

Hmga2 Cas9-KO Strategy

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Project Overview

Project Name

Hmga2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hmga2* gene. The schematic diagram is as follows:



- The *Hmga2* gene has 3 transcripts. According to the structure of *Hmga2* gene, exon1-exon3 of *Hmga2-203* (ENSMUST00000159699.1) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hmga2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for null mutations exhibit proportionate dwarfing with a significant reduction in body weight, reduced amounts of fat tissue, and infertility in both sexes. Mutants have normal growth hormone levels.
- In this strategy, the exon1-exon3 code is deleted and the starting codon ATG is deleted, which may generate new ATG translation unknown protein
- The *Hmga2* gene is located on the Chr10. 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)

Hmga2 high mobility group AT-hook 2 [*Mus musculus* (house mouse)]

Gene ID: 15364, updated on 12-Nov-2019

Summary

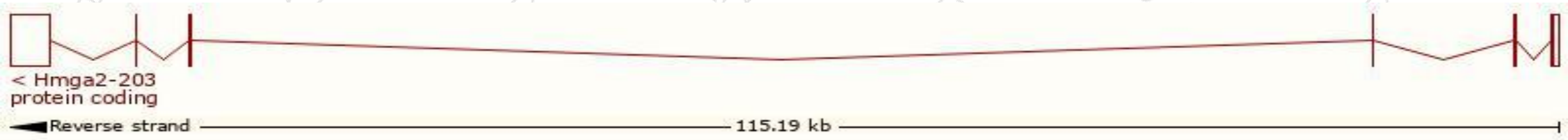
Official Symbol	Hmga2 provided by MGI
Official Full Name	high mobility group AT-hook 2 provided by MGI
Primary source	MGI:MGI:101761
See related	Ensembl:ENSMUSG000000056758
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	pg; Hmgic; pygmy; HMGI-C; 9430083A20Rik
Expression	Biased expression in CNS E11.5 (RPKM 40.3), limb E14.5 (RPKM 26.9) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

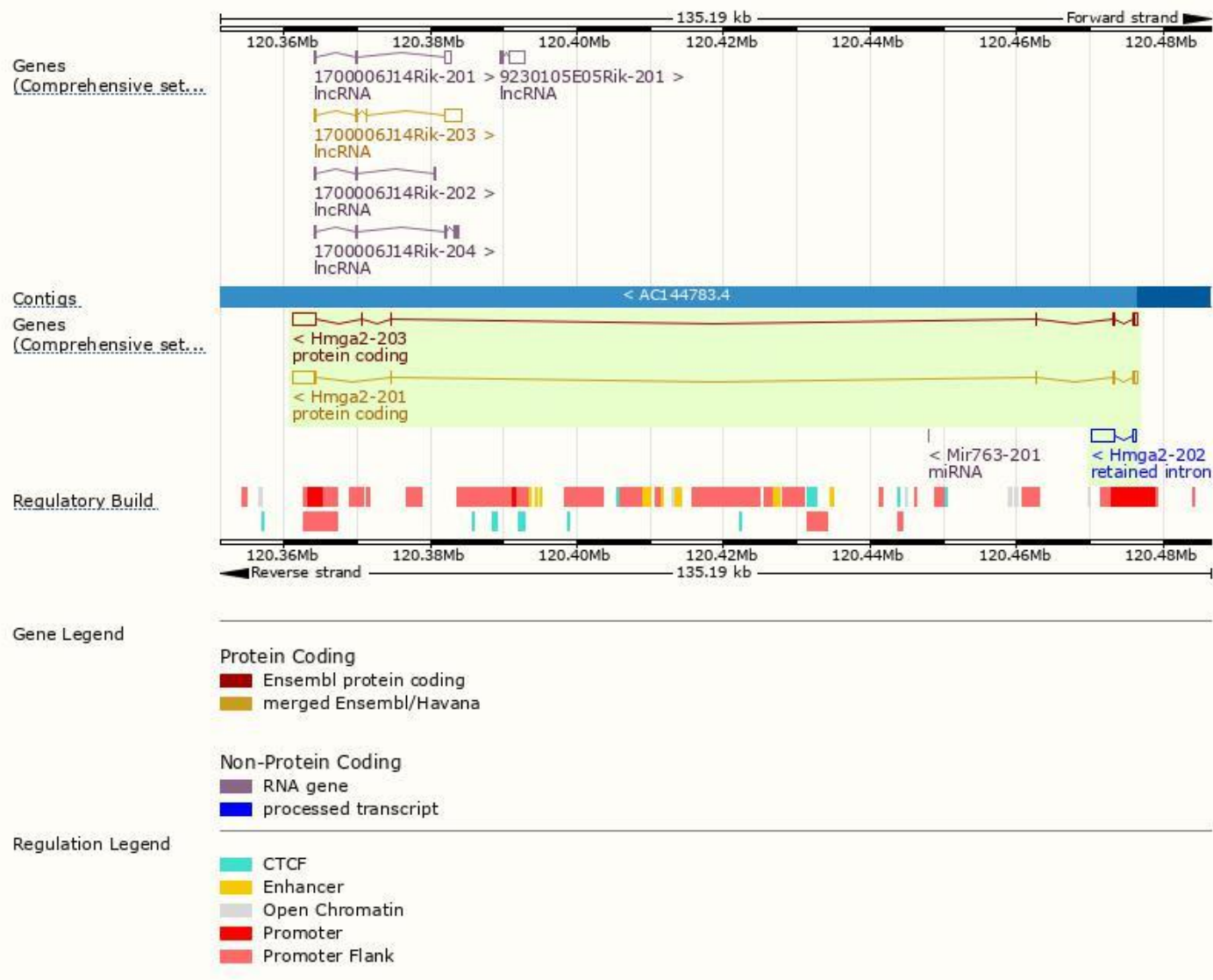
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hmga2-203	ENSMUST00000159699.1	3810	129aa	Protein coding	CCDS83758	Q6NSP9	TSL:1 GENCODE basic
Hmga2-201	ENSMUST00000072777.13	3710	108aa	Protein coding	CCDS36073	P52927	TSL:1 GENCODE basic APPRIS P1
Hmga2-202	ENSMUST00000159310.1	3389	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Hmga2-203* transcript,The transcription is shown below



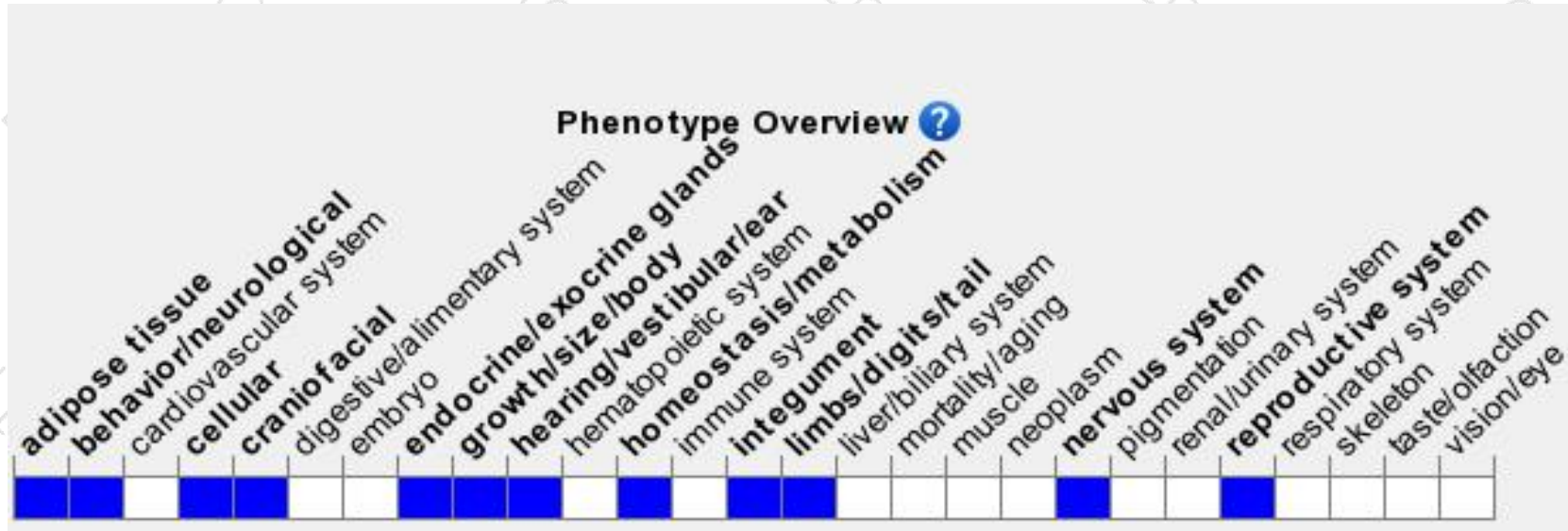
Genomic location distribution



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 null mutations exhibit proportionate dwarfing with a significant reduction in body weight, reduced amounts of fat tissue, and infertility in both sexes. Mutants have normal growth hormone levels.

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

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