

# *Upk1a Cas9-KO Strategy*

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**Reviewer:**

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# Project Overview

**Project Name**

*Upk1a*

**Project type**

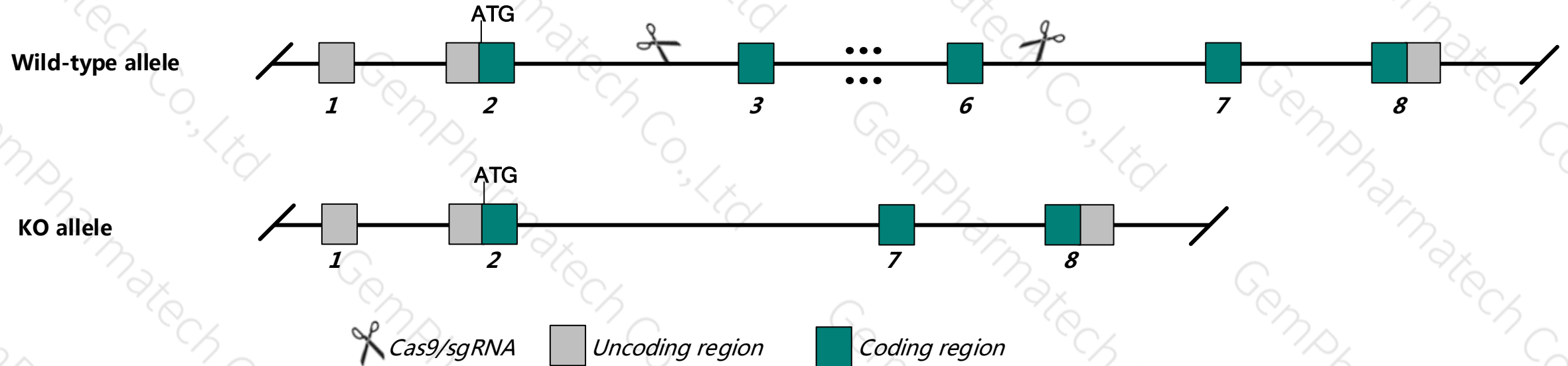
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Upk1a* gene. The schematic diagram is as follows:



# Technical routes

- The *Upk1a* gene has 1 transcript. According to the structure of *Upk1a* gene, exon3~exon6 of *Upk1a*- 201 (ENSMUST0000006476.5) transcript is recommended as the knockout region. The region contains 564bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Upk1a* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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 KO region deletes most of the coding sequence, but does not result in frameshift.
- The *Upk1a* 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 )



## Upk1a uroplakin 1A [ *Mus musculus* (house mouse) ]

Gene ID: 109637, updated on 24-Dec-2019

### Summary

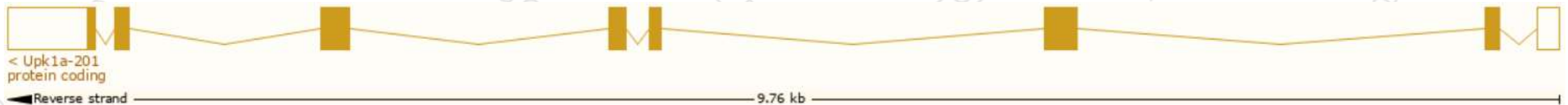
<b>Official Symbol</b>	Upk1a provided by <a href="#">MGI</a>
<b>Official Full Name</b>	uroplakin 1A provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:98911</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000006313</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	PROVISIONAL
<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>	Upk1; C87192; Tspan21; AU019298; 1110031P12Rik
<b>Expression</b>	Biased expression in bladder adult (RPKM 983.6), ovary adult (RPKM 86.0) and 1 other tissue <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information ( Ensembl )

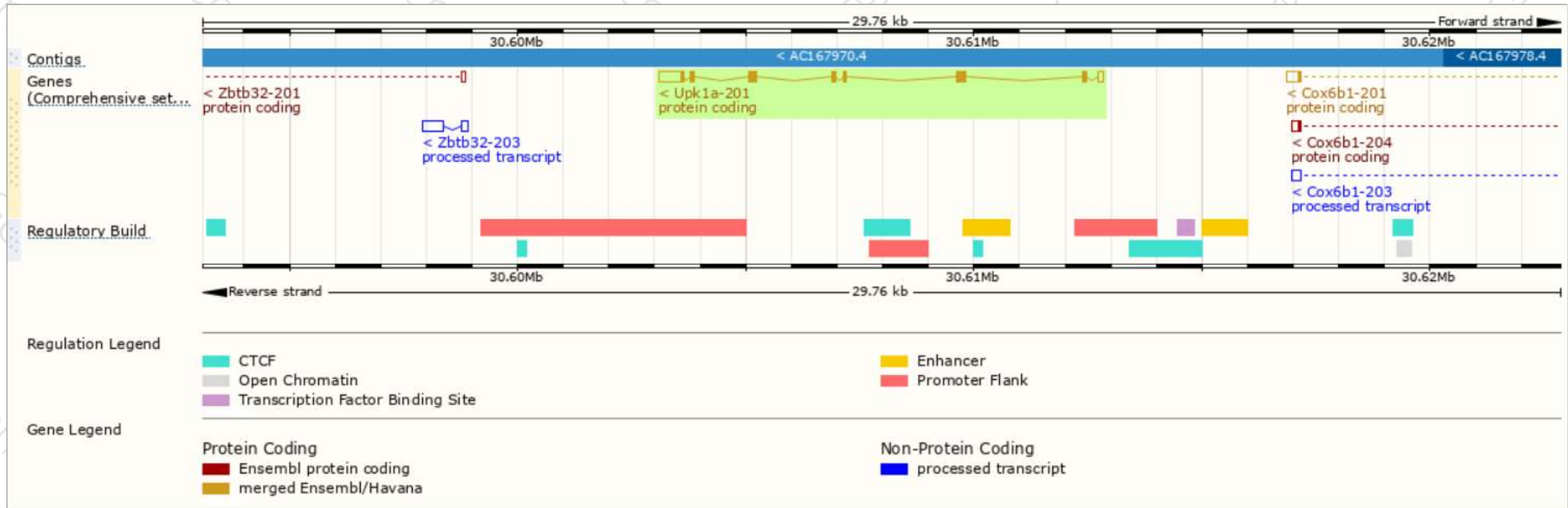
The gene has 1 transcript, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Upk1a-201	<a href="#">ENSMUST00000006476.5</a>	1421	<a href="#">257aa</a>	Protein coding	<a href="#">CCDS21103</a>	<a href="#">A2RSB9</a> <a href="#">Q9D132</a>	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Upk1a-201* transcript, the transcription is shown below:

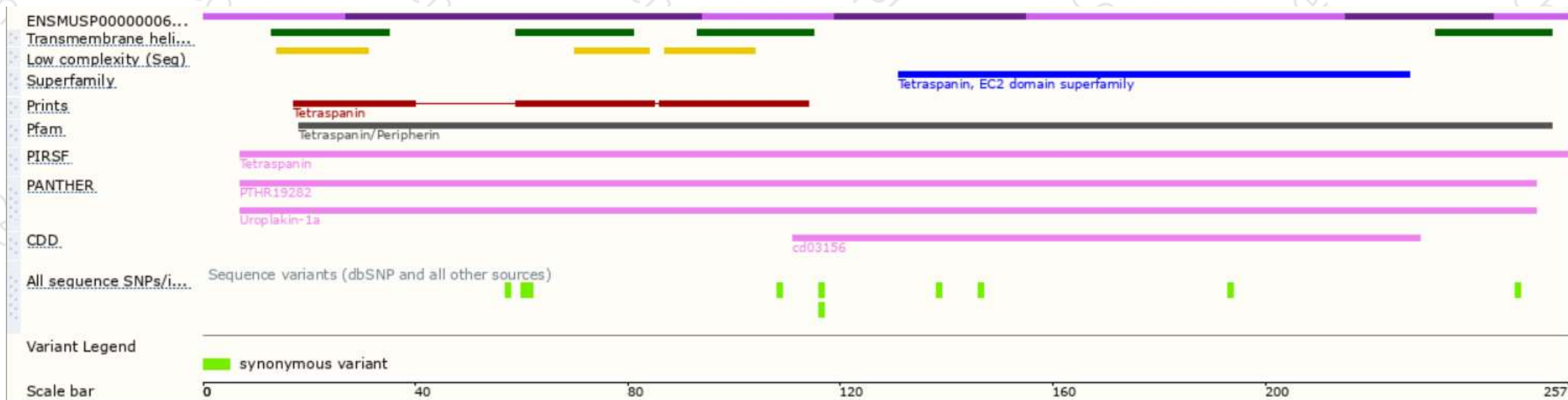


# Genomic location ( Ensembl )





# Protein domain ( Ensembl )



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

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