

Acap2 Cas9-CKO Strategy

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Project Overview

Project Name

Acap2

Project type

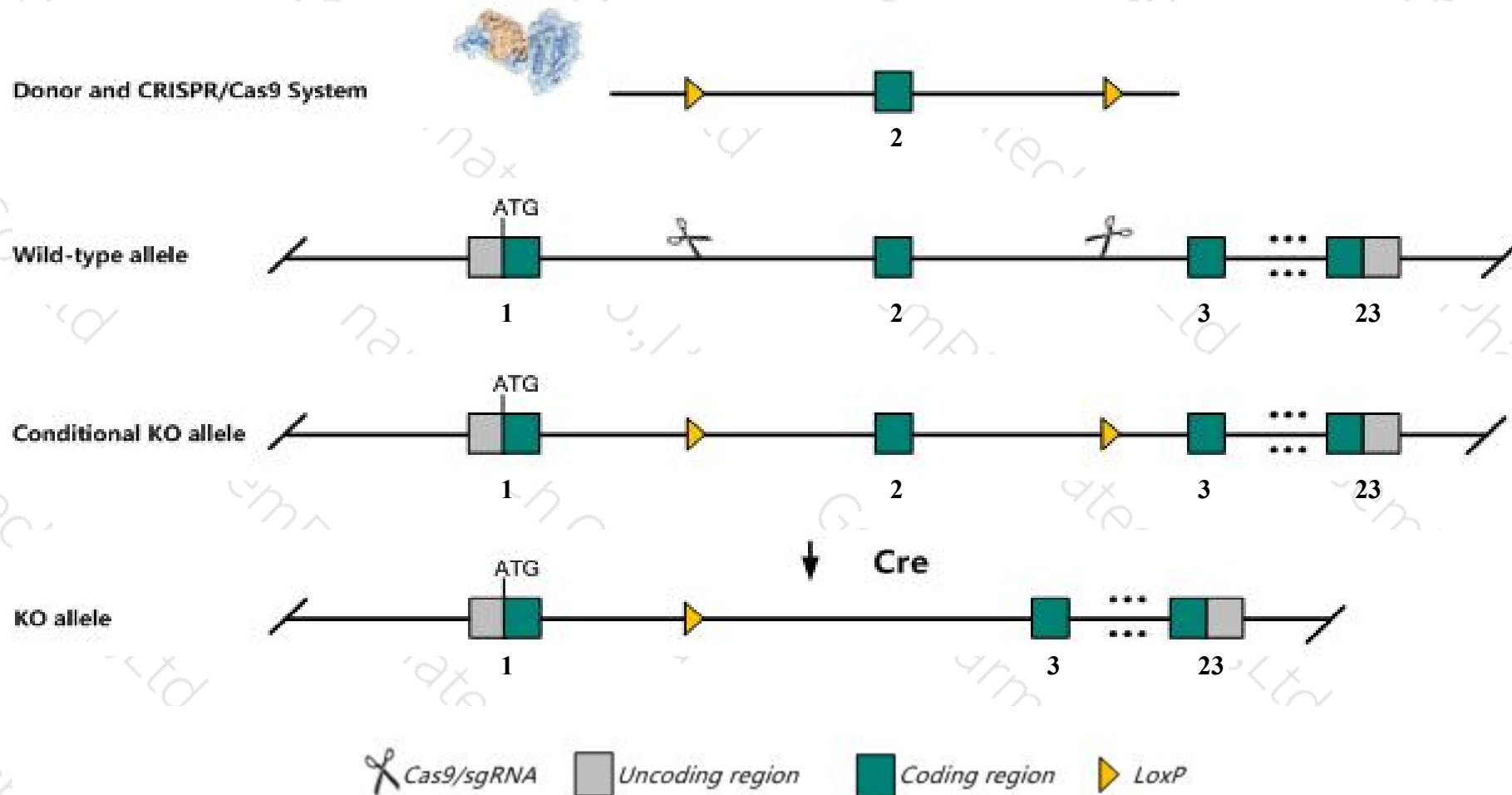
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acap2* gene. The schematic diagram is as follows:



Technical routes

- The *Acap2* gene has 7 transcripts. According to the structure of *Acap2* gene, exon2 of *Acap2*-203(ENSMUST00000230614.1) transcript is recommended as the knockout region. The region contains 58bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acap2* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor 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.
- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- The *Acap2* gene is located on the Chr16. 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.
- Transcript *Acap2*-205 may not be affected.
- The effect on transcript *Acap2*-207 is unknown.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Acap2 ArfGAP with coiled-coil, ankyrin repeat and PH domains 2 [Mus musculus (house mouse)]

Gene ID: 78618, updated on 13-Mar-2020

Summary



Official Symbol Acap2 provided by [MGI](#)

Official Full Name ArfGAP with coiled-coil, ankyrin repeat and PH domains 2 provided by [MGI](#)

Primary source [MGI:MGI:1925868](#)

See related [Ensembl:ENSMUSG00000049076](#)

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 4832442G16, 9530039J15Rik, CNT-B2, Centb2, mKIAA0041

Expression Ubiquitous expression in bladder adult (RPKM 7.0), frontal lobe adult (RPKM 5.5) and 28 other tissues [See more](#)

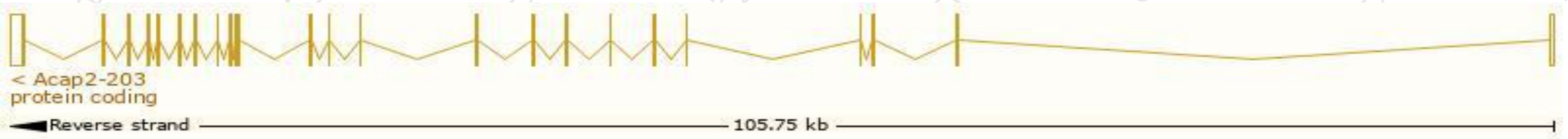
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

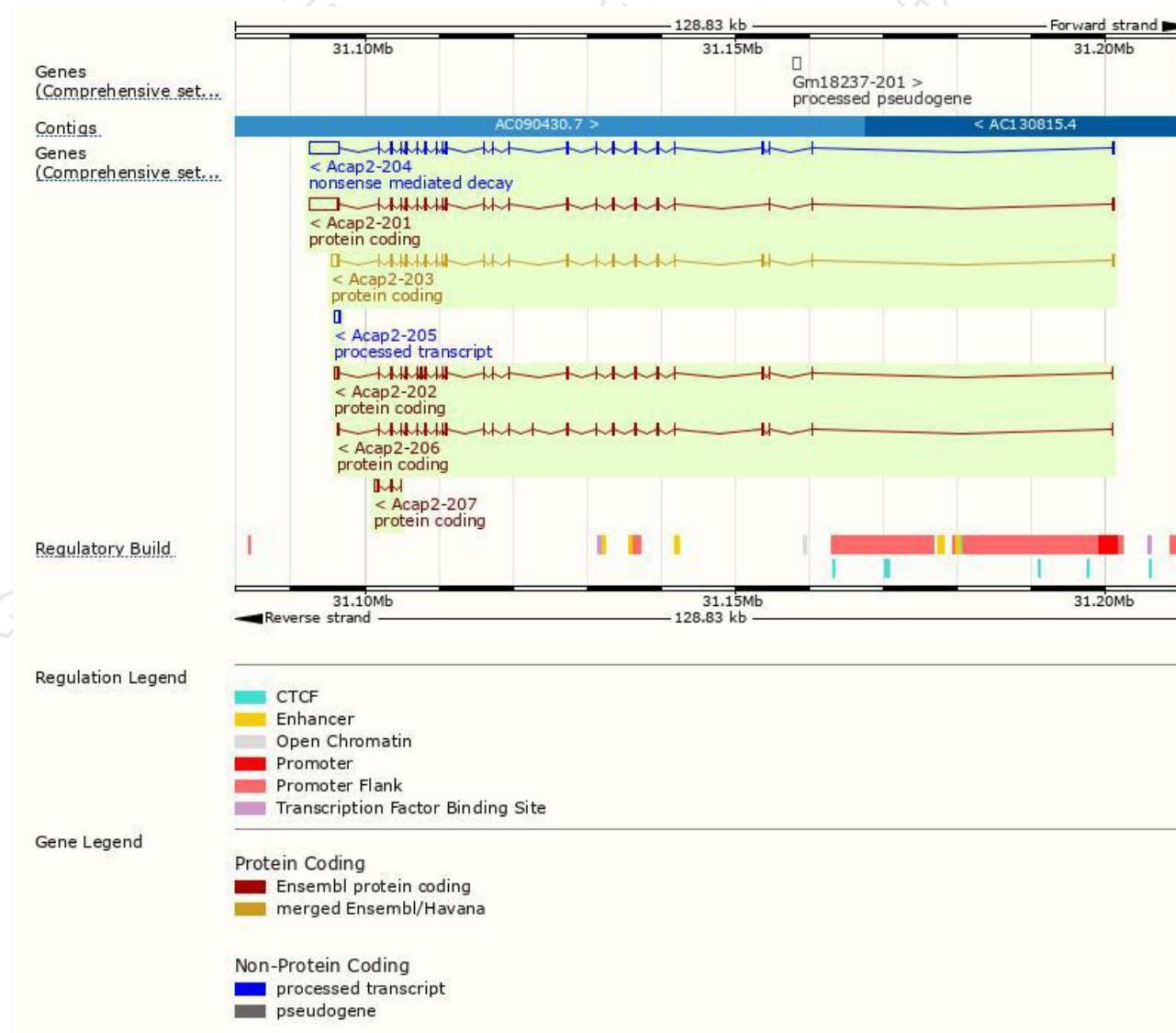
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acap2-203	ENSMUST00000230614.1	3414	770aa	Protein coding	CCDS49823	Q6ZQK5	GENCODE basic APPRIS P2
Acap2-201	ENSMUST00000058033.8	6362	752aa	Protein coding	-	Q6ZQK5	TSL:1 GENCODE basic APPRIS ALT2
Acap2-202	ENSMUST00000229010.2	2810	805aa	Protein coding	-	A0A338P6P6	GENCODE basic APPRIS ALT2
Acap2-206	ENSMUST00000231125.1	2334	777aa	Protein coding	-	D4AFX6	GENCODE basic APPRIS ALT2
Acap2-207	ENSMUST00000239132.1	663	99aa	Protein coding	-	-	CDS 5' incomplete
Acap2-204	ENSMUST00000230698.1	6515	142aa	Nonsense mediated decay	-	A0A2R8W6H4	
Acap2-205	ENSMUST00000230839.1	722	No protein	Processed transcript	-	-	

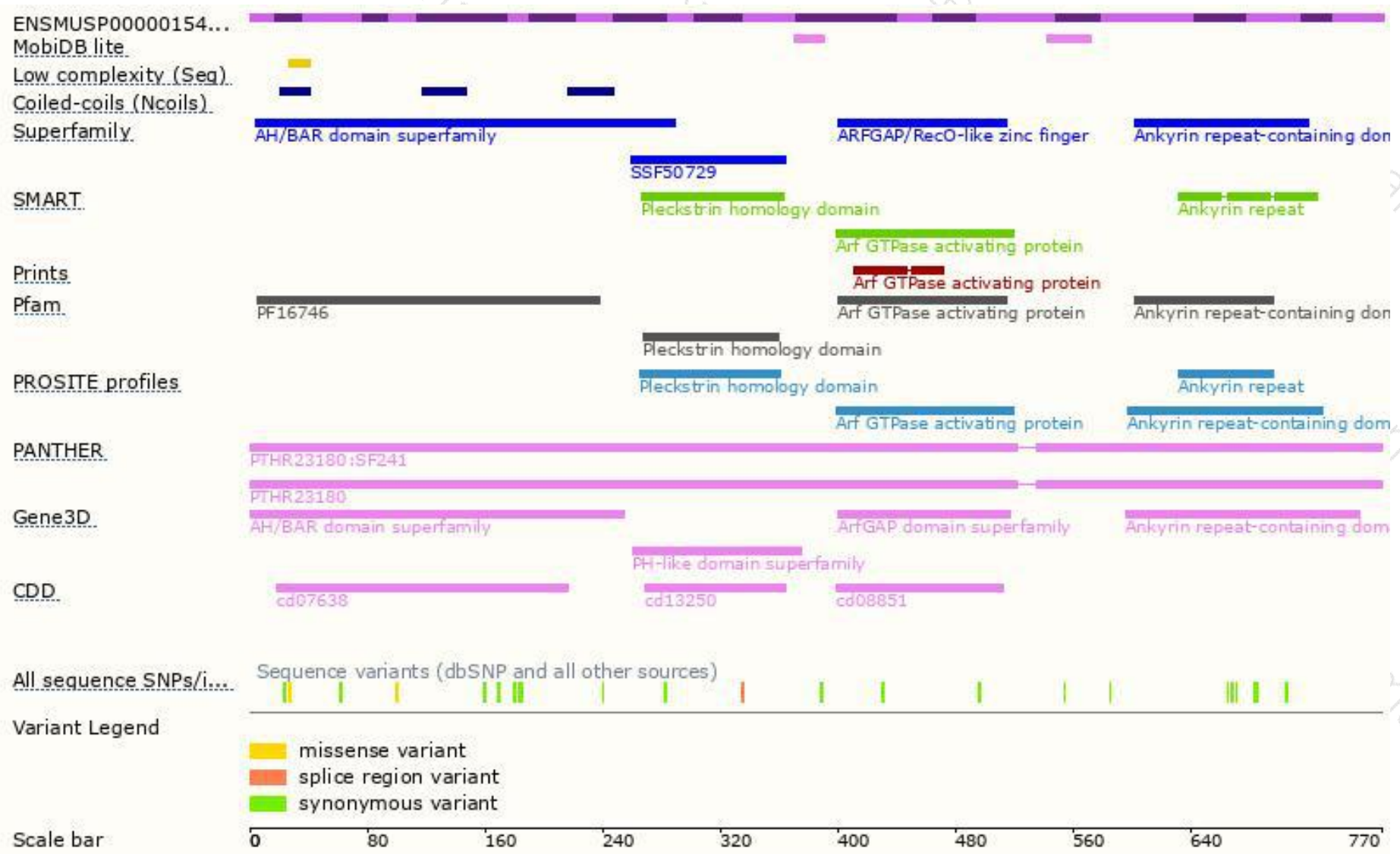
The strategy is based on the design of *Acap2-203* transcript,the transcription is shown below:



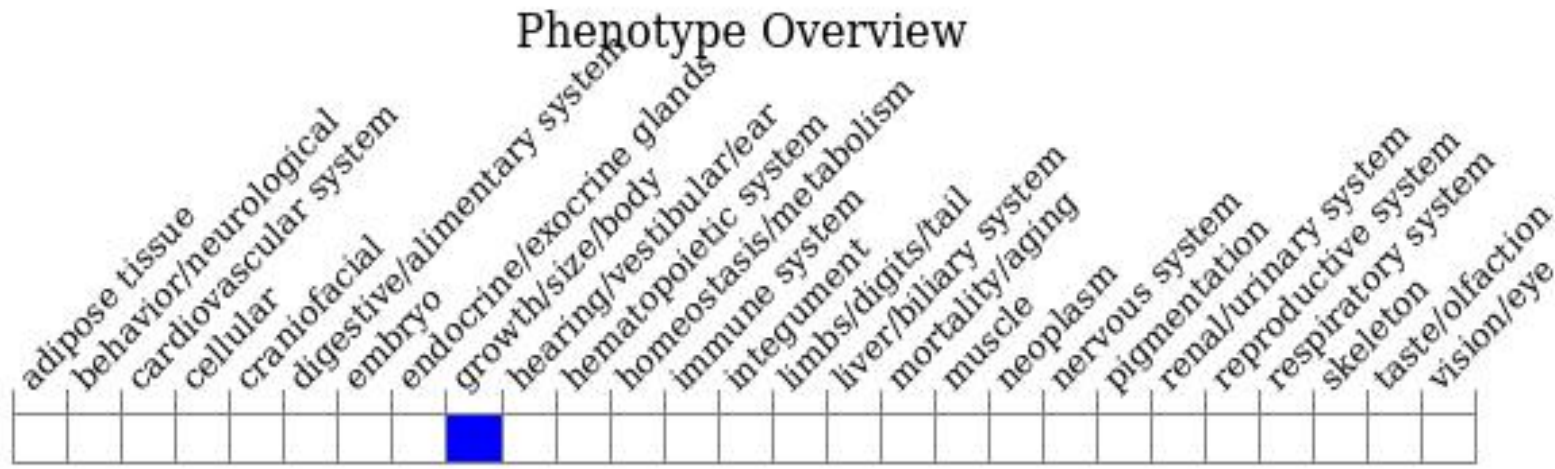
Genomic location distribution



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/>).

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

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