Nfil3 Cas9-CKO Strategy

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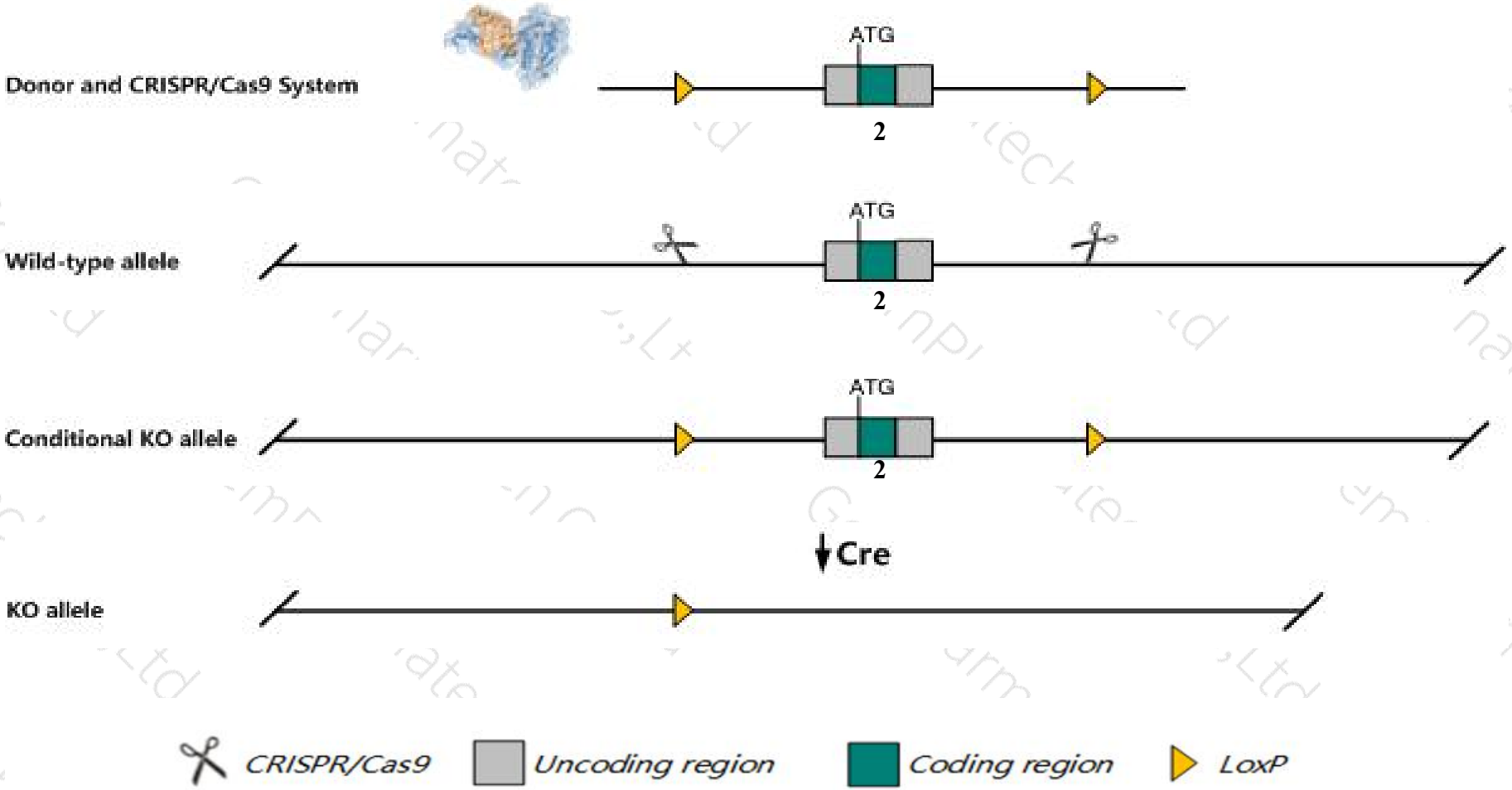
Project Overview

Project Name	***Nfil3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nfil3* gene. The schematic diagram is as follows:



Technical routes

- The *Nfil3* gene has 1 transcript. According to the structure of *Nfil3* gene, exon2 of *Nfil3-201* (ENSMUST00000071065.7) 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 *Nfil3* 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,Mice homozygous for a knock-out allele exhibit decreased NK cell differentiation, numbers, and activity. Mice homozygous for a different knock-out allele exhibit reduced class switching and IgE production.

- The *Nfil3* gene is located on the Chr13. 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）

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Nfil3 nuclear factor, interleukin 3, regulated [Mus musculus (house mouse)]

Gene ID: 18030, updated on 20-Mar-2019

Summary

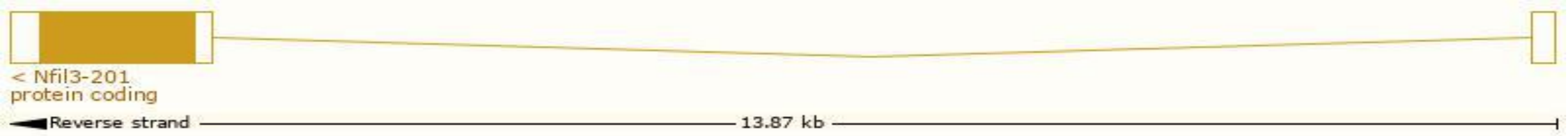
Official Symbol	Nfil3 provided by MGI
Official Full Name	nuclear factor, interleukin 3, regulated provided byMGI
Primary source	MGI:MGI:109495
See related	Ensembl:ENSMUSG00000056749
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AV225605, E4BP4
Summary	The protein encoded by this gene is a transcriptional regulator that binds as a homodimer to activating transcription factor (ATF) sites in many cellular and viral promoters. The encoded protein represses Per1 and Per2 expression and therefore plays a role in the regulation of circadian rhythm. [provided by RefSeq, Feb 2014]
Expression	Ubiquitous expression in large intestine adult (RPKM 2.7), CNS E14 (RPKM 2.5) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

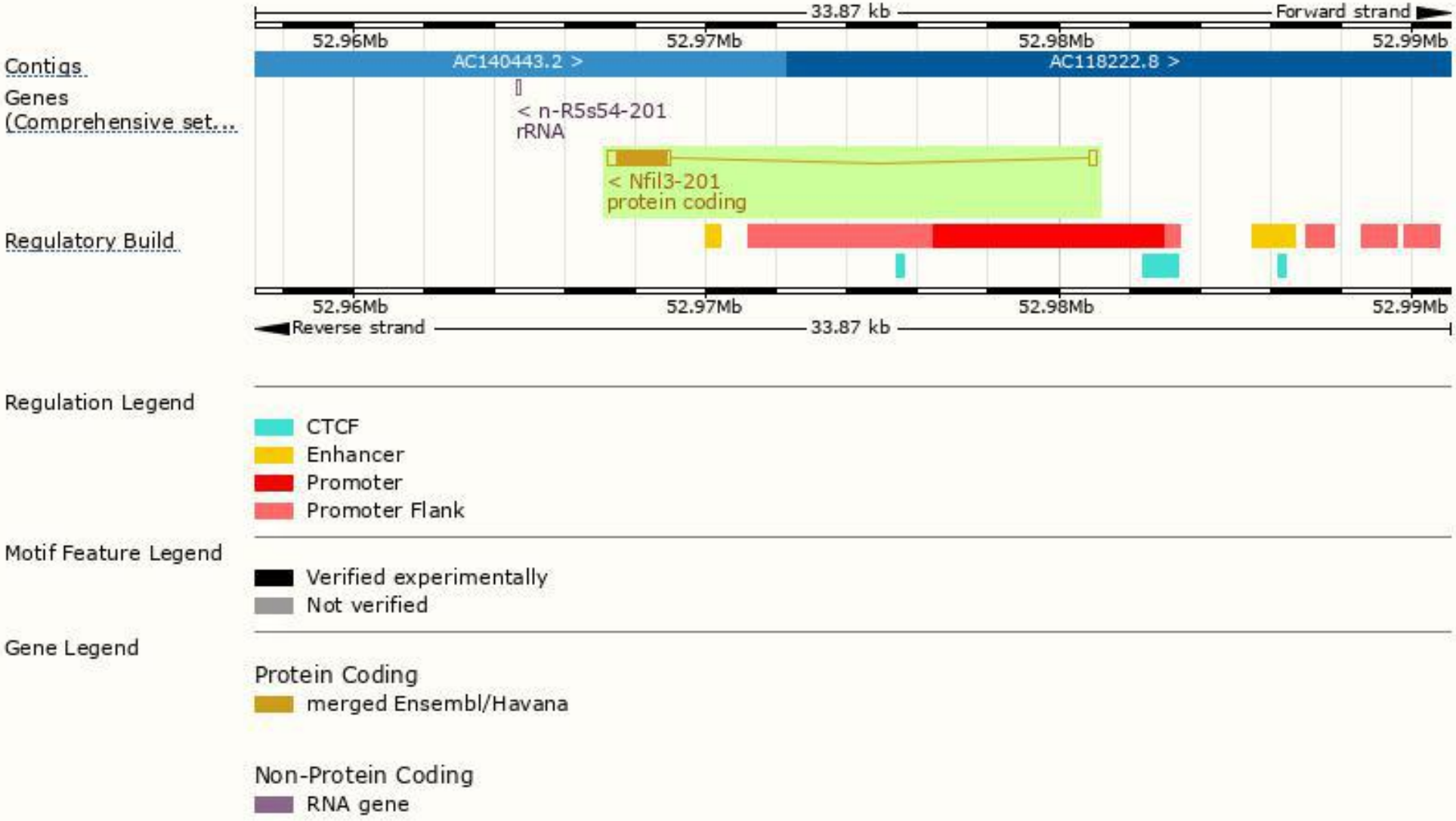
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nfil3-201	ENSMUST00000071065.7	2026	462aa	Protein coding	CCDS26519	O08750	TSL:1 GENCODE basic APPRIS P1

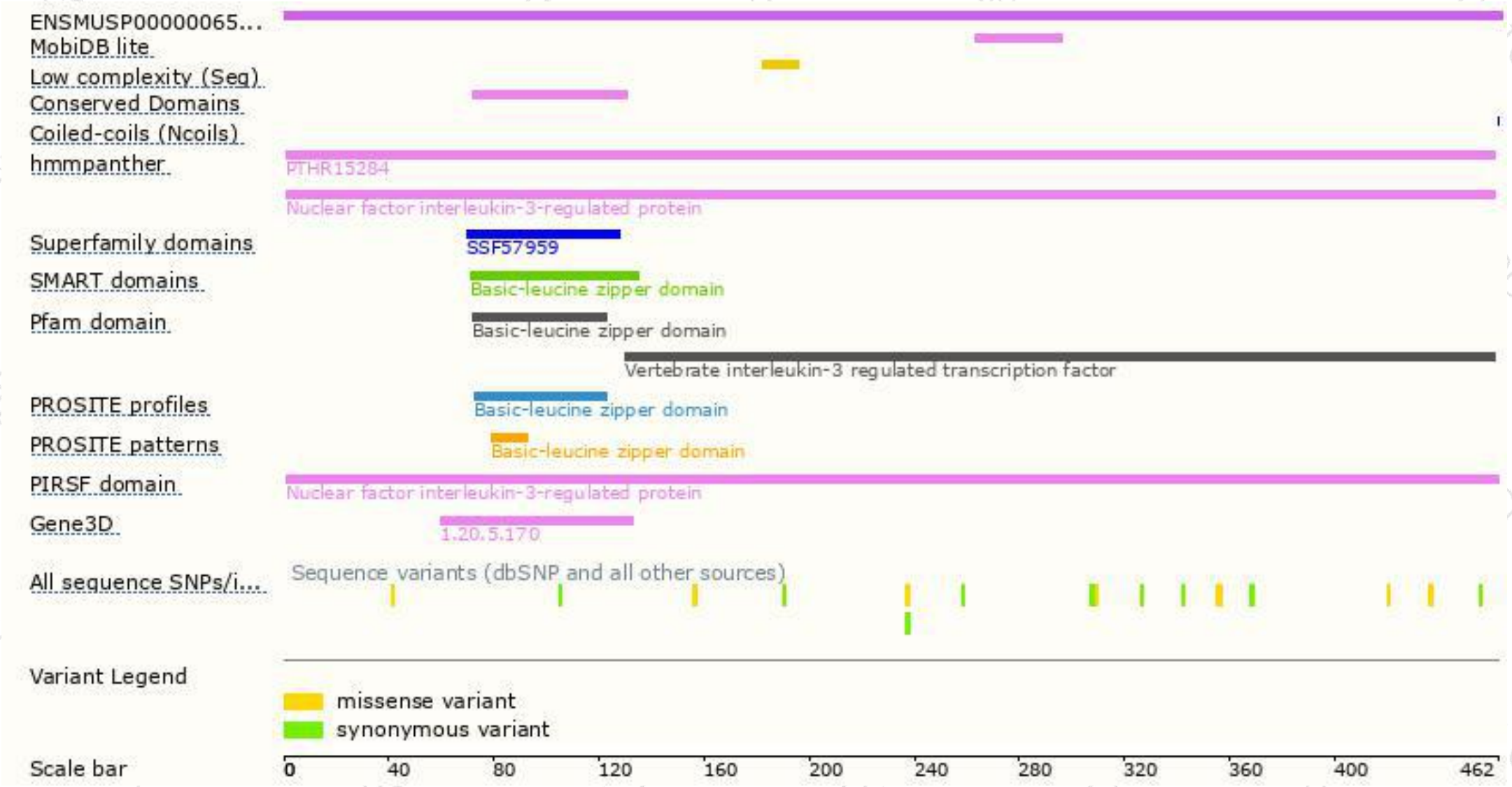
The strategy is based on the design of *Nfil3-201* transcript,The transcription is shown below



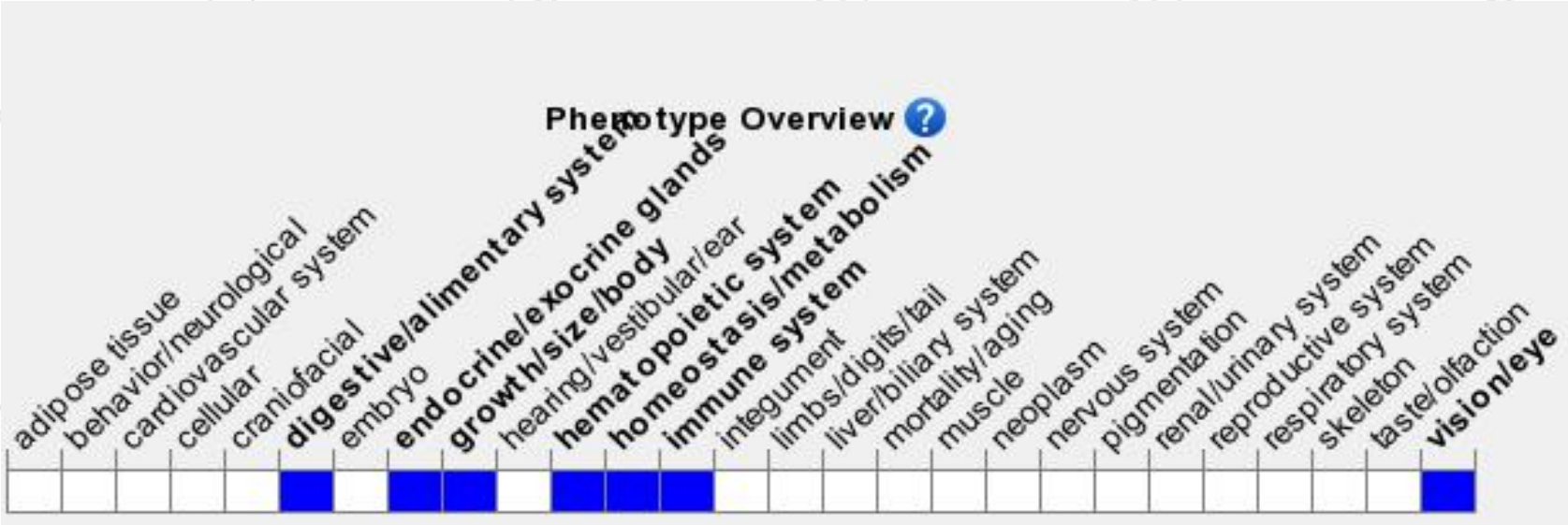
Genomic location distribution



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/).

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

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