

# ***Apba1*** Cas9-CKO Strategy

**Designer:**

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# Project Overview

**Project Name**

*Apba1*

**Project type**

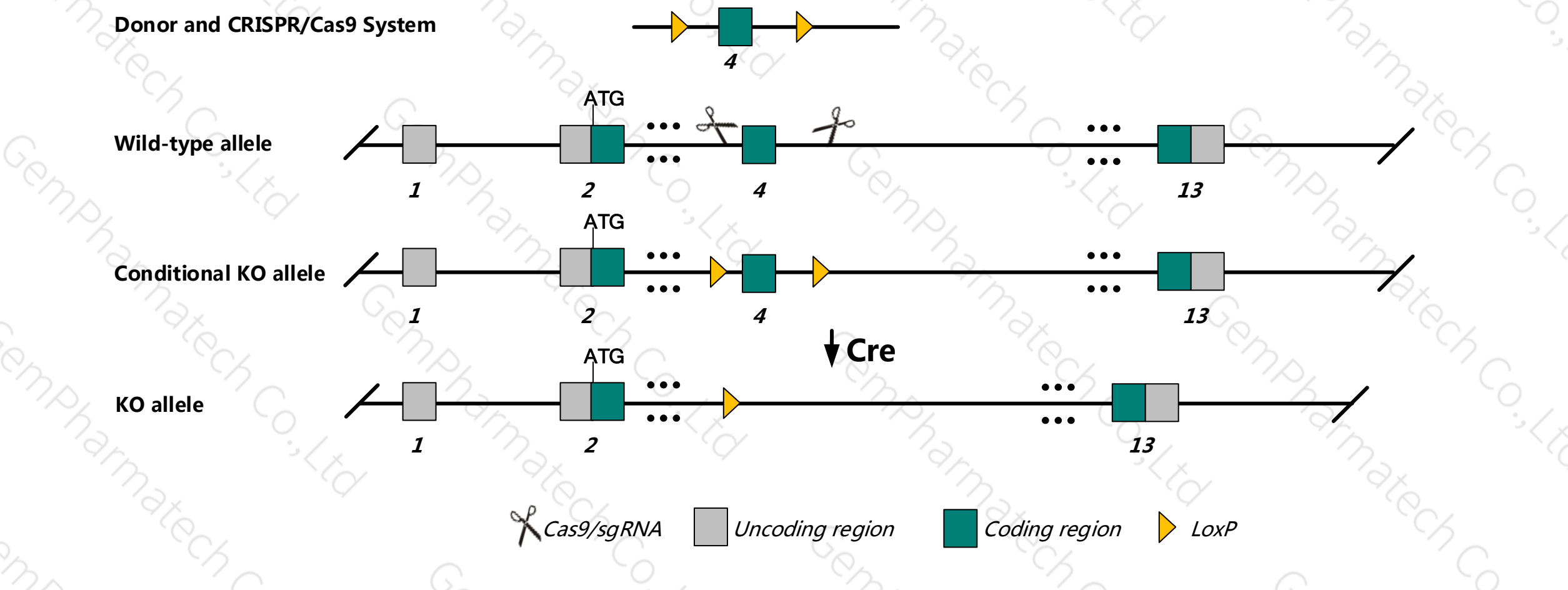
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Apba1* gene. The schematic diagram is as follows:



- The *Apba1* gene has 2 transcripts. According to the structure of *Apba1* gene, exon4 of *Apba1*-201 transcript is recommended as the knockout region. The region contains 40bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Apba1* 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 or cell types.

- The *Apba1* gene is located on the Chr19. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

# Gene information ( NCBI )



**Apba1 amyloid beta (A4) precursor protein binding, family A, member 1 [ *Mus musculus* (house mouse) ]**

Gene ID: 319924, updated on 7-May-2019

**Summary**

Official Symbol	Apba1 provided by MGI
Official Full Name	amyloid beta (A4) precursor protein binding, family A, member 1 provided by MGI
Primary source	MGI:MGI:1860297
See related	Ensembl:ENSMUSG00000024897
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	X11; Mint; Mint1; Lin-10; Urop11; X11alpha; 6430513E09Rik
Expression	Broad expression in cortex adult (RPKM 21.6), cerebellum adult (RPKM 21.4) and 17 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

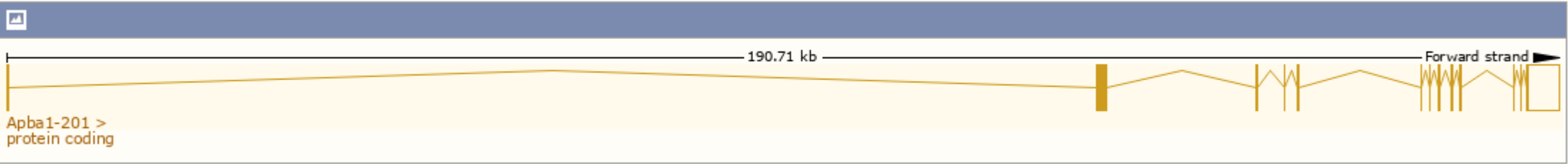


# Transcript information ( Ensembl )

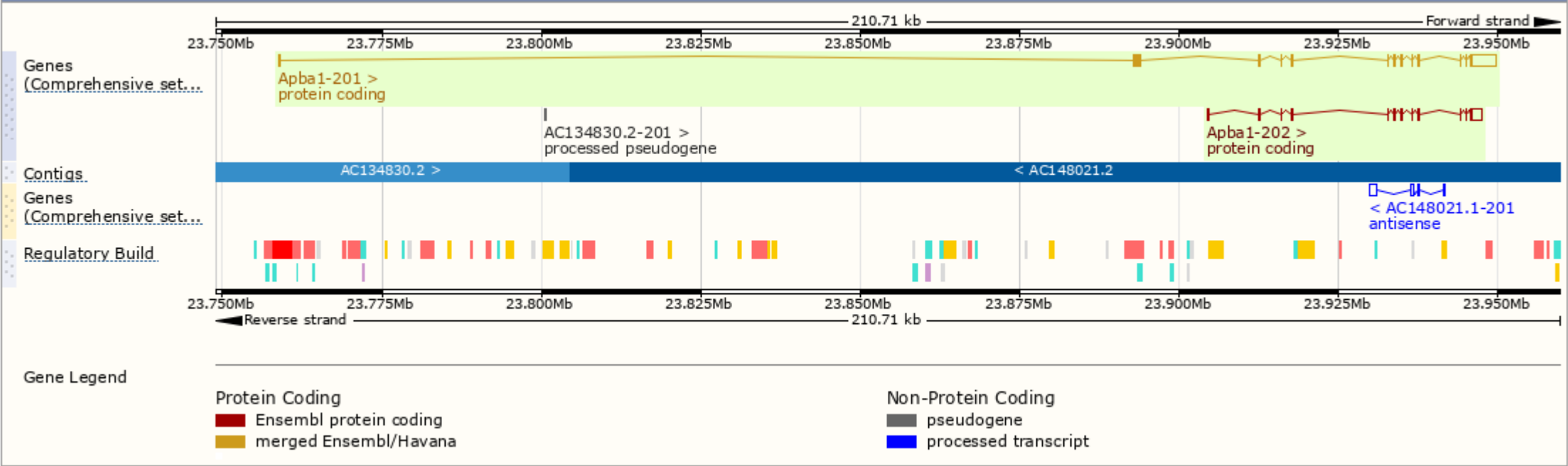
The gene has 2 transcripts, and all transcripts are shown below :

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Apba1-201	<a href="#">ENSMUST00000025830.8</a>	6620	<a href="#">842aa</a>	Protein coding	<a href="#">CCDS50407</a>	<a href="#">B2RUJ5</a>	TSL:1	GENCODE basic APPRIS P2
Apba1-202	<a href="#">ENSMUST000000237688.1</a>	3174	<a href="#">452aa</a>	Protein coding	-	-	GENCODE basic	APPRIS ALT2

The strategy is based on the design of *Apba1-201* transcript, The transcription is shown below

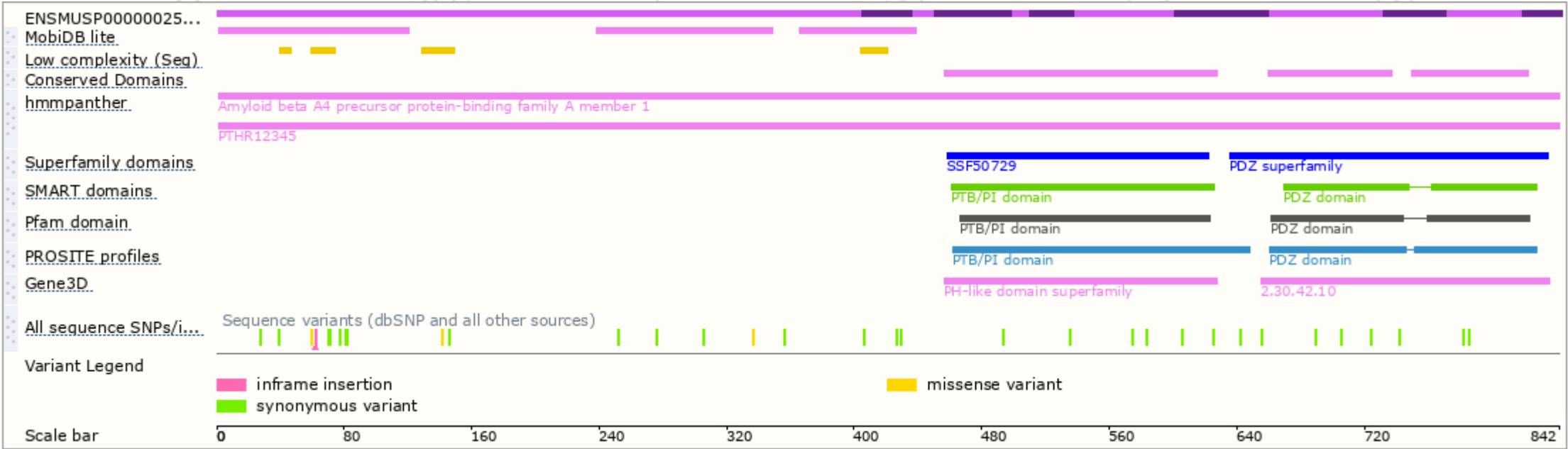


# Genomic location distribution

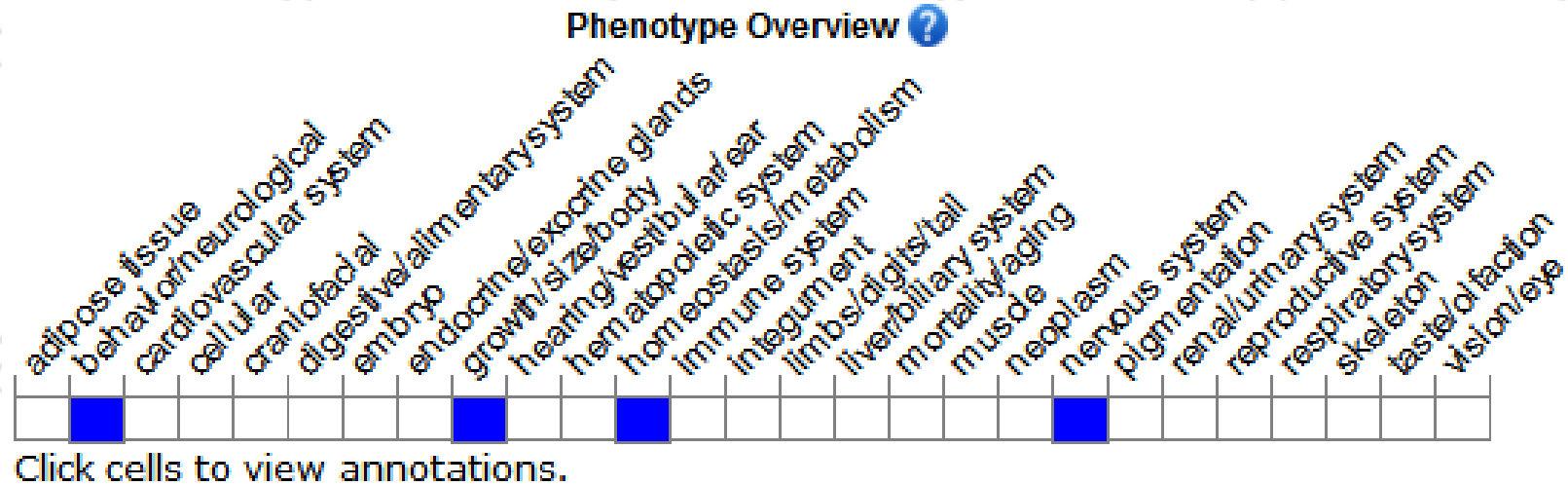




# Protein domain



# 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, Animals carrying a homozygous mutation of this gene have reduced body size.

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