Erbb3 Cas9-KO *Strategy*

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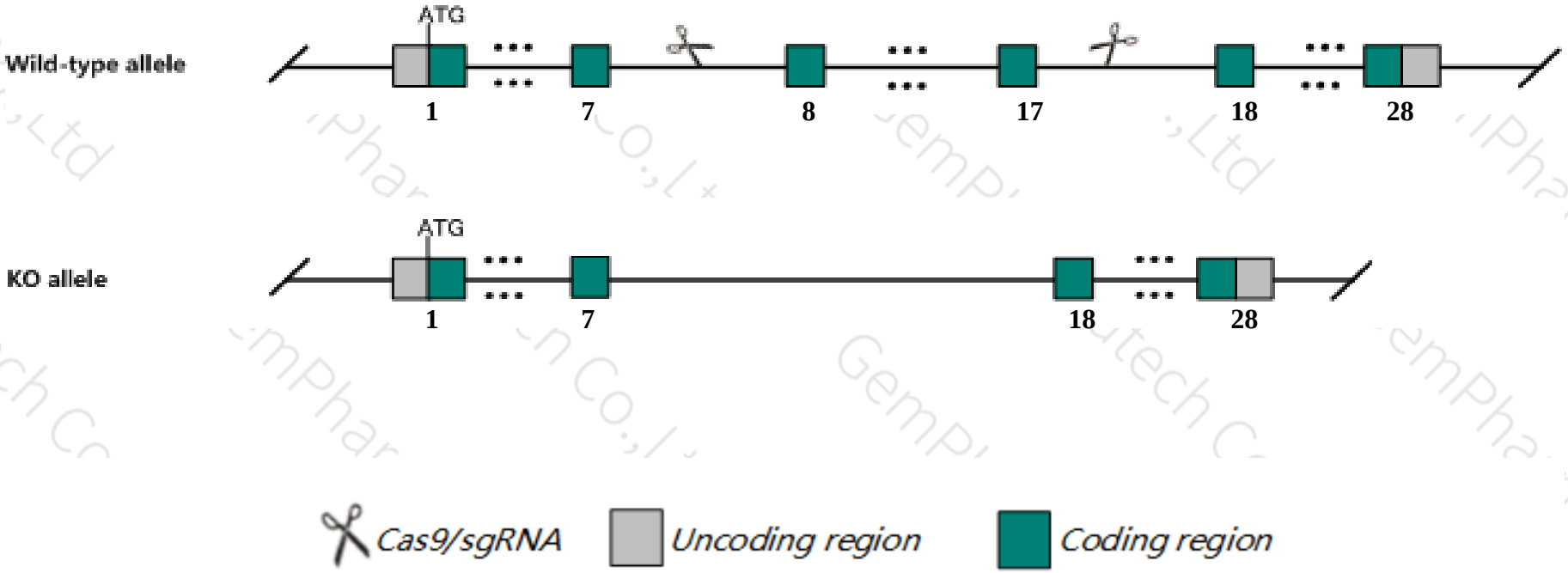
Design Date: **2019-10-15**

Project Overview

Project Name	**Erbb3**
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Erbb3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Erbb3* gene has 1 transcript. According to the structure of *Erbb3* gene, exon8-exon17 of *Erbb3-201* (ENSMUST00000082059.6) transcript is recommended as the knockout region.The region contains 1175bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Erbb3* 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.

Notice

➢ According to the existing MGI data,Homozygotes for targeted null mutations exhibit a lack of Schwann-cell precursors leading to loss of sensory and motor neurons, hypoplasia of the primary sympathetic ganglion chain, cardiac defects, impaired brain development, and embryonic lethality.

➢ The *Erbb3* gene is located on the Chr10. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Erbb3 erb-b2 receptor tyrosine kinase 3 [*Mus musculus* (house mouse)]

Gene ID: 13867, updated on 11-Sep-2019

Summary

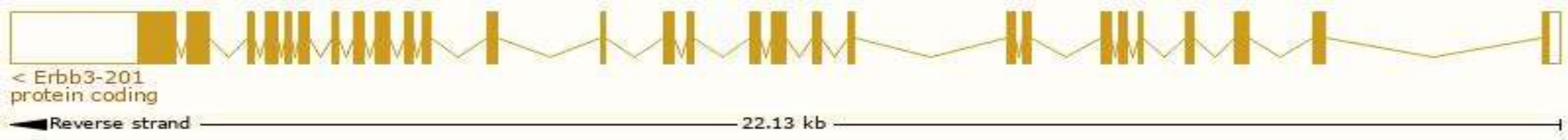
Official Symbol	Erbb3 provided by MGI
Official Full Name	erb-b2 receptor tyrosine kinase 3 provided by MGI
Primary source	MGI:MGI:95411
See related	Ensembl:ENSMUSG00000018166
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Her3; C76256; Erbb-3; Erbb3r
Expression	Biased expression in colon adult (RPKM 49.8), large intestine adult (RPKM 38.8) and 13 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

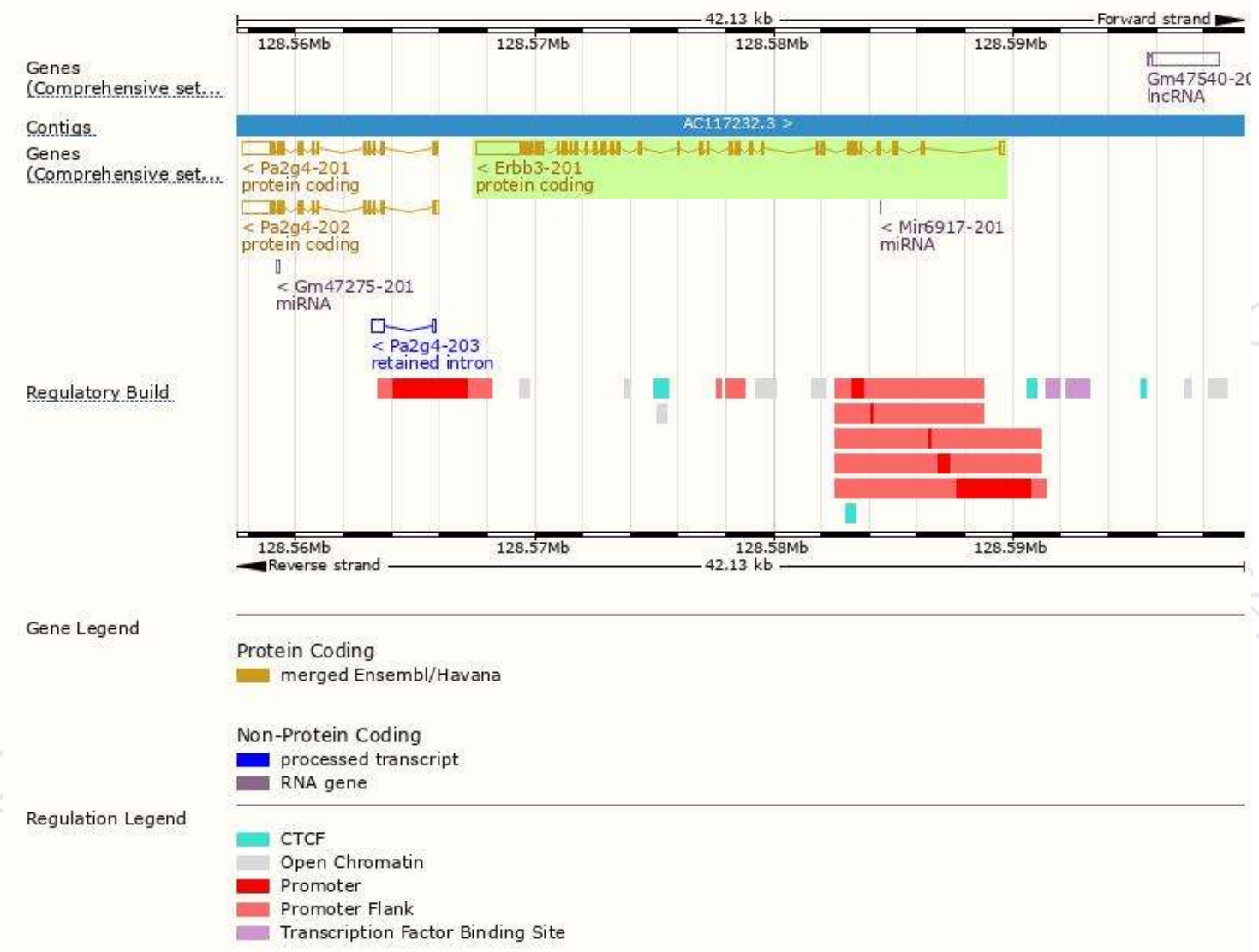
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Erbb3-201	ENSMUST00000082059.6	6016	1339aa	Protein coding	CCDS24283	Q61526	TSL:1 GENCODE basic APPRIS P1

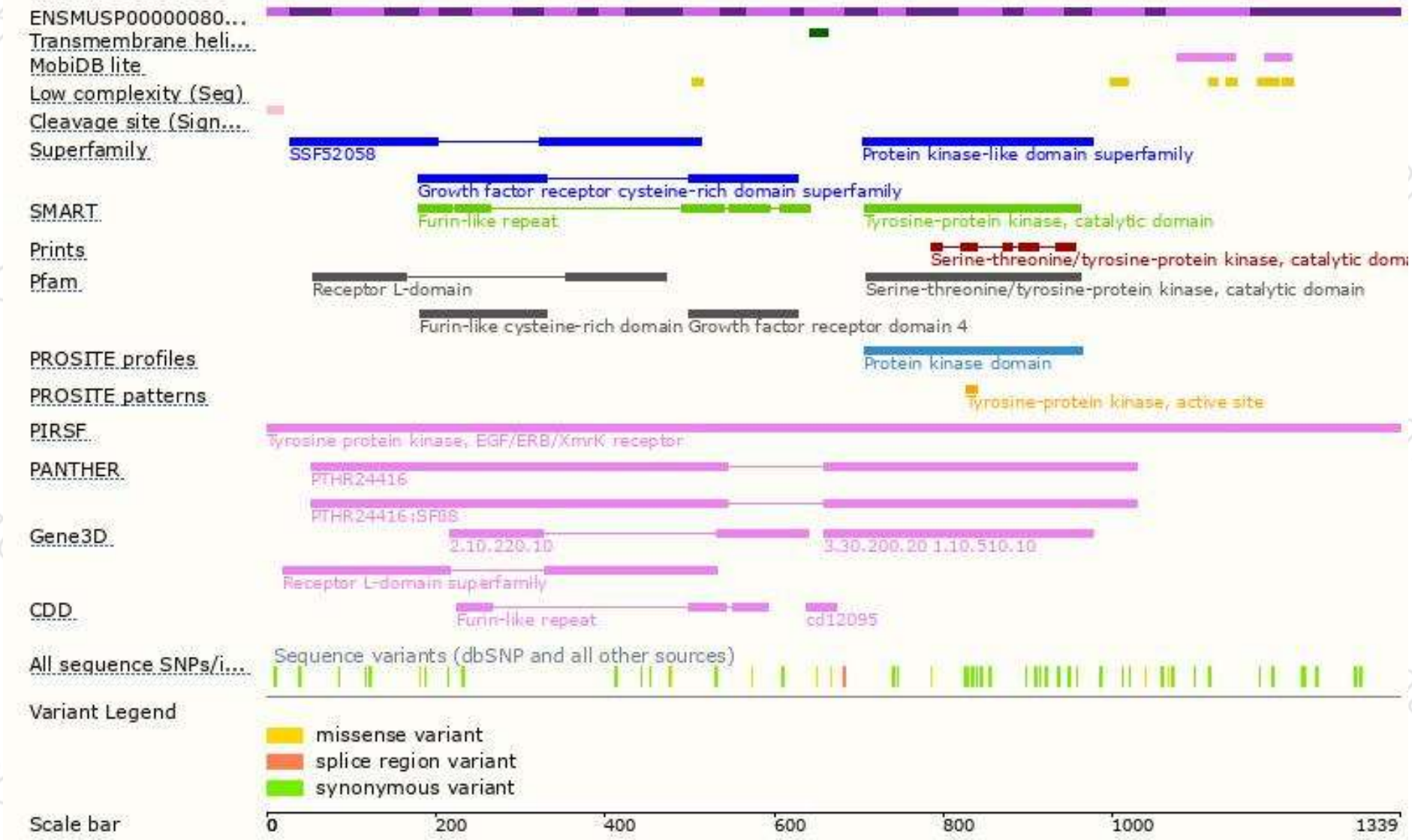
The strategy is based on the design of *Erbb3-201* transcript,The transcription is shown below



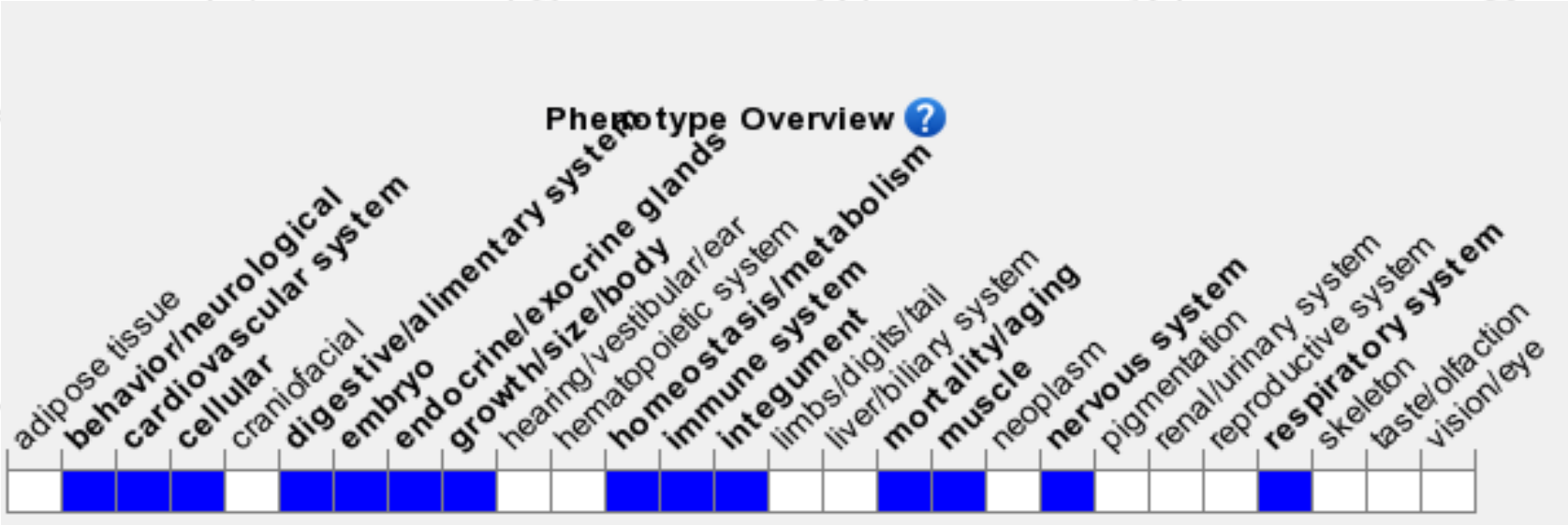
Genomic location distribution



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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