

# *Col20a1* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Col20a1*

**Project type**

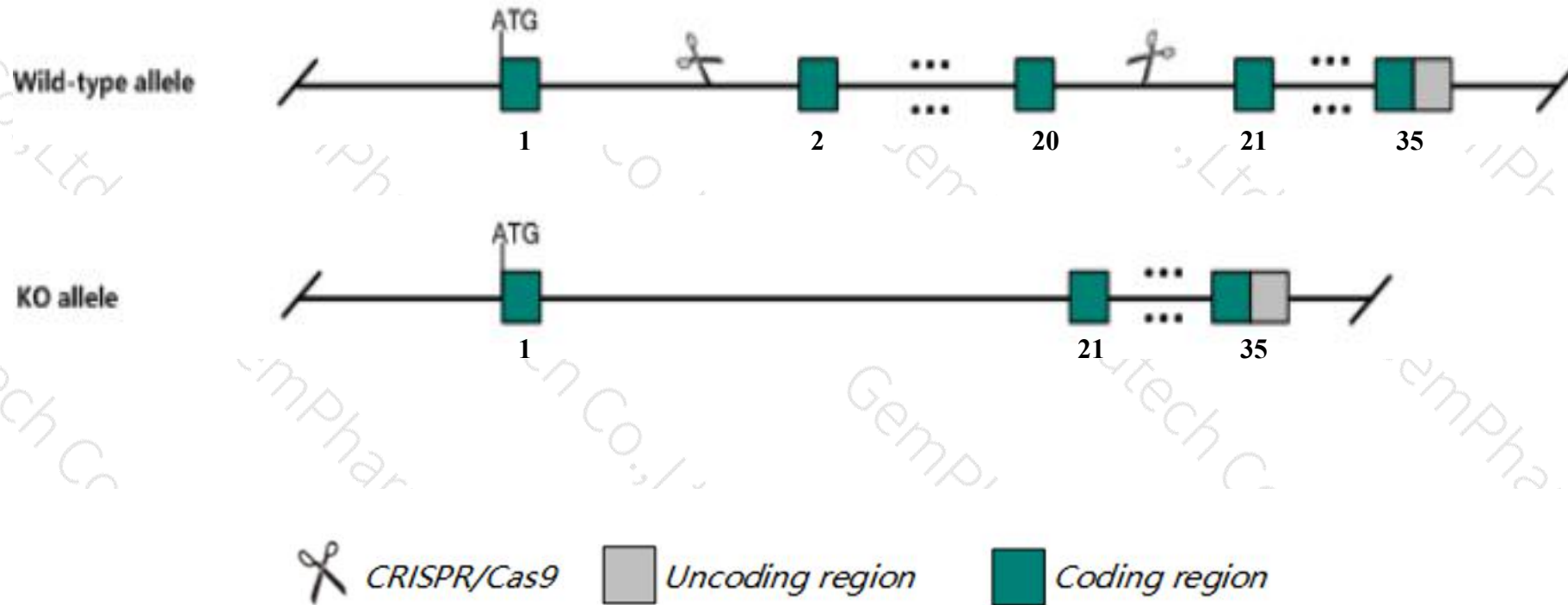
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Col20a1* gene. The schematic diagram is as follows:



- The *Col20a1* gene has 5 transcripts. According to the structure of *Col20a1* gene, exon2-exon20 of *Col20a1*-205(ENSMUST00000228434.1) transcript is recommended as the knockout region. The region contains 2578bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Col20a1* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, male mice homozygous for a mutation are viable and show normal fertility.
- Transcript 204 CDS 5' incomplete the influences is unknown.
- The *Col20a1* gene is located on the Chr2. 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)

## Col20a1 collagen, type XX, alpha 1 [Mus musculus (house mouse)]

Gene ID: 73368, updated on 13-Mar-2020

### Summary



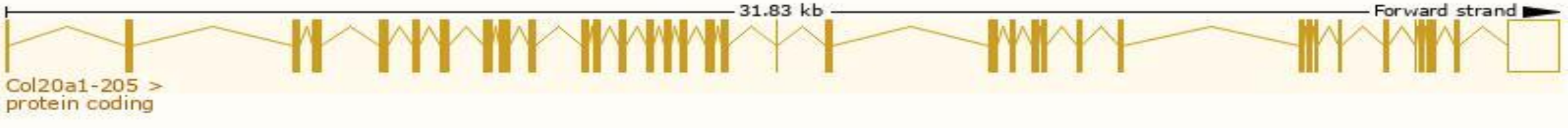
<b>Official Symbol</b>	Col20a1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	collagen, type XX, alpha 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1920618</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000016356</a>
<b>Gene type</b>	protein coding
<b>RefSeq 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>	1700051I12Rik
<b>Expression</b>	Ubiquitous expression in testis adult (RPKM 8.7), ovary adult (RPKM 3.1) and 26 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

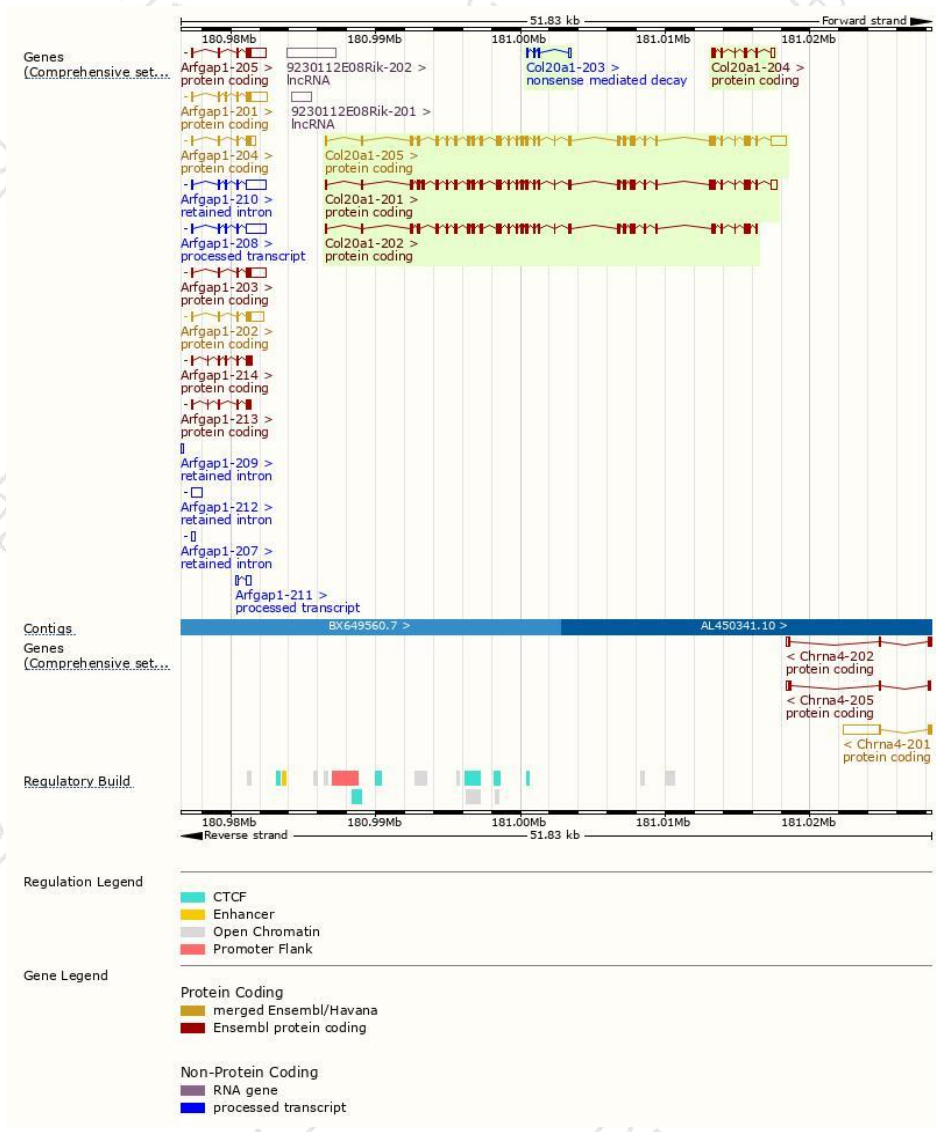
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Col20a1-205	<a href="#">ENSMUST00000228434.1</a>	5012	<a href="#">1320aa</a>	Protein coding	<a href="#">CCDS50844</a>	<a href="#">Q923P0</a>	GENCODE basic APPRIS P2
Col20a1-201	<a href="#">ENSMUST00000108856.8</a>	4489	<a href="#">1362aa</a>	Protein coding	-	<a href="#">A0A2K6EDL8</a>	TSL:5 GENCODE basic APPRIS ALT2
Col20a1-202	<a href="#">ENSMUST00000149179.8</a>	3867	<a href="#">1288aa</a>	Protein coding	-	<a href="#">F6UFI2</a>	TSL:5 GENCODE basic APPRIS ALT2
Col20a1-204	<a href="#">ENSMUST00000155425.1</a>	633	<a href="#">135aa</a>	Protein coding	-	<a href="#">F6ZZM4</a>	CDS 5' incomplete TSL:1
Col20a1-203	<a href="#">ENSMUST00000152473.1</a>	441	<a href="#">79aa</a>	Nonsense mediated decay	-	<a href="#">F6ZXI1</a>	CDS 5' incomplete TSL:5

The strategy is based on the design of *Col20a1-205* transcript,the transcription is shown below:



# Genomic location distribution

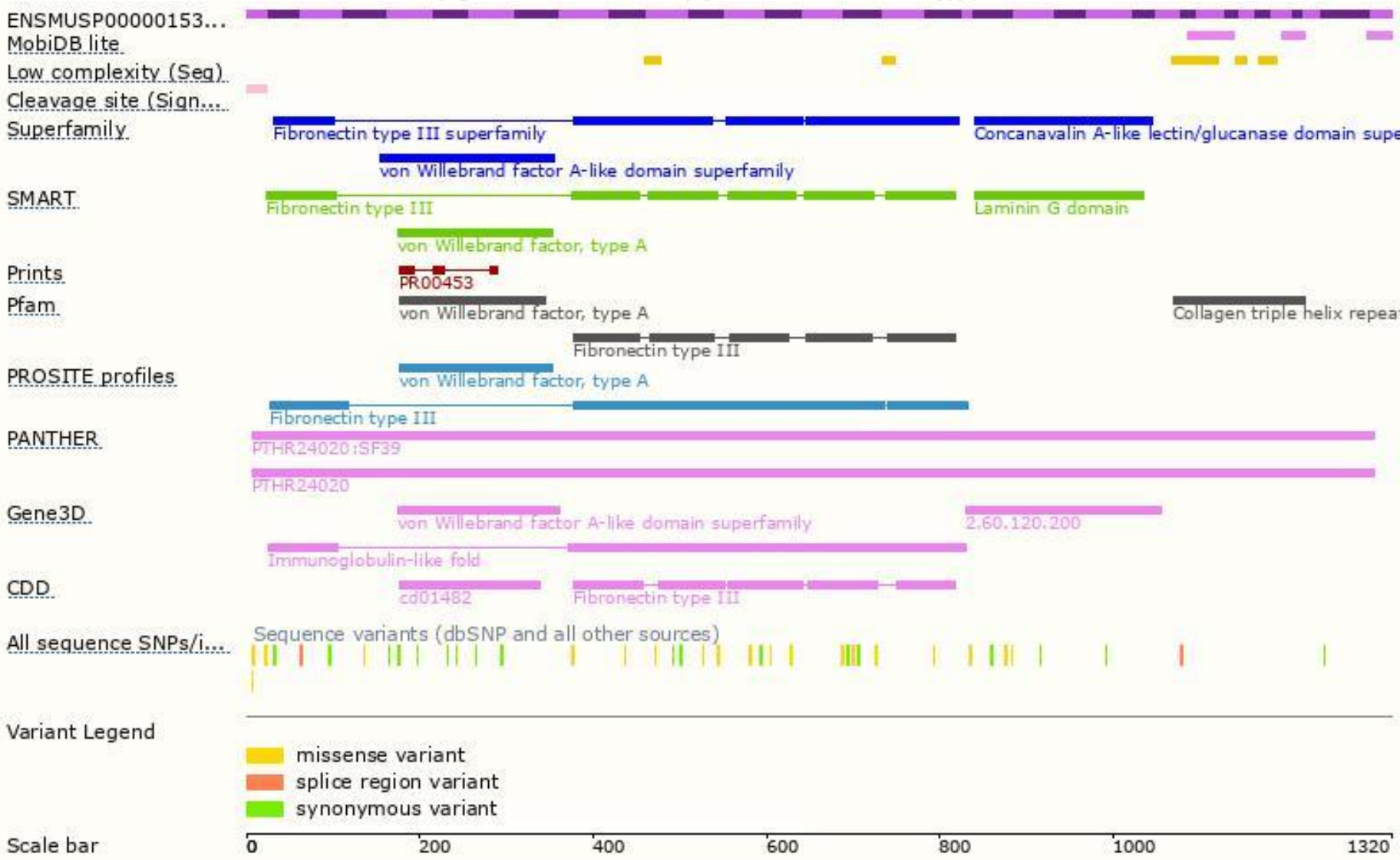




# Protein domain



集萃药康  
GemPharmatech



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

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