Nup37 Cas9-CKO Strategy

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Project Overview

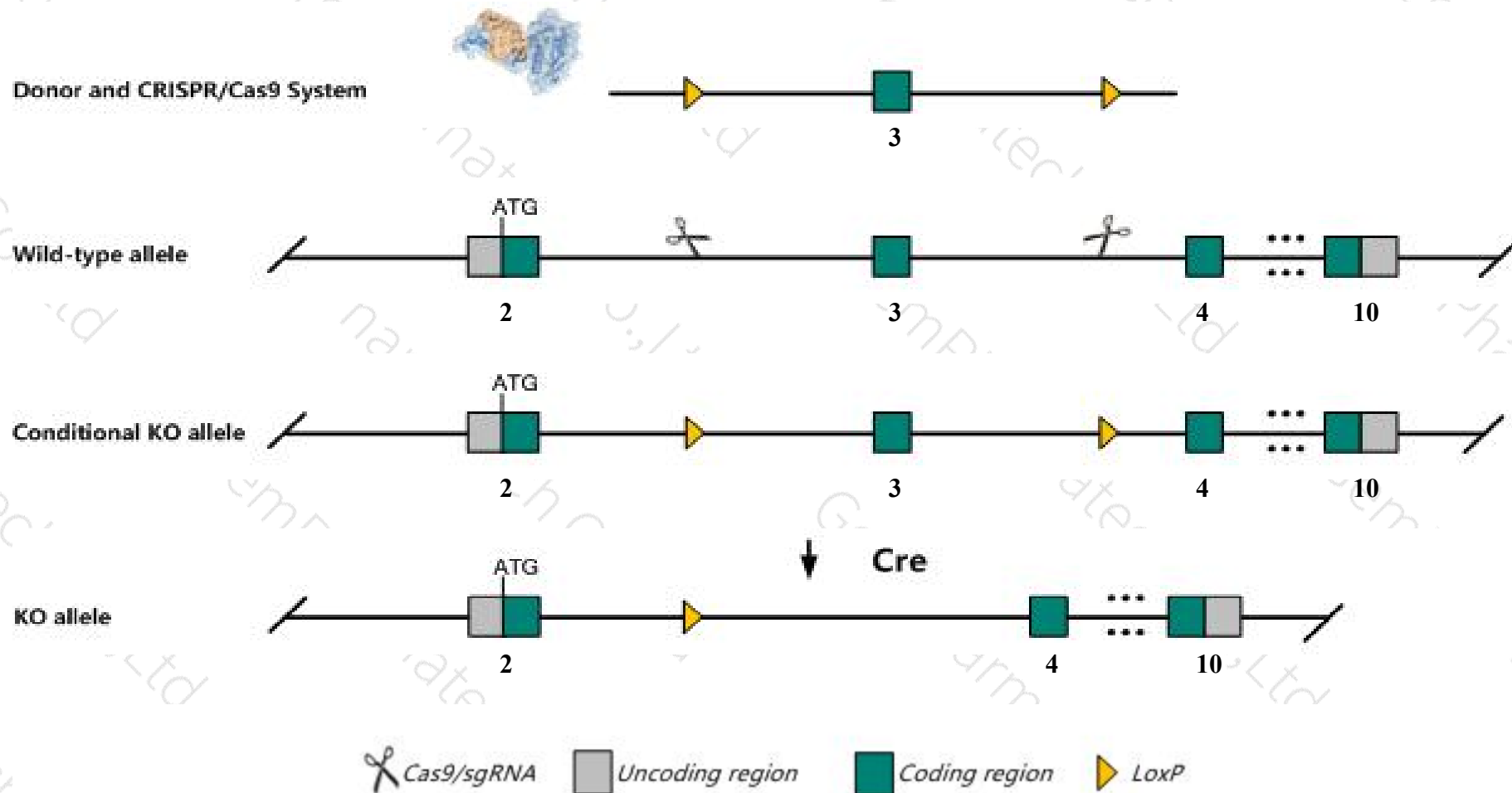|	
Project Name	*Nup37*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nup37* gene. The schematic diagram is as follows:

Technical routes

➢ The *Nup37* gene has 6 transcripts. According to the structure of *Nup37* gene, exon3 of *Nup37-202* (ENSMUST00000169309.2) transcript is recommended as the knockout region.The region contains Ens 125bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Nup37* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was 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

➢ The *Nup37* gene is located on the Chr10. 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〕

Nup37 nucleoporin 37 [Mus musculus (house mouse)]

Gene ID: 69736, updated on 13-Mar-2020

▲ Summary

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Official Symbol	Nup37 provided by MGI
Official Full Name	nucleoporin 37 provided by MGI
Primary source	MGI:MGI:1919964
See related	Ensembl:ENSMUSG00000035351
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	2410003L22Rik, 2810039M17Rik
Expression	Broad expression in CNS E11.5 (RPKM 13.9), placenta adult (RPKM 12.5) and 24 other tissues See 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
Nup37-202	ENSMUST00000169309.2	1277	326aa	Protein coding	CCDS24107	Q9CWU9	TSL:1 GENCODE basic APPRIS P1
Nup37-201	ENSMUST00000052355.14	1267	326aa	Protein coding	CCDS24107	Q9CWU9	TSL:1 GENCODE basic APPRIS P1
Nup37-205	ENSMUST00000219121.1	430	67aa	Protein coding	-	A0A1W2P6V2	CDS 5' incomplete TSL:3
Nup37-206	ENSMUST00000219859.1	1448	No protein	Retained intron	-	-	TSL:NA
Nup37-204	ENSMUST00000219059.1	721	No protein	Retained intron	-	-	TSL:2
Nup37-203	ENSMUST00000218935.1	679	No protein	Retained intron	-	-	TSL:2

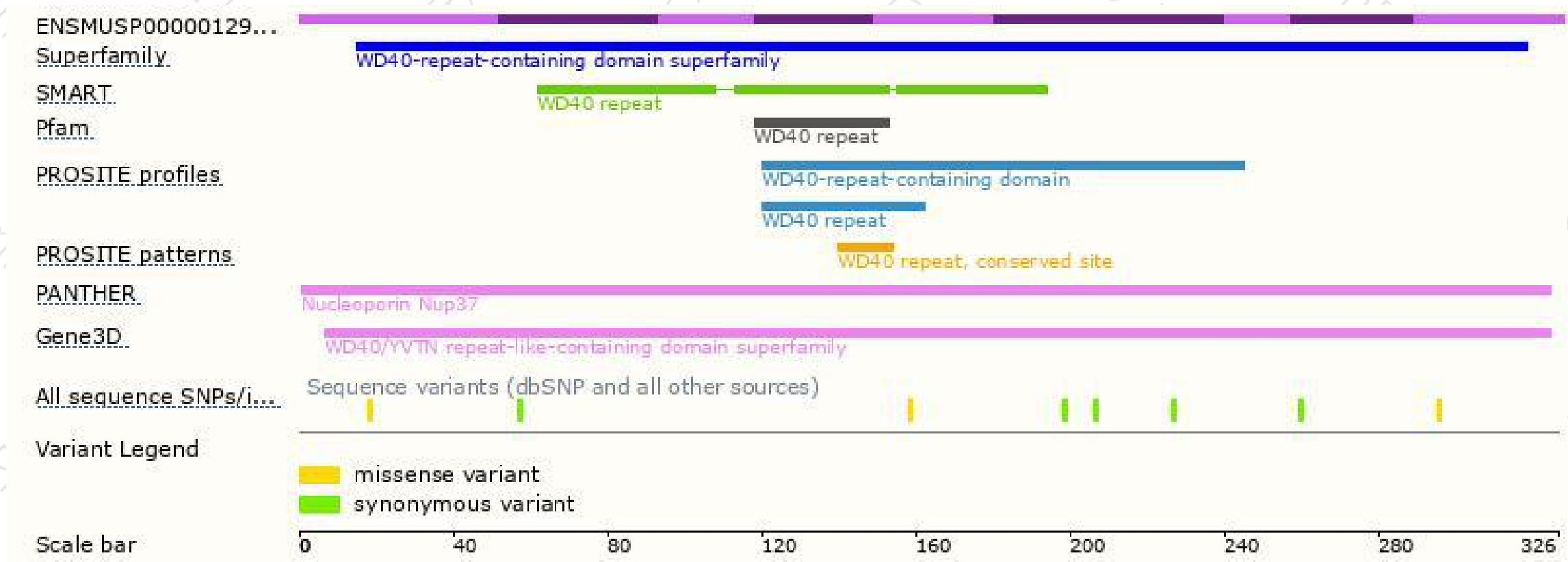The strategy is based on the design of *Nup37-202* transcript,the transcription is shown below:
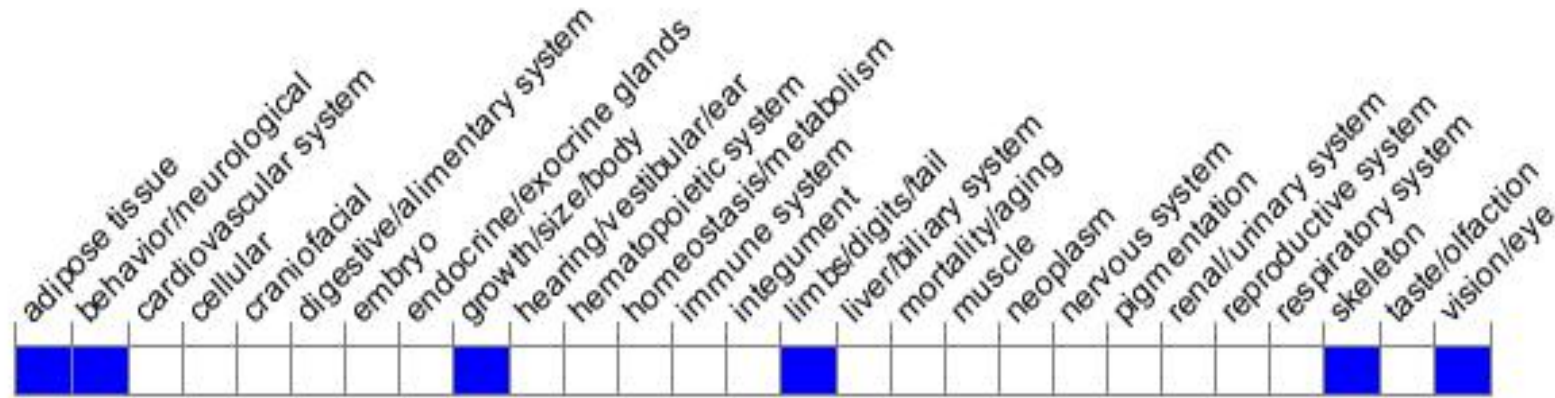
Genomic location distribution
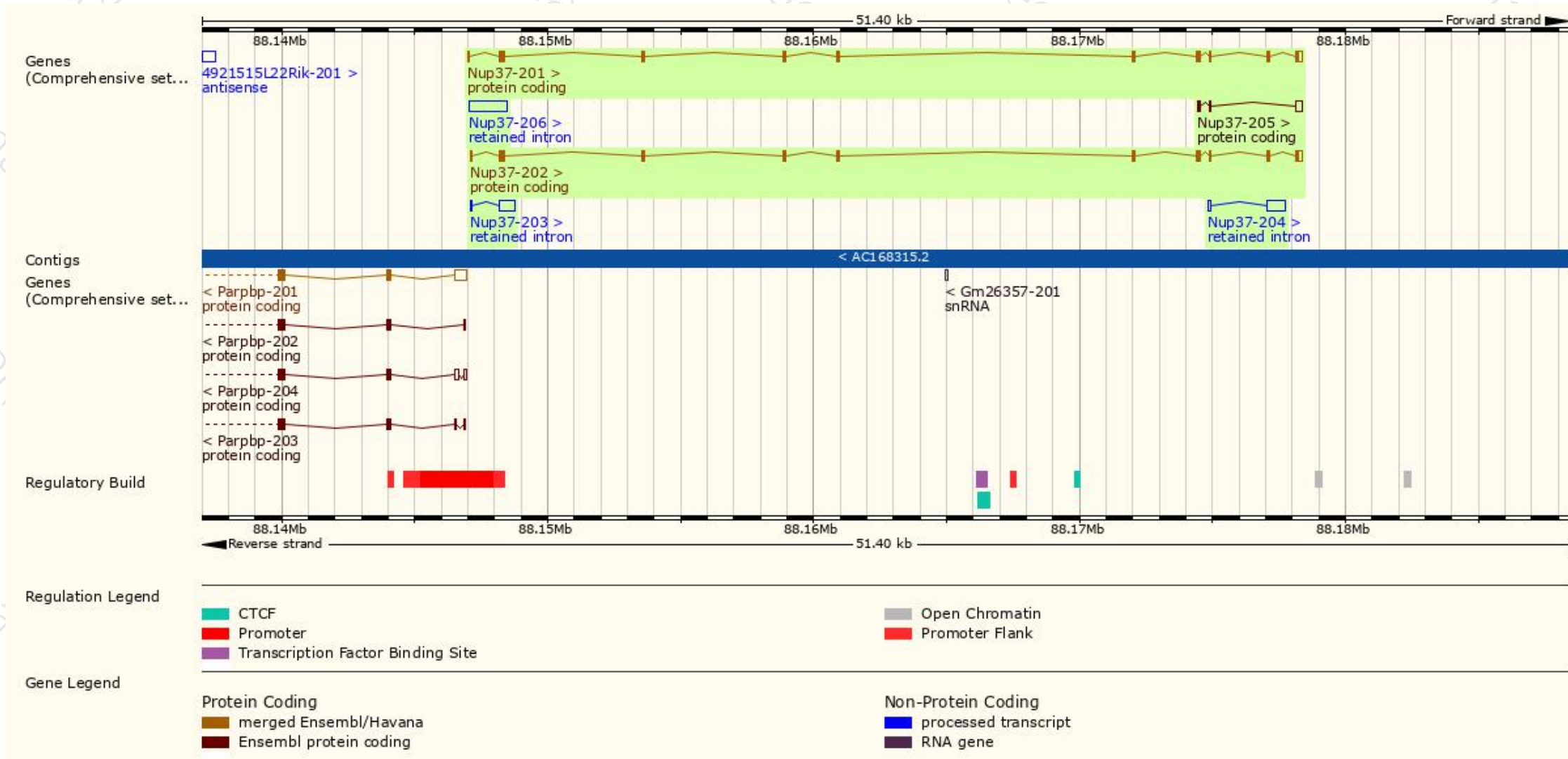
Protein domain

Mouse phenotype description(MGI)

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).