

Hivep3 Cas9-CKO Strategy

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Reviewer :

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Project Overview

Project Name

Hivep3

Project type

Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

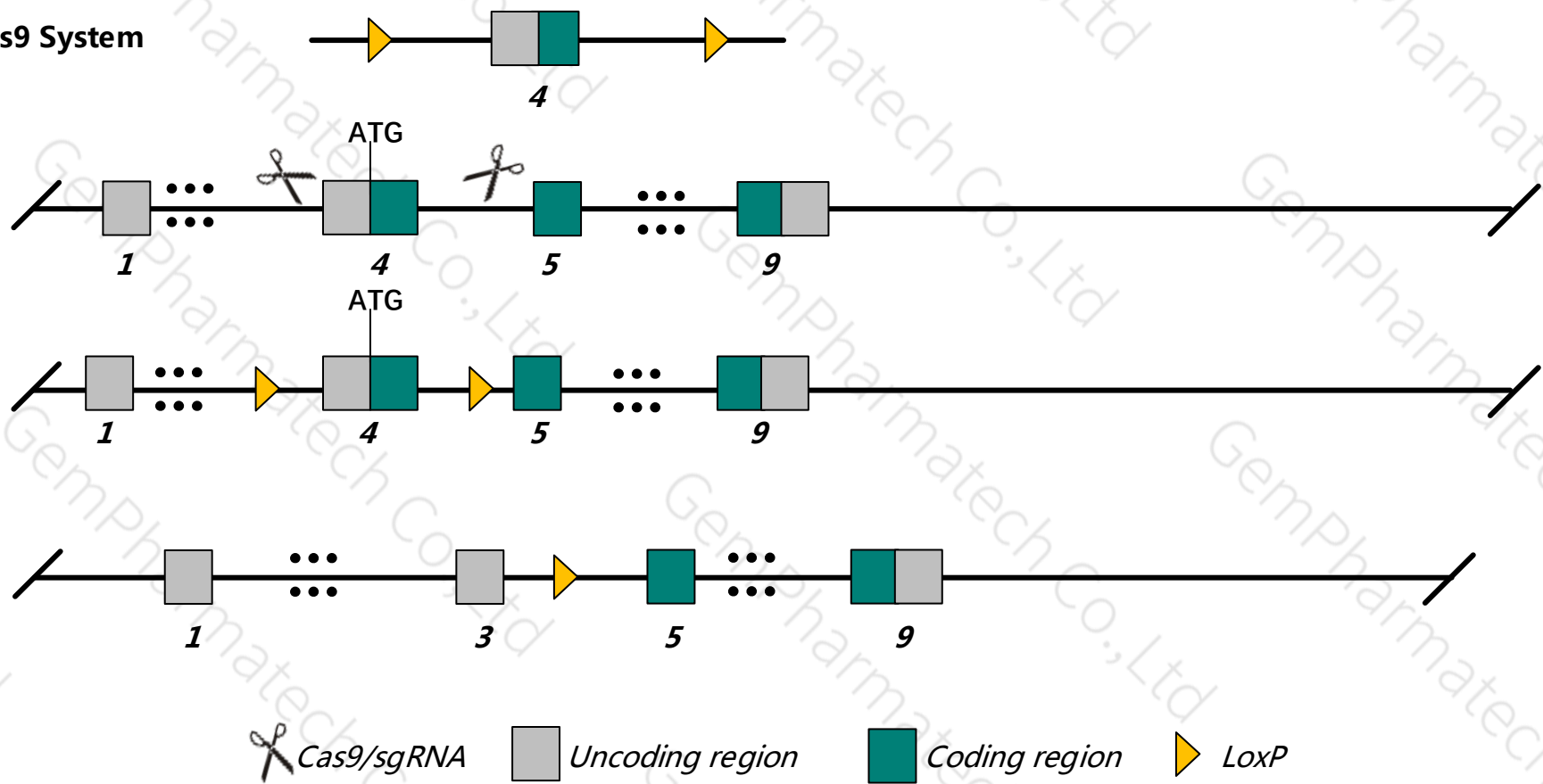
This model will use CRISPR/Cas9 technology to edit the *Hivep3* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System

Wild-type allele

Conditional KO allele

KO allele



- The *Hivep3* gene has 10 transcripts. According to the structure of *Hivep3* gene, exon4 of *Hivep3*-202 (ENSMUST00000106307.8) 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 *Hivep3* 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 or cell types.

- According to the existing MGI data , Homozygous mutation of this gene results in diminished IL-2 production by stimulated CD4 cells. Mice homozygous for a knock-out allele exhibit increased bone volume.
- The KO region contains functional region of the *AL607142.1* gene. Knockout the region may affect the function of *AL607142.1* gene.
- The *Hivep3* gene is located on the Chr4. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Hivep3 human immunodeficiency virus type I enhancer binding protein 3 [*Mus musculus* (house mouse)]

Gene ID: 16656, updated on 27-Feb-2020

Summary

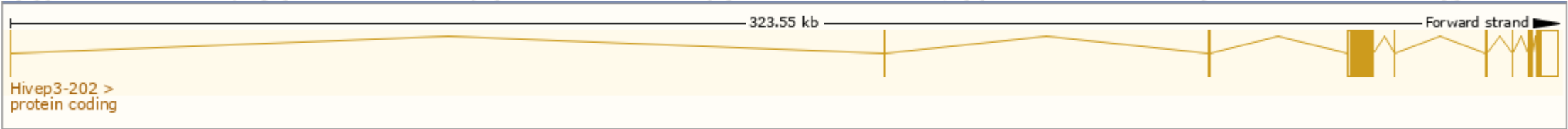
Official Symbol	Hivep3 provided by MGI
Official Full Name	human immunodeficiency virus type I enhancer binding protein 3 provided by MGI
Primary source	MGI:MGI:106589
See related	Ensembl:ENSMUSG00000028634
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Rc; Krc; KBP1; Shn3; Zas3; KBP-1; AI848000; A130075N07; Schnurri-3; 2900056N03Rik; E030045D18Rik
Expression	Broad expression in thymus adult (RPKM 3.7), cortex adult (RPKM 2.0) and 16 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

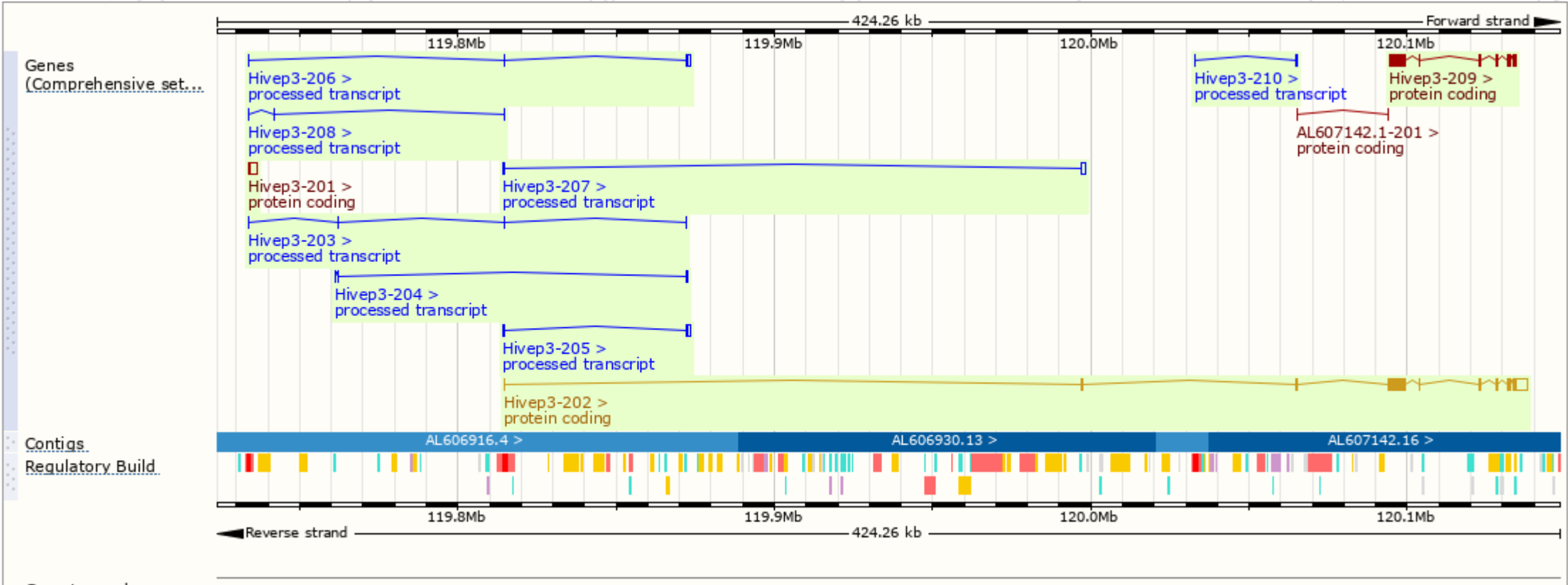
The gene has 10 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hivep3-202	ENSMUST00000106307.8	11838	2348aa	Protein coding	CCDS38863	A2A884	TSL:1 GENCODE basic APPRIS P1
Hivep3-209	ENSMUST00000166542.2	7253	2348aa	Protein coding	CCDS38863	A2A884	TSL:1 GENCODE basic APPRIS P1
Hivep3-201	ENSMUST00000084306.4	2973	116aa	Protein coding	-	F7D7H6	TSL:NA GENCODE basic
Hivep3-207	ENSMUST00000143837.1	1719	No protein	Processed transcript	-	-	TSL:1
Hivep3-205	ENSMUST00000136547.1	1359	No protein	Processed transcript	-	-	TSL:1
Hivep3-206	ENSMUST00000141605.7	1115	No protein	Processed transcript	-	-	TSL:1
Hivep3-204	ENSMUST00000125069.7	520	No protein	Processed transcript	-	-	TSL:1
Hivep3-203	ENSMUST00000123698.7	500	No protein	Processed transcript	-	-	TSL:5
Hivep3-210	ENSMUST00000227491.1	397	No protein	Processed transcript	-	-	-
Hivep3-208	ENSMUST00000144907.7	270	No protein	Processed transcript	-	-	TSL:1

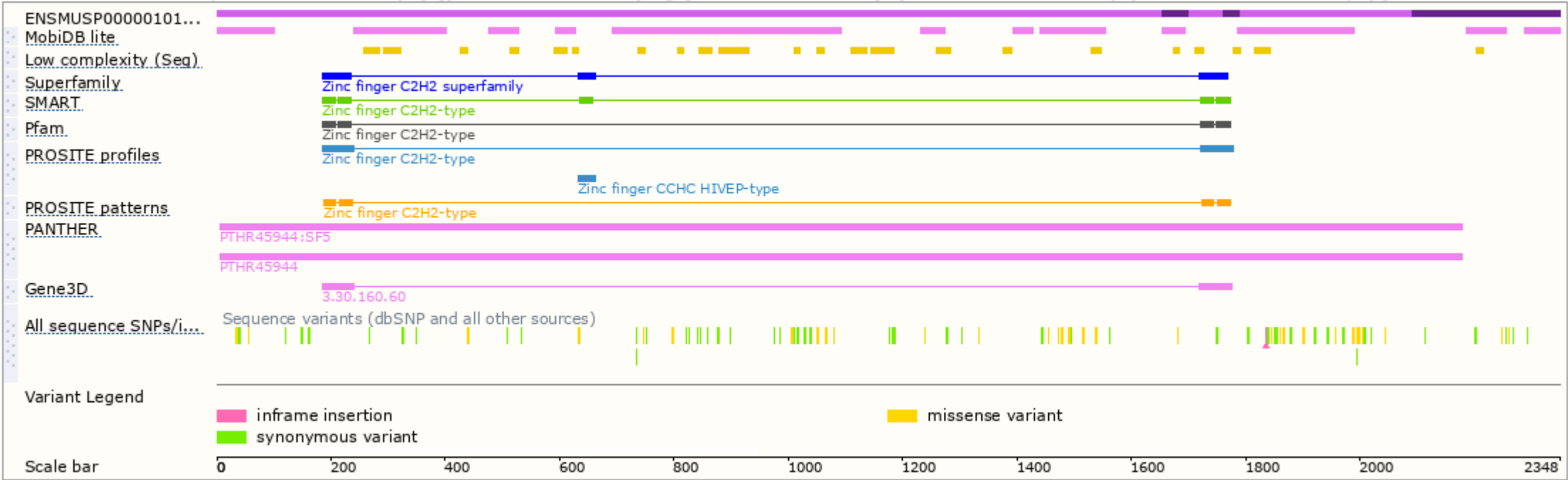
The strategy is based on the design of *Hivep3-202* transcript, The transcription is shown below



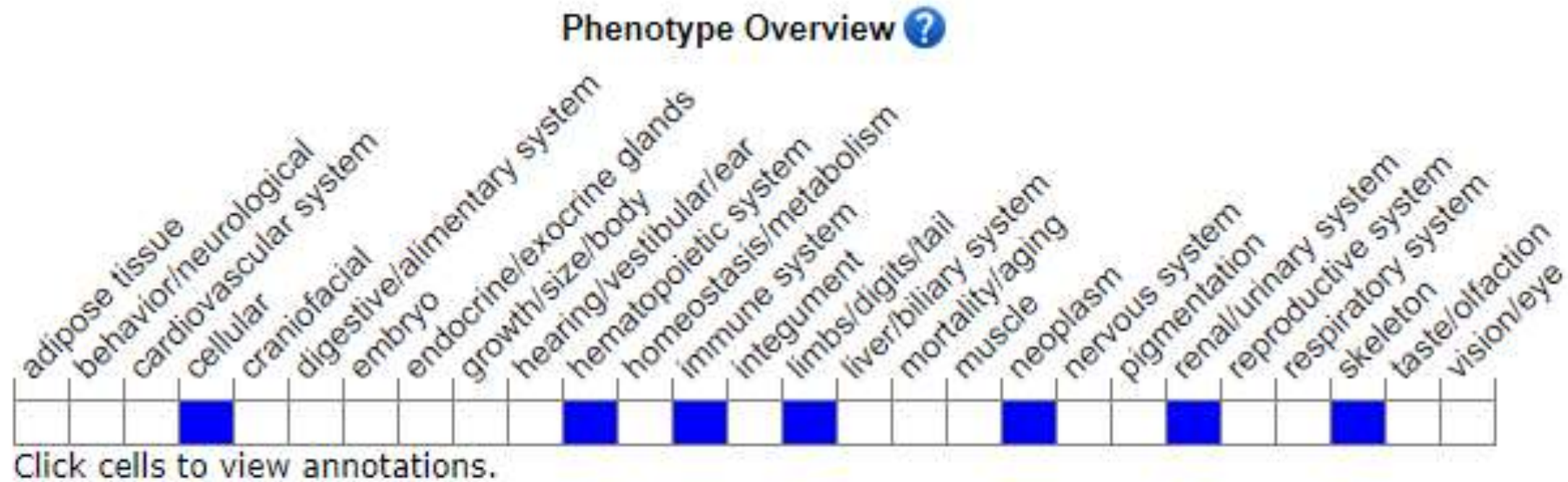
Genomic location distribution



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/>) .

According to the existing MGI data, Homozygous mutation of this gene results in diminished IL-2 production by stimulated CD4 cells. Mice homozygous for a knock-out allele exhibit increased bone volume.

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