

Arg1 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Arg1

Project type

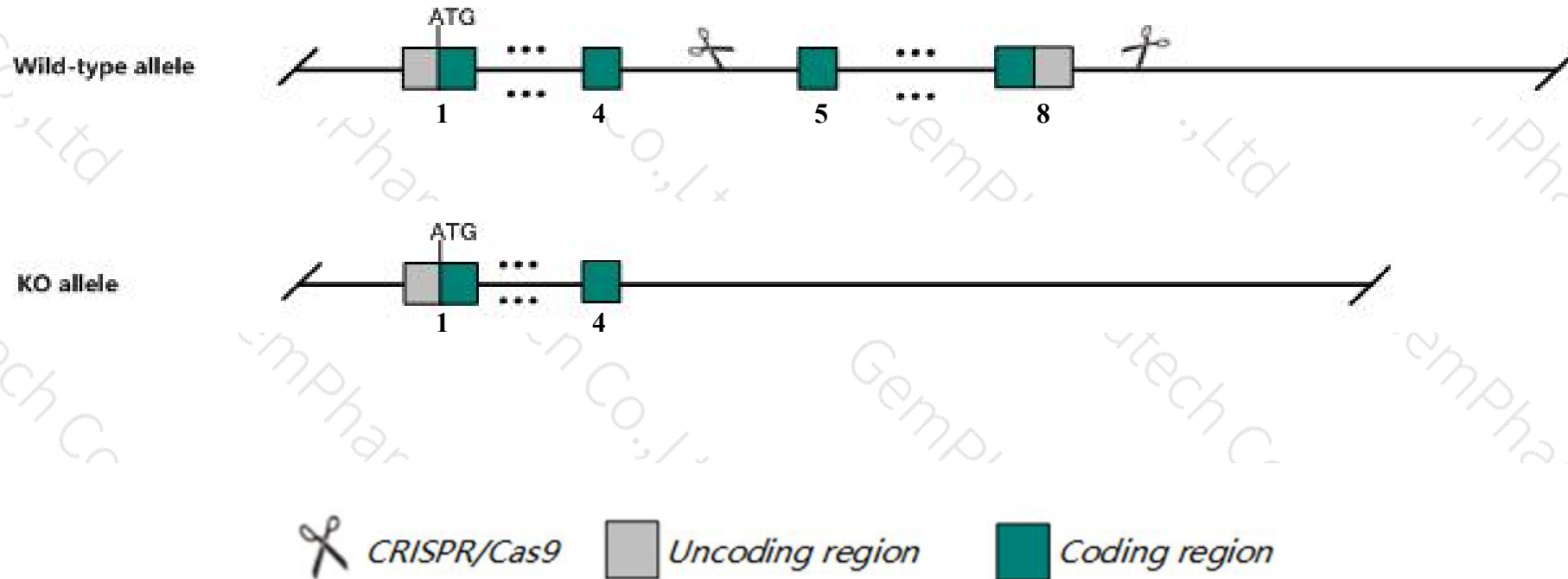
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arg1* gene. The schematic diagram is as follows:



- The *Arg1* gene has 3 transcripts. According to the structure of *Arg1* gene, exon5-exon8 of *Arg1-201* (ENSMUST00000020161.9) transcript is recommended as the knockout region. The region contains 507bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arg1* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a null allele show postnatal lethality, hyperammonemia, argininemia, altered plasma levels of other amino acids, enlarged pale livers, and abnormal hepatocytes. Mice homozygous for a different null allele show postnatal lethality, and increased macrophage nitric oxide production.
- The *Arg1* 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)

Arg1 arginase, liver [Mus musculus (house mouse)]

Gene ID: 11846, updated on 19-Feb-2019

Summary



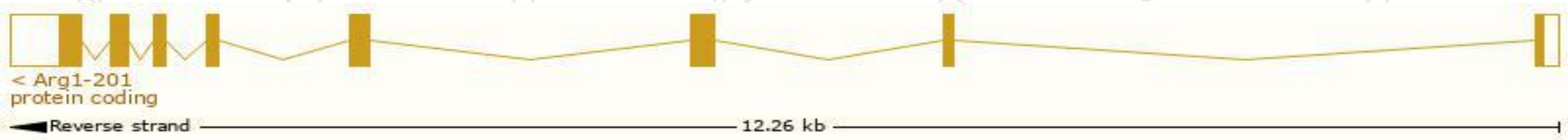
Official Symbol	Arg1 provided by MGI
Official Full Name	arginase, liver provided by MGI
Primary source	MGI:MGI:88070
See related	Ensembl:ENSMUSG00000019987
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI, AI256583, Arg-1, PGIF
Expression	Biased expression in liver adult (RPKM 207.8) and liver E18 (RPKM 196.5) See more
Orthologs	human all

Transcript information (Ensembl)

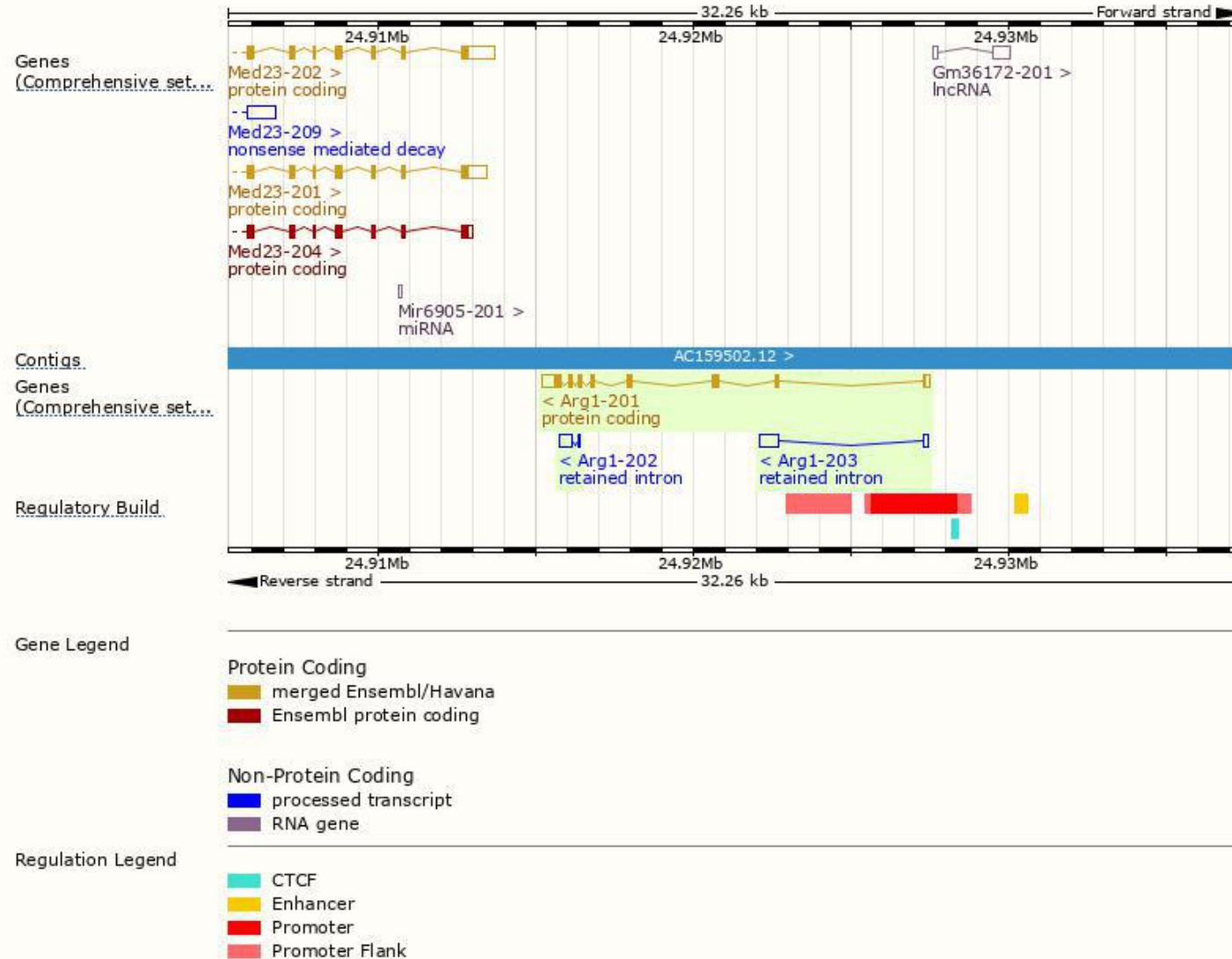
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arg1-201	ENSMUST00000020161.9	1477	323aa	Protein coding	CCDS48523	Q61176	TSL:1 GENCODE basic APPRIS P1
Arg1-203	ENSMUST00000220186.1	702	No protein	Retained intron	-	-	TSL:2
Arg1-202	ENSMUST00000218260.1	443	No protein	Retained intron	-	-	TSL:3

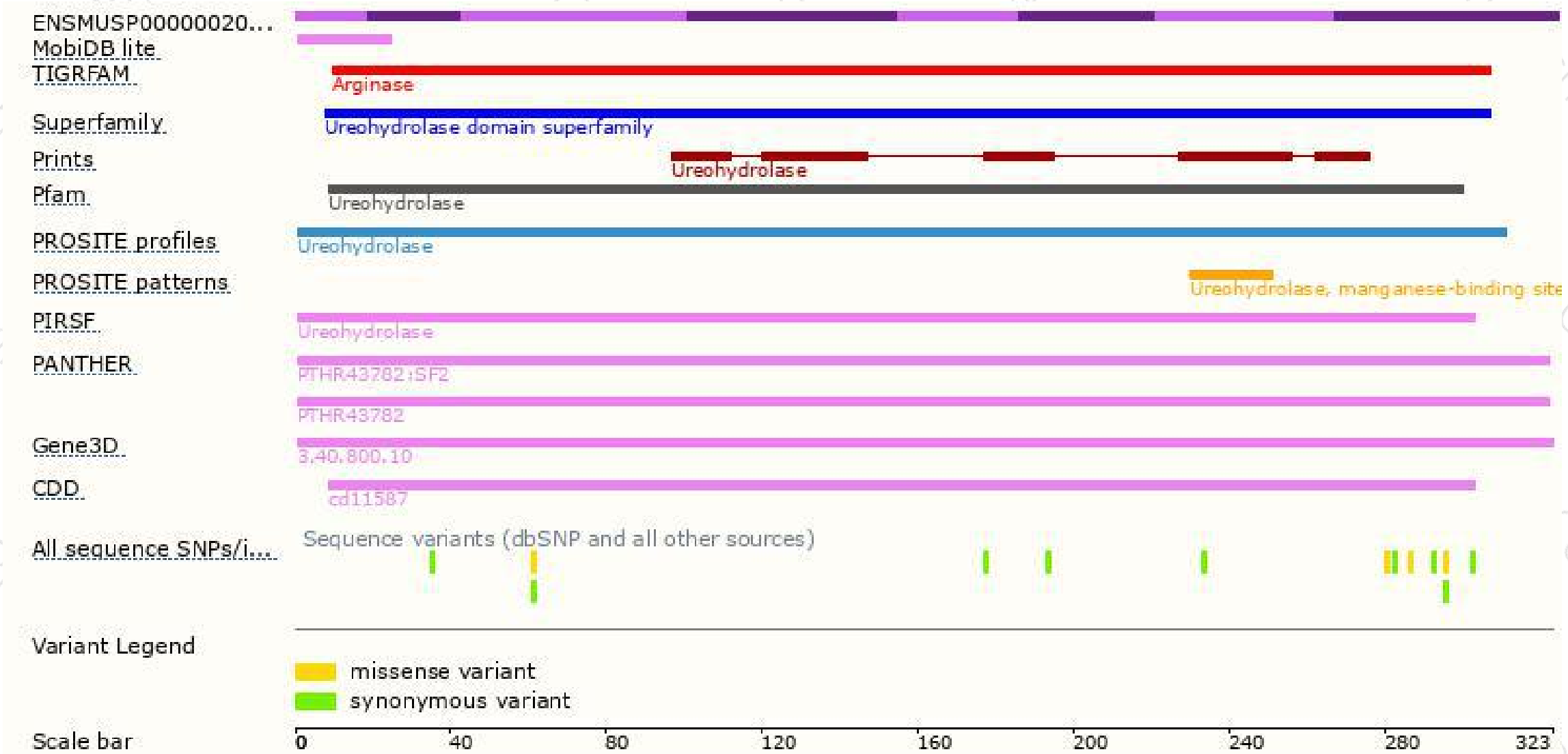
The strategy is based on the design of *Arg1-201* transcript,The transcription is shown below



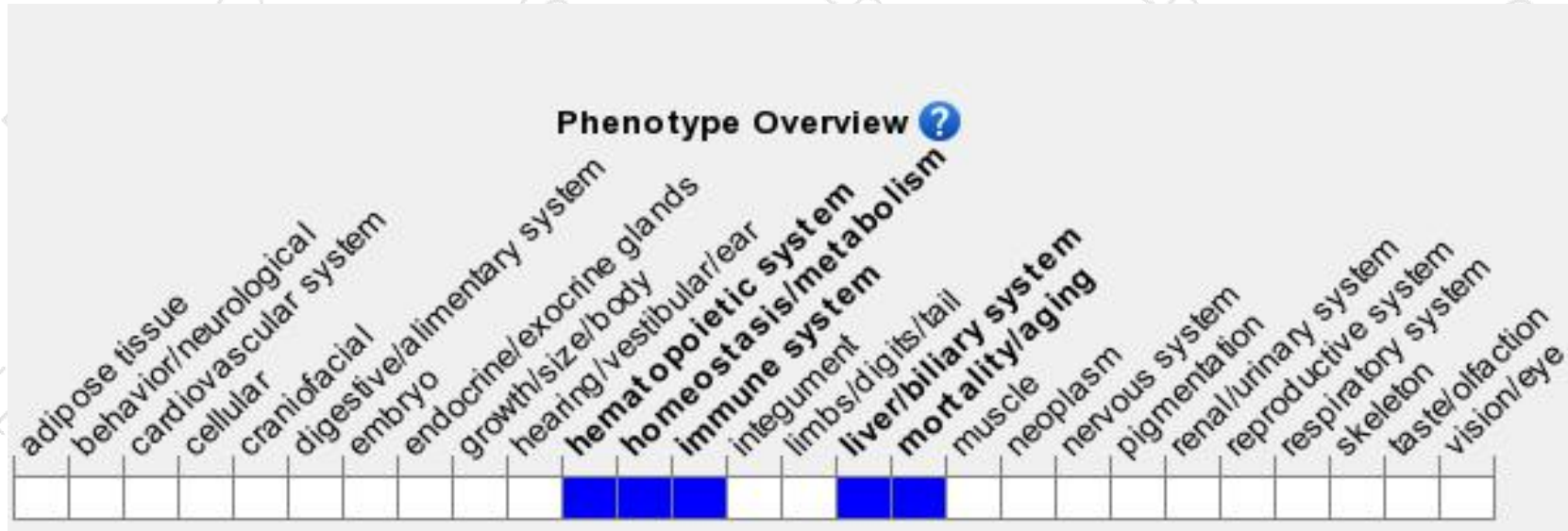
Genomic location distribution



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 show postnatal lethality, hyperammonemia, argininemia, altered plasma levels of other amino acids, enlarged pale livers, and abnormal hepatocytes. Mice homozygous for a different null allele show postnatal lethality, and increased macrophage nitric oxide production.

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

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