Rgs10 Cas9-CKO Strategy

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Design Date: **2019-11-14**

Project Overview

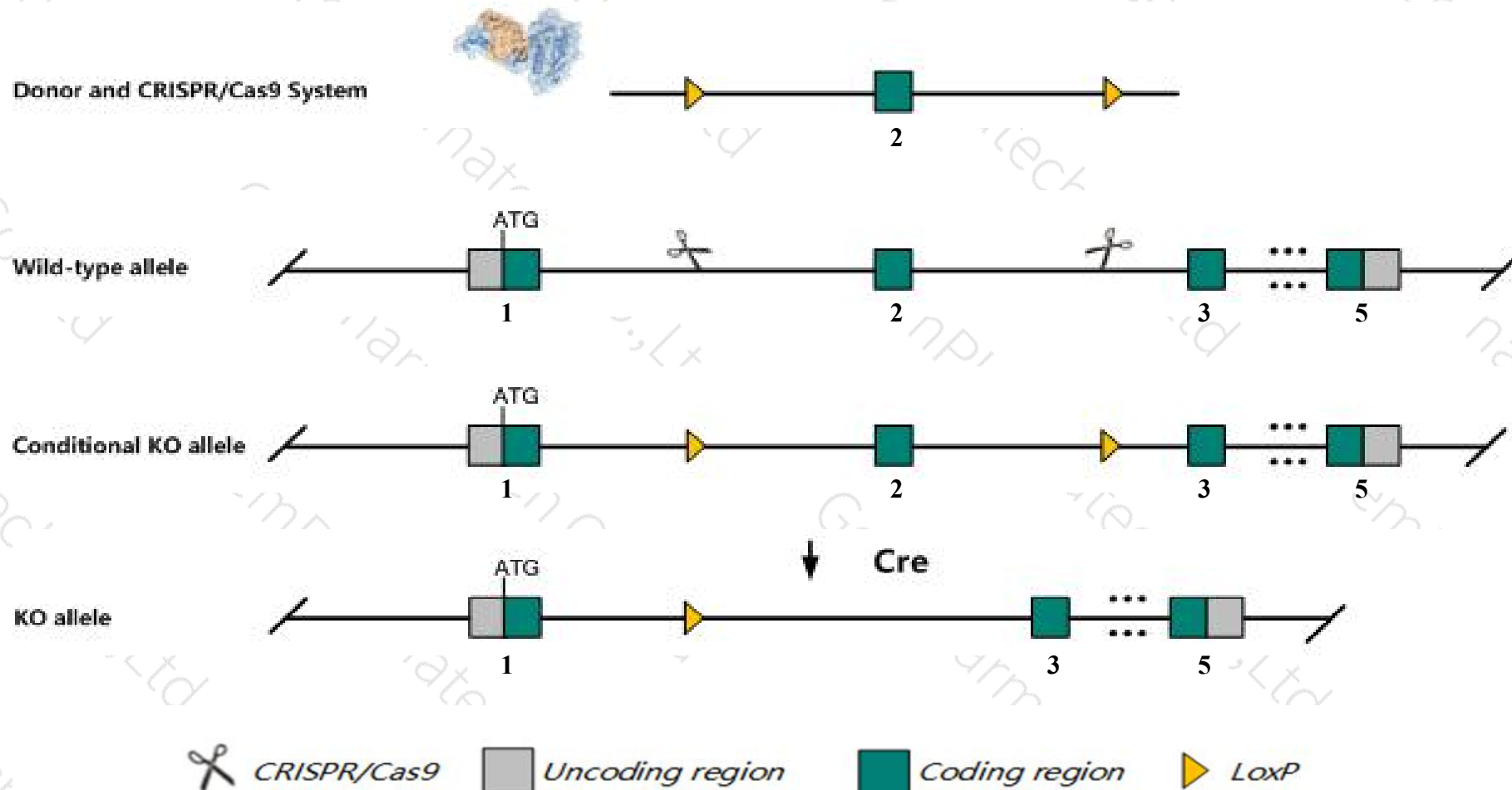|	
Project Name	*Rgs10*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rgs10* gene. The schematic diagram is as follows:

Technical routes

➢ The *Rgs10* gene has 6 transcripts. According to the structure of *Rgs10* gene, exon2 of *Rgs10-201* (ENSMUST00000033133.11) transcript is recommended as the knockout region.The region contains 119bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rgs10* 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,A gene trap mutation of this gene results in impaired glucose tolerance and increased fasting glucose levels whereas a targeted knockout shows defects in osteoclast differentiation and in the skeleton.

➢ The *Rgs10* gene is located on the Chr7. 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）

Rgs10 regulator of G-protein signalling 10 [Mus musculus (house mouse)]

Gene ID: 67865, updated on 9-Apr-2019

Summary

|	
Official Symbol	Rgs10 provided by MGI
Official Full Name	regulator of G-protein signalling 10 provided by MGI
Primary source	MGI:MGI:1915115
See related	Ensembl:ENSMUSG00000030844
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310010N19Rik
Expression	Ubiquitous expression in liver E14 (RPKM 15.3), thymus adult (RPKM 13.5) and 27 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rgs10-201	ENSMUST00000033133.11	880	181aa	Protein coding	CCDS21896	Q32MD7 Q9CQE5	TSL:1 GENCODE basic APPRIS P1
Rgs10-205	ENSMUST00000145739.2	564	93aa	Protein coding	-	A0A0U1RPU5	TSL:1 GENCODE basic
Rgs10-206	ENSMUST00000147840.1	373	85aa	Protein coding	-	D3Z1B6	CDS 3' incomplete TSL:2
Rgs10-202	ENSMUST00000129120.1	469	No protein	Retained intron	-	-	TSL:2
Rgs10-204	ENSMUST00000134144.1	458	No protein	lncRNA	-	-	TSL:2
Rgs10-203	ENSMUST00000129144.1	160	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Rgs10-201* transcript,The transcription is shown below

< Rgs10-201
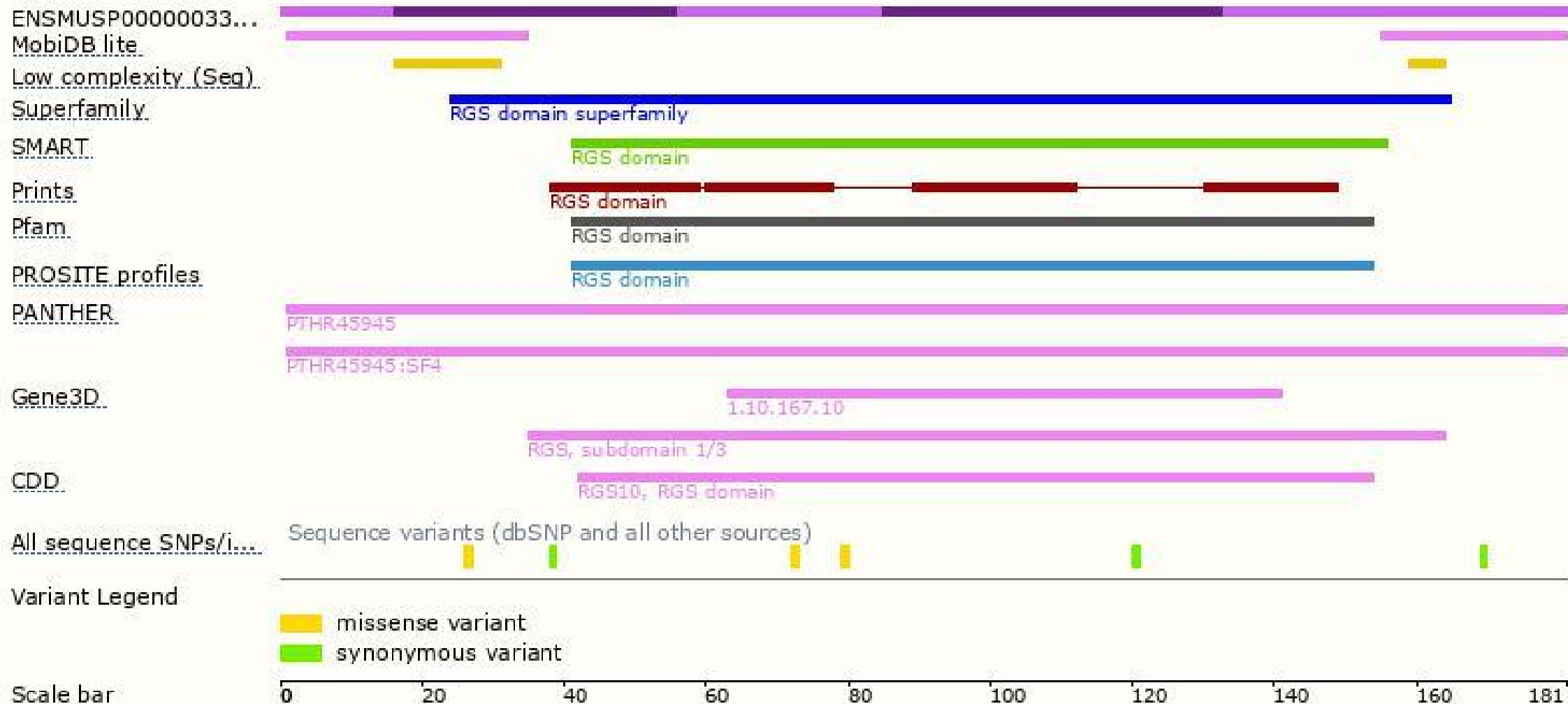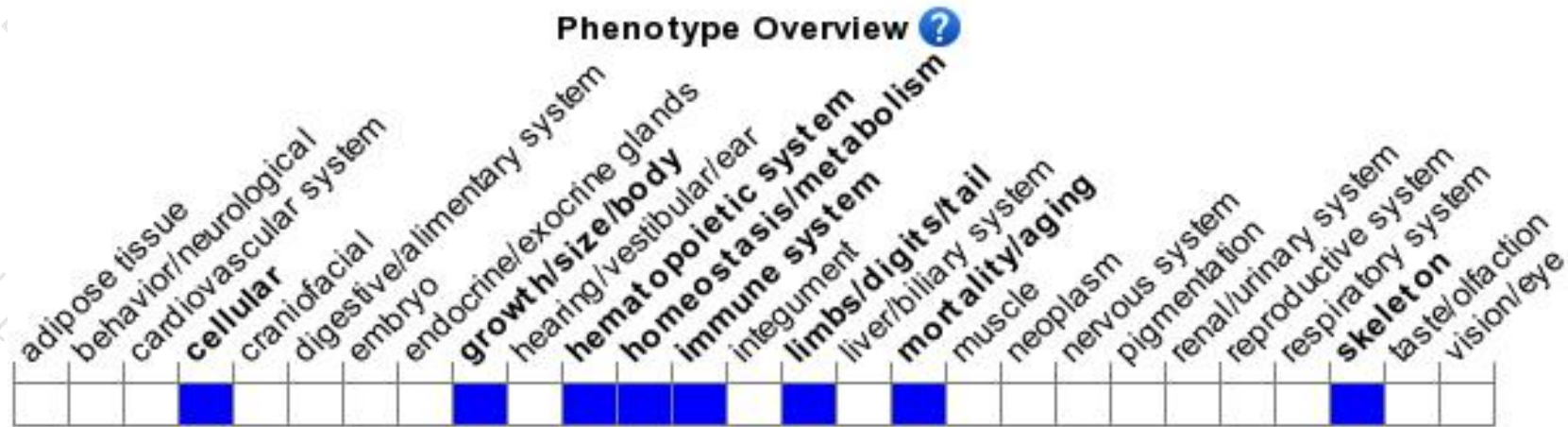protein coding

◄ Reverse strand

44.55 kb
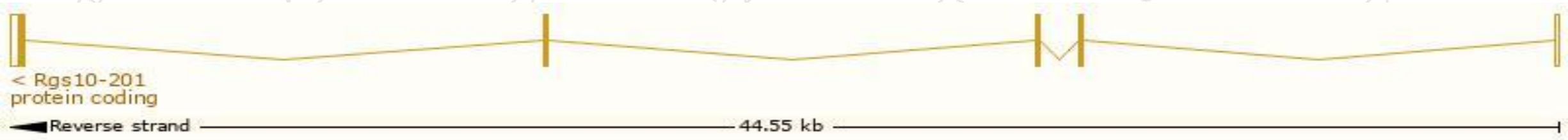
Genomic location distribution
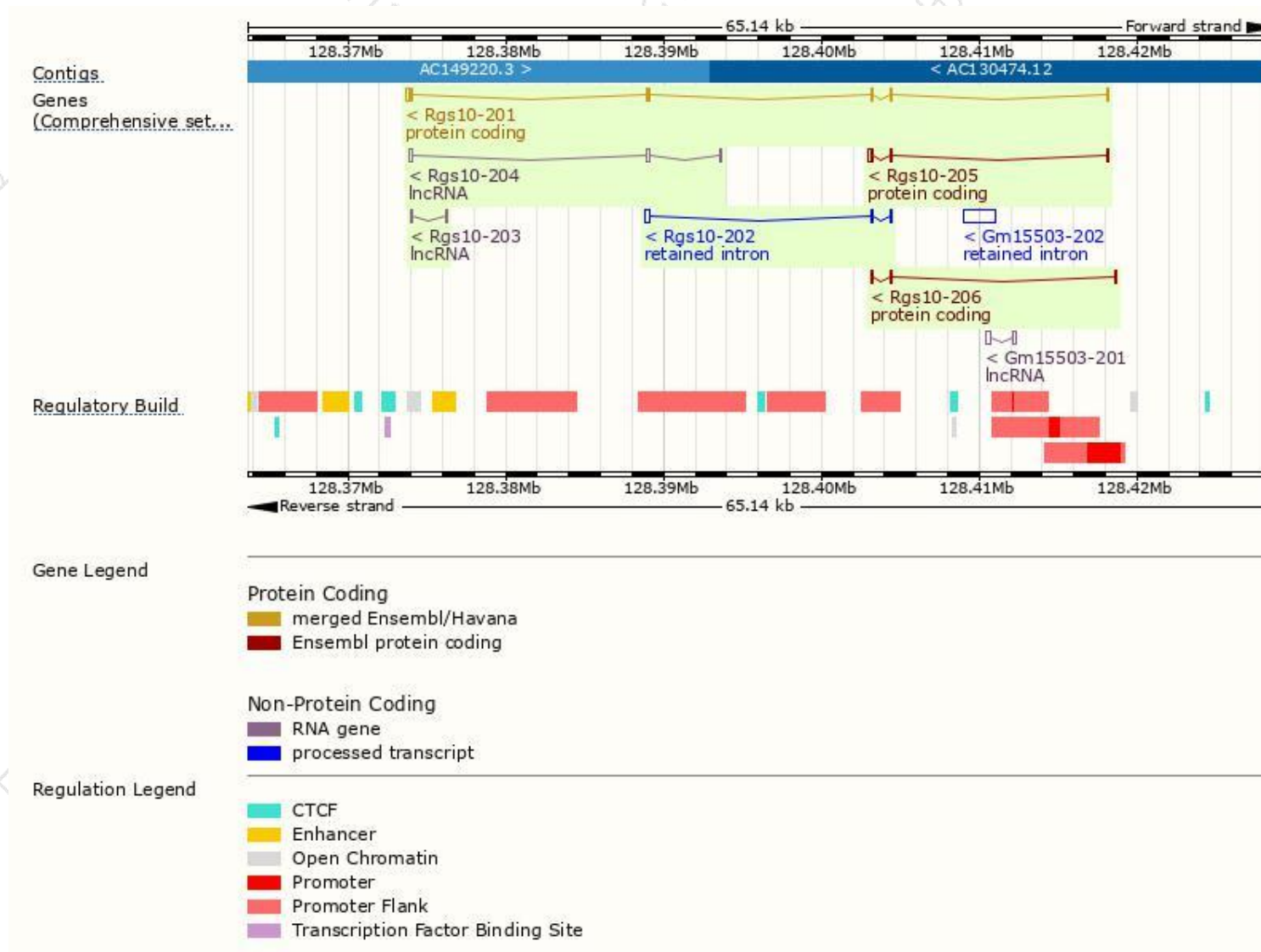
Protein domain

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,A gene trap mutation of this gene results in impaired glucose tolerance and increased fasting glucose levels whereas a targeted knockout shows defects in osteoclast differentiation and in the skeleton.

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