

Dbx2 Cas9-CKO Strategy

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Project Overview

Project Name

Dbx2

Project type

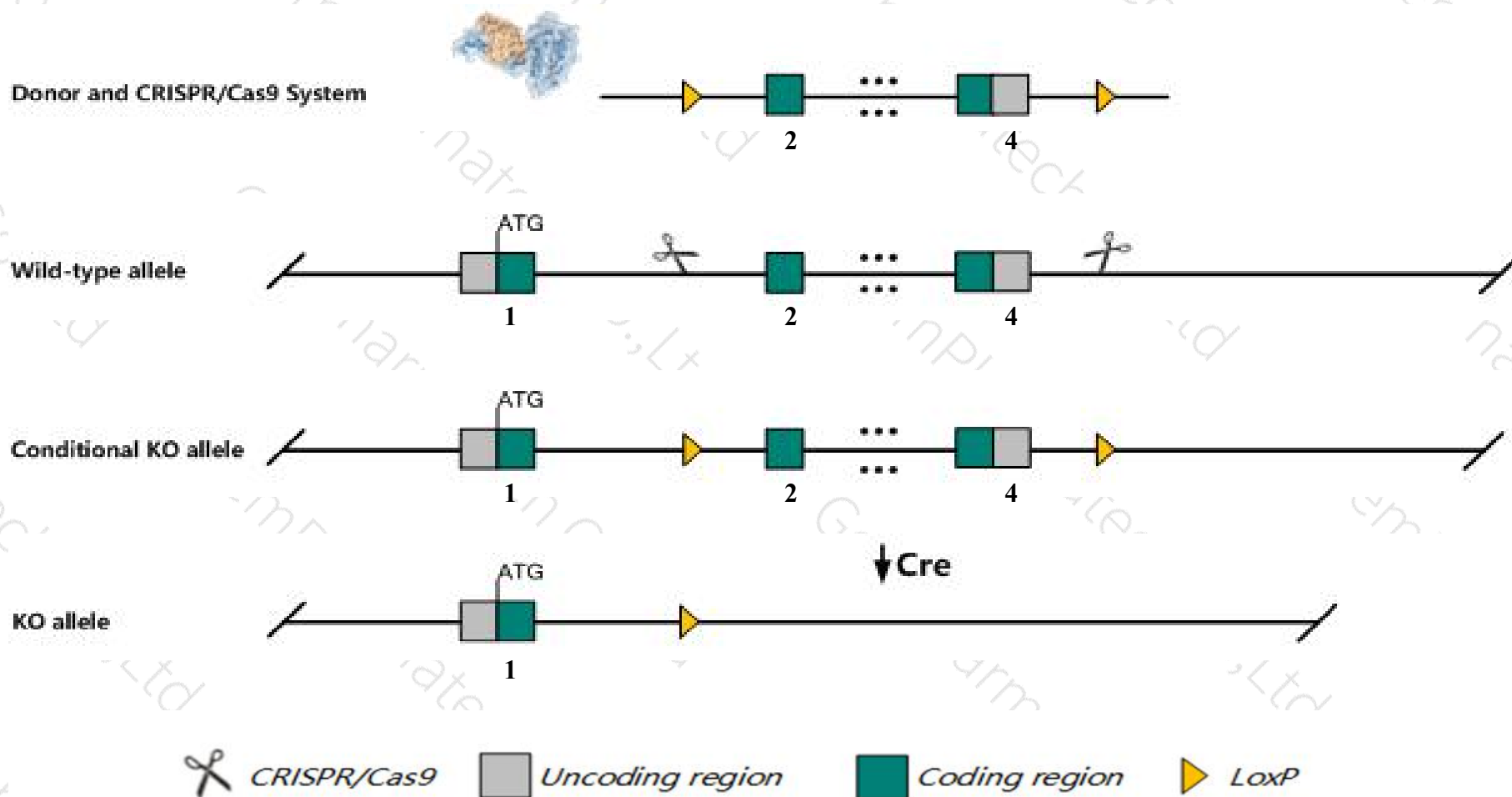
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dbx2* gene. The schematic diagram is as follows:



- The *Dbx2* gene has 2 transcripts. According to the structure of *Dbx2* gene, exon2-exon4 of *Dbx2-201* (ENSMUST00000054244.6) transcript is recommended as the knockout region. The region contains most 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 *Dbx2* 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

- The *Dbx2* gene is located on the Chr15. 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)

Dbx2 developing brain homeobox 2 [*Mus musculus* (house mouse)]

Gene ID: 223843, updated on 16-Sep-2019

Summary

Official Symbol	Dbx2 provided by MGI
Official Full Name	developing brain homeobox 2 provided by MGI
Primary source	MGI:MGI:107445
See related	Ensembl:ENSMUSG00000045608
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm1229; AI846217; 9630005K15; 9430056A22Rik
Expression	Biased expression in cortex adult (RPKM 5.6), frontal lobe adult (RPKM 5.4) and 5 other tissues See more
Orthologs	human all

Genomic context

Location: 15 E3; 15 50.47 cM

See Dbx2 in [Genome Data Viewer](#)

Exon count: 4

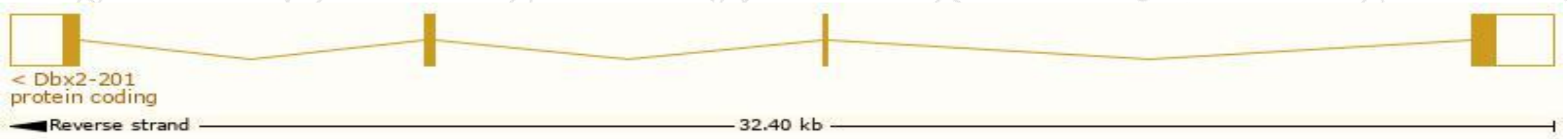
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (95623563..95654771, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (95453994..95485202, complement)

Transcript information (Ensembl)

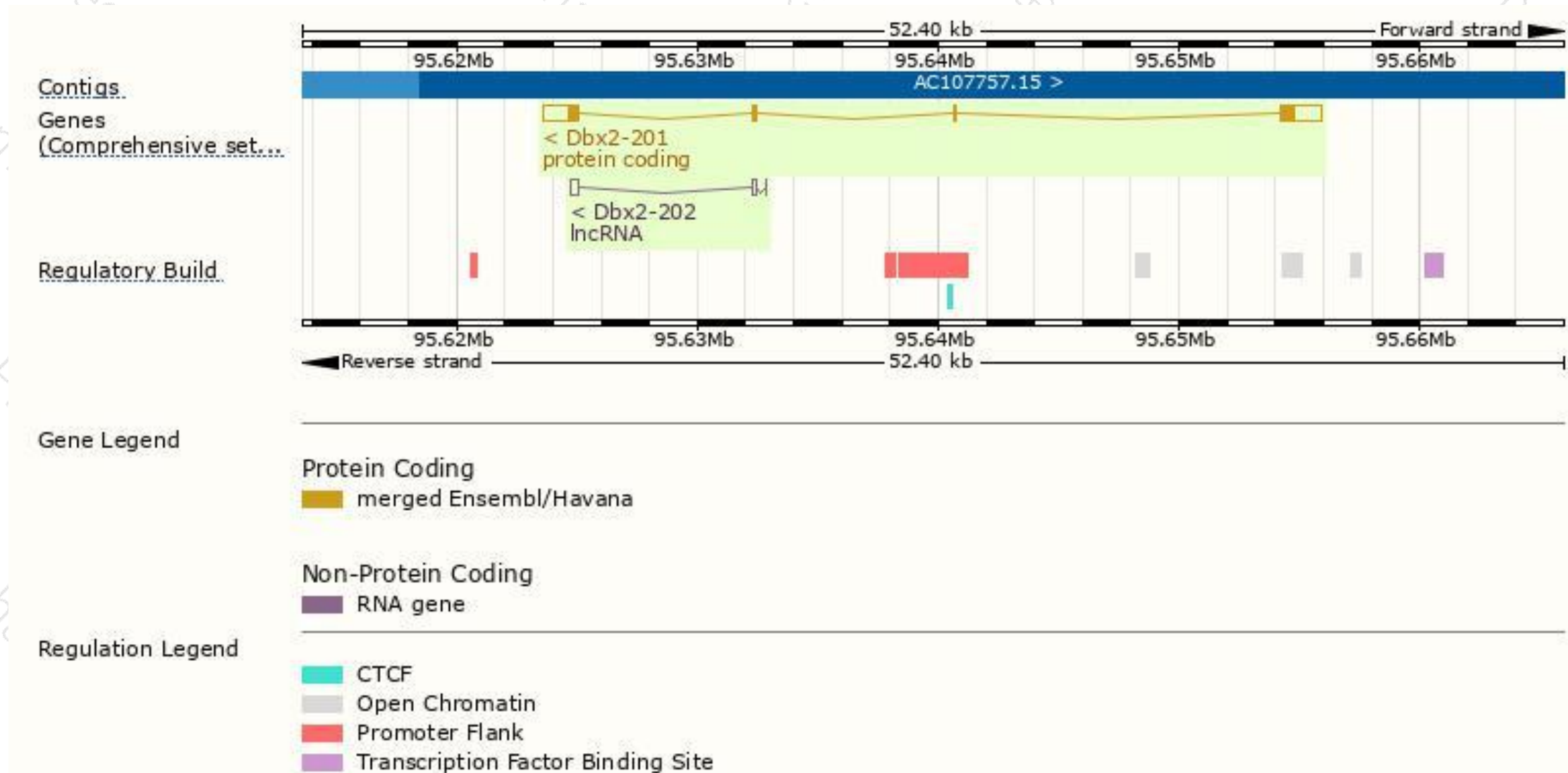
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dbx2-201	ENSMUST00000054244.6	3460	377aa	Protein coding	CCDS37183	F8VQH7	TSL:1 GENCODE basic APPRIS P1
Dbx2-202	ENSMUST00000229611.1	477	No protein	lncRNA	-	-	

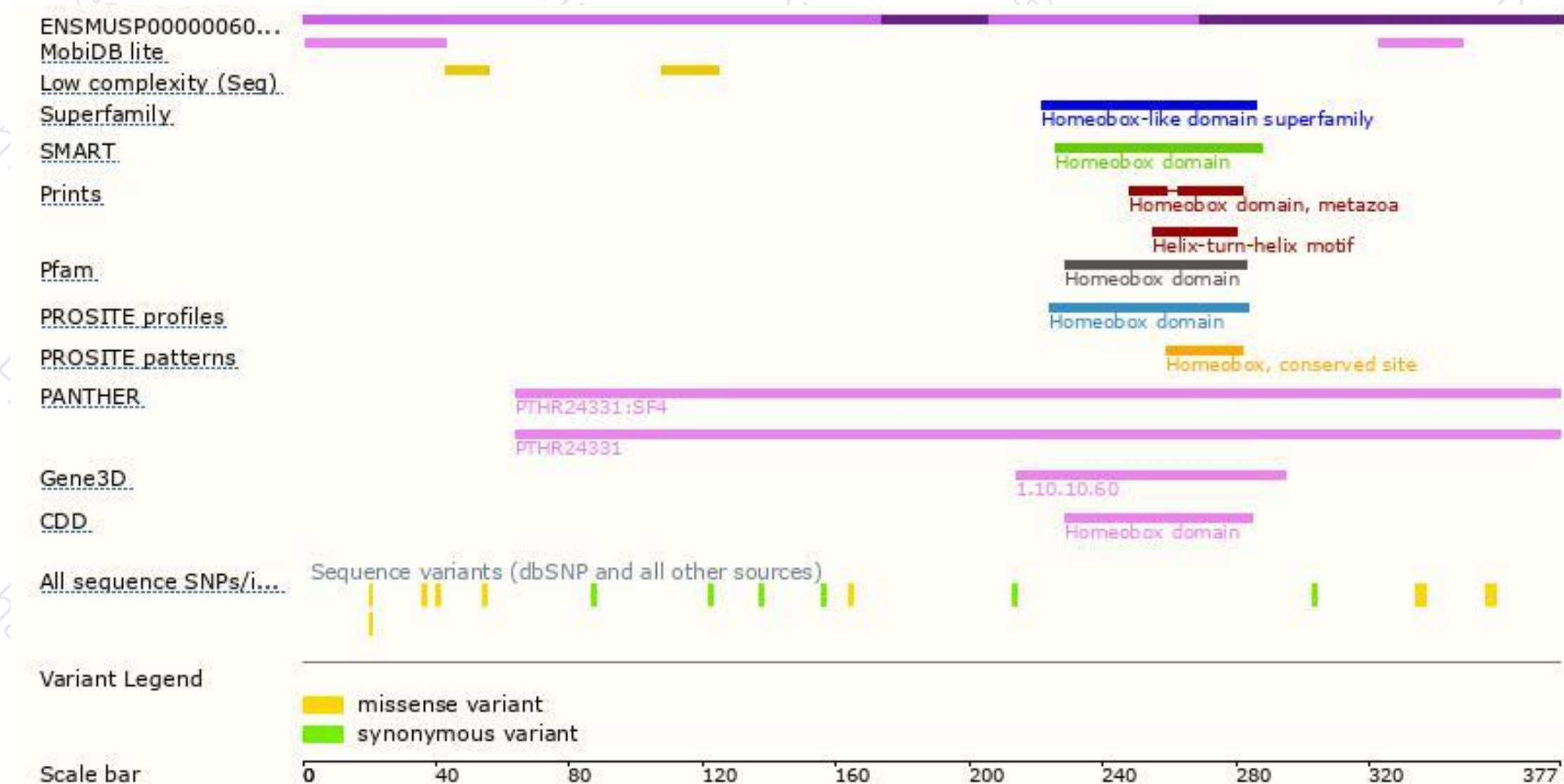
The strategy is based on the design of *Dbx2-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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