# *Hmgn3* Cas9-KO Strategy


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**Reviewer:** Xueting Zhang


**Design Date:** 2019-11-12

# Project Overview

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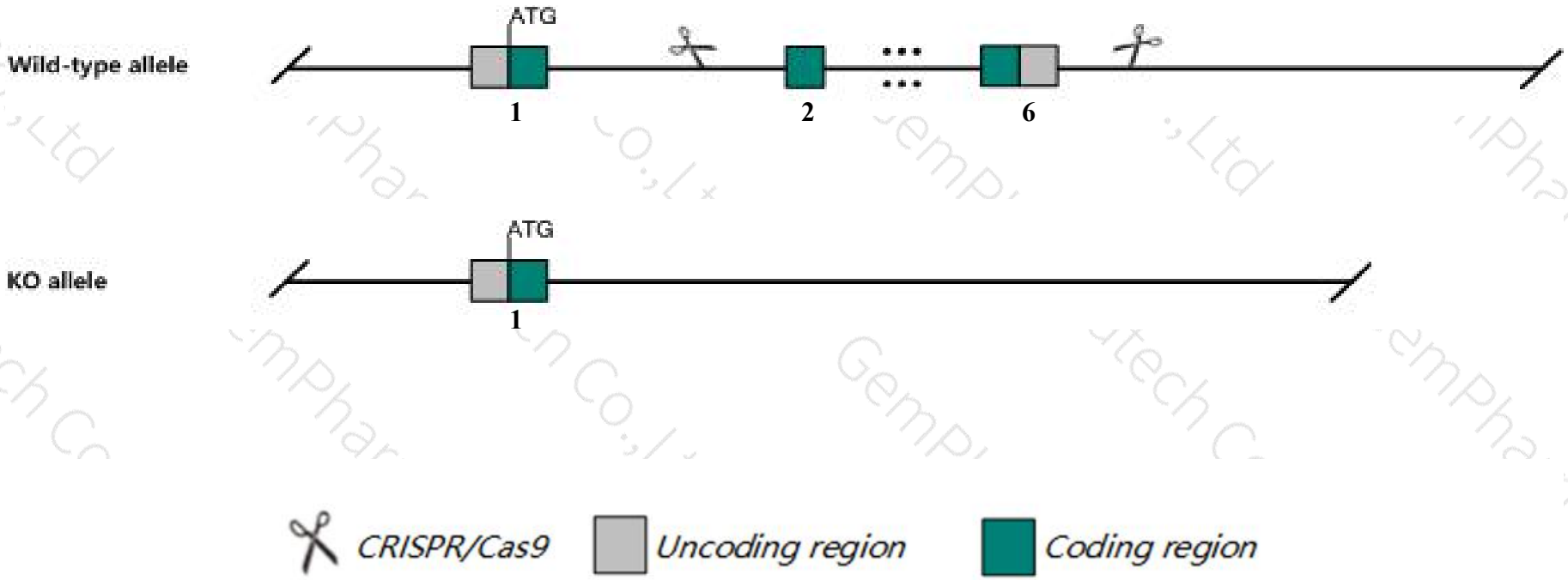
| **Project Name** | ***Hmgn3*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hmgn3* gene. The schematic diagram is as follows:



# Technical routes

➢ The *Hmgn3* gene has 9 transcripts. According to the structure of *Hmgn3* gene, exon2-exon6 of *Hmgn3-202* (ENSMUST00000162246.8) 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 *Hmgn3* gene. The brief process is as follows: CRISPR/Cas9 syster

# Notice

➢ According to the existing MGI data,Mice homozygous for a null allele exhibit impaired glucose tolerance with decreased insulin serum levels and increased glucose serum levels during feeding.

➢ *Gm2065-201* will be knockout.

➢ The *Hmgn3* gene is located on the Chr9. 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）

集萃药康 GemPharmatech

## Hmgn3 high mobility group nucleosomal binding domain 3 [ *Mus musculus* (house mouse) ]

Gene ID: 94353, updated on 12-Aug-2019

### Summary

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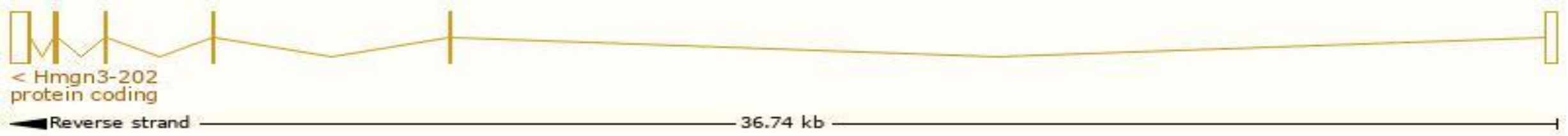
|---|---|
| **Official Symbol** | Hmgn3 provided by MGI |
| **Official Full Name** | high mobility group nucleosomal binding domain 3 provided by MGI |
| **Primary source** | MGI:MGI:2138069 |
| **See related** | Ensembl:ENSMUSG00000066456 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | TRIP7; BB071015; 1110002A15Rik; 6330514M13Rik |
| **Expression** | Biased expression in CNS E18 (RPKM 41.8), CNS E14 (RPKM 31.6) and 12 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

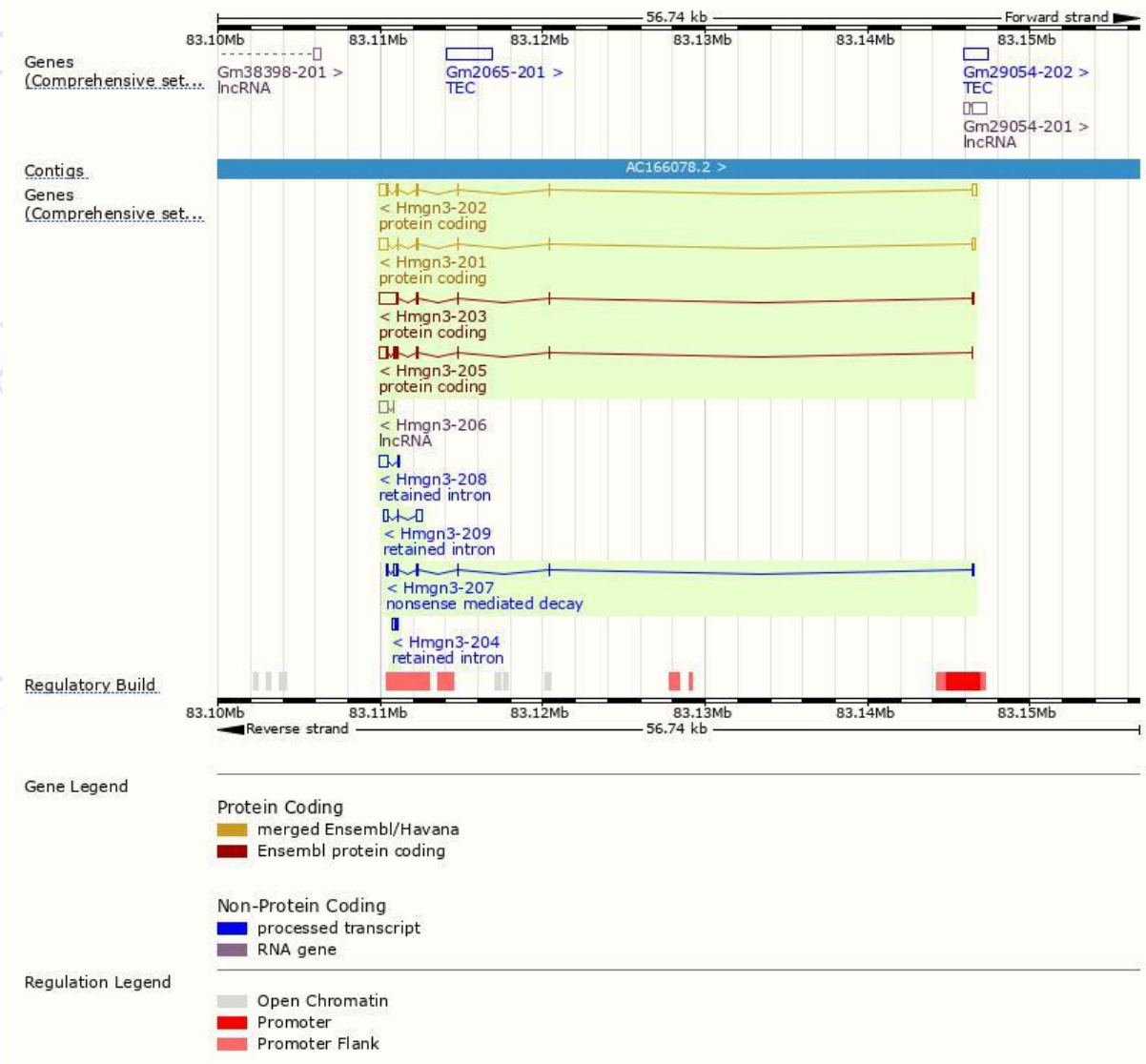
The gene has 9 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| Hmgn3-202 | ENSMUST00000162246.8 | 983 | 99aa | Protein coding | CCDS52872 | Q9DCB1 | TSL:1 GENCODE basic APPRIS P1 |
| Hmgn3-201 | ENSMUST00000161796.8 | 862 | 77aa | Protein coding | CCDS52873 | Q9DCB1 | TSL:1 GENCODE basic |
| Hmgn3-203 | ENSMUST00000185315.6 | 1391 | 95aa | Protein coding | - | Q9DCB1 | TSL:2 GENCODE basic |
| Hmgn3-205 | ENSMUST00000187193.6 | 855 | 128aa | Protein coding | - | A0A087WSB8 | TSL:5 GENCODE basic |
| Hmgn3-207 | ENSMUST00000190154.1 | 546 | 95aa | Nonsense mediated decay | - | Q9DCB1 | TSL:5 |
| Hmgn3-209 | ENSMUST00000191105.1 | 671 | No protein | Retained intron | - | - | TSL:2 |
| Hmgn3-208 | ENSMUST00000190580.1 | 560 | No protein | Retained intron | - | - | TSL:2 |
| Hmgn3-204 | ENSMUST00000185359.1 | 256 | No protein | Retained intron | - | - | TSL:3 |
| Hmgn3-206 | ENSMUST00000189777.1 | 533 | No protein | lncRNA | - | - | TSL:3 |

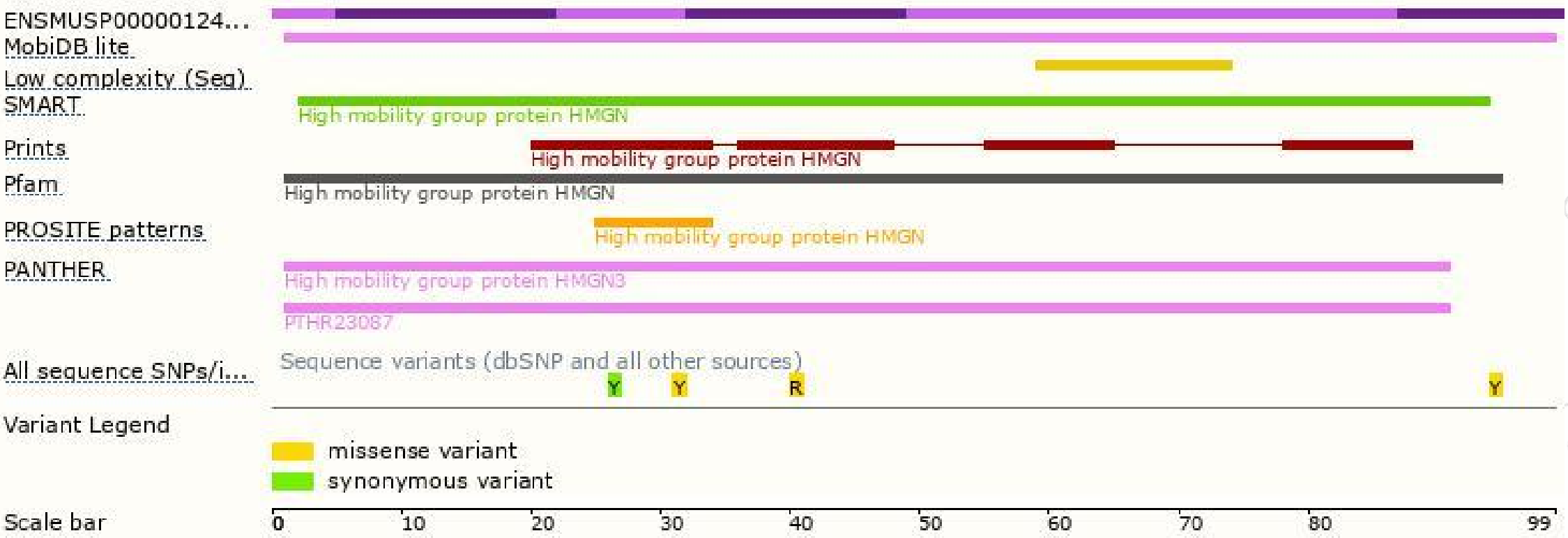
The strategy is based on the design of *Hmgn3-202* transcript,The transcription is shown below



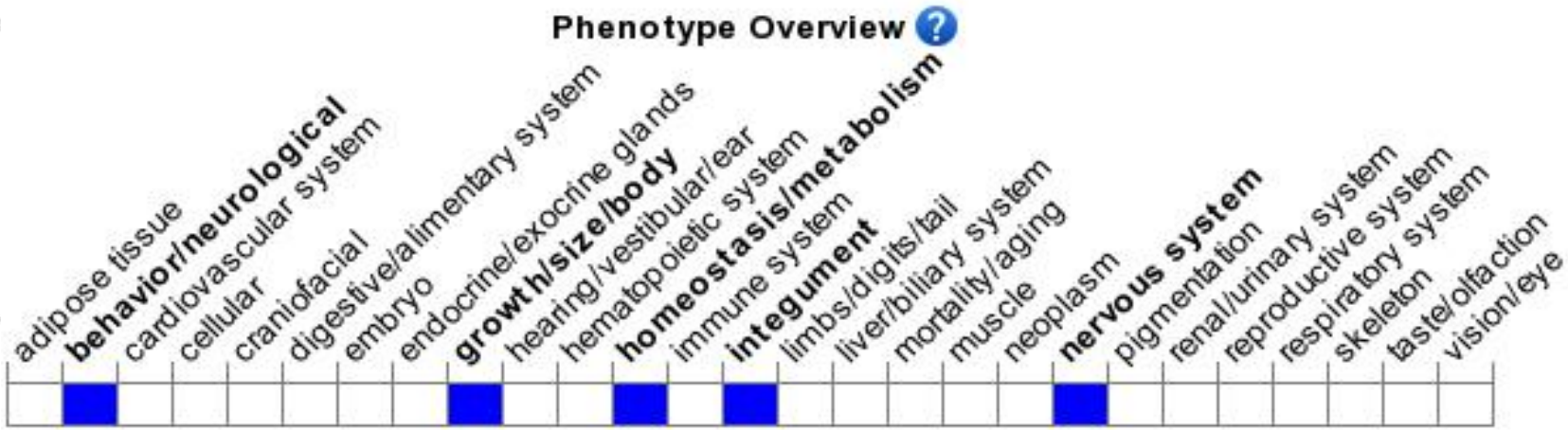
# Genomic location distribution



# 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 null allele exhibit impaired glucose tolerance with decreased insulin serum levels and increased glucose serum levels during feeding.

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

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