

# *Wnt5a* Cas9-KO Strategy

**Designer:**

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**Design Date:**

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# Project Overview

**Project Name**

*Wnt5a*

**Project type**

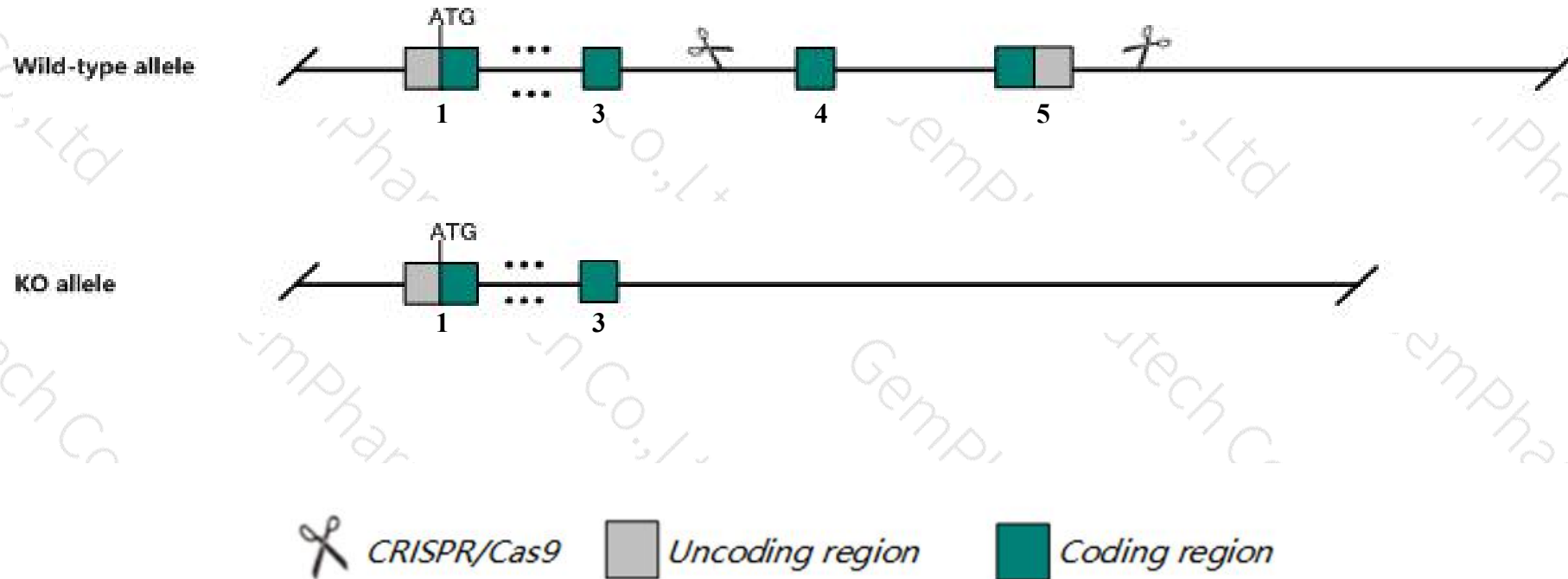
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wnt5a* gene. The schematic diagram is as follows:



- The *Wnt5a* gene has 6 transcripts. According to the structure of *Wnt5a* gene, exon4-exon5 of *Wnt5a-201* (ENSMUST00000063465.11) transcript is recommended as the knockout region. The region contains 752bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Wnt5a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutants exhibit caudal truncation with shortened anterior-posterior axis, truncation of the snout, tongue and mandible, short fore- and hindlimbs, which lack digits, absent genital tubercle and lung abnormalities. Mutants die perinatally.
- The *Wnt5a* gene is located on the Chr14. 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)

## Wnt5a wingless-type MMTV integration site family, member 5A [Mus musculus (house mouse)]

Gene ID: 22418, updated on 19-Mar-2019

### Summary



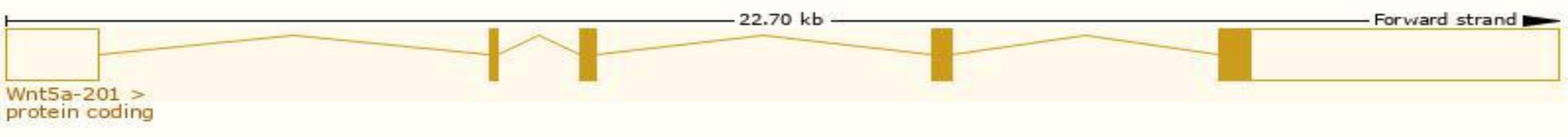
<b>Official Symbol</b>	Wnt5a provided by <a href="#">MGI</a>
<b>Official Full Name</b>	wingless-type MMTV integration site family, member 5A provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:98958</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000021994</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	8030457G12Rik, Wnt-5a
<b>Expression</b>	Broad expression in limb E14.5 (RPKM 24.5), bladder adult (RPKM 18.8) and 17 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

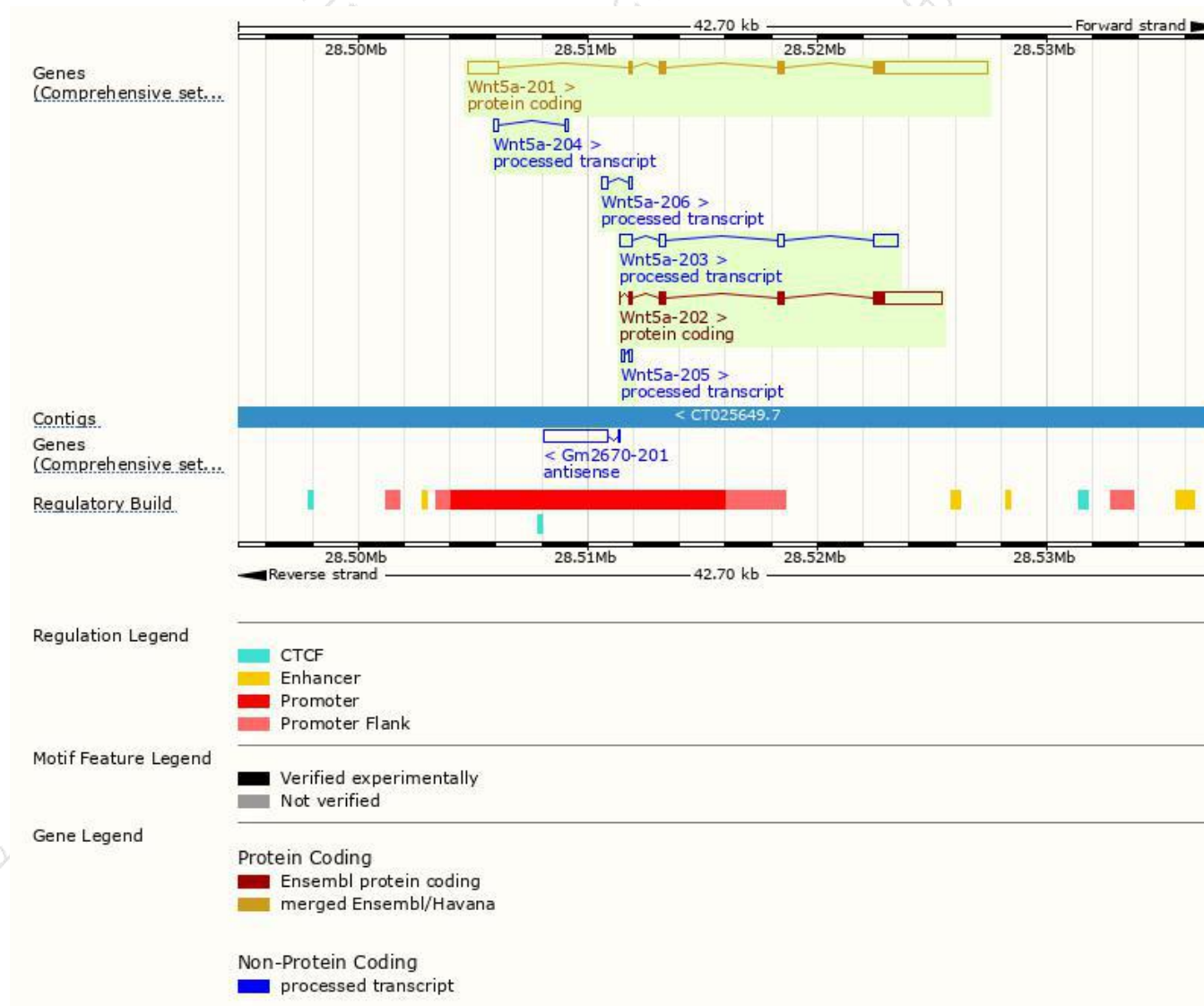
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wnt5a-201	<a href="#">ENSMUST00000063465.11</a>	7010	<a href="#">380aa</a>	Protein coding	<a href="#">CCDS26888</a>	<a href="#">P22725</a>	TSL:1 GENCODE basic APPRIS P1
Wnt5a-202	<a href="#">ENSMUST00000112272.1</a>	3650	<a href="#">360aa</a>	Protein coding	<a href="#">CCDS56946</a>	<a href="#">P22725</a>	TSL:1 GENCODE basic
Wnt5a-203	<a href="#">ENSMUST00000134163.1</a>	2147	No protein	Processed transcript	-	-	TSL:5
Wnt5a-206	<a href="#">ENSMUST00000151929.1</a>	361	No protein	Processed transcript	-	-	TSL:3
Wnt5a-204	<a href="#">ENSMUST00000134766.1</a>	337	No protein	Processed transcript	-	-	TSL:3
Wnt5a-205	<a href="#">ENSMUST00000146192.1</a>	254	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Wnt5a-201* transcript,The transcription is shown below

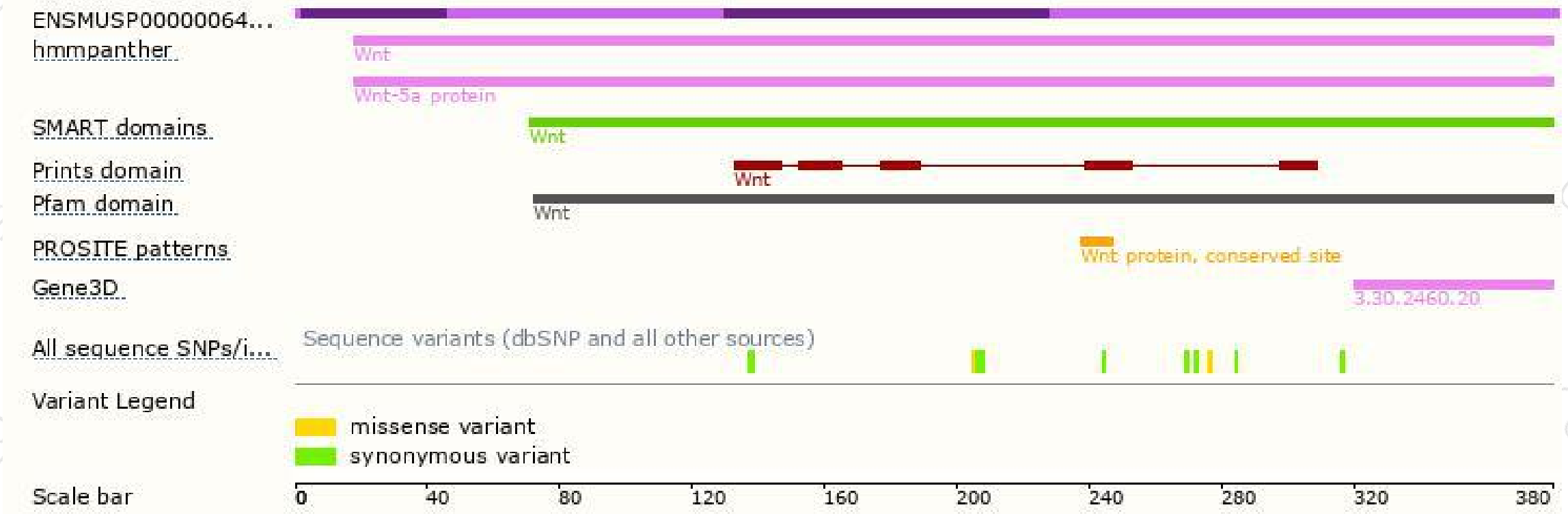


# Genomic location distribution

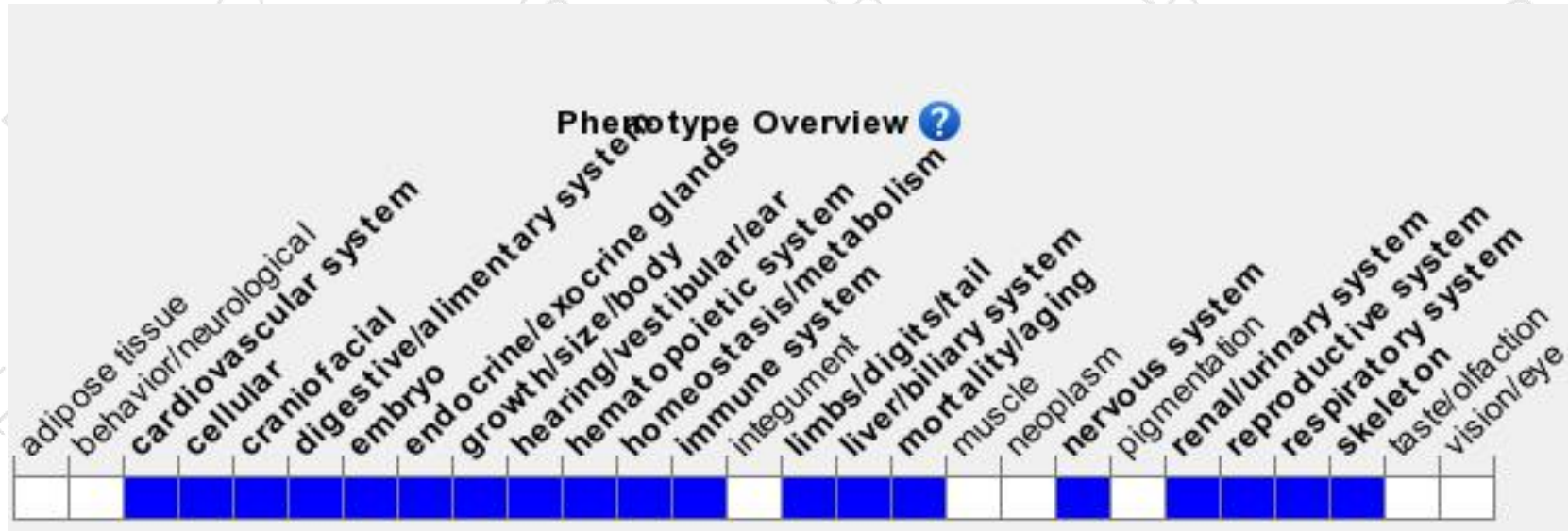




# Protein domain



# 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, Homozygous mutants exhibit caudal truncation with shortened anterior-posterior axis, truncation of the snout, tongue and mandible, short fore- and hindlimbs, which lack digits, absent genital tubercle and lung abnormalities. Mutants die perinatally.

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

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