Gga2 Cas9-KO Strategy

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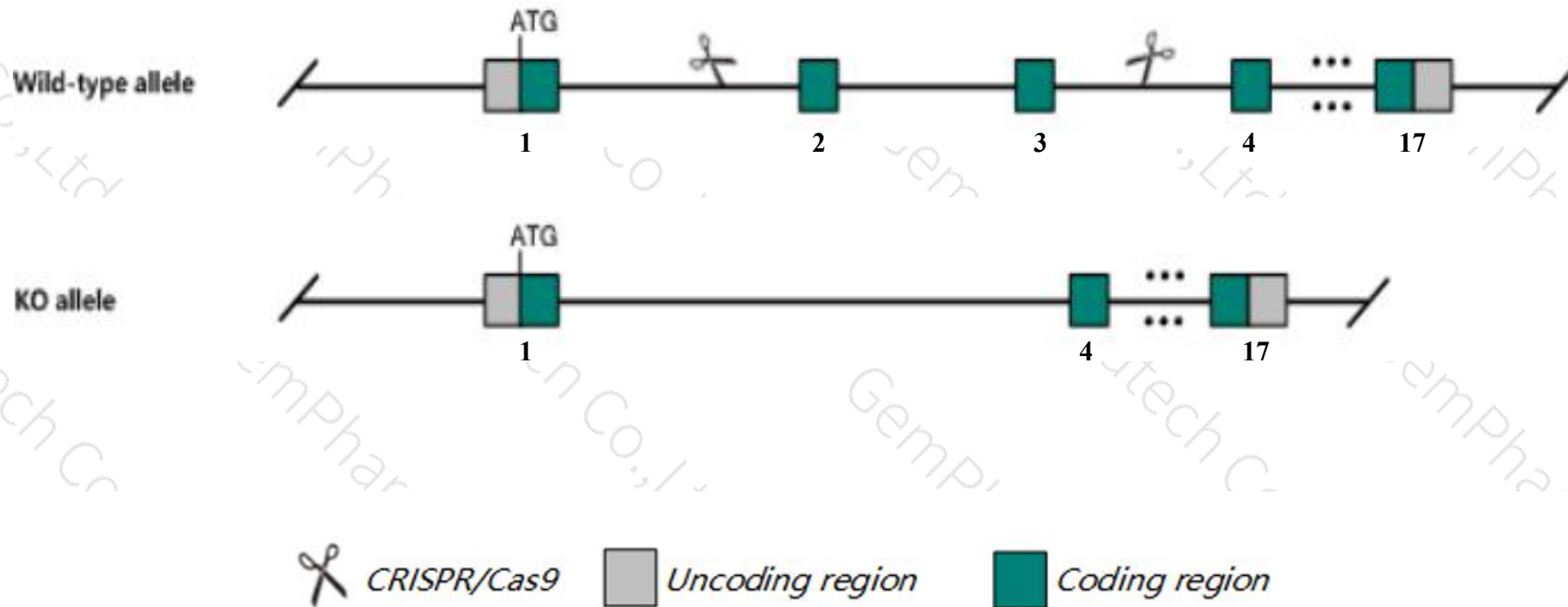|	
Project Name	*Gga2*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gga2* gene. The schematic diagram is as follows:

Technical routes

➢ The *Gga2* gene has 6 transcripts. According to the structure of *Gga2* gene, exon2-exon3 of *Gga2-201* (ENSMUST00000033160.14) transcript is recommended as the knockout region.The region contains 161bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gga2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,mice homozygous for a gene trapped allele exhibit complete embryonic lethality. mice homozygous for a different gene trapped allele show decreased birth weight, hypoglycemia and partial neonatal lethality, with all remaining mice dying within the first three weeks of life.

➢ The *Gga2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

Gga2 golgi associated, gamma adaptin ear containing, ARF binding protein 2 [Mus musculus (house mouse)]
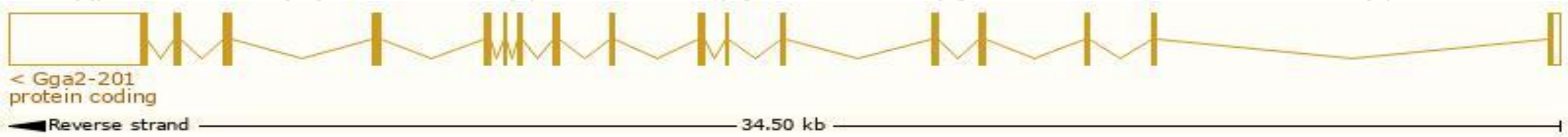
Gene ID: 74105, updated on 13-Mar-2020

▲ Summary

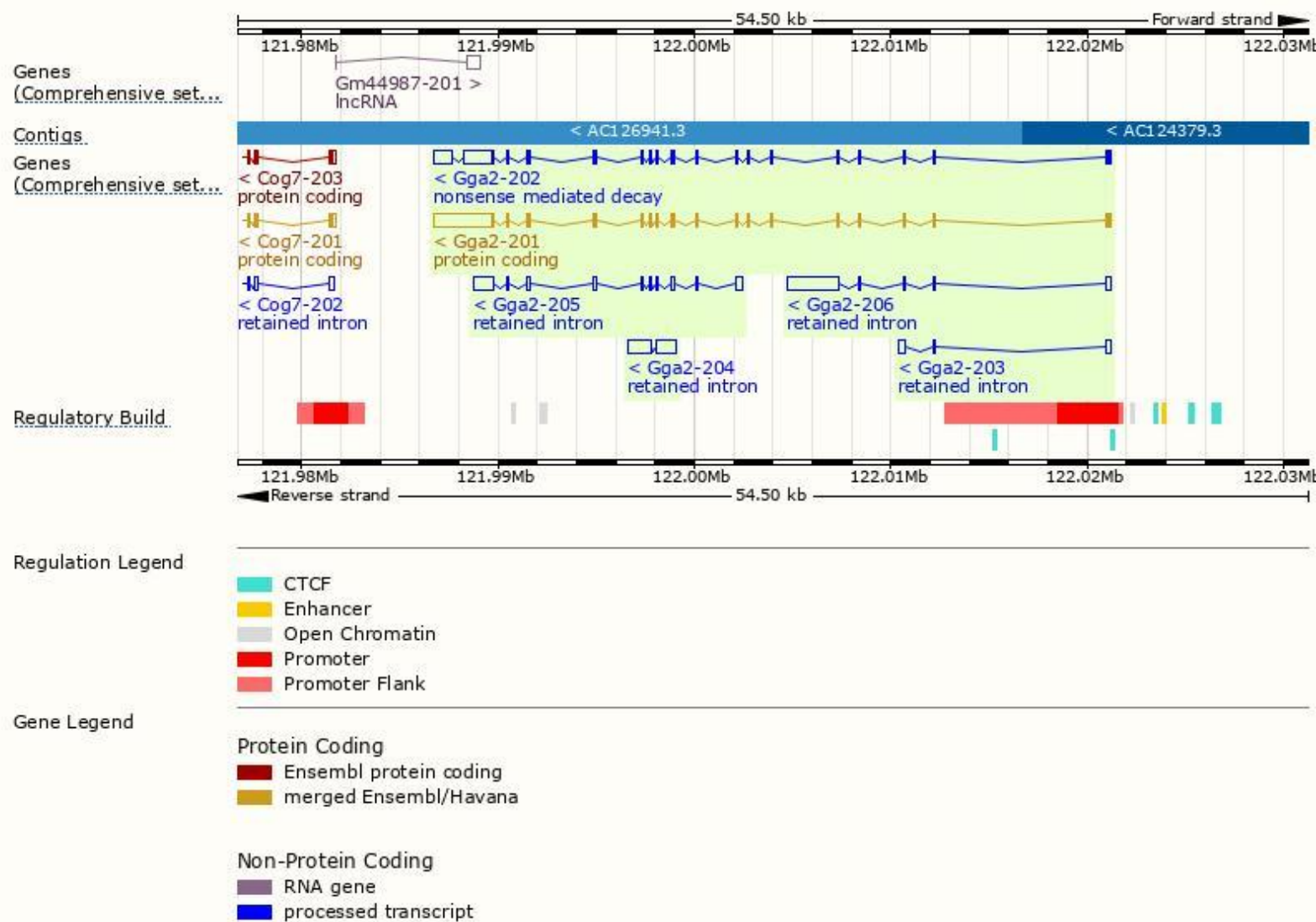|	
Official Symbol	Gga2 provided by MGI
Official Full Name	golgi associated, gamma adaptin ear containing, ARF binding protein 2 provided by MGI
Primary source	MGI:MGI:1921355
See related	Ensembl:ENSMUSG00000030872
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200007E24Rik, mKIAA1080
Expression	Broad expression in placenta adult (RPKM 61.9), limb E14.5 (RPKM 23.5) and 22 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
Gga2-201	ENSMUST00000033160.14	4915	603aa	Protein coding	CCDS40116	Q6P5E6	TSL:1 GENCODE basic APPRIS P1
Gga2-202	ENSMUST00000124566.1	4251	603aa	Nonsense mediated decay	-	Q6P5E6	TSL:2
Gga2-206	ENSMUST00000145277.7	3086	No protein	Retained intron	-	-	TSL:2
Gga2-205	ENSMUST00000144779.1	2351	No protein	Retained intron	-	-	TSL:1
Gga2-204	ENSMUST00000138441.1	2181	No protein	Retained intron	-	-	TSL:1
Gga2-203	ENSMUST00000131081.1	620	No protein	Retained intron	-	-	TSL:2

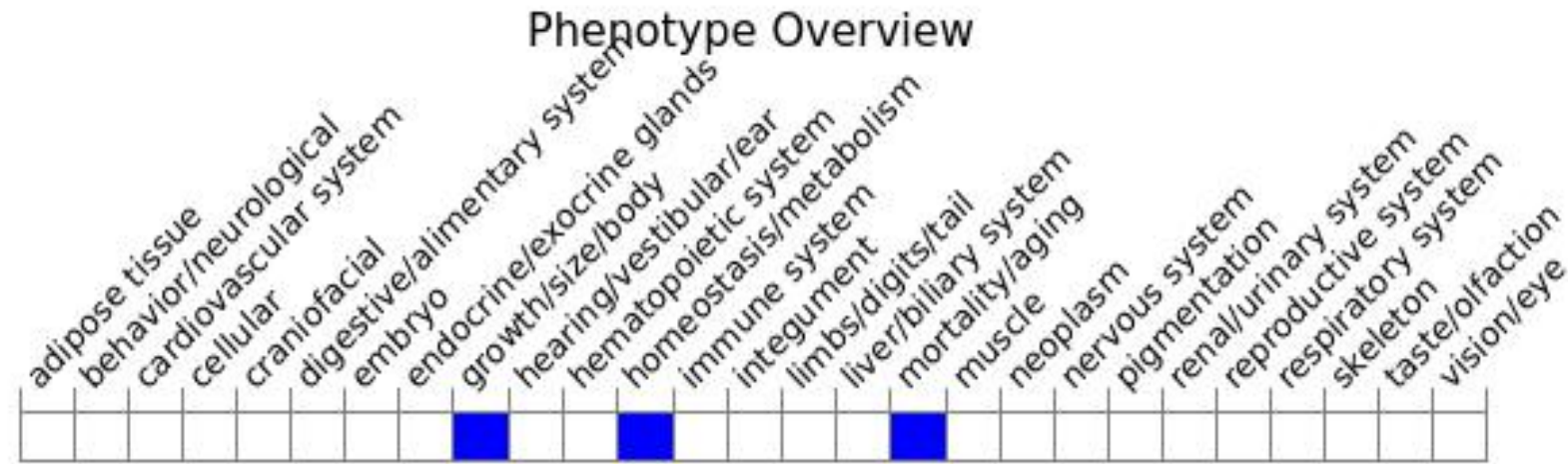The strategy is based on the design of *Gga2-201* transcript,the transcription is shown below:

< Gga2-201
protein coding

Reverse strand

34.50 kb

Genomic location distribution

Protein domain
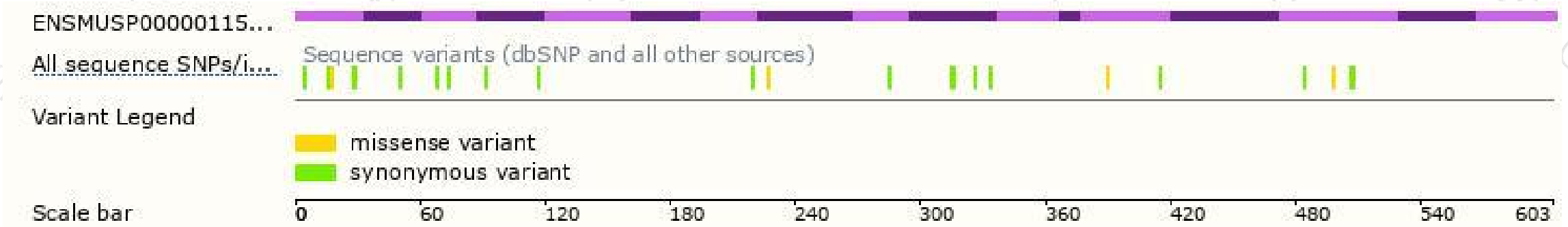
Mouse phenotype description(MGI)

Phenotype Overview

adipose tissue, behavior/neurological, cardiovascular system, cellular, craniofacial, digestive/alimentary system, embryo, endocrine/exocrine glands, growth/size/body, hearing/vestibular/ear, hematopoietic system, homeostasis/metabolism, immune system, integument, limbs/digits/tail, liver/biliary system, mortality/aging, muscle, neoplasm, nervous system, pigmentation, renal/urinary system, reproductive system, respiratory system, skeleton, taste/olfaction, vision/eye

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

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