

# *Arfgef3* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Arfgef3*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arfgef3* gene. The schematic diagram is as follows:



- The *Arfgef3* gene has 2 transcripts. According to the structure of *Arfgef3* gene, exon3-exon4 of *Arfgef3*-202 (ENSMUST00000215836.1) transcript is recommended as the knockout region. The region contains 214bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arfgef3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit increased insulin granule biogenesis and insulin secretion.
- The *Arfgef3* 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)

## Arfgef3 ARFGEF family member 3 [ *Mus musculus* (house mouse) ]

Gene ID: 215821, updated on 13-Mar-2020

### Summary

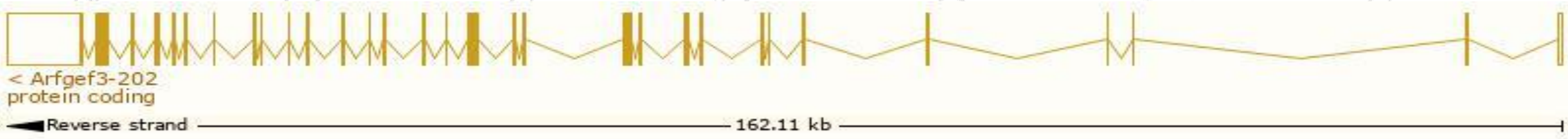
Official Symbol	Arfgef3 provided by MGI
Official Full Name	ARFGEF family member 3 provided by MGI
Primary source	MGI:MGI:106387
See related	Ensembl:ENSMUSG00000019852
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BIG3; mKIAA1244; 9630004D11; D10Bwg1379e; B930094H20Rik
Expression	Broad expression in cortex adult (RPKM 3.5), colon adult (RPKM 3.2) and 19 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

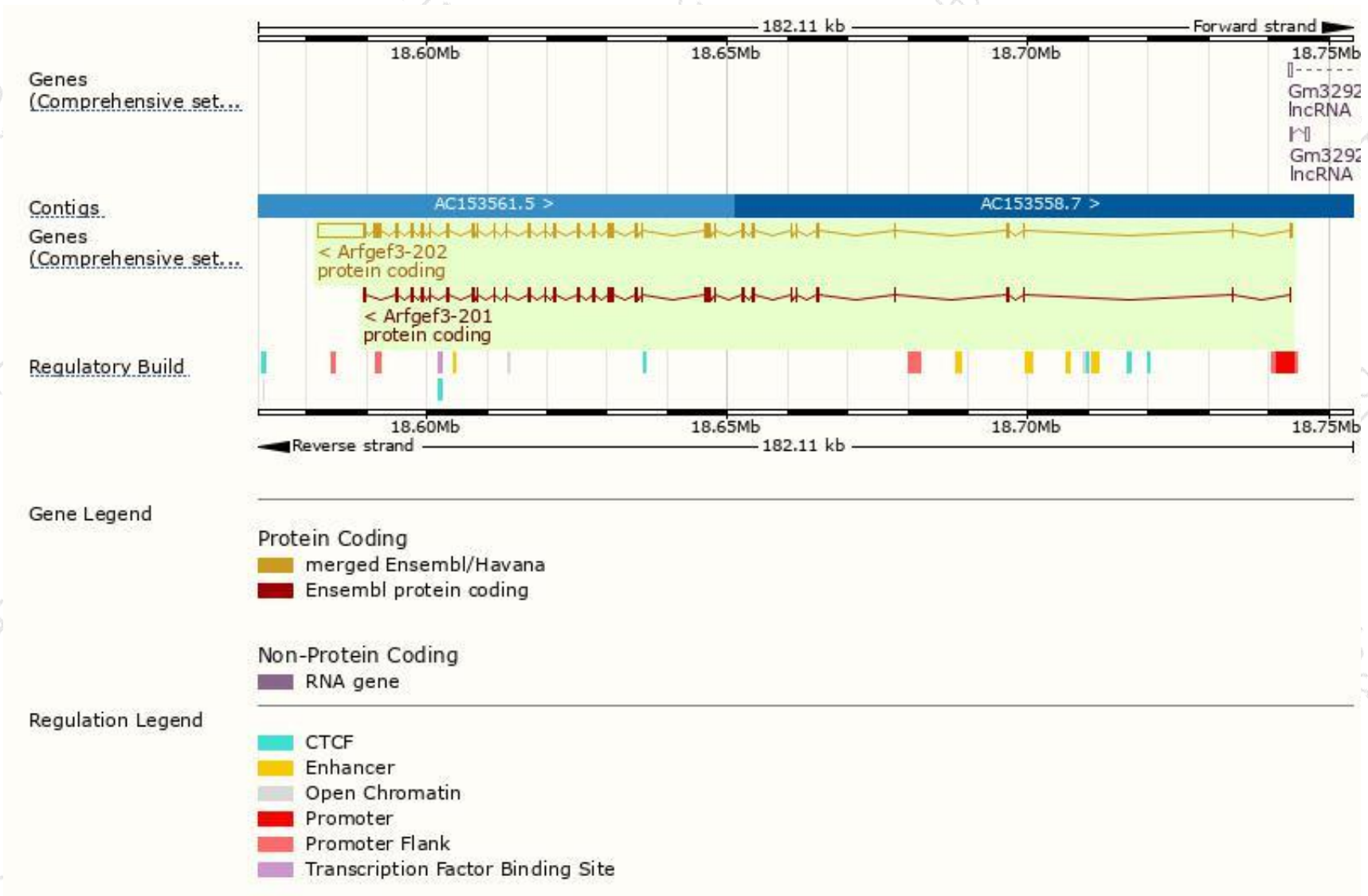
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arfgef3-202	<a href="#">ENSMUST00000215836.1</a>	14579	<a href="#">2170aa</a>	Protein coding	<a href="#">CCDS23712</a>	<a href="#">Q3UGY8</a>	TSL:1 GENCODE basic APPRIS P2
Arfgef3-201	<a href="#">ENSMUST00000019999.6</a>	5606	<a href="#">1709aa</a>	Protein coding	-	<a href="#">A0A1N9M5I8</a>	TSL:1 GENCODE basic APPRIS ALT2

The strategy is based on the design of *Arfgef3-202* transcript,The transcription is shown below

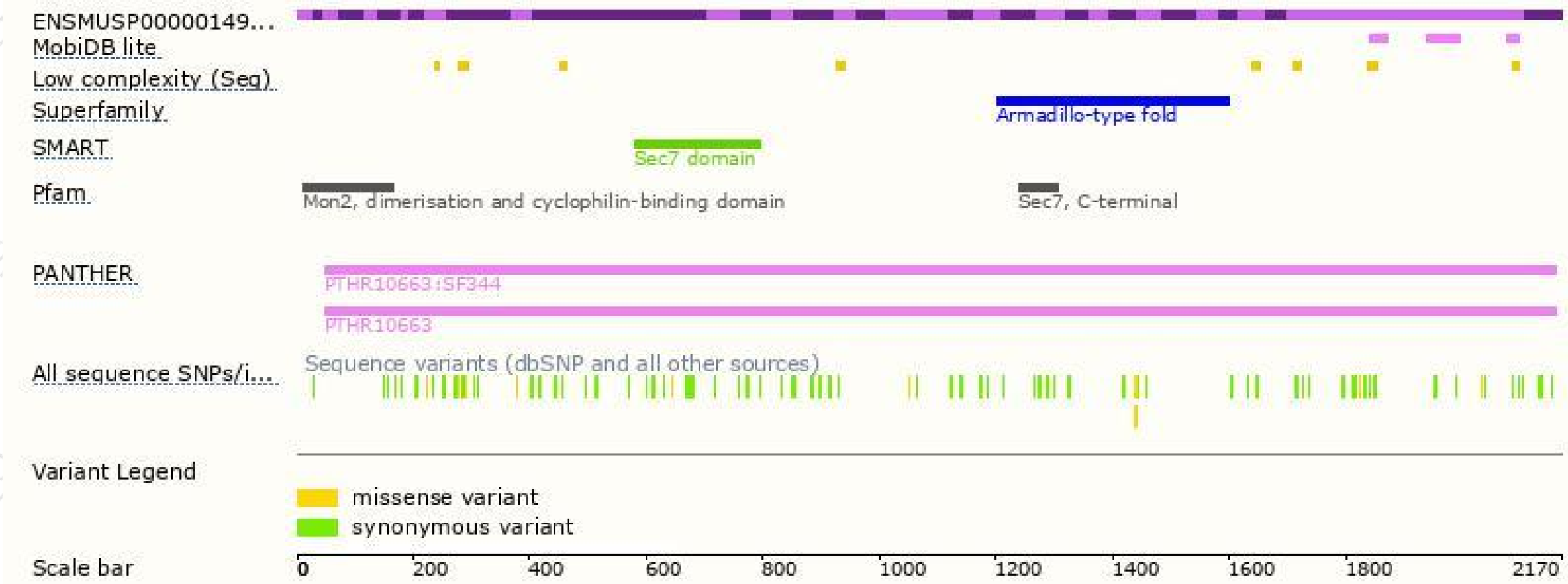


# Genomic location distribution

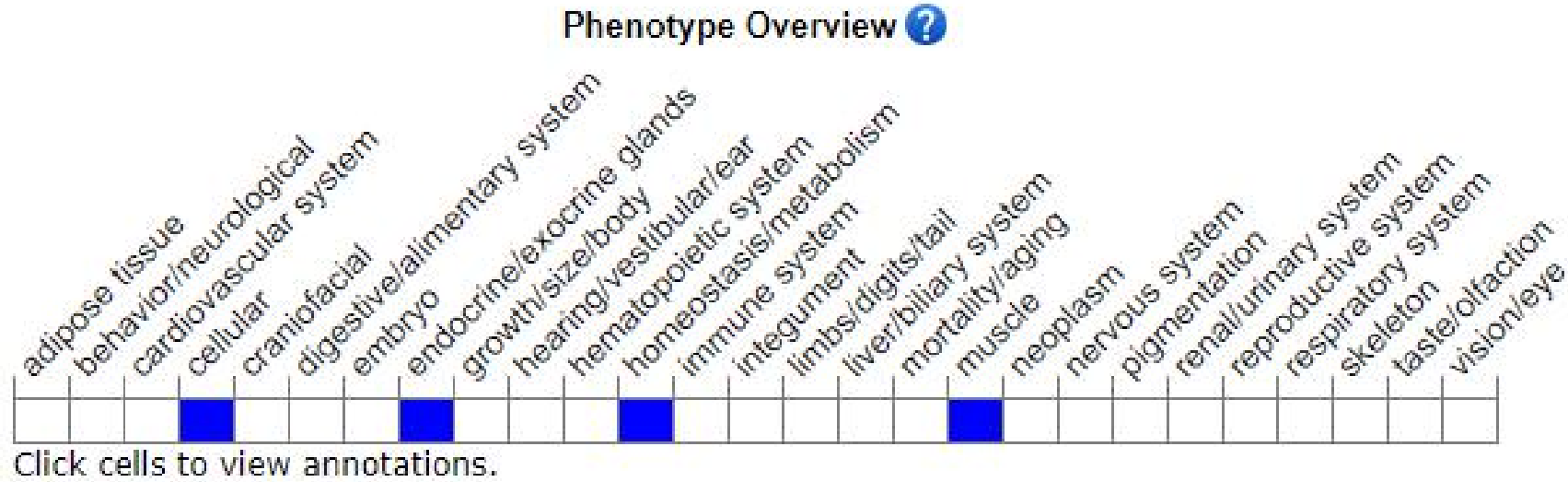




# Protein domain



# 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 knock-out allele exhibit increased insulin granule biogenesis and insulin secretion.

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

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