

# ***Ddx20 Cas9-KO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

***Ddx20***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ddx20* gene. The schematic diagram is as follows:



- The *Ddx20* gene has 3 transcripts. According to the structure of *Ddx20* gene, exon3-exon10 of *Ddx20-201* (ENSMUST00000090680.10) transcript is recommended as the knockout region. The region contains 916bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ddx20* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele fail to implant and develop past the 2-cell stage. Heterozygous null females are viable, healthy and fertile but show increased ovary weight, a greater number of empty follicles, a prolonged estrous phase, and reduced nocturnal and stress-induced serum ACTH levels.
- The *Ddx20* 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Ddx20 DEAD (Asp-Glu-Ala-Asp) box polypeptide 20 [ *Mus musculus* (house mouse) ]

Gene ID: 53975, updated on 10-Oct-2019

### Summary

Official Symbol	Ddx20 provided by <a href="#">MGI</a>
Official Full Name	DEAD (Asp-Glu-Ala-Asp) box polypeptide 20 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1858415</a>
See related	<a href="#">Ensembl:ENSMUSG00000027905</a>
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	dp103; GEMIN3
Expression	Broad expression in testis adult (RPKM 40.1), ovary adult (RPKM 10.1) and 23 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

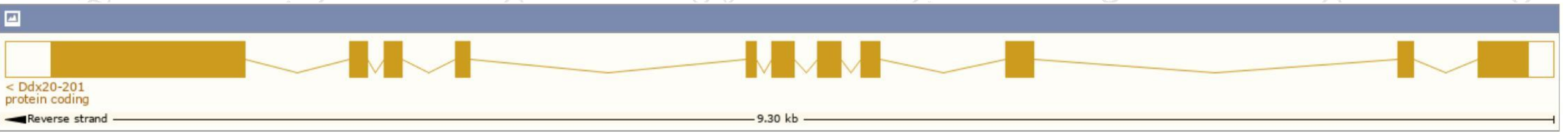
# Transcript information (Ensembl)

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

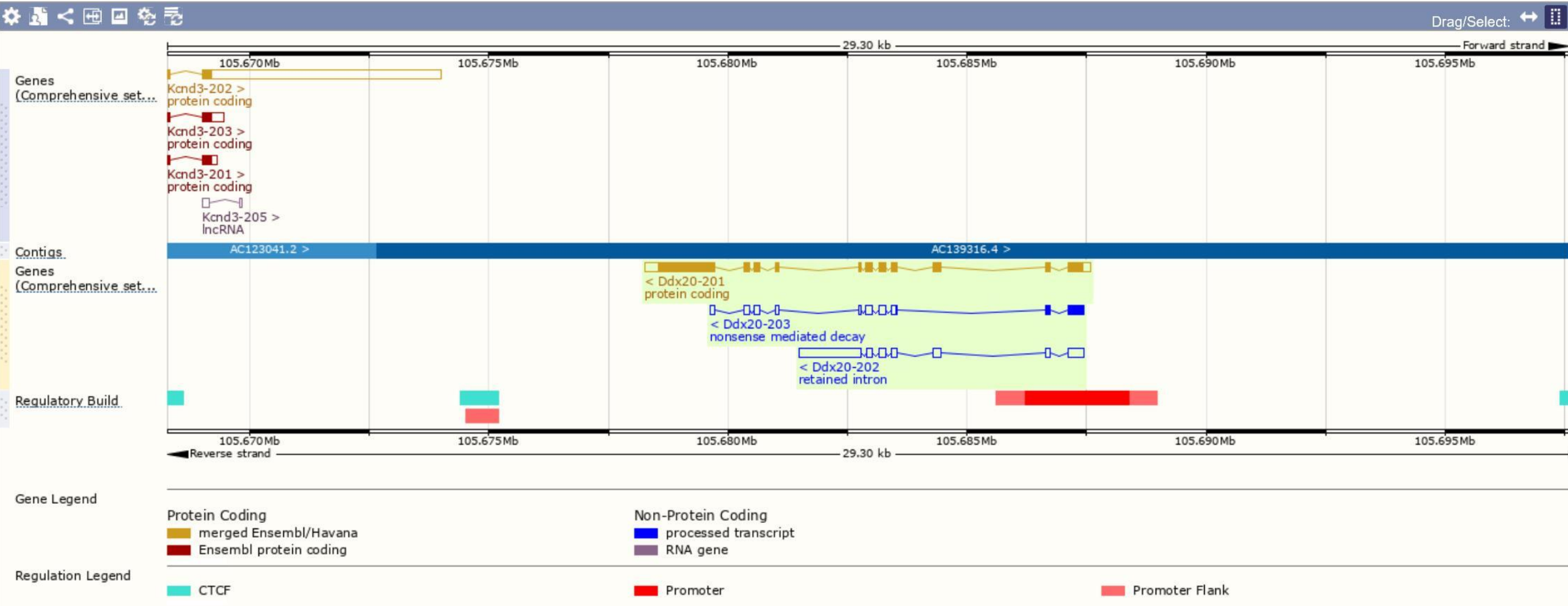
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Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ddx20-203	<a href="#">ENSMUST00000200078.4</a>	1264	<a href="#">139aa</a>	Nonsense mediated decay	-	<a href="#">A0A0G2JE88</a>	TSL:5
Ddx20-202	<a href="#">ENSMUST00000132008.1</a>	2257	No protein	Retained intron	-	-	TSL:5
Ddx20-201	<a href="#">ENSMUST00000090680.10</a>	2905	<a href="#">825aa</a>	Protein coding	<a href="#">CCDS38581</a>	<a href="#">Q9JJY4</a>	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Ddx20-201* transcript,The transcription is shown below



# Genomic location distribution

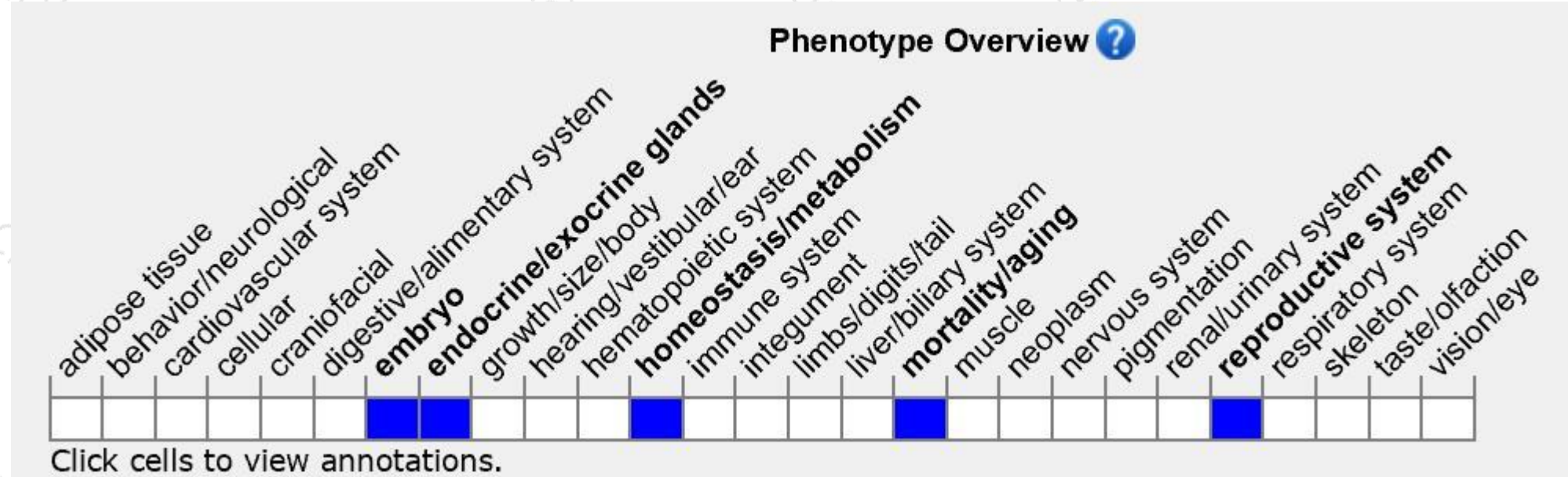




# Protein domain



# 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 null allele fail to implant and develop past the 2-cell stage.

Heterozygous null females are viable, healthy and fertile but show increased ovary weight, a greater number of empty follicles, a prolonged estrous phase, and reduced nocturnal and stress-induced serum ACTH levels.

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

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