Inhbb Cas9-CKO Strategy

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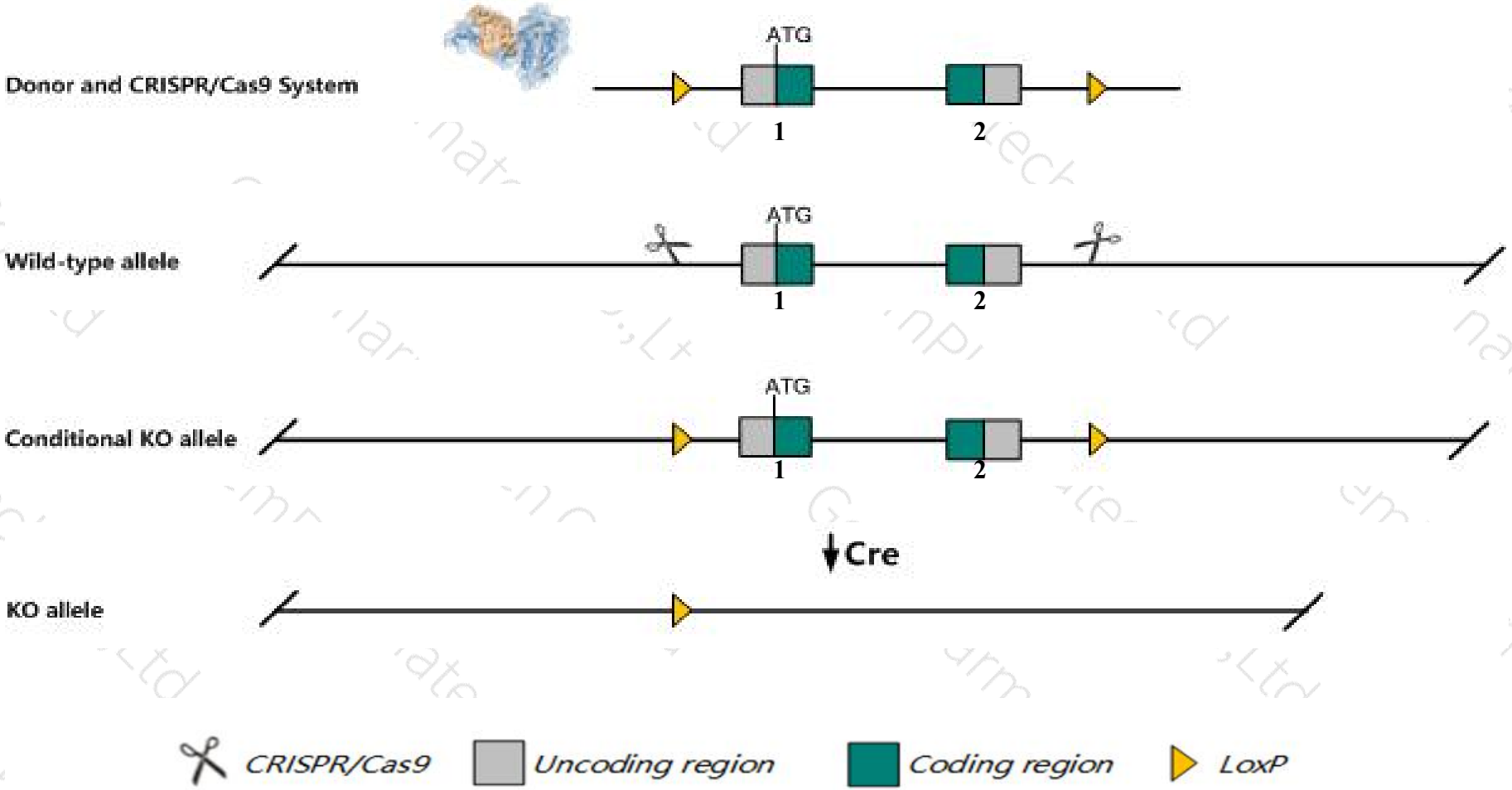
Date:2019-11-26

Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Inhbb* gene has 1 transcript. According to the structure of *Inhbb* gene, exon1-exon2 of *Inhbb-201* (ENSMUST00000038765.5) 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 *Inhbb* 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,Some homozygotes for targeted null mutations exhibit open eyes at birth and impaired maternal nuturing. Mutant females for one line exhibit extended gestation length, retarded mammary duct elongation and alveolar morphogenesis, and are unable to nurse their pups.

- The *Inhbb* gene is located on the Chr1. 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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Inhbb inhibin beta-B [*Mus musculus* (house mouse)]

Gene ID: 16324, updated on 27-Aug-2019

Summary

Official Symbol	Inhbb provided by MGI
Official Full Name	inhibin beta-B provided by MGI
Primary source	MGI:MGI:96571
See related	Ensembl:ENSMUSG00000037035
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Summary	This gene encodes a member of the TGF-beta (transforming growth factor-beta) superfamily of proteins. The encoded preproprotein is proteolytically processed to generate a subunit of the dimeric activin and inhibin protein complexes. These complexes activate and inhibit, respectively, follicle stimulating hormone secretion from the pituitary gland. Homozygous knockout mice for this gene exhibit eyelid defects. [provided by RefSeq, Aug 2016]
Expression	Biased expression in ovary adult (RPKM 148.1), mammary gland adult (RPKM 18.2) and 3 other tissues See more
Orthologs	human all

Genomic context

Location: 1 E2.3; 1 52.29 cM

See Inhbb in Genome Data Viewer

Exon count: 2

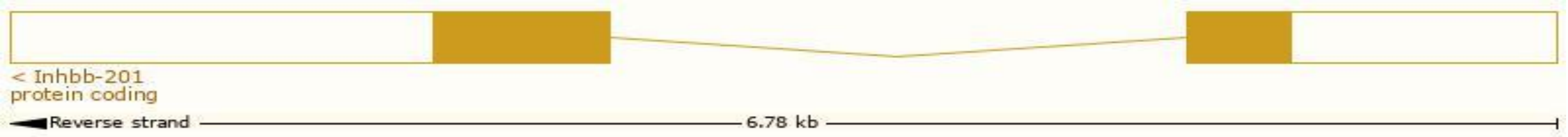
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	1	NC_000067.6 (119415463..119422248, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	1	NC_000067.5 (121312042..121318825, complement)

Transcript information（Ensembl）

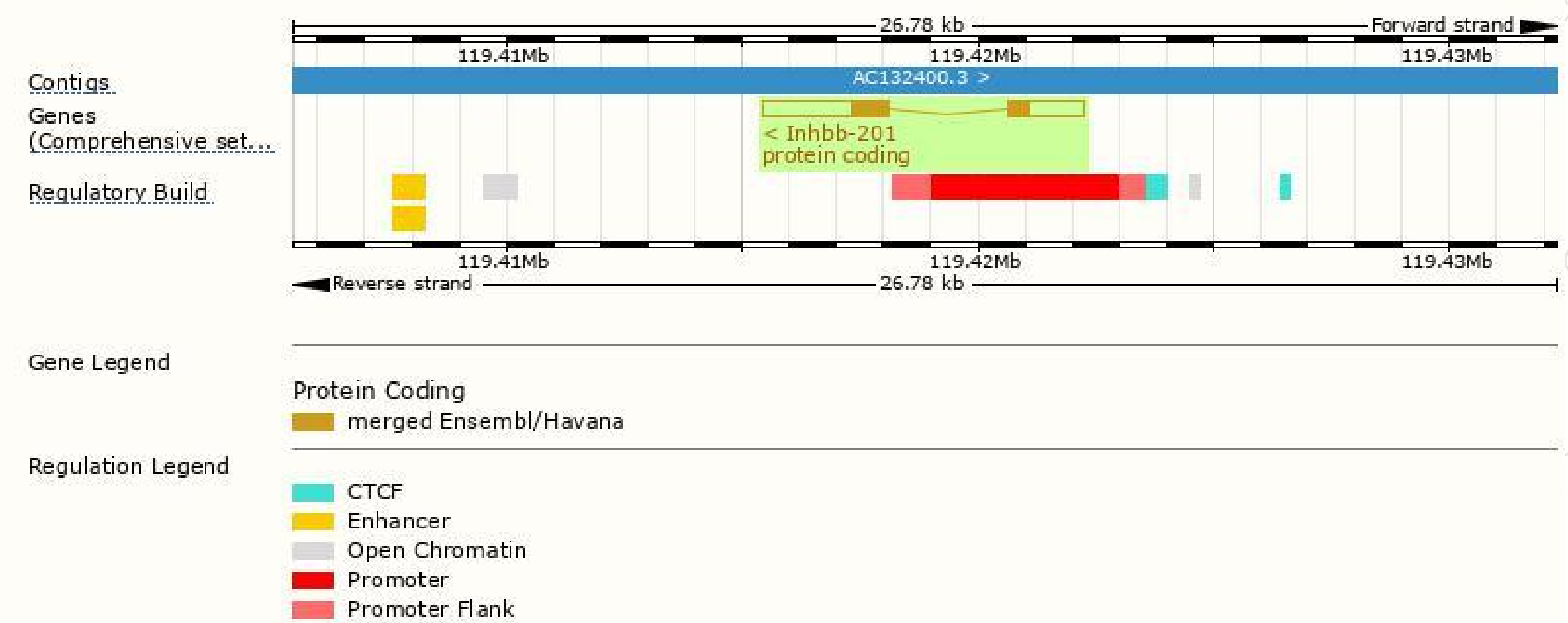
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Inhbb-201	ENSMUST00000038765.5	4255	411aa	Protein coding	CCDS15224	Q04999	TSL:1 GENCODE basic APPRIS P1

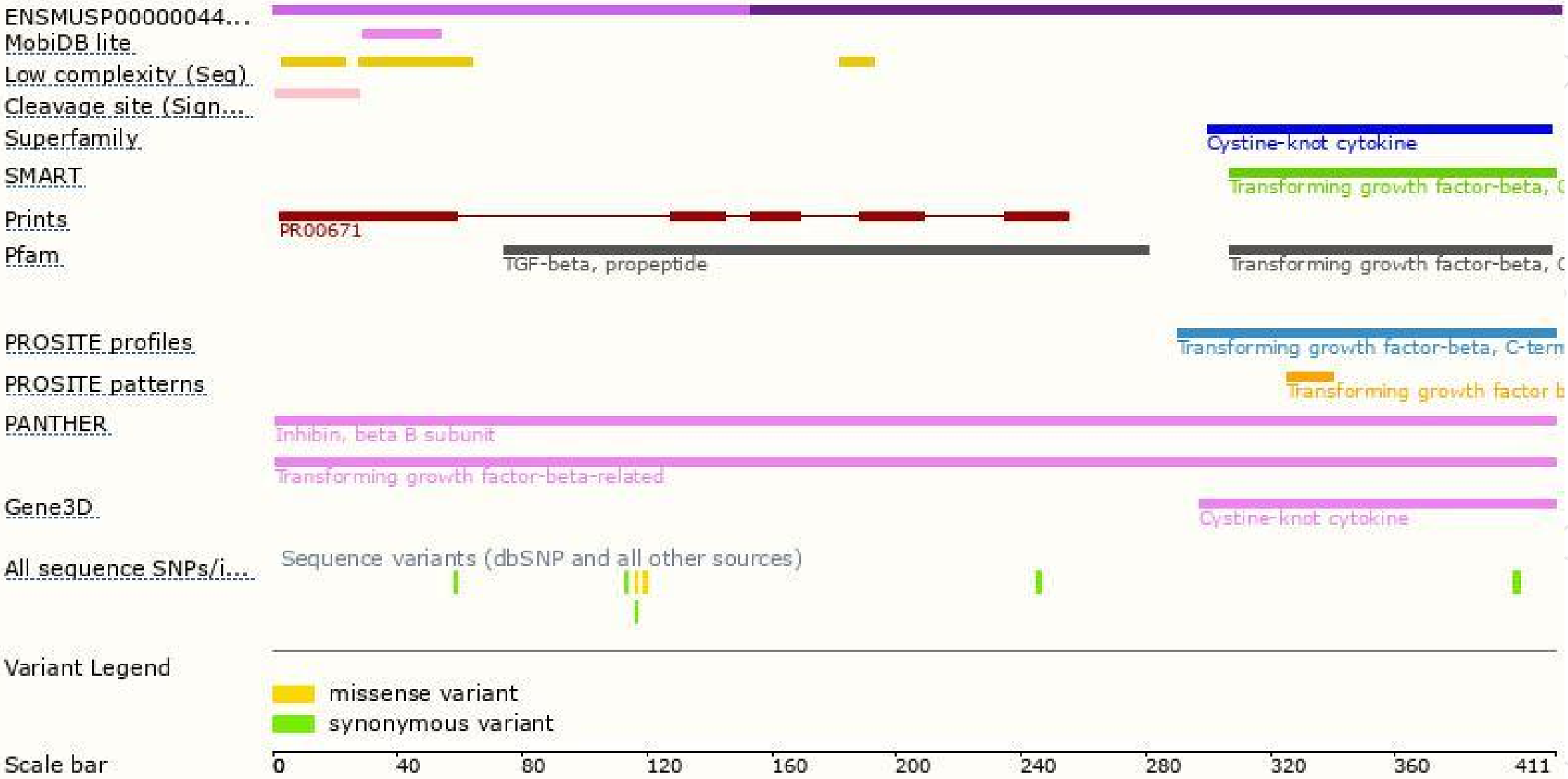
The strategy is based on the design of *Inhbb-201* transcript,The transcription is shown below



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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