Ptf1a Cas9-CKO Strategy

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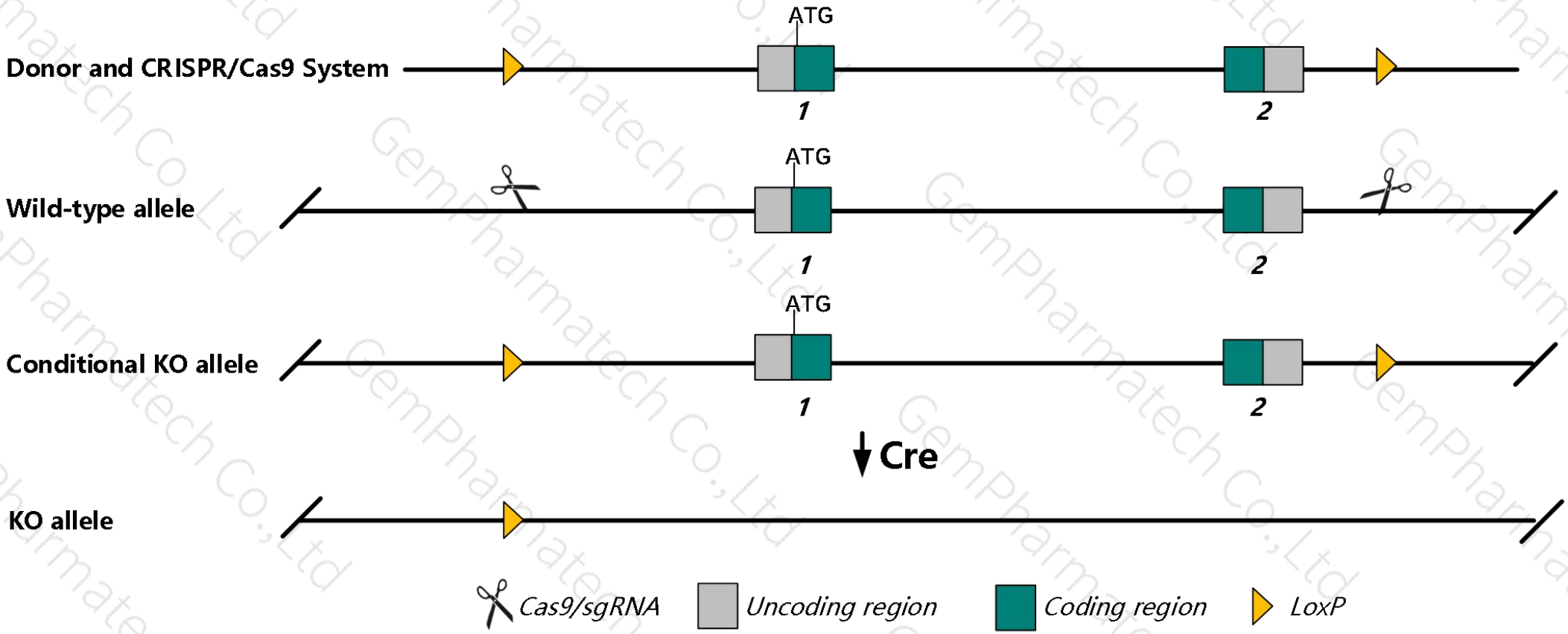
Project Overview

Project Name	***Ptf1a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptf1a* gene. The schematic diagram is as follows:



Technical routes

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- The *Ptf1a* gene has 1 transcript. According to the structure of *Ptf1a* gene, exon1-2 of *Ptf1a-201* (ENSMUST00000028068.2) transcript is recommended as the knockout region.The region contains all of coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ptf1a* 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, Nullizygous mice show neonatal death, exocrine pancreas and cerebellum agenesis, hypoglycemia and relocation of endocrine cells to the spleen. Knock-in mutations can lead to neonatal death, absent pancreas, altered GABAergic neuronal fate and retinal dysplasia due to misspecified retinal precursors..

➢The flox region coincides with *Ptf1aos*-201 and the gene will be deleted.

➢The *Ptf1a* gene is located on the Chr2. 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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Ptf1a pancreas specific transcription factor, 1a [*Mus musculus* (house mouse)]

Gene ID: 19213, updated on 22-Oct-2019

Summary

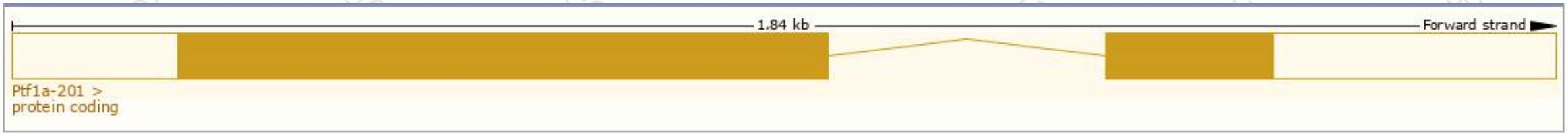
Official Symbol	Ptf1a provided by MGI
Official Full Name	pancreas specific transcription factor, 1a provided by MGI
Primary source	MGI:MGI:1328312
See related	Ensembl:ENSMUSG00000026735
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PTF1p48; bHLHa29; PTF1-p48
Expression	Biased expression in small intestine adult (RPKM 8.1), stomach adult (RPKM 4.1) and 4 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

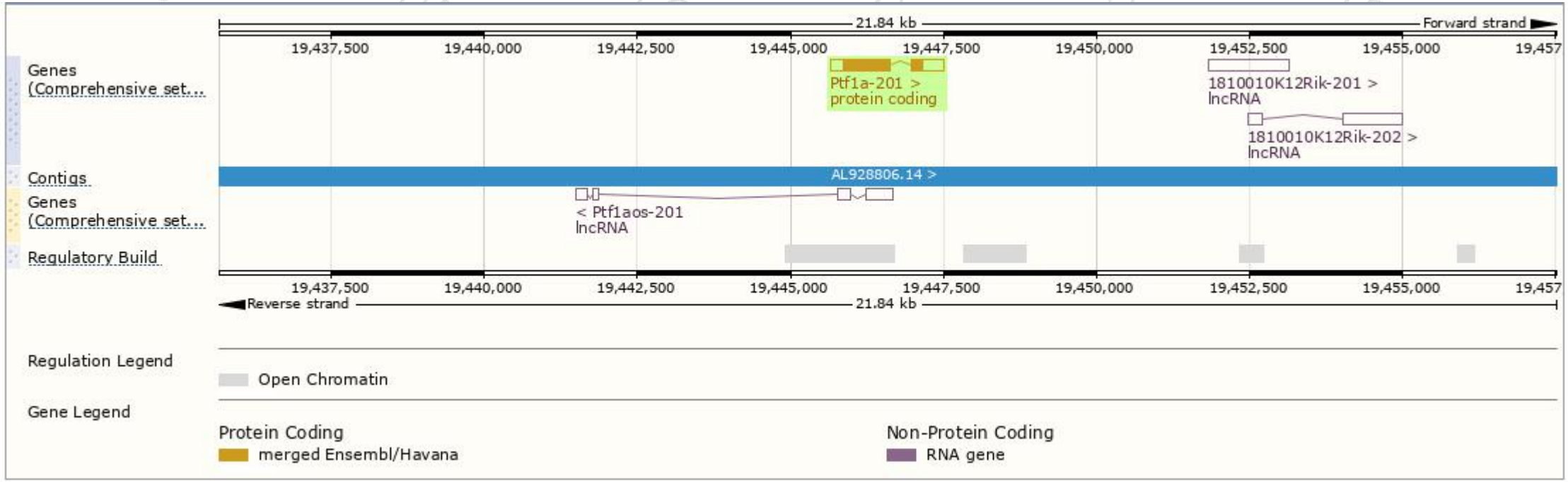
The gene has 1 transcript,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptf1a-201	ENSMUST00000028068.2	1508	324aa	Protein coding	CCDS15715	A2ATA7 Q9QX98	TSL:1 GENCODE basic APPRIS P1

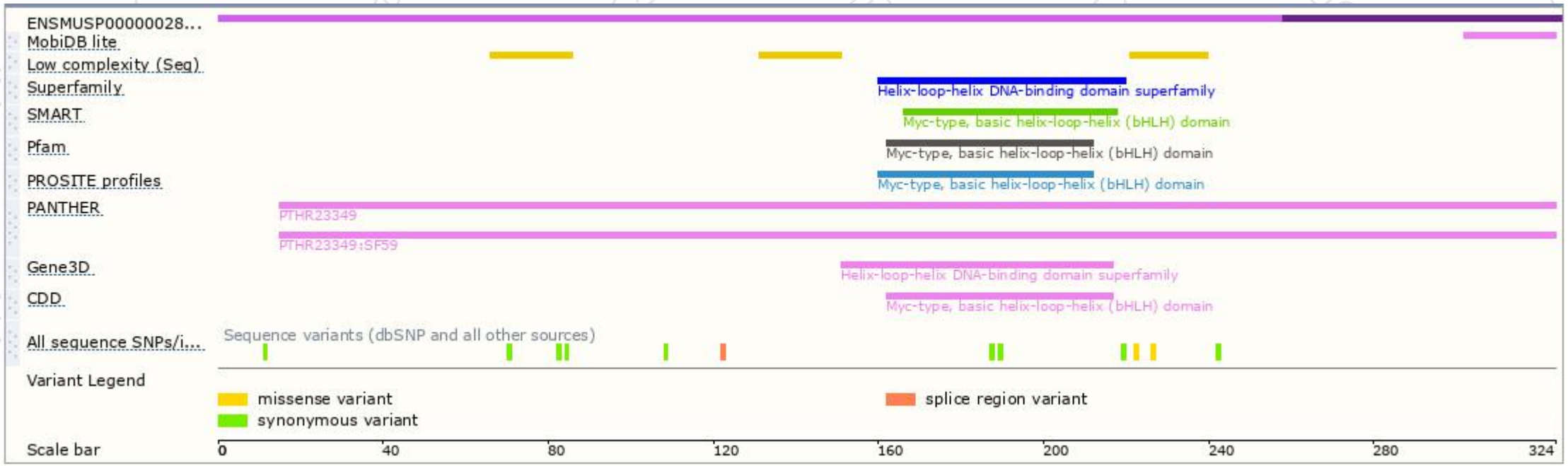
The strategy is based on the design of *Ptf1a-201* transcript,The transcription is shown below



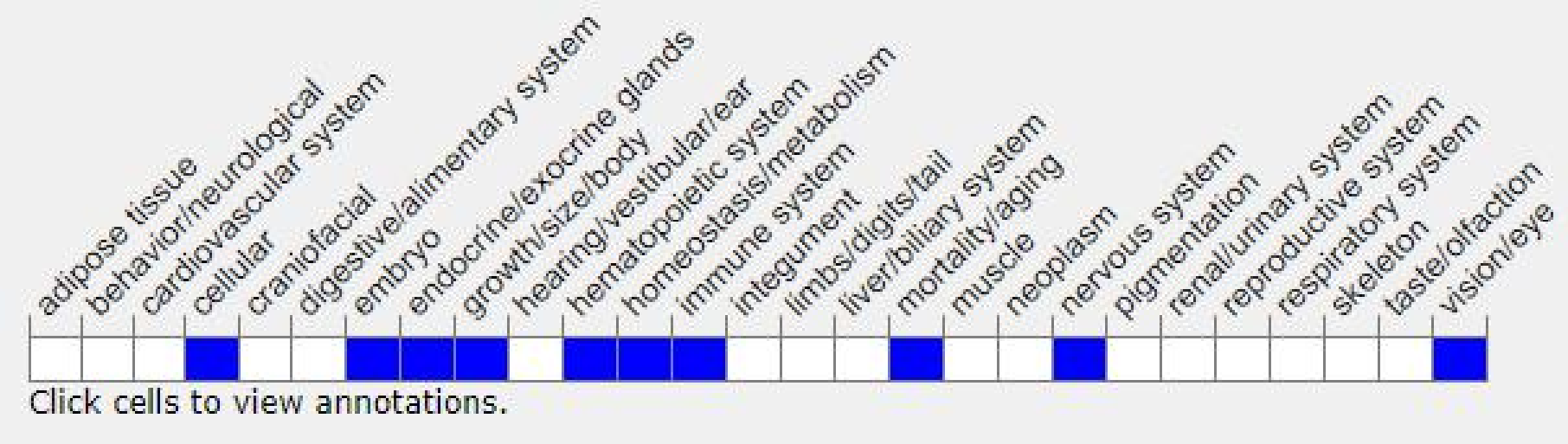
Genomic location distribution



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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