

Hydin Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Hydin

Project type

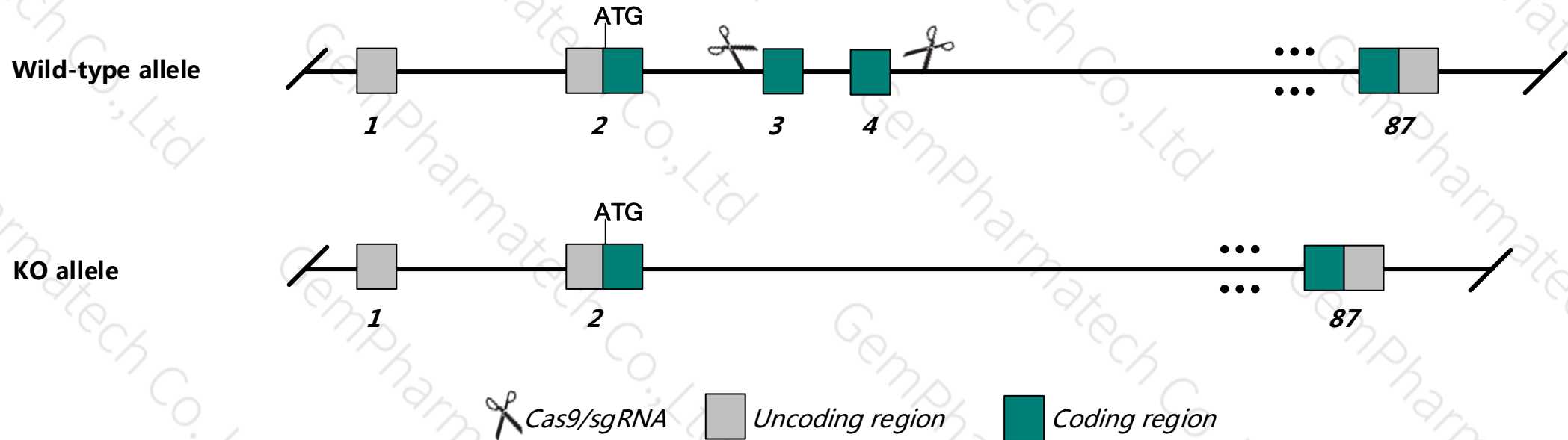
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



Technical routes

- The *Hydin* gene has 3 transcripts. According to the structure of *Hydin* gene, exon3-exon4 of *Hydin*-201 (ENSMUST00000043141.6) transcript is recommended as the knockout region. The region contains 284bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hydin* 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 , Mice homozygous for a mutation in this gene develop hydrocephaly after birth. Symptoms develop after 3-5 days. Affected animals usually die before 2 months of age.
- The *Hydin* gene is located on the Chr8. 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)

Hydin HYDIN, axonemal central pair apparatus protein [*Mus musculus* (house mouse)]

Gene ID: 244653, updated on 2-Apr-2019

Summary

Official Symbol Hydin provided by [MGI](#)

Official Full Name HYDIN, axonemal central pair apparatus protein provided by [MGI](#)

Primary source [MGI:MGI:2389007](#)

See related [Ensembl:ENSMUSG00000059854](#)

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 hy3; hy-3; hyrh; 672398; Gm9558; 4932703P14; A830061H17; 1700034M11Rik; 4930545D19Rik; AC069308.21gm4

Expression Biased expression in testis adult (RPKM 10.5), lung adult (RPKM 1.1) and 1 other tissue [See more](#)

Orthologs [human](#) [all](#)

Transcript information (Ensembl)

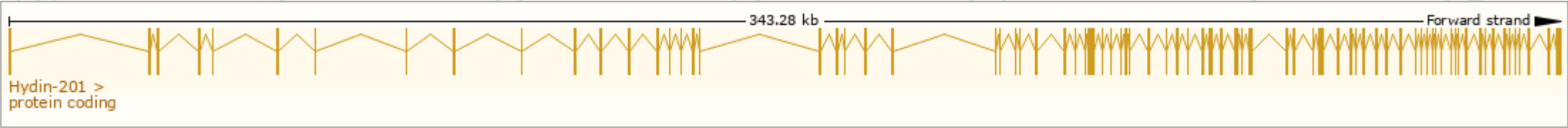
The gene has 3 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)

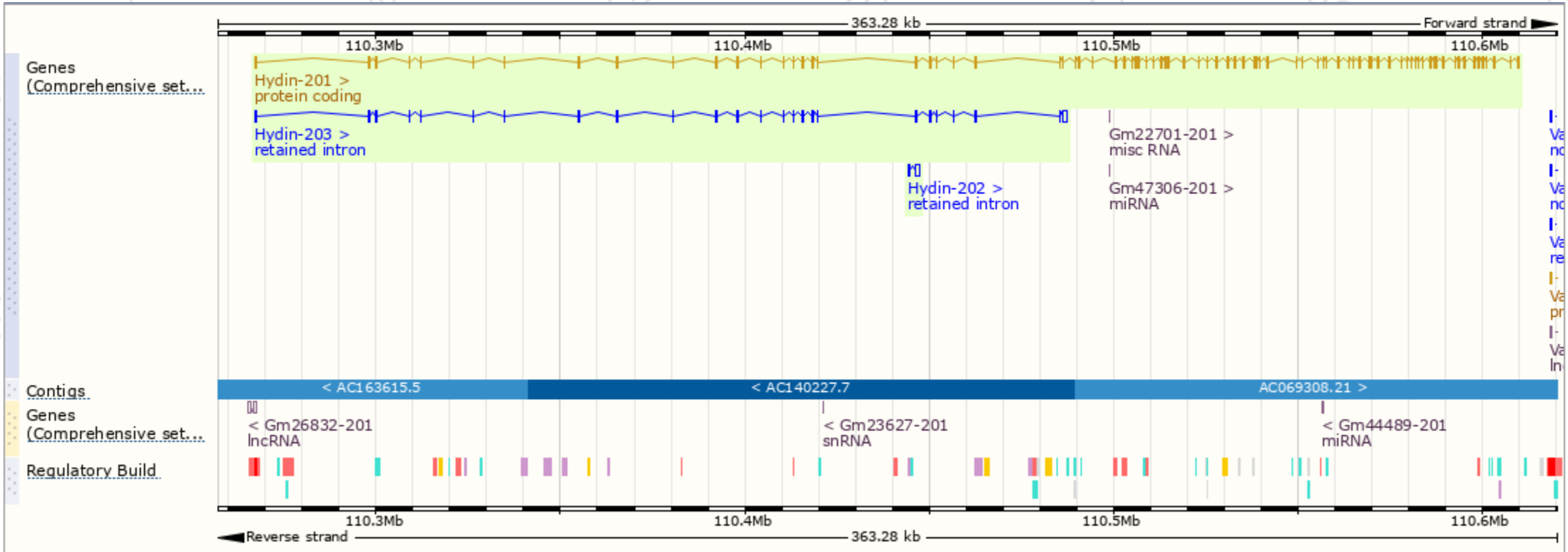
Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hydin-201	ENSMUST00000043141.6	15783	5154aa	Protein coding	CCDS40476	Q80W93	TSL:1 Gencode basic APPRIS P1
Hydin-203	ENSMUST00000212218.1	5330	No protein	Retained intron	-	-	TSL:1
Hydin-202	ENSMUST00000212034.1	1267	No protein	Retained intron	-	-	TSL:1

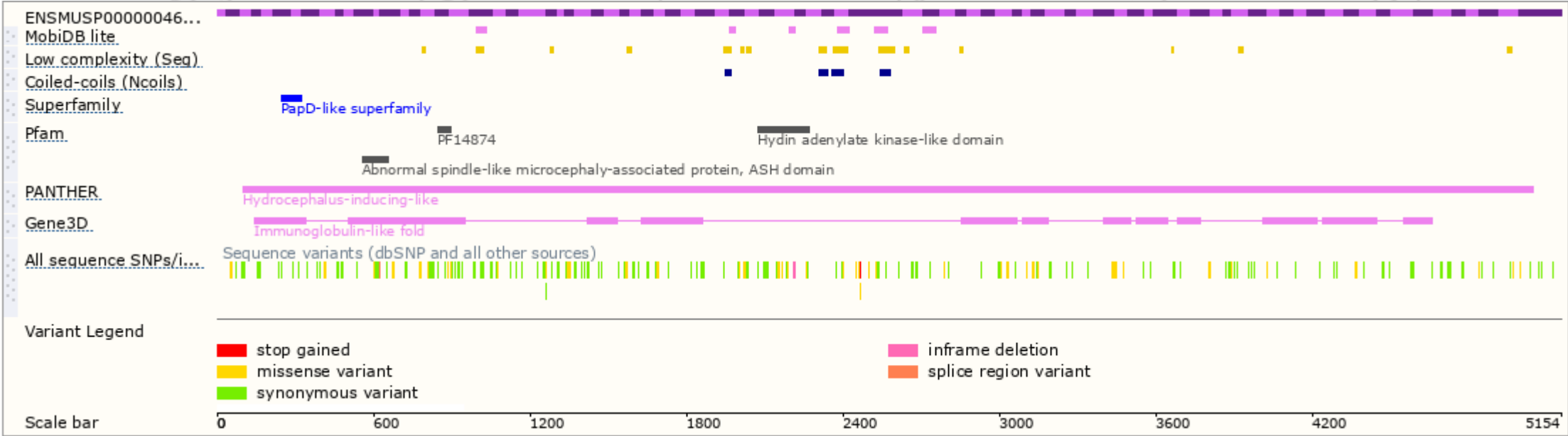
The strategy is based on the design of *Hydin*-201 transcript, The transcription is shown below



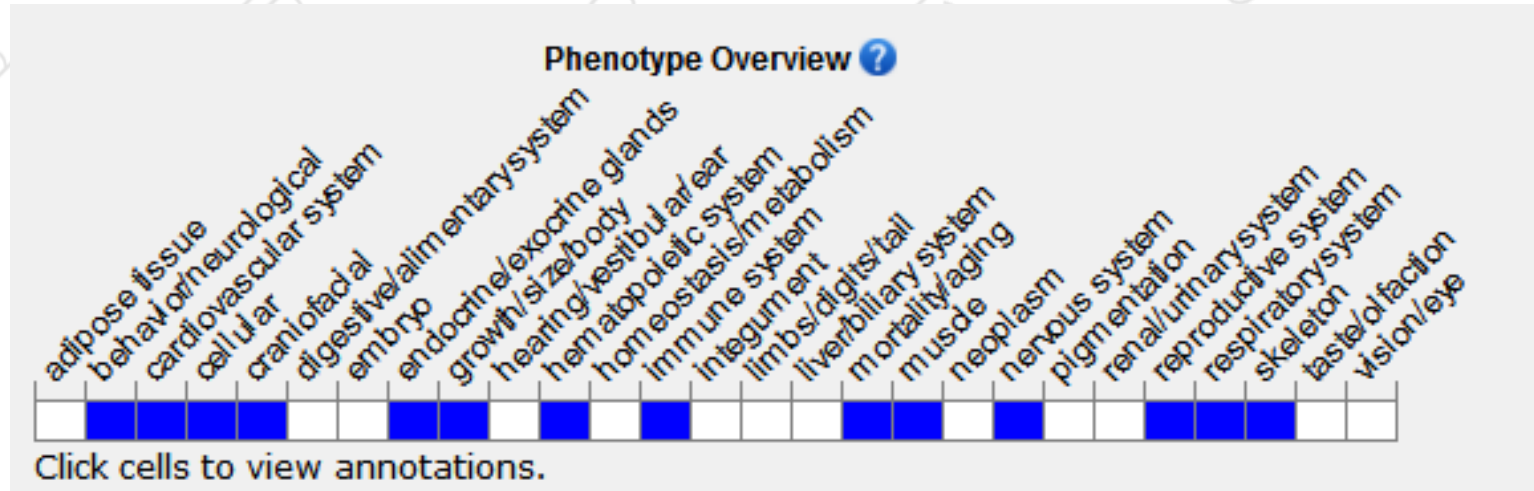
Genomic location distribution



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, Mice homozygous for a mutation in this gene develop hydrocephaly after birth.

Symptoms develop after 3-5 days. Affected animals usually die before 2 months of age.

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