

Ptx3 Cas9-KO Strategy

Designer:

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Design Date:

2019-10-22

Project Overview



Project Name

Ptx3

Project type

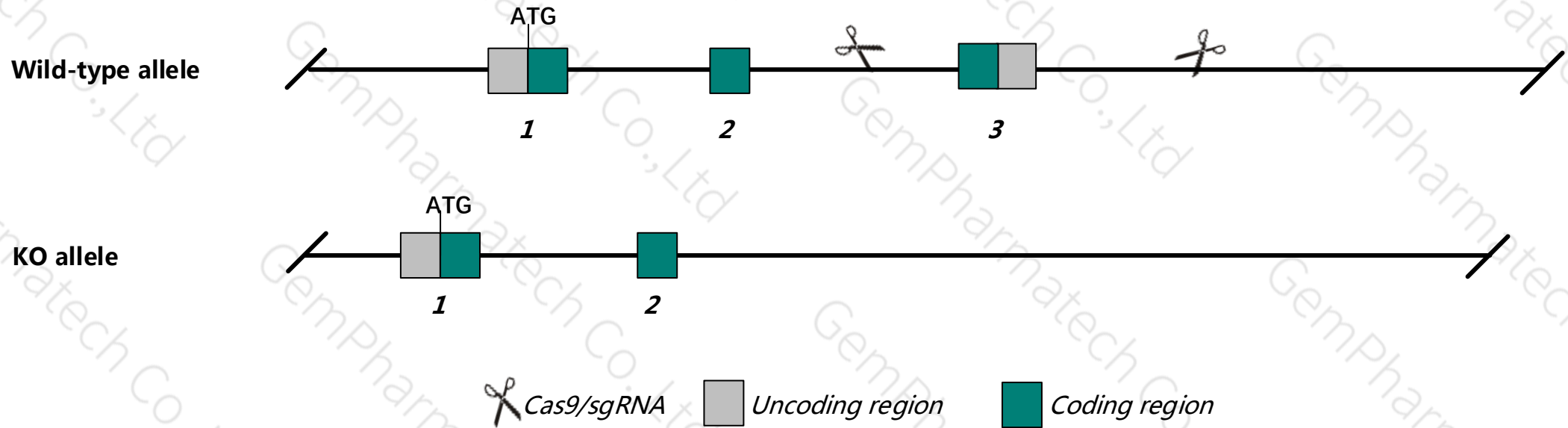
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptx3* gene. The schematic diagram is as follows:



Technical routes

- The *Ptx3* gene has 2 transcripts. According to the structure of *Ptx3* gene, exon3 of *Ptx3*-201 (ENSMUST00000029421.5) transcript is recommended as the knockout region. The region contains key coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptx3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9, sgRNA 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.

- According to the existing MGI data , Homozygous mutant mice display female subfertility due to abnormalities of the cumulus oophorus and are susceptible to invasive pulmonary aspergillosis associated with defective recognition of conidia by alveolar macrophages and dendritic cells and impaired induction of adaptive type 2 responses.
- The KO region contains functional region of the *Veph1* gene. Knockout the region may affect the function of *Veph1* gene.
- The *Ptx3* gene is located on the Chr3. 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 knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ptx3 pentraxin related gene [*Mus musculus* (house mouse)]








Gene ID: 19288, updated on 12-Aug-2018

Summary

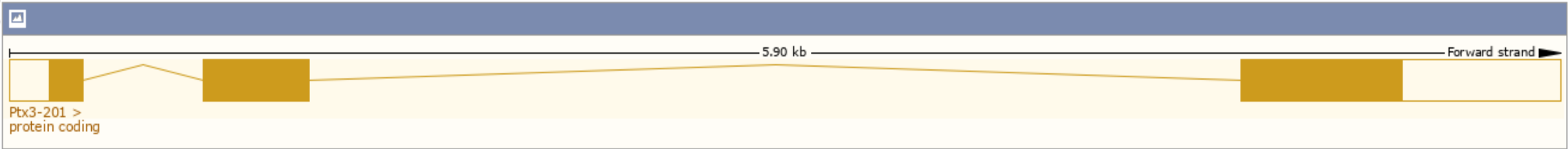
Official Symbol	Ptx3 provided by MGI
Official Full Name	pentraxin related gene provided by MGI
Primary source	MGI:MGI:104641
See related	Ensembl:ENSMUSG000000027832 Vega:OTTMUSG000000043511
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TSG-14; AI607804
Expression	Biased expression in limb E14.5 (RPKM 16.3), CNS E11.5 (RPKM 14.4) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

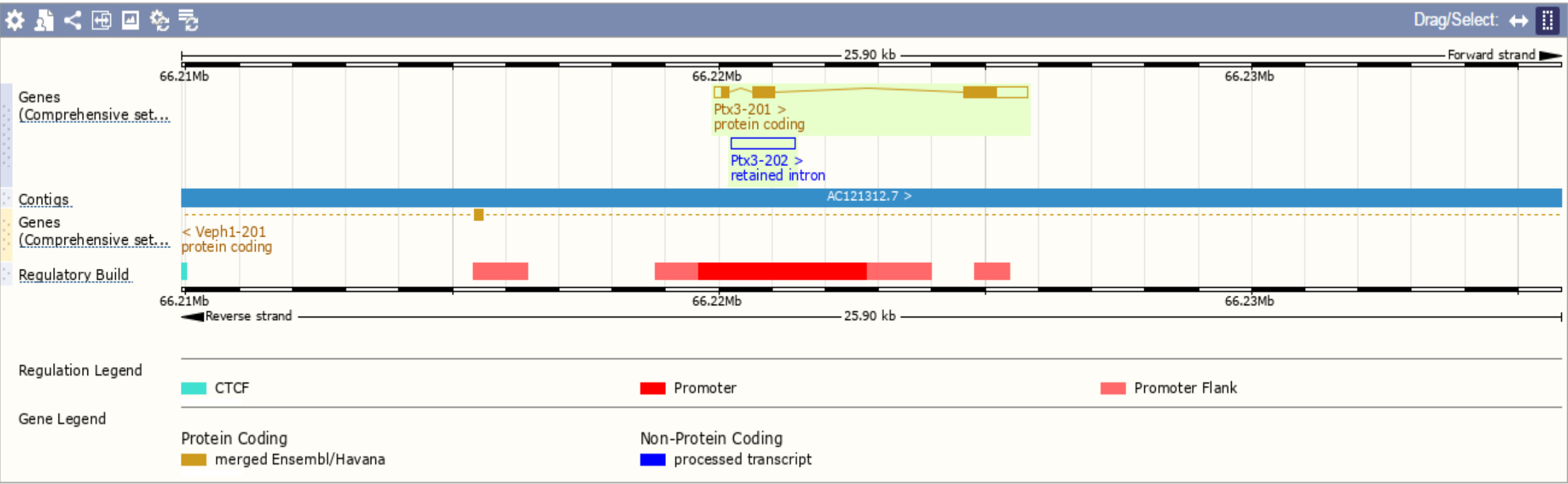
The gene has 2 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)								Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags		
Ptx3-201	ENSMUST00000029421.5	1898	381aa	 Protein coding	CCDS17392 	P48759 	NM_008987  NP_033013 	TSL:1	GENCODE basic	APPRIS P1
Ptx3-202	ENSMUST000000182521.1	1186	No protein	 Retained intron	-	-	-	TSL:NA		

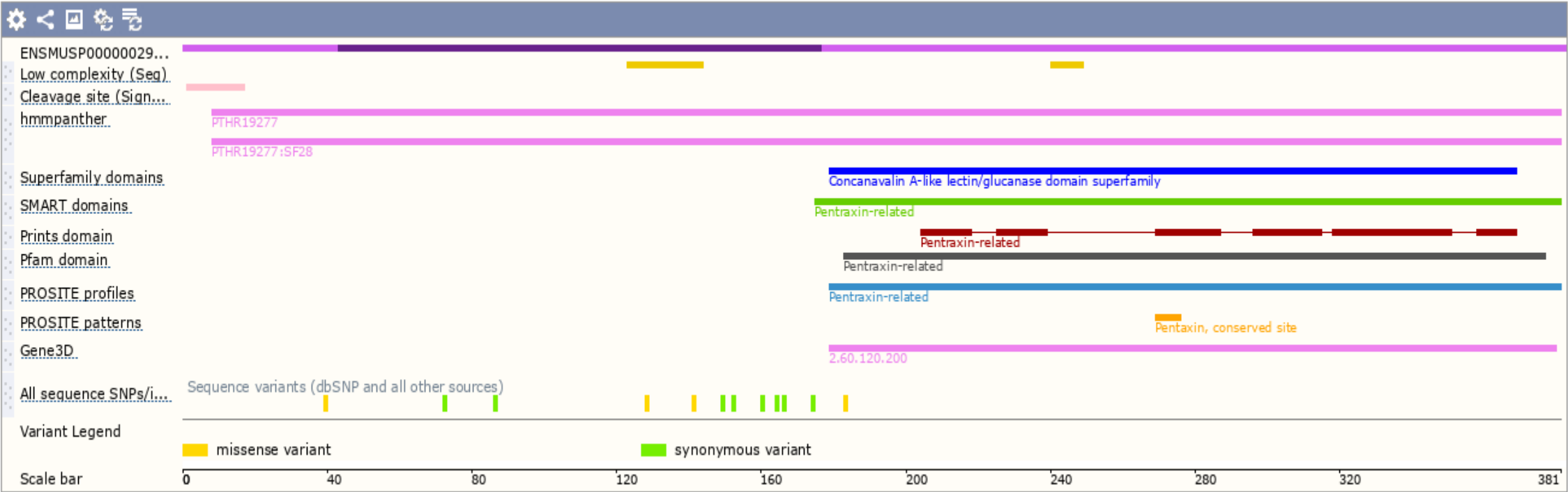
The strategy is based on the design of *Ptx3*-201 transcript, The transcription is shown below



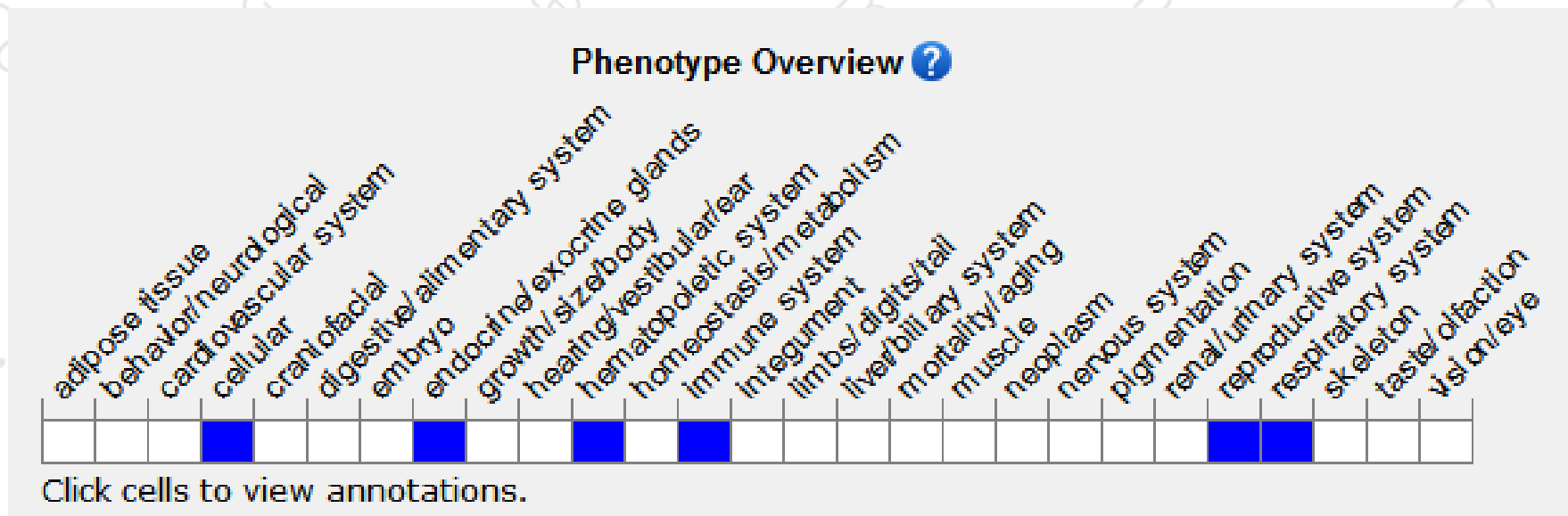
Genomic location distribution



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/>).

According to the existing MGI data, Homozygous mutant mice display female subfertility due to abnormalities of the cumulus oophorus and are susceptible to invasive pulmonary aspergillosis associated with defective recognition of conidia by alveolar macrophages and dendritic cells and impaired induction of adaptive type 2 responses.

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