

***Gnb4* Cas9-KO Strategy**

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Reviewer:

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Design Date:

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Project Overview

Project Name

Gnb4

Project type

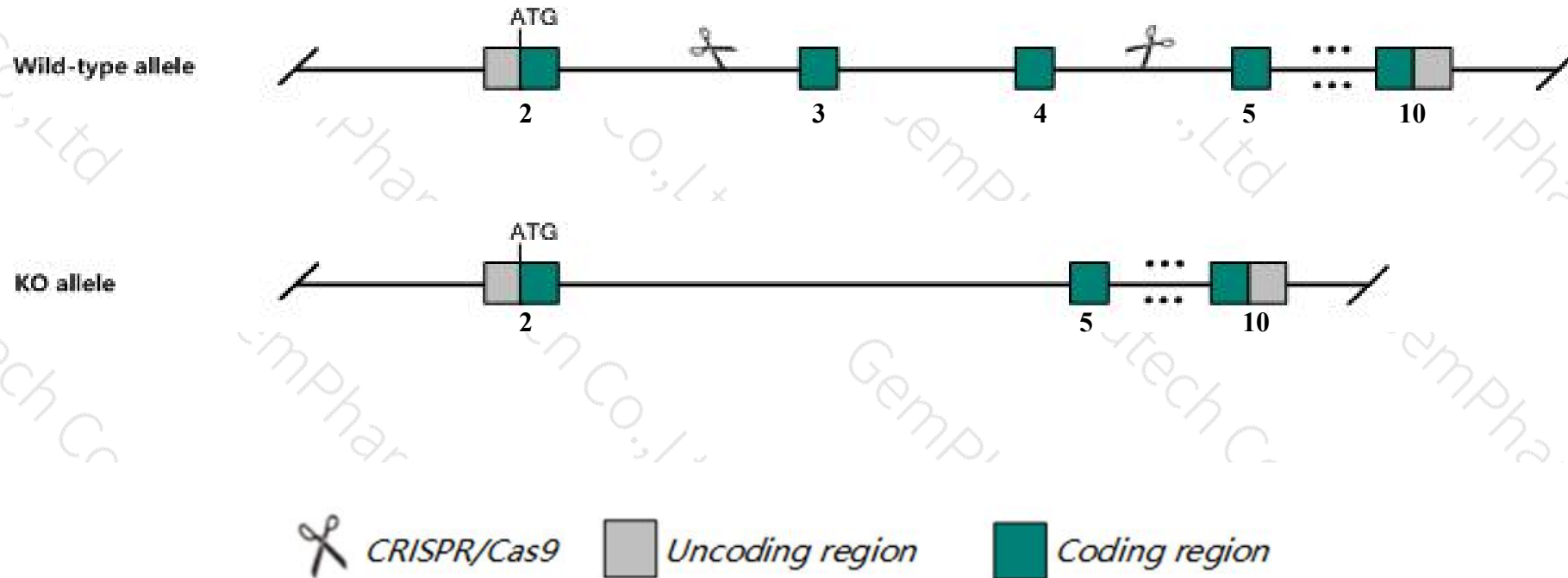
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gnb4* gene. The schematic diagram is as follows:



- The *Gnb4* gene has 8 transcripts. According to the structure of *Gnb4* gene, exon3-exon4 of *Gnb4-205* (ENSMUST00000155737.7) transcript is recommended as the knockout region. The region contains 146bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gnb4* gene. The brief process is as follows: CRISPR/Cas9 system w

- The *Gnb4* gene is located on the Chr3. 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)

Gnb4 guanine nucleotide binding protein (G protein), beta 4 [*Mus musculus* (house mouse)]

Gene ID: 14696, updated on 24-Oct-2019

Summary

- Official Symbol** Gnb4 provided by [MGI](#)
- Official Full Name** guanine nucleotide binding protein (G protein), beta 4 provided by [MGI](#)
- Primary source** [MGI:MGI:104581](#)
- See related** [Ensembl:ENSMUSG00000027669](#)
- 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** G(beta)4; 6720453A21Rik
- Expression** Broad expression in placenta adult (RPKM 17.2), CNS E18 (RPKM 11.9) and 23 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

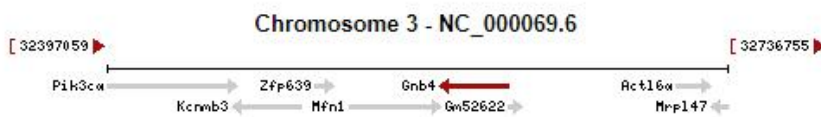
Genomic context

Location: 3; 3 A3

[See Gnb4 in Genome Data Viewer](#)

Exon count: 13

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	3	NC_000069.6 (32578587..32616673, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	3	NC_000069.5 (32482450..32515457, complement)



Transcript information (Ensembl)

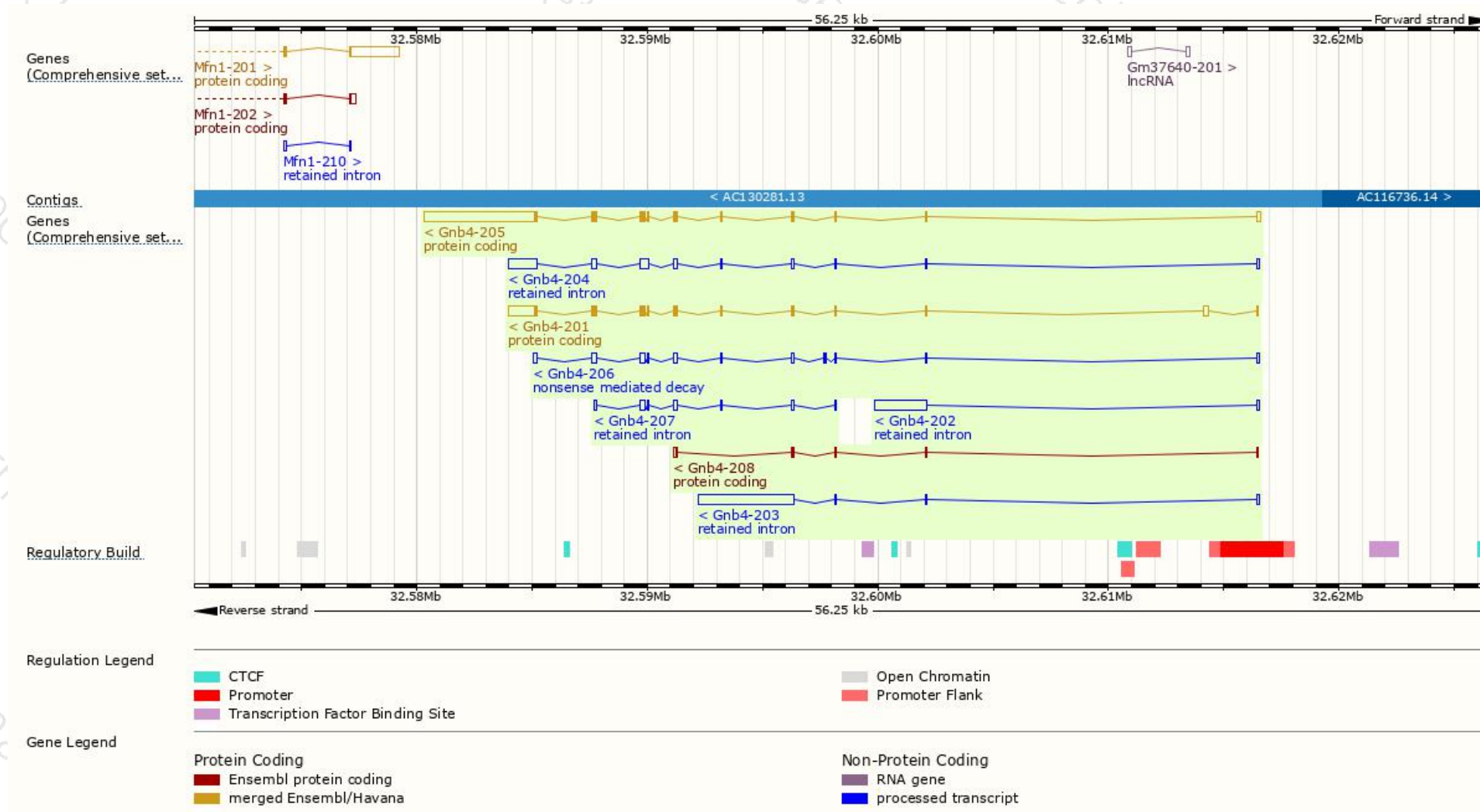
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gnb4-205	ENSMUST00000155737.7	5997	340aa	Protein coding	CCDS17297	P29387	TSL:1 GENCODE basic APPRIS P1
Gnb4-201	ENSMUST00000108234.7	2510	340aa	Protein coding	CCDS17297	P29387	TSL:1 GENCODE basic APPRIS P1
Gnb4-208	ENSMUST00000193050.1	423	73aa	Protein coding	-	A0A0A6YVN9	TSL:5 GENCODE basic
Gnb4-206	ENSMUST00000184130.6	1356	83aa	Nonsense mediated decay	-	V9GWY1	TSL:1
Gnb4-203	ENSMUST00000144292.1	4395	No protein	Retained intron	-	-	TSL:1
Gnb4-202	ENSMUST00000143588.1	2388	No protein	Retained intron	-	-	TSL:1
Gnb4-204	ENSMUST00000152901.7	2357	No protein	Retained intron	-	-	TSL:1
Gnb4-207	ENSMUST00000192116.1	728	No protein	Retained intron	-	-	TSL:3

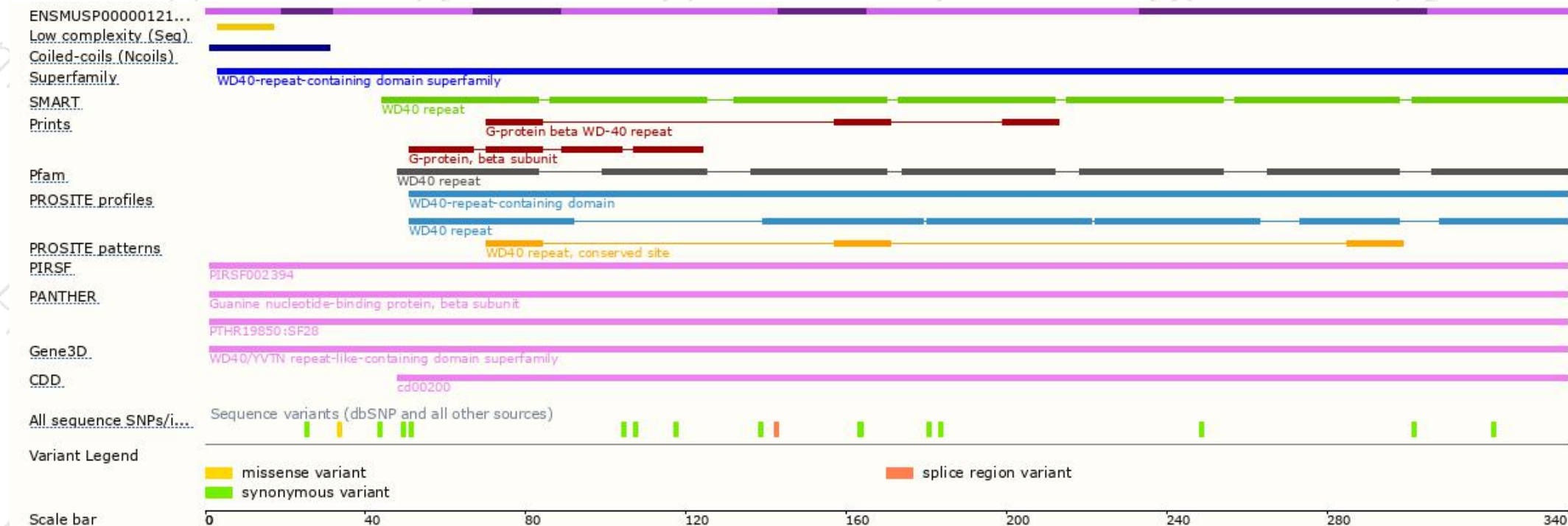
The strategy is based on the design of *Gnb4-205* transcript,The transcription is shown below



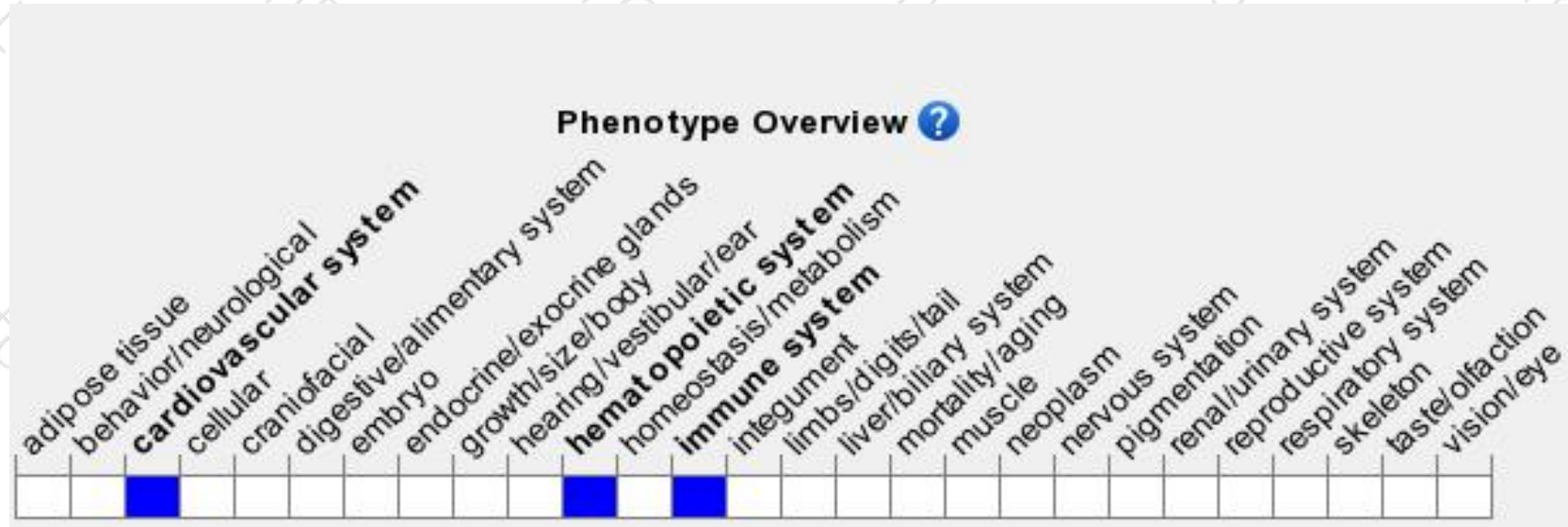
Genomic location distribution



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/>).

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

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