

# ***Epor Cas9-KO Strategy***

**Designer:**

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# Project Overview



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**Project Name**

***Epor***

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**Project type**

**Cas9-KO**

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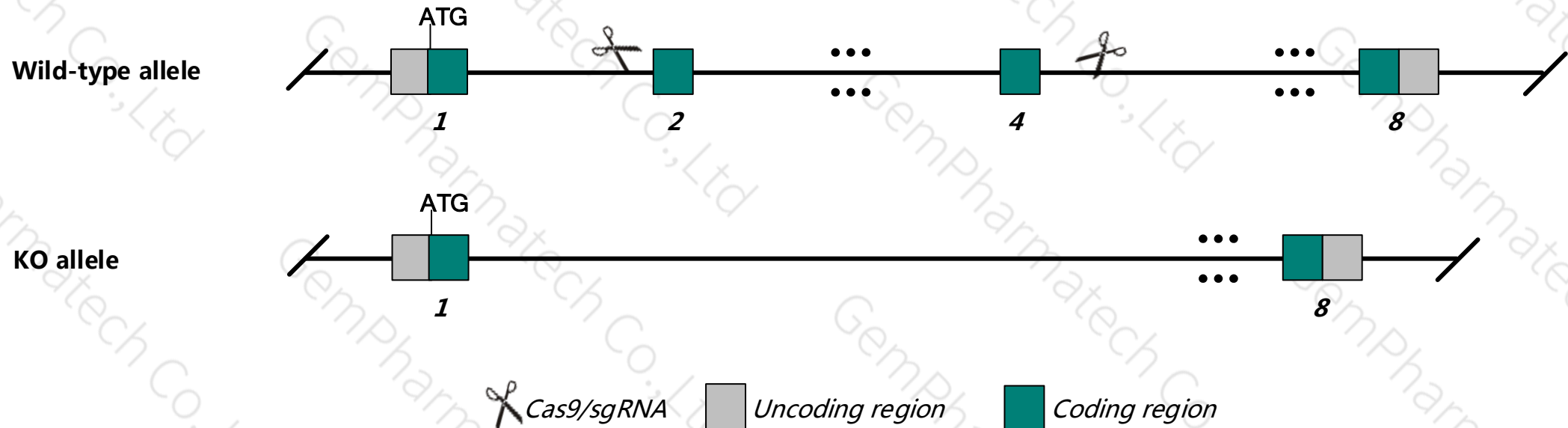
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

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



# Technical routes

- The *Epor* gene has 2 transcripts. According to the structure of *Epor* gene, exon2-exon4 of *Epor*-201 ( ENSMUST00000006397.6) transcript is recommended as the knockout region. The region contains 467bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Epor* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and 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 , Mutations in this locus affect erythropoiesis. Targeted null mutants die at embryonic day 11-12.5 with severe anemia. Mutants with truncated alleles are viable with mild changes in erythropoiesis. A human mutation replacement allele produces polycythemia.
- The *Epor* gene is located on the Chr9. 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,, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information ( NCBI )



## Epor erythropoietin receptor [ *Mus musculus* (house mouse) ]

Gene ID: 13857, updated on 11-Jun-2019

Summary

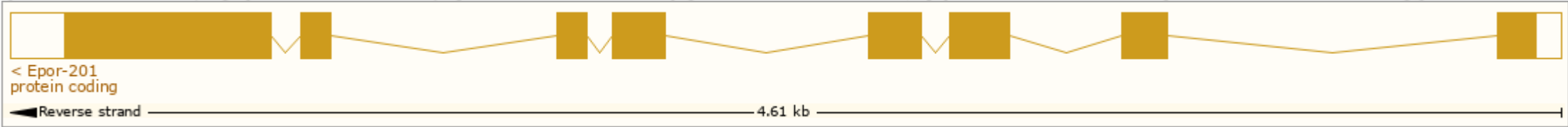
Official Symbol	Epor provided by <a href="#">MGI</a>
Official Full Name	erythropoietin receptor provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:95408</a>
See related	<a href="#">Ensembl:ENSMUSG00000006235</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in liver E14.5 (RPKM 73.4), liver E14 (RPKM 57.8) and 5 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information ( Ensembl )

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

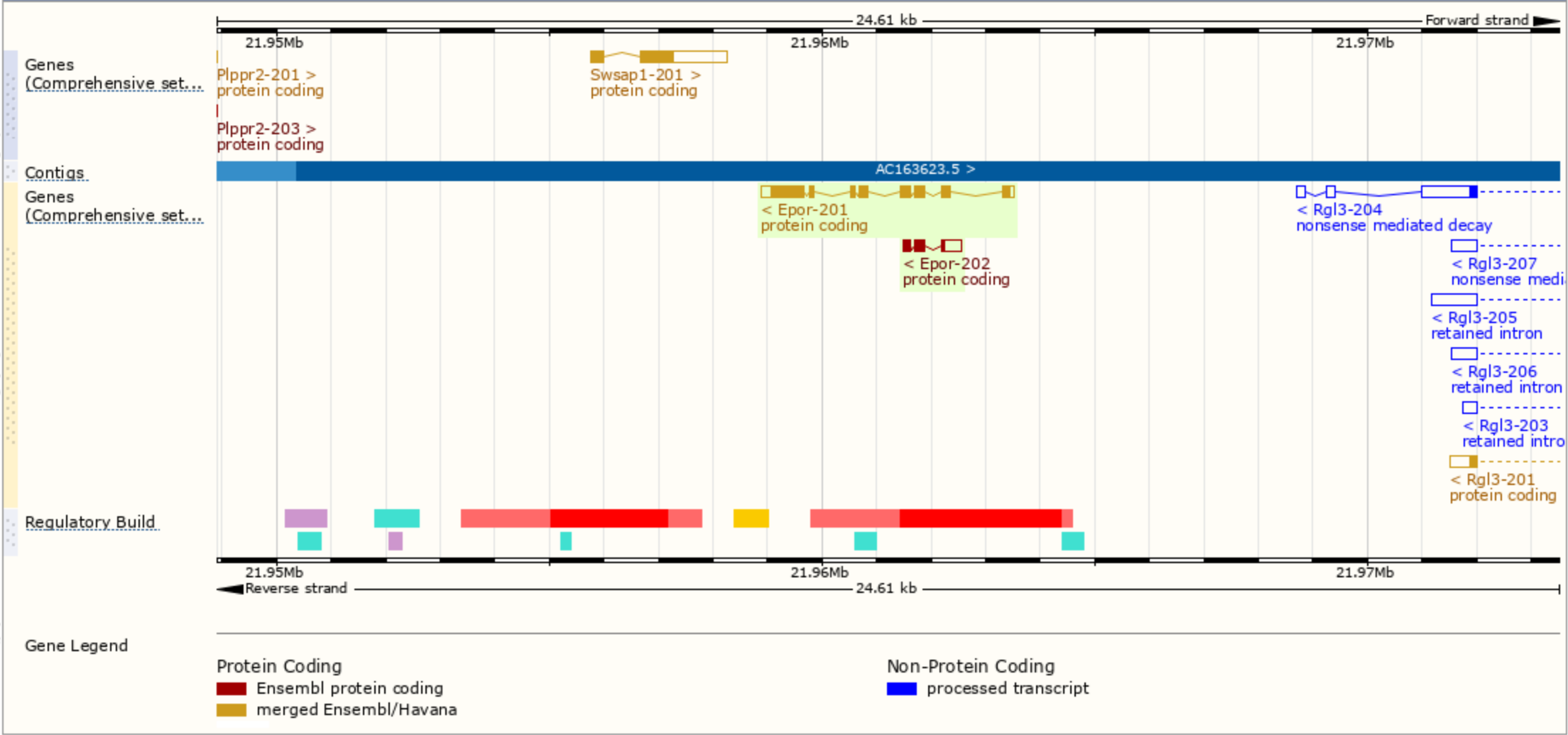
Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Epor-201	<a href="#">ENSMUST00000006397.6</a>	1761	<a href="#">507aa</a>	Protein coding	<a href="#">CCDS22915</a>	<a href="#">P14753</a> <a href="#">Q3UTV9</a>	TSL:1	GENCODE basic APPRIS P1
Epor-202	<a href="#">ENSMUST00000213181.1</a>	659	<a href="#">111aa</a>	Protein coding	-	<a href="#">A0A1L1SRC0</a>	CDS 3' incomplete	TSL:2

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





# Genomic location distribution

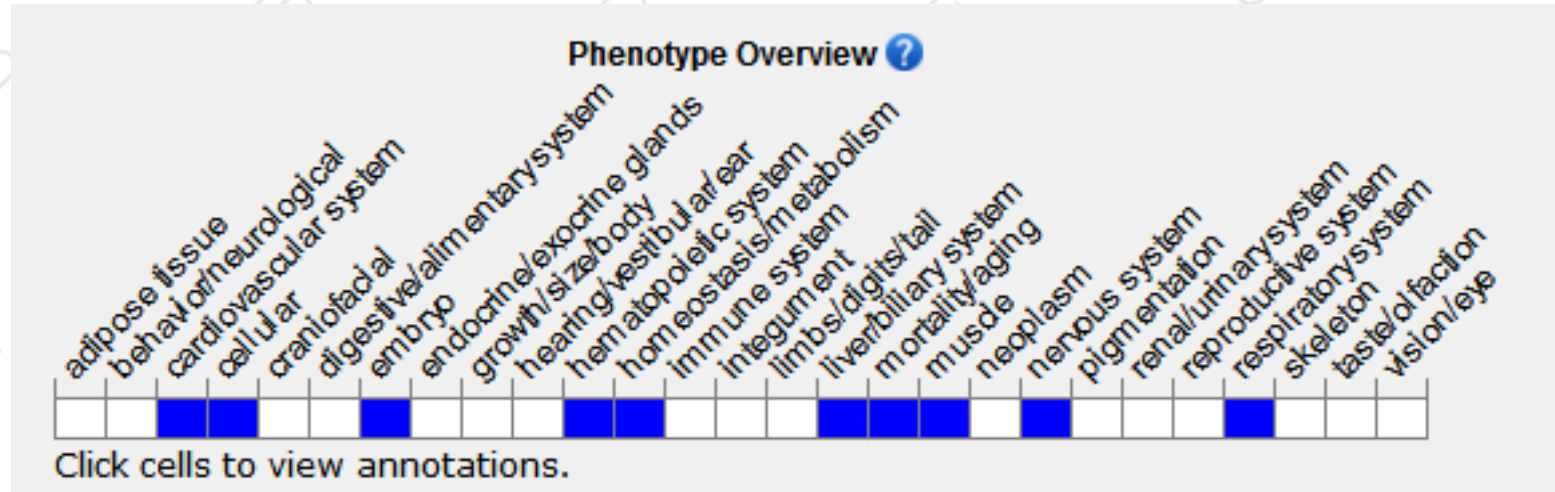




# Protein domain



# 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, Mutations in this locus affect erythropoiesis. Targeted null mutants die at embryonic day 11-12.5 with severe anemia. Mutants with truncated alleles are viable with mild changes in erythropoiesis. A human mutation replacement allele produces polycythemia.

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