# *Id1* Cas9-KO Strategy

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**Design Date:** 2019-11-26

# Project Overview

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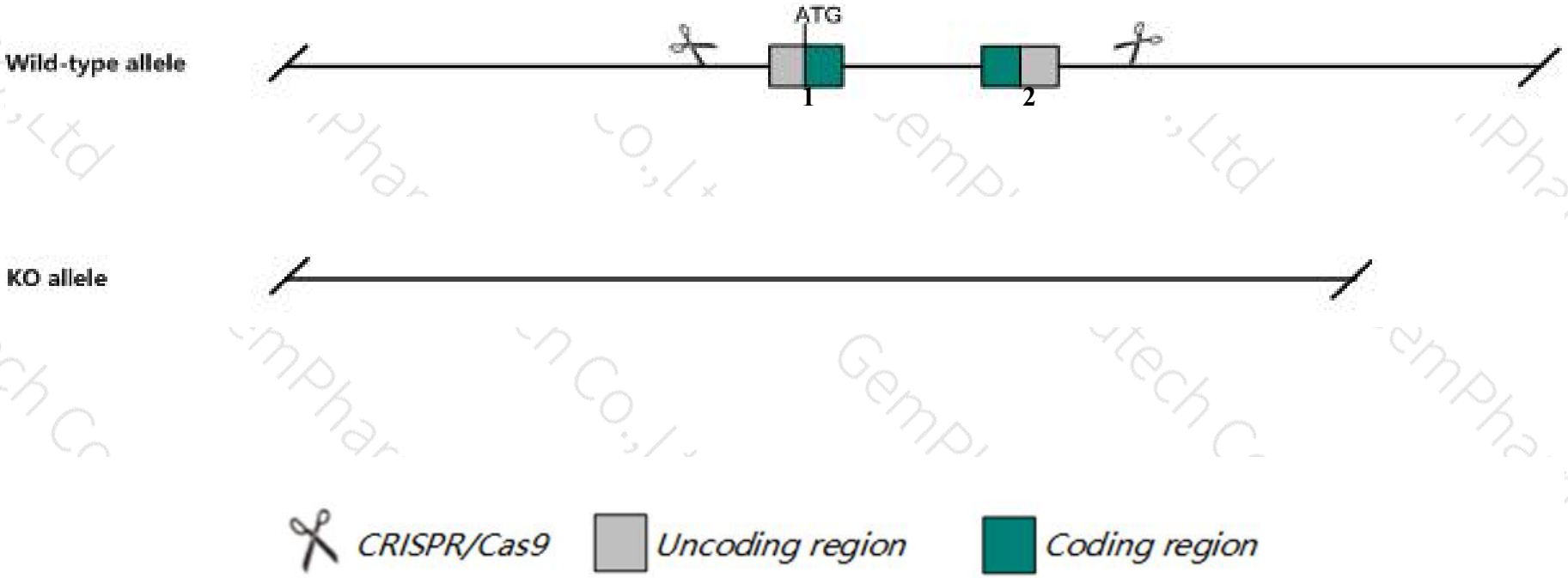
|---|---|
| **Project Name** | ***Id1*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Id1* gene. The schematic diagram is as follows:



# Technical routes

➢ The *Id1* gene has 2 transcripts. According to the structure of *Id1* gene, exon1-exon2 of *Id1-201* (ENSMUST00000038368.8) transcript is recommended as the knockout region.The region contains all 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 *Id1* gene. The brief process is as follows: CRISPR/Cas9 system we

# Notice

- According to the existing MGI data,Homozygotes for knockout alleles of both Id1 and Id3 exhibit vascular malformations in the forebrain, lack of vascular branching and sprouting in the neuroectoderm, and impaired angiogenesis in transplanted and spontaneous tumors.

- The *Id1* 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）

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## Id1 inhibitor of DNA binding 1, HLH protein [Mus musculus (house mouse)]

Gene ID: 15901, updated on 19-Mar-2019

### Summary

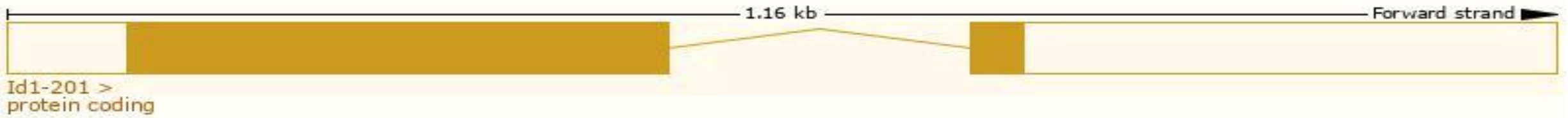
| | |
|---|---|
| **Official Symbol** | Id1 provided by MGI |
| **Official Full Name** | inhibitor of DNA binding 1, HLH protein provided by MGI |
| **Primary source** | MGI:MGI:96396 |
| **See related** | Ensembl:ENSMUSG00000042745 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | AI323524, D2Wsu140e, Idb1, bHLHb24 |
| **Expression** | Broad expression in stomach adult (RPKM 416.7), colon adult (RPKM 399.7) and 22 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

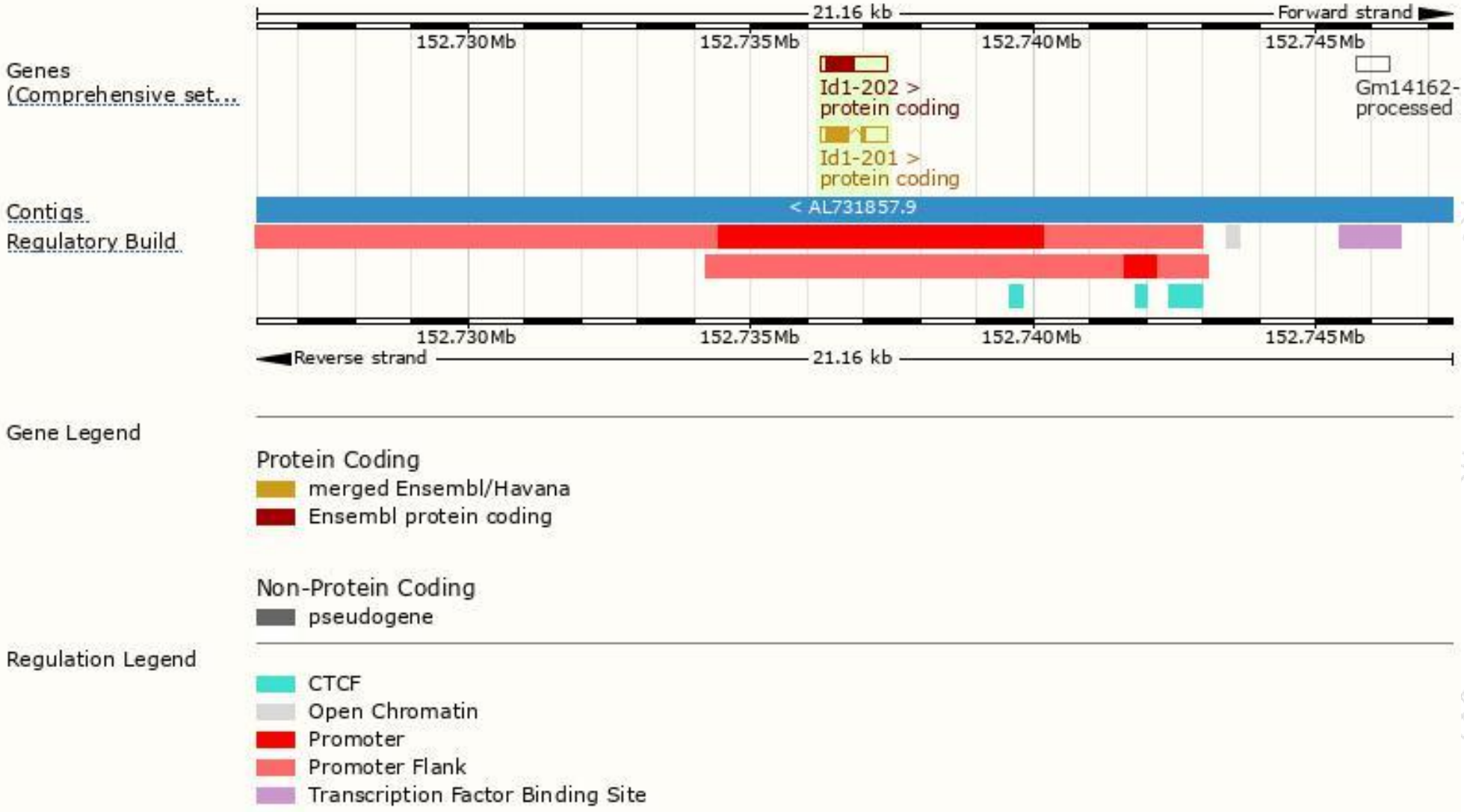
The gene has 2 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| Id1-201 | ENSMUST00000038368.8 | 934 | 148aa | Protein coding | CCDS16897 | P20067 Q6GTZ3 | TSL:1 GENCODE basic APPRIS P2 |
| Id1-202 | ENSMUST00000109824.1 | 1160 | 168aa | Protein coding | - | A2AHY3 | TSL:NA GENCODE basic APPRIS ALT2 |

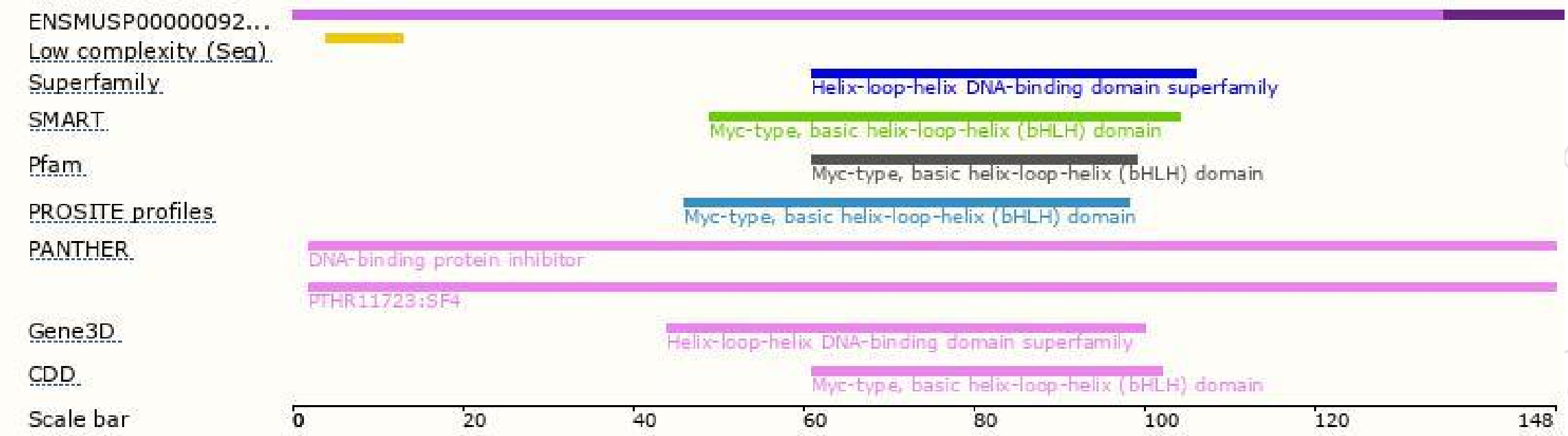
The strategy is based on the design of *Id1-201* transcript,The transcription is shown below



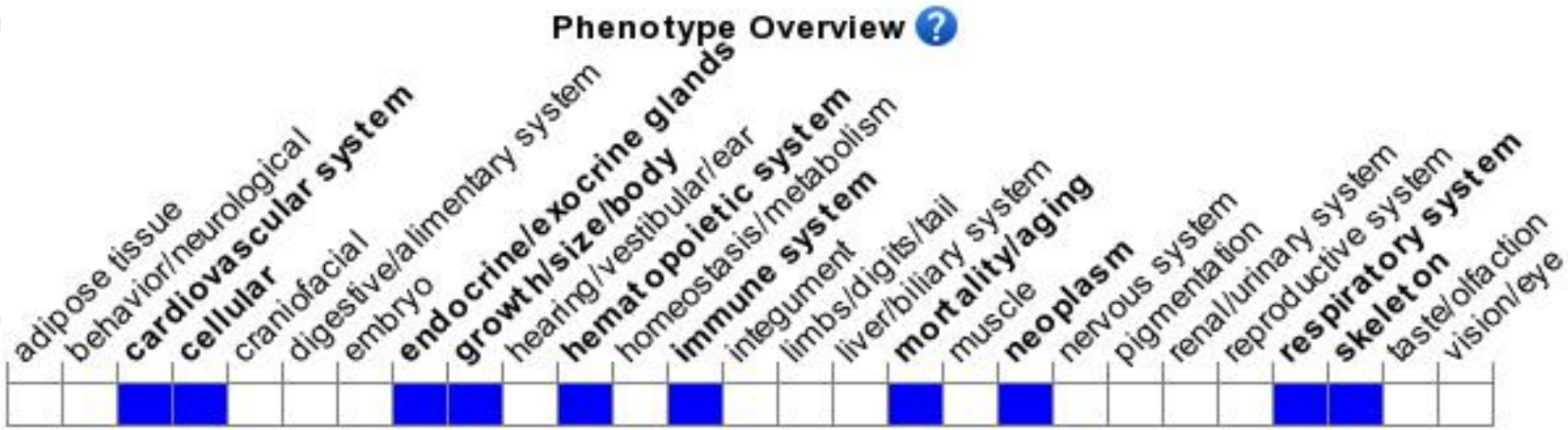
# Genomic location distribution



# 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,Homozygotes for knockout alleles of both Id1 and Id3 exhibit vascular malformations in the forebrain, lack of vascular branching and sprouting in the neuroectoderm, and impaired angiogenesis in transplanted and spontaneous tumors.

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

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