Hnrnpd Cas9-CKO Strategy

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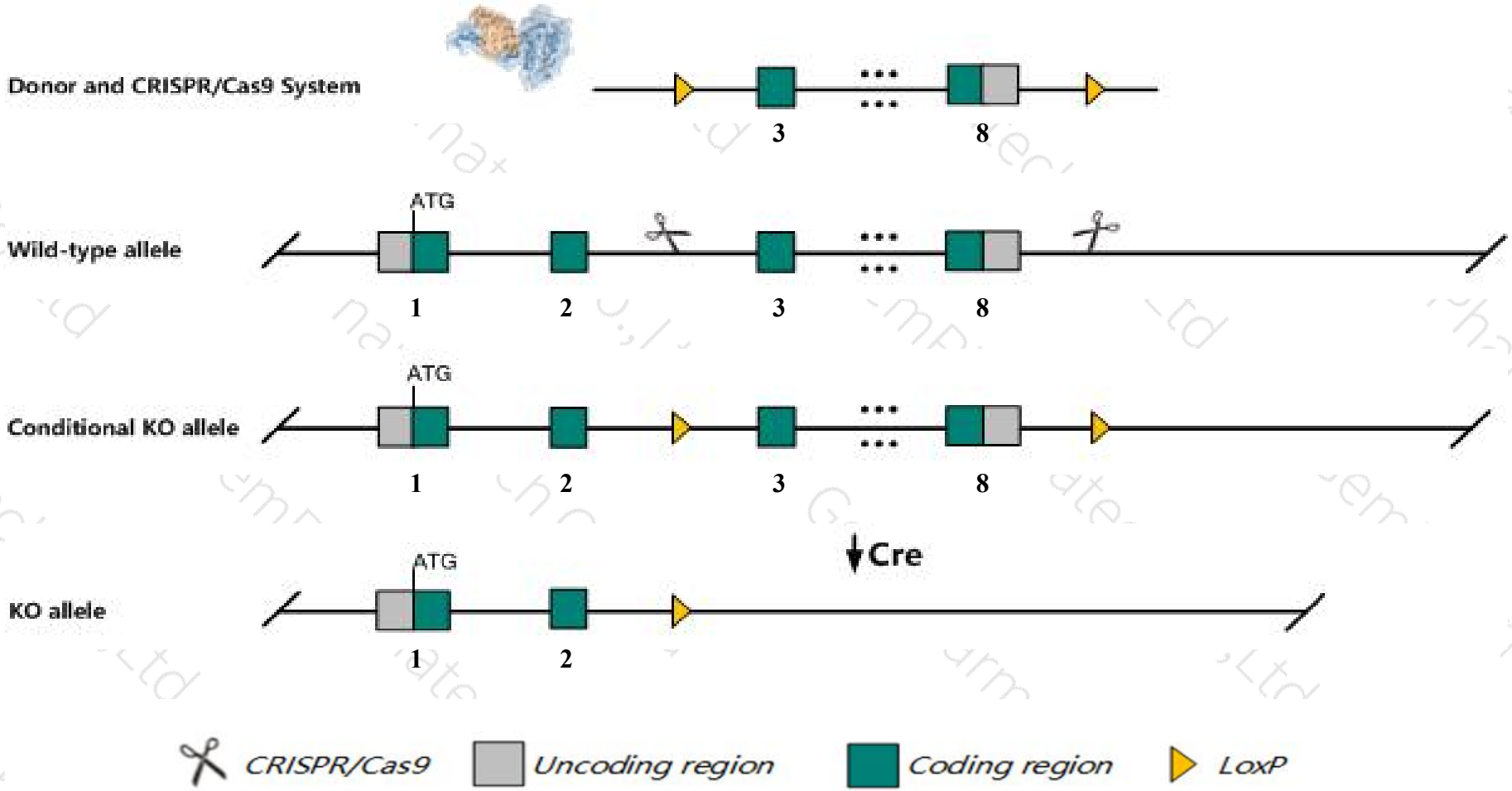
Project Overview

Project Name	***Hnrnpd***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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



Technical routes

➢ The *Hnrnpd* gene has 11 transcripts. According to the structure of *Hnrnpd* gene, exon3-exon8 of *Hnrnpd-211*(ENSMUST00000172361.7) transcript is recommended as the knockout region.The region contains 778bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Hnrnpd* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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.

Notice

➢ According to the existing MGI data,homozygous mutation of this gene results in fetal growth retardation and decreased body weight. Mice show increased susceptibility to bacterial infection and endotoxin shock.

➢ The *Hnrnpd* 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 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）

集萃药康 GemPharmatech

Hnrnpd heterogeneous nuclear ribonucleoprotein D [Mus musculus (house mouse)]

Gene ID: 11991, updated on 13-Mar-2020

Summary

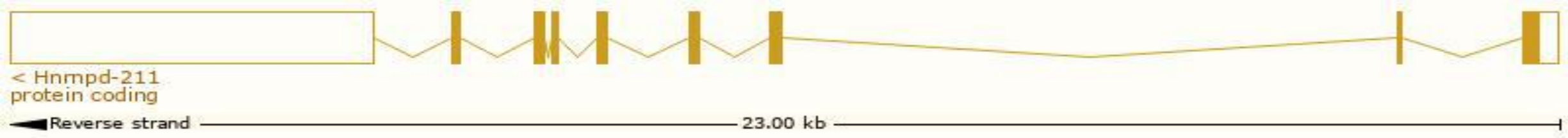
Official Symbol	Hnrnpd provided by MGI
Official Full Name	heterogeneous nuclear ribonucleoprotein D provided byMGI
Primary source	MGI:MGI:101947
See related	Ensembl:ENSMUSG00000000568
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Auf1, Hnrpd
Expression	Broad expression in CNS E11.5 (RPKM 36.7), CNS E14 (RPKM 24.3) and 18 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

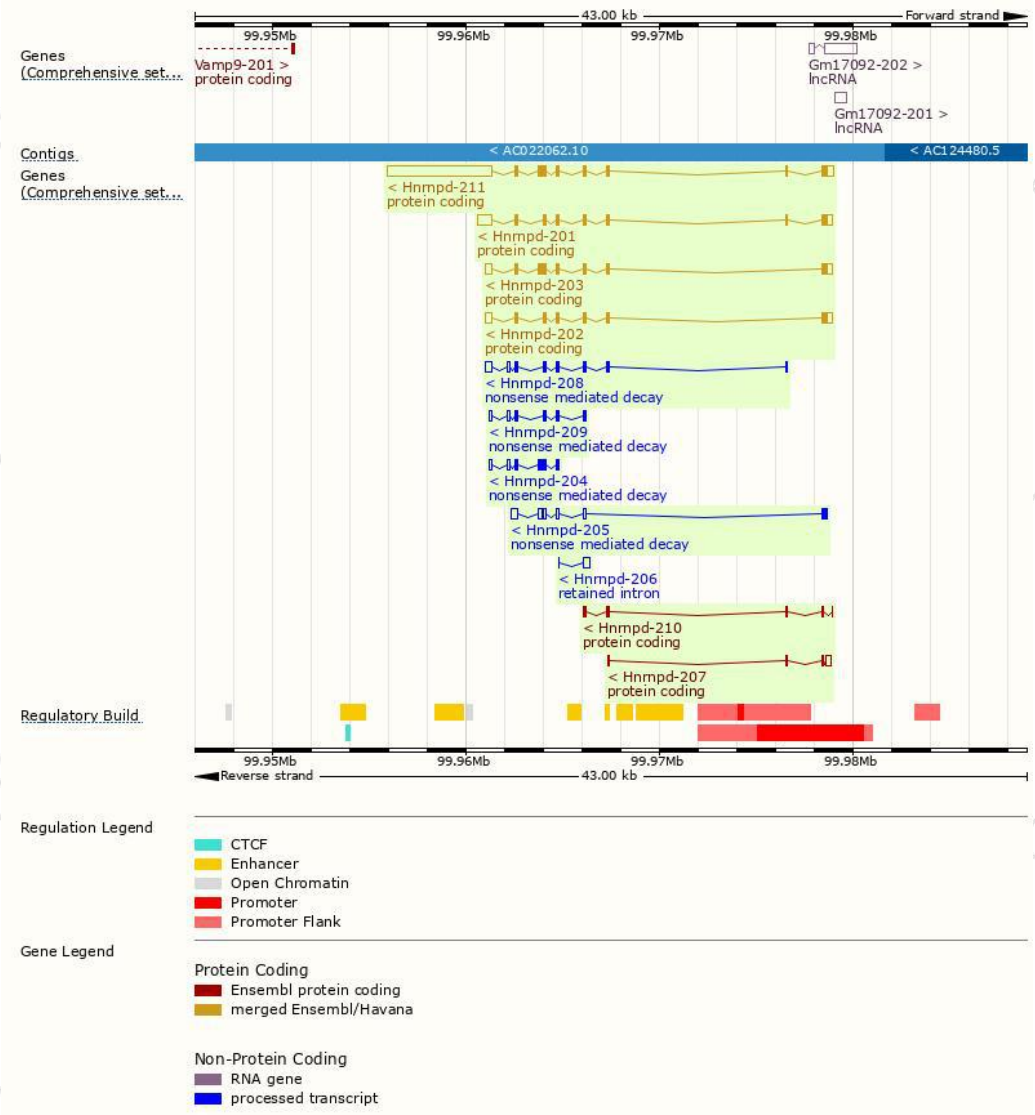
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hnrnpd-211	ENSMUST00000172361.7	6811	355aa	Protein coding	CCDS39182	Q60668	TSL:1 GENCODE basic APPRIS P4
Hnrnpd-201	ENSMUST00000019128.14	2000	306aa	Protein coding	CCDS39181	Q60668	TSL:1 GENCODE basic APPRIS ALT2
Hnrnpd-203	ENSMUST00000112939.9	1670	336aa	Protein coding	CCDS39180	G3X9W0	TSL:5 GENCODE basic APPRIS ALT2
Hnrnpd-202	ENSMUST00000072750.12	1537	287aa	Protein coding	CCDS51571	G5E8G0	TSL:3 GENCODE basic APPRIS ALT2
Hnrnpd-210	ENSMUST00000171786.7	493	107aa	Protein coding	-	E9Q5B6	CDS 3' incomplete TSL:5
Hnrnpd-207	ENSMUST00000170912.1	478	25aa	Protein coding	-	A0A0G2JFL4	CDS 3' incomplete TSL:5
Hnrnpd-208	ENSMUST00000171106.7	1117	216aa	Nonsense mediated decay	-	F6ZV59	CDS 5' incomplete TSL:5
Hnrnpd-205	ENSMUST00000168396.1	1104	86aa	Nonsense mediated decay	-	E9Q4W5	TSL:5
Hnrnpd-209	ENSMUST00000171640.7	737	150aa	Nonsense mediated decay	-	F6SHF3	CDS 5' incomplete TSL:5
Hnrnpd-204	ENSMUST00000164833.1	699	131aa	Nonsense mediated decay	-	F7A465	CDS 5' incomplete TSL:5
Hnrnpd-206	ENSMUST00000170654.1	425	No protein	Retained intron	-	-	TSL:2

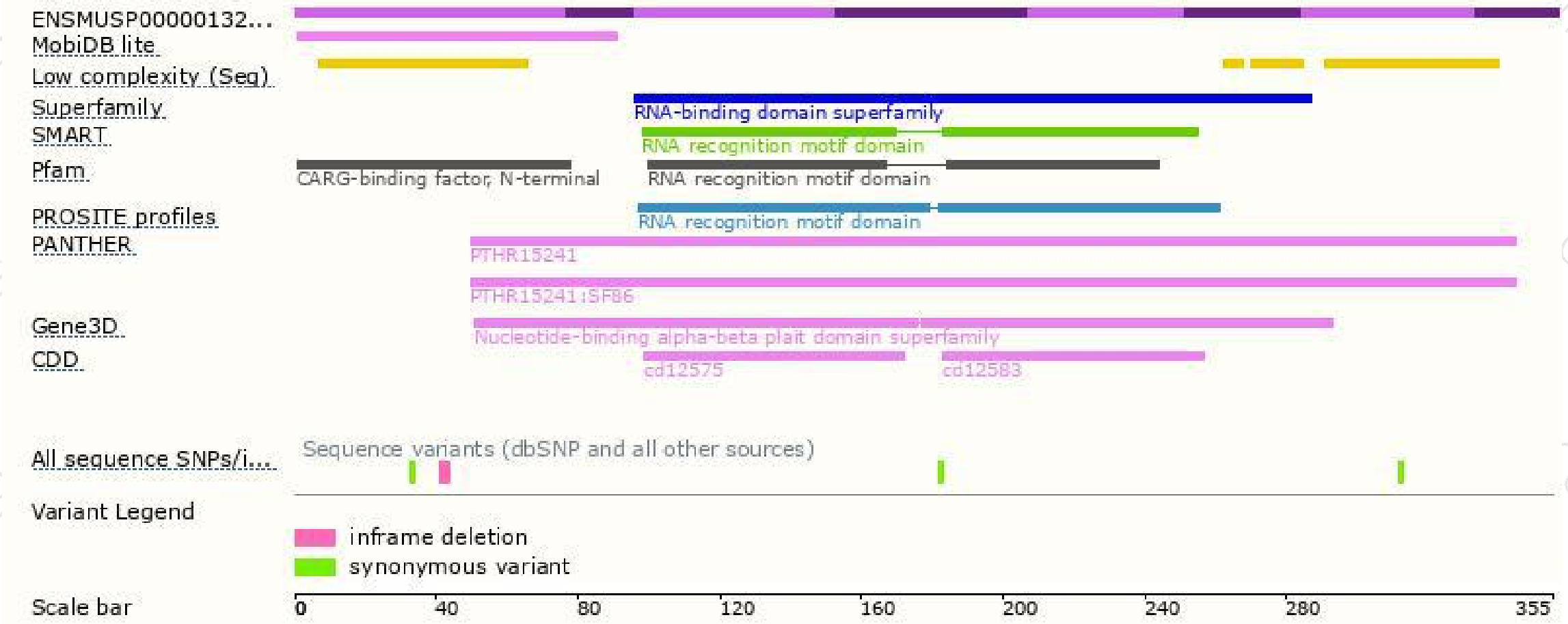
The strategy is based on the design of *Hnrnpd-211* transcript,the transcription is shown below:



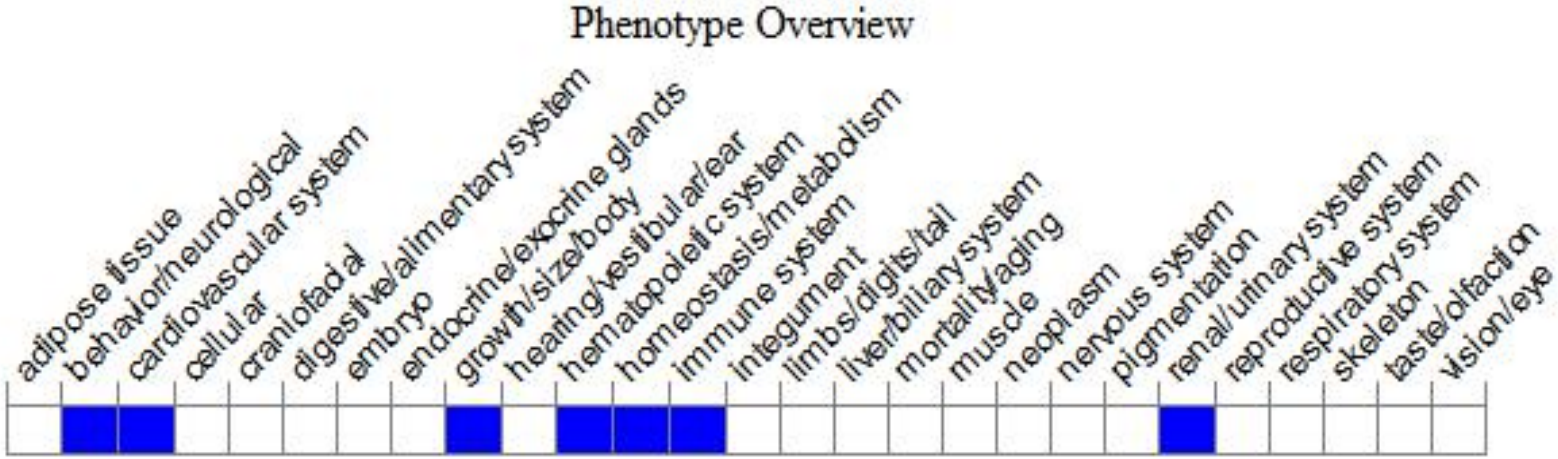
Genomic location distribution



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,homozygous mutation of this gene results in fetal growth retardation and decreased body weight. Mice show increased susceptibility to bacterial infection and endotoxin shock.

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

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