

# ***A3galt2 Cas9-CKO Strategy***

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**Reviewer :**

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# Project Overview

**Project Name**

***A3galt2***

**Project type**

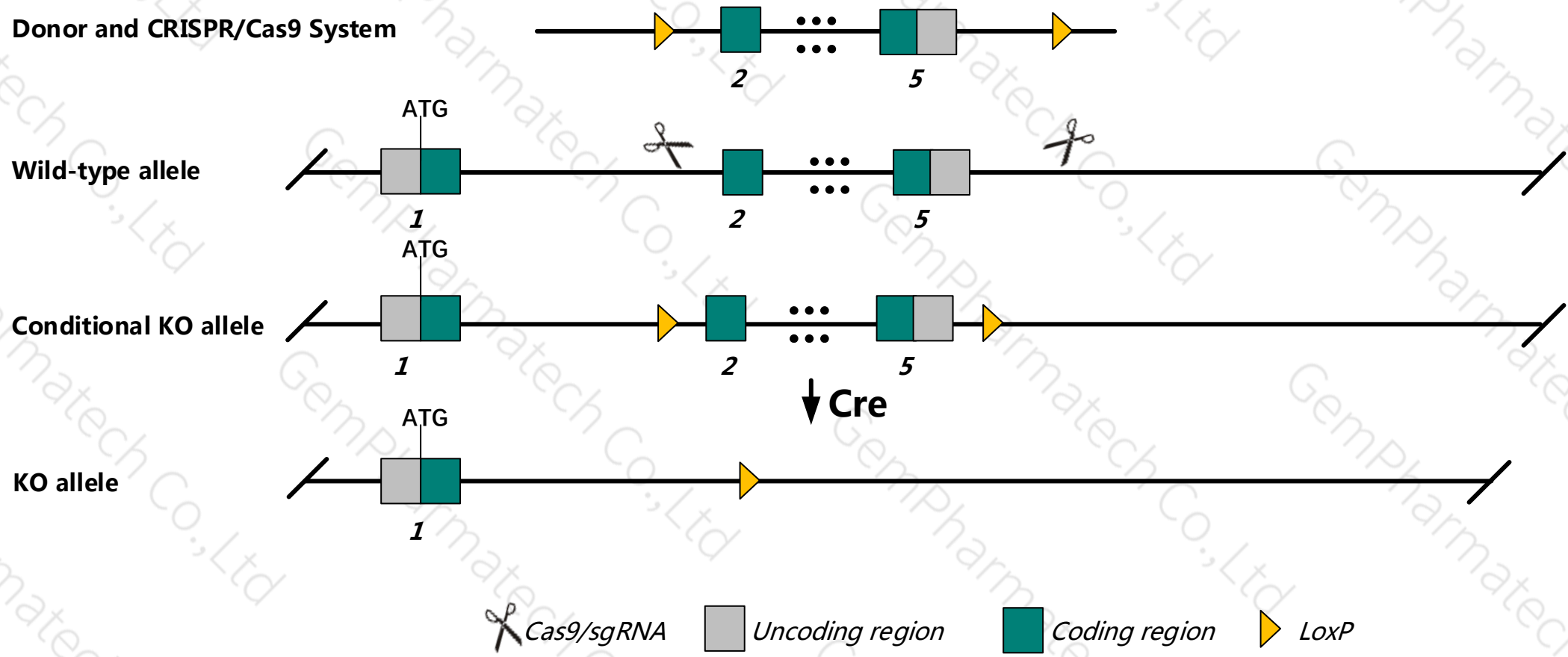
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *A3galt2* gene. The schematic diagram is as follows:



- The *A3galt2* gene has 2 transcripts. According to the structure of *A3galt2* gene, exon2-exon5 of *A3galt2*-201 (ENSMUST00000030585.7) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *A3galt2* 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.

- According to the existing MGI data , Mice homozygous for a knock-out allele are viable, fertile and behaviorally normal with no detectable alterations in the development and function of invariant natural killer T cells.
- The *A3galt2* gene is located on the Chr4. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information ( NCBI )

## A3galt2 alpha 1,3-galactosyltransferase 2 (isoglobotriaosylceramide synthase) [ *Mus musculus* (house mouse) ]

Gene ID: 215493, updated on 13-Mar-2020



### Summary

Official Symbol	A3galt2 provided by <a href="#">MGI</a>
Official Full Name	alpha 1,3-galactosyltransferase 2 (isoglobotriaosylceramide synthase) provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:2685279</a>
See related	<a href="#">Ensembl:ENSMUSG00000028794</a>
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	iGb3; Gm433; iGb3S
Expression	Broad expression in whole brain E14.5 (RPKM 1.3), CNS E14 (RPKM 1.1) and 17 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

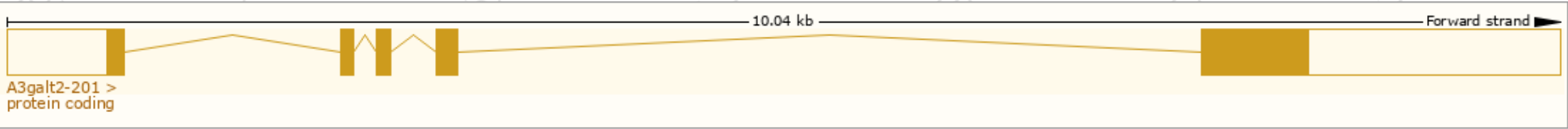


# Transcript information ( Ensembl )

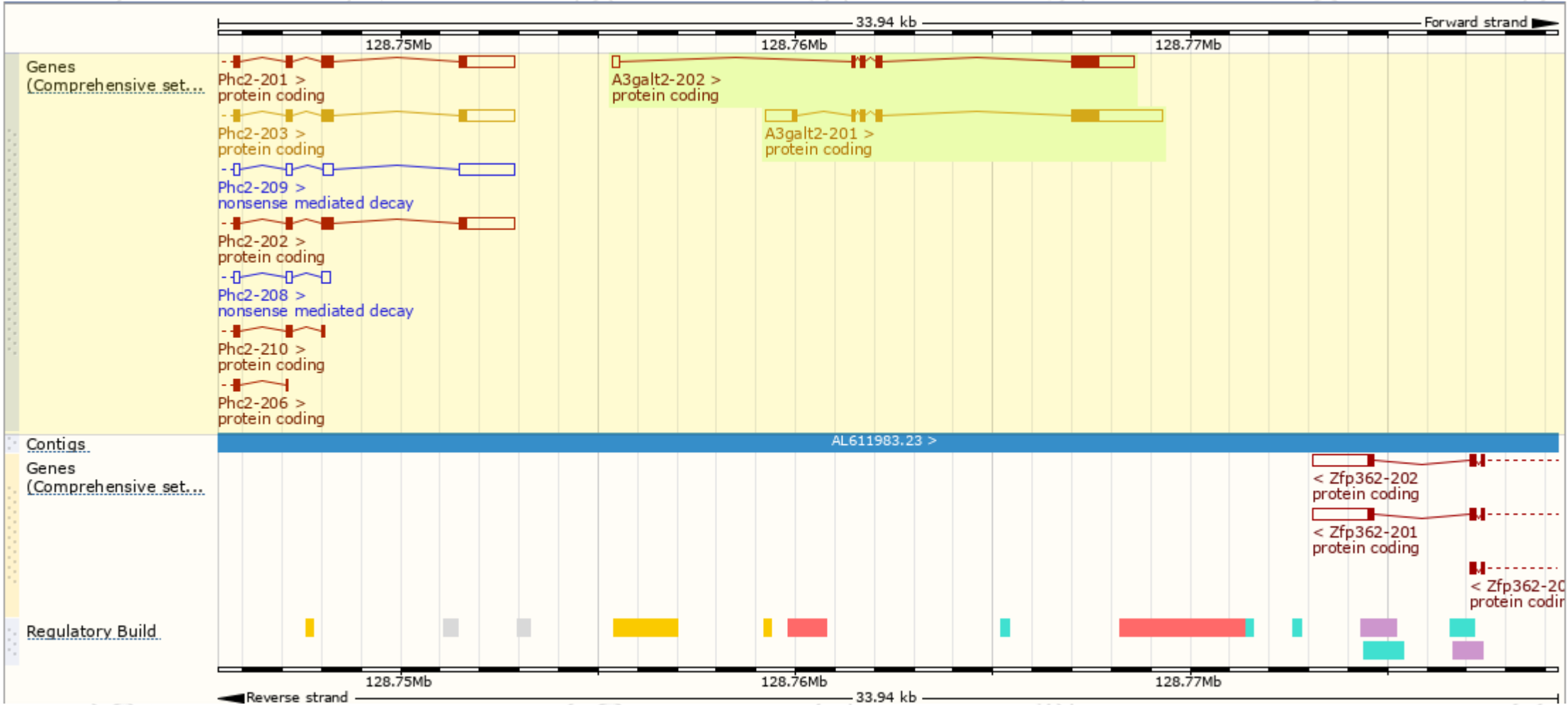
The gene has 2 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
A3galt2-201	<a href="#">ENSMUST00000030585.7</a>	3390	<a href="#">370aa</a>	 Protein coding	<a href="#">CCDS18675</a>	<a href="#">Q3V1N9</a>	TSL:1 GENCODE basic APPRIS P2
A3galt2-202	<a href="#">ENSMUST00000106077.7</a>	2114	<a href="#">339aa</a>	 Protein coding	-	<a href="#">Q3V1N9</a>	TSL:5 GENCODE basic APPRIS ALT2

The strategy is based on the design of A3galt2-201 transcript, The transcription is shown below

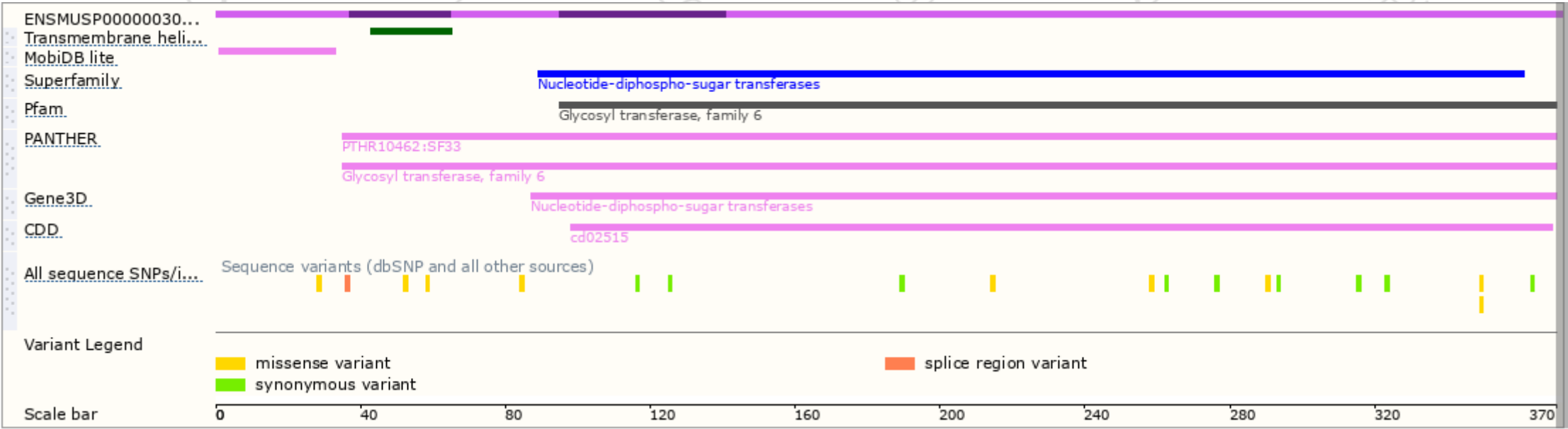


# Genomic location distribution





# 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, Mice homozygous for a knock-out allele are viable, fertile and behaviorally normal with no detectable alterations in the development and function of invariant natural killer T cells.

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