# *Igfbp7* Cas9-KO Strategy

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# Project Overview

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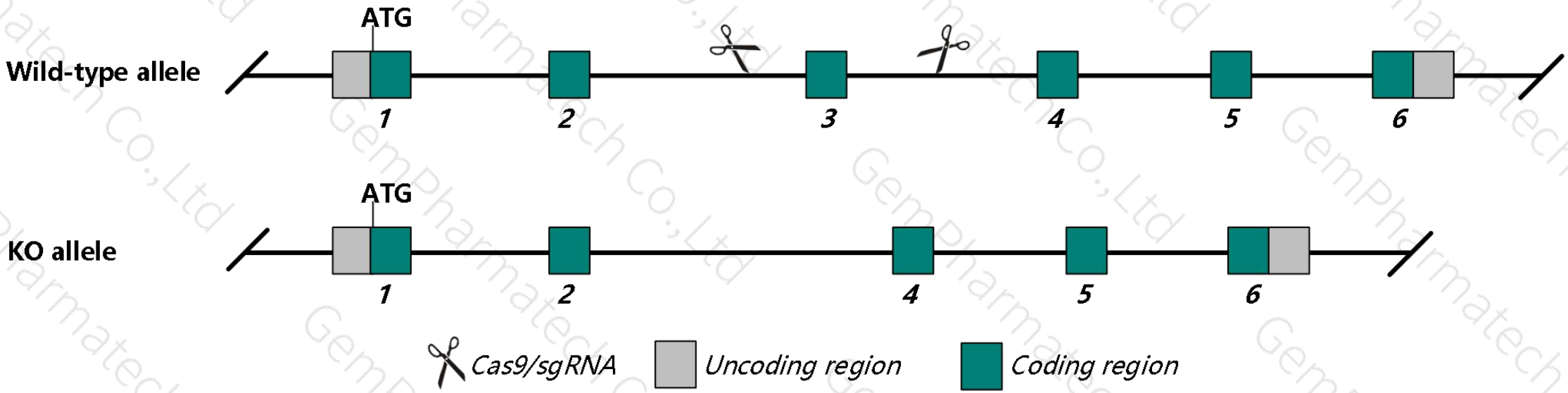
|---|---|
| **Project Name** | ***Igfbp7*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6J** |

# Knockout strategy



# Technical routes

- The *Igfbp7* gene has 2 transcripts. According to the structure of *Igfbp7* gene, exon3 of *Igfbp7-202* ( ENSMUST00000163898.5) transcript is recommended as the knockout region.The region contains 110bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Igfbp7* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

# Notice

- According to the existing MGI data,mice homozygous for a null allele exhibit retarded mammary gland developmental in virgin and adult females, reduced mammary gland size and alveolar density during pregnancy, precocious involution in lactating mammary glands, and abnormal milk composition.

- The *Igfbp7* gene is located on the Chr5. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

# Gene information（NCBI）

集萃药康 GemPharmatech

## Igfbp7 insulin-like growth factor binding protein 7 [Mus musculus (house mouse)]

Gene ID: 29817, updated on 5-Feb-2019

### Summary

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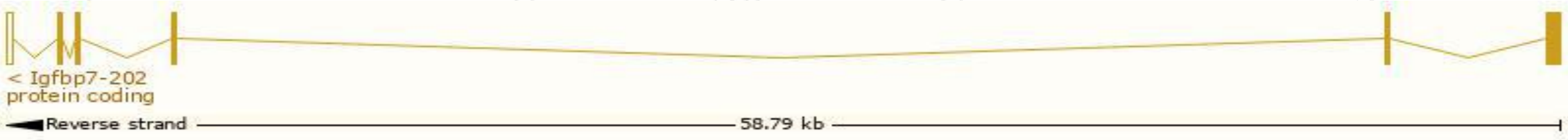
|---|---|
| **Official Symbol** | Igfbp7 provided by MGI |
| **Official Full Name** | insulin-like growth factor binding protein 7 provided by MGI |
| **Primary source** | MGI:MGI:1352480 |
| **See related** | Ensembl:ENSMUSG00000036256 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | AGM, Fstl2, Mac25 |
| **Expression** | Biased expression in adrenal adult (RPKM 2884.8), ovary adult (RPKM 2858.2) and 11 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

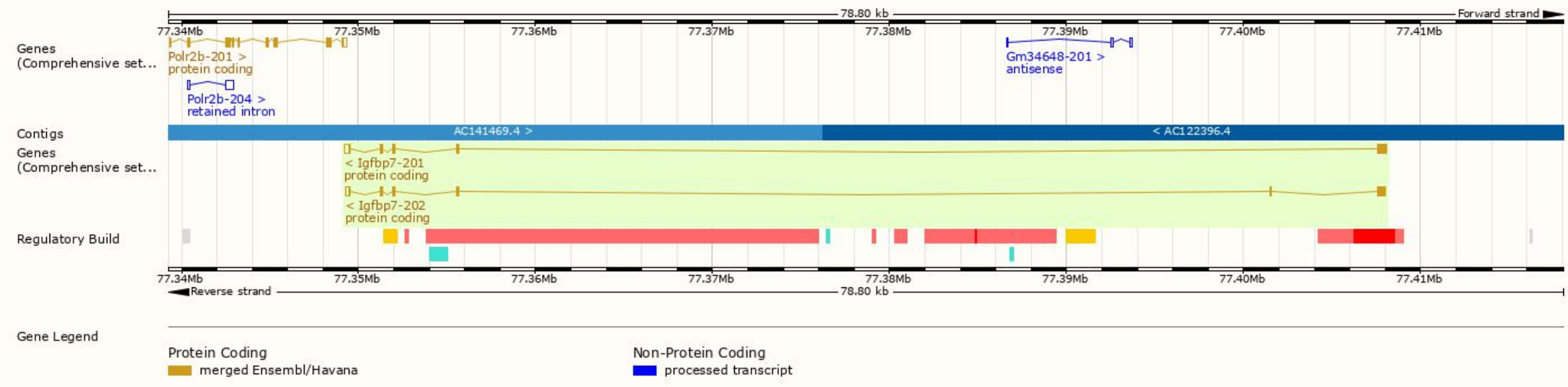
The gene has 2 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| Igfbp7-202 | ENSMUST00000163898.5 | 1200 | 313aa | Protein coding | CCDS51530 | E9Q5D9 | TSL:5 GENCODE basic APPRIS P4 |
| Igfbp7-201 | ENSMUST00000046746.9 | 1116 | 282aa | Protein coding | CCDS51529 | F8WH23 | TSL:1 GENCODE basic APPRIS ALT2 |

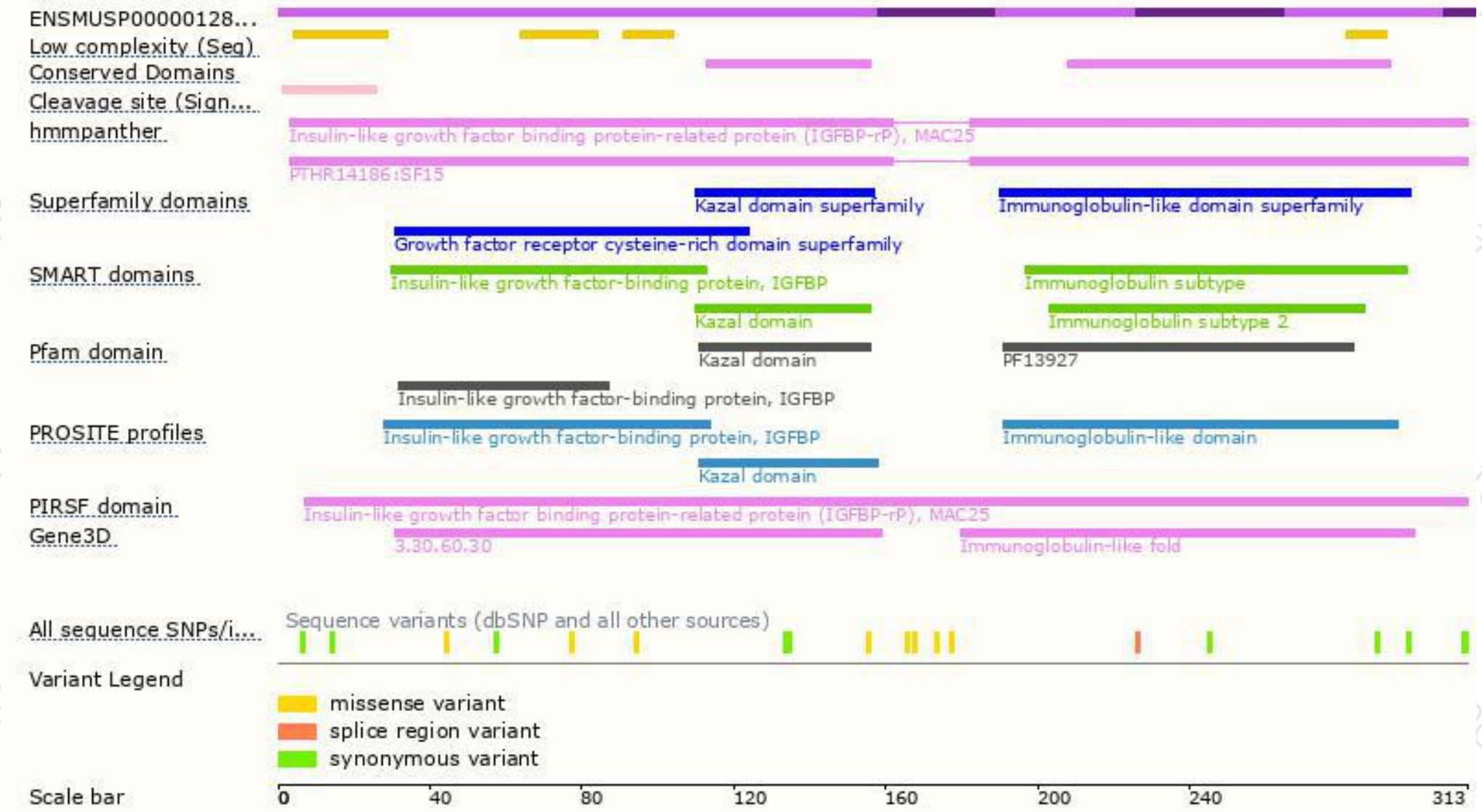
The strategy is based on the design of *Igfbp7-202* transcript,the transcription is shown below:



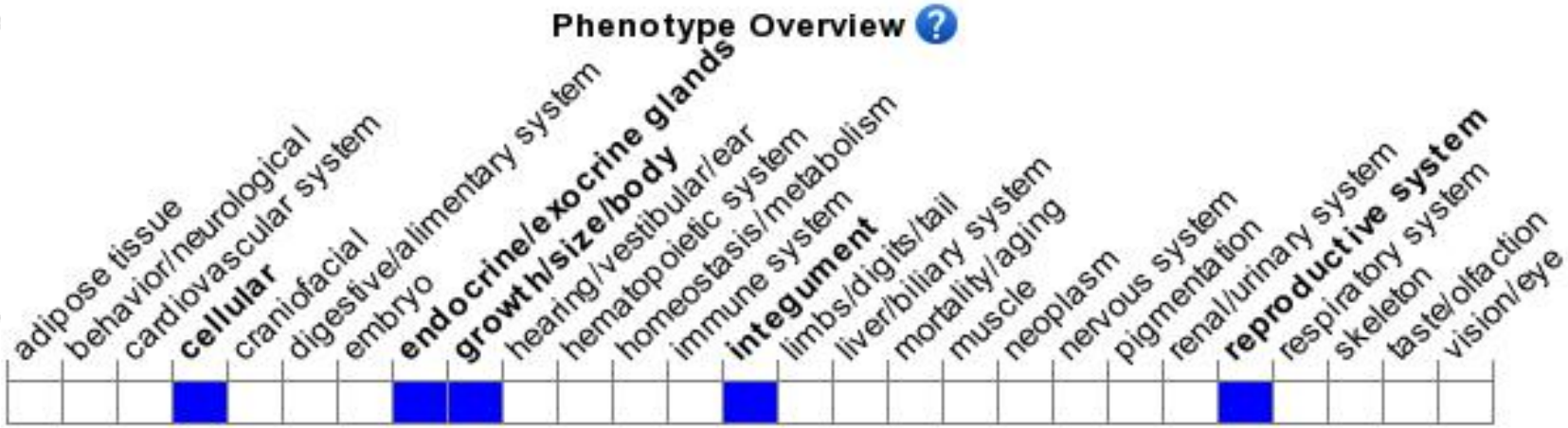
# Genomic location distribution



# 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/).*

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

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