38181	A0A0R4J082	TSL:1 GENCODE basic APPRIS P1

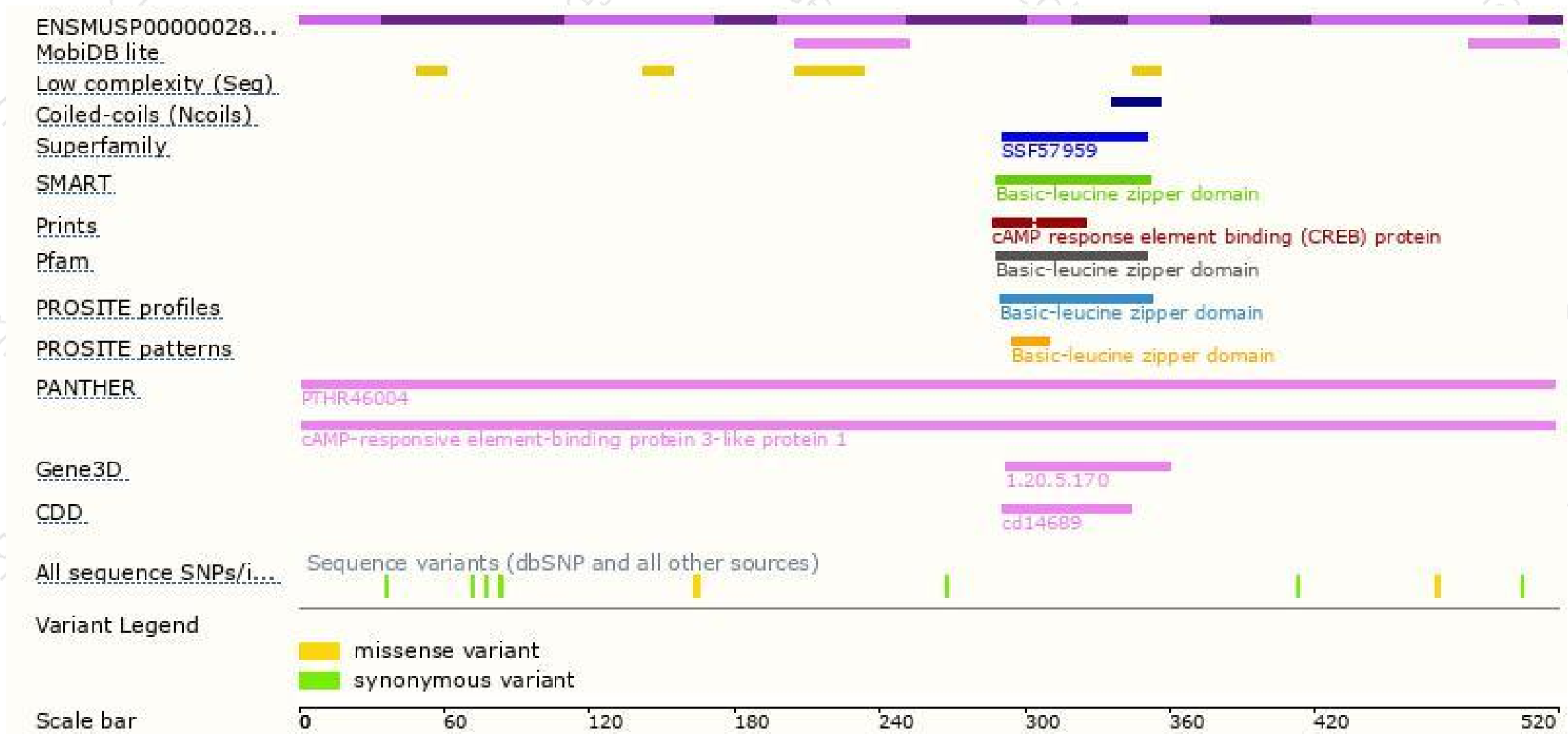
The strategy is based on the design of *Creb3l1-201* transcript, The transcription is shown below



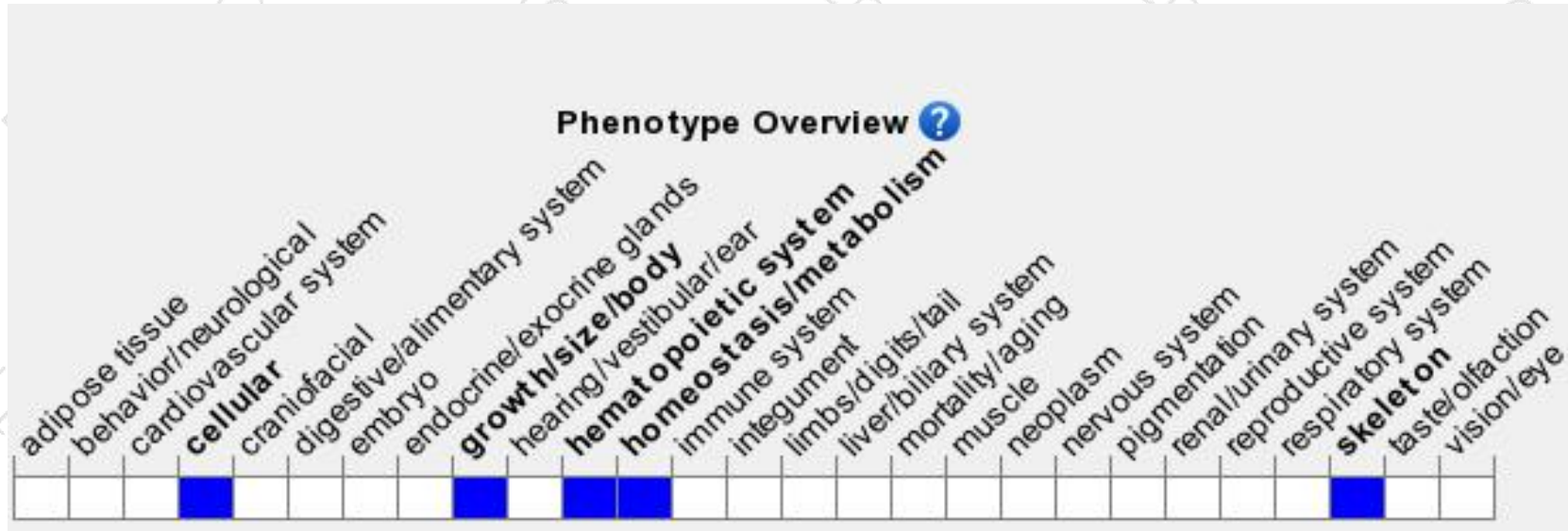
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit postnatal growth retardation, fragile skeleton, and decreased bone density, cortical and trabecular thickness, and osteoblast maturation.

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

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