# *Vbp1* Cas9-KO *Strategy*

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# Project Overview

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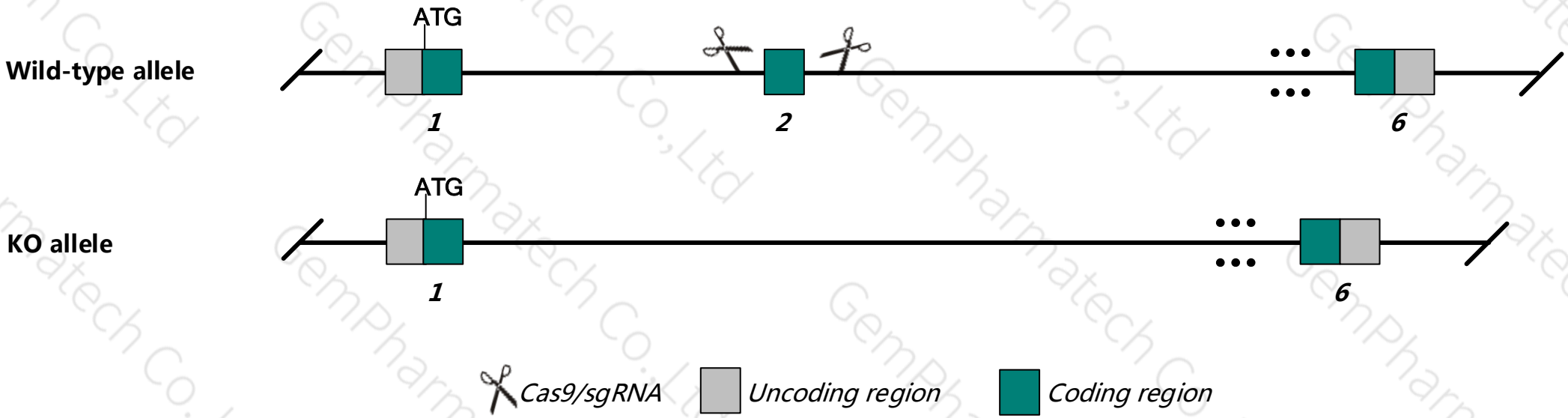
|---|---|
| **Project Name** | ***Vbp1*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vbp1* gene. The schematic diagram is as follows:



# Technical routes

- The *Vbp1* gene has 3 transcripts.According to the structure of *Vbp1* gene, exon2 of *Vbp1*-201 (ENSMUST00000033540.5) transcript is recommended as the knockout region.The region contains 125bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Vbp1* 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.

# Notice

- According to the existing MGI data，Male chimeras hemizygous for a gene trapped allele appear normal at E9.5.
- The *Vbp1* gene is located on the ChrX. 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 the gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information （NCBI）

## Vbp1 von Hippel-Lindau binding protein 1 [ *Mus musculus* (house mouse) ]

Gene ID: 22327, updated on 5-Aug-2018

### Summary

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|---|---|
| **Official Symbol** | Vbp1 provided by MGI |
| **Official Full Name** | von Hippel-Lindau binding protein 1 provided by MGI |
| **Primary source** | MGI:MGI:1333804 |
| **See related** | Ensembl:ENSMUSG00000031197 Vega:OTTMUSG00000020873 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | VBP-1 |
| **Expression** | Broad expression in CNS E18 (RPKM 30.1), CNS E14 (RPKM 25.7) and 15 other tissues See more |
| **Orthologs** | human all |

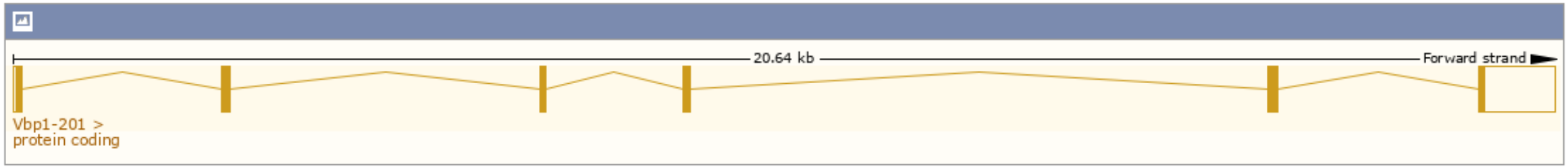
# Transcript information（ Ensembl ）

The gene has 3 transcripts, and all transcripts are shown below:

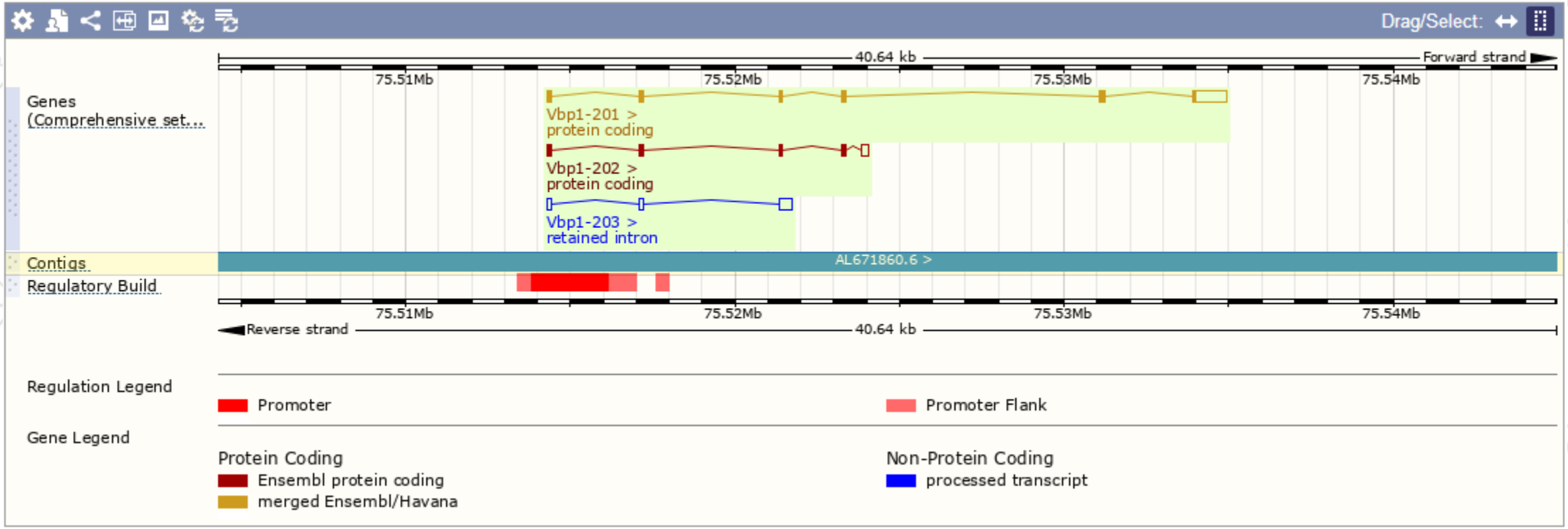
Show/hide columns (1 hidden) Filter

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | RefSeq | Flags |
|---|---|---|---|---|---|---|---|---|
| Vbp1-201 | ENSMUST00000033540.5 | 1595 | 196aa | Protein coding | CCDS41032 | P61759 | NM_011692 NP_035822 | TSL:1 GENCODE basic APPRIS P1 |
| Vbp1-202 | ENSMUST00000114070.9 | 632 | 130aa | Protein coding | - | Q3TIR6 | - | TSL:1 GENCODE basic |
| Vbp1-203 | ENSMUST00000123419.1 | 630 | No protein | Retained intron | - | - | - | TSL:2 |

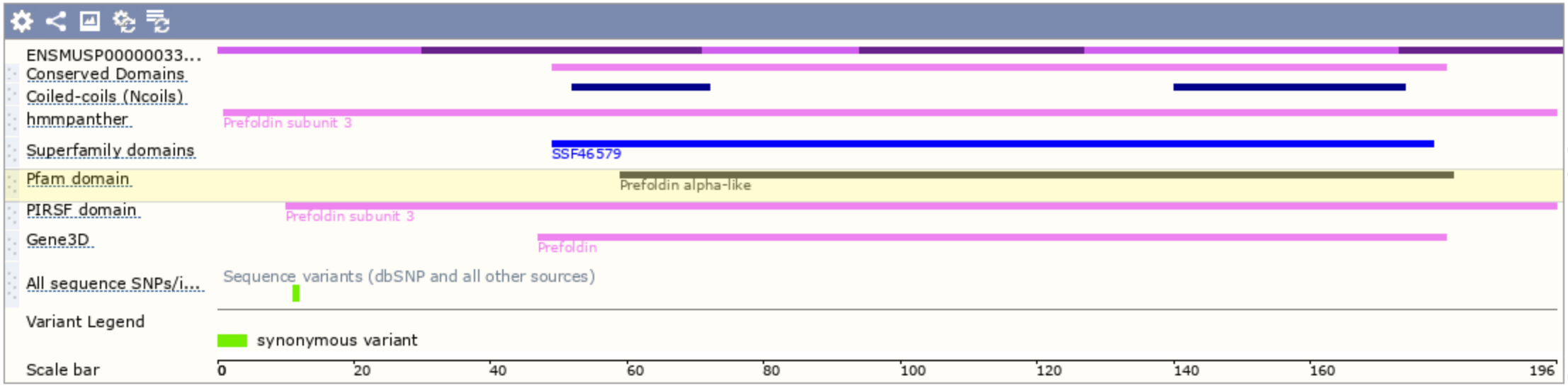
The strategy is based on the design of *Vbp1*-201 transcript,The transcription is shown below



# 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,Male chimeras hemizygous for a gene trapped allele appear normal at E9.5.

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

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