

Cd226 Cas9-CKO Strategy

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Project Overview

Project Name

Cd226

Project type

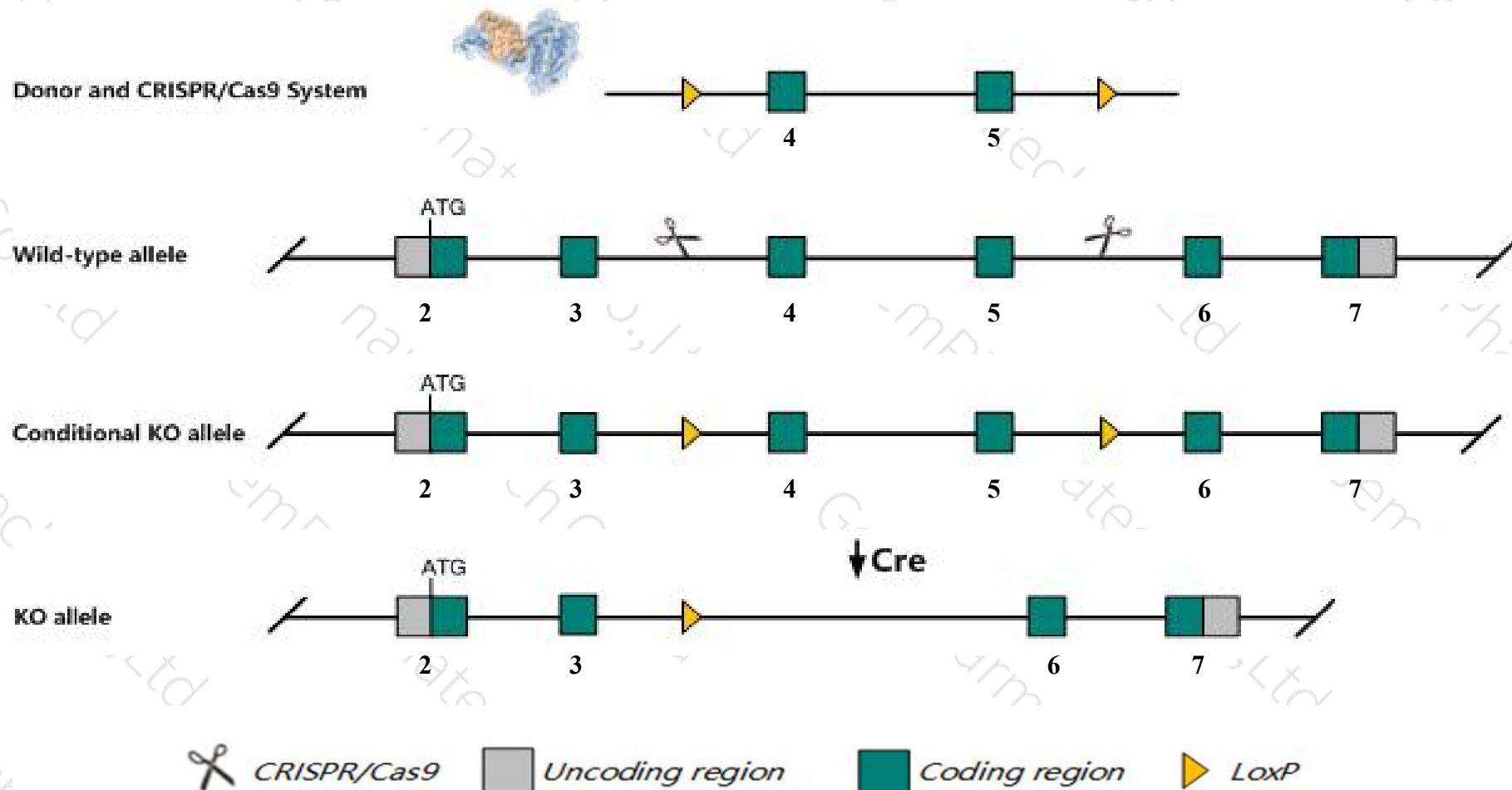
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd226* gene. The schematic diagram is as follows:



Technical routes

- The *Cd226* gene has 10 transcripts. According to the structure of *Cd226* gene, exon4-exon5 of *Cd226-201*(ENSMUST00000037142.12) transcript is recommended as the knockout region. The region contains 445bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cd226* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit impaired NK cell cytotoxicity and increased incidence of tumor formation and mortality.
- The *Cd226* gene is located on the Chr18. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.
- Transcript-208 may not be affected.

Gene information (NCBI)

Cd226 CD226 antigen [Mus musculus (house mouse)]

Gene ID: 225825, updated on 13-Mar-2020

Summary



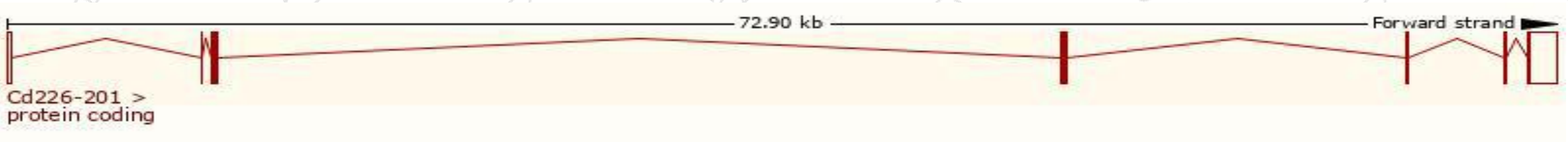
Official Symbol	Cd226 provided by MGI
Official Full Name	CD226 antigen provided by MGI
Primary source	MGI:MGI:3039602
See related	Ensembl:ENSMUSG00000034028
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BC051526, DNAM-1, DNAM1, Pta1, TLISA1
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

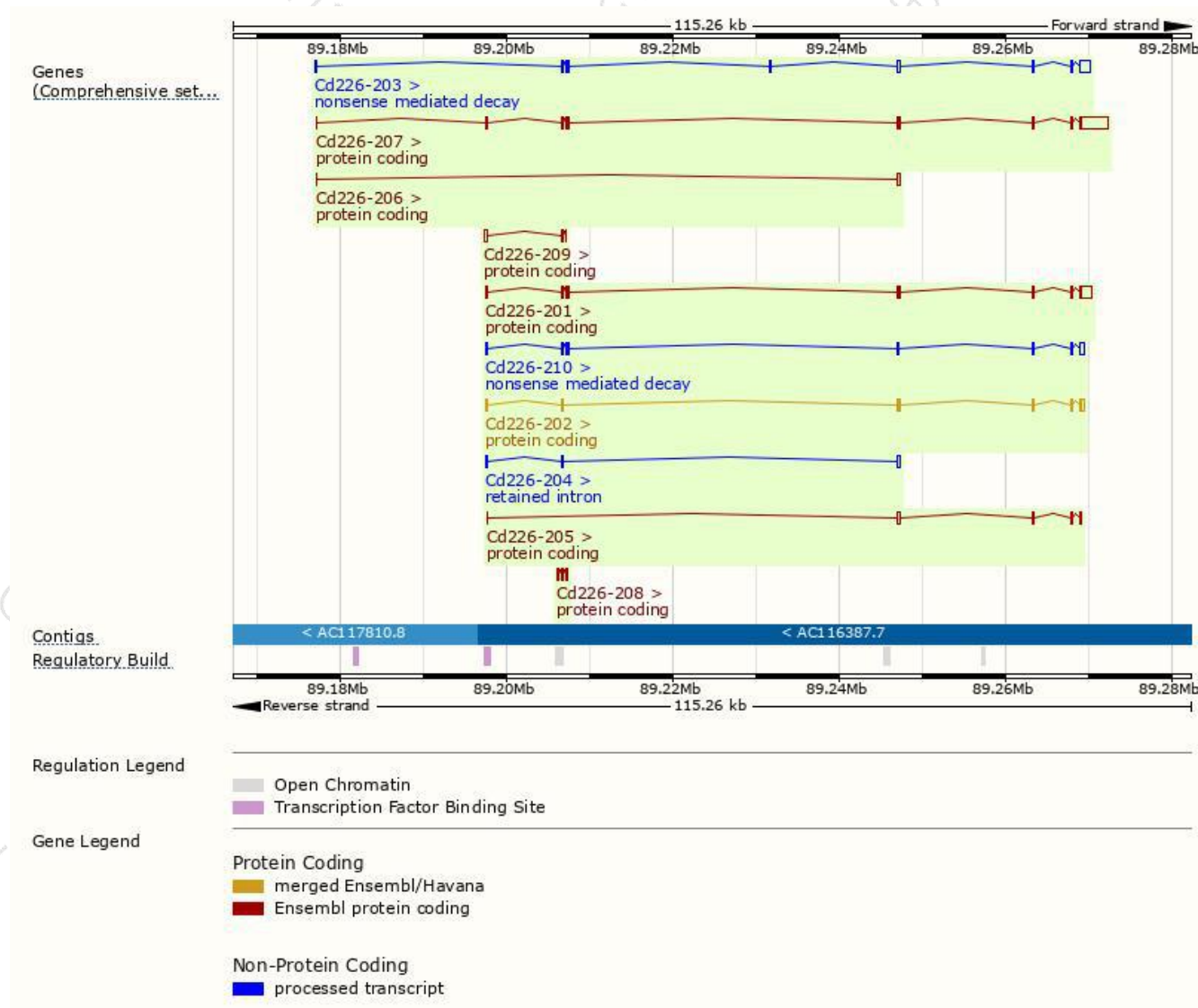
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd226-207	ENSMUST00000236828.1	4494	333aa	Protein coding	CCDS29392	Q5DW69 Q8K4F0	GENCODE basic APPRIS P1
Cd226-201	ENSMUST00000037142.12	2487	333aa	Protein coding	CCDS29392	Q5DW69 Q8K4F0	TSL:1 GENCODE basic APPRIS P1
Cd226-202	ENSMUST00000097496.3	1239	220aa	Protein coding	CCDS29391	Q8K4E3	TSL:1 GENCODE basic
Cd226-205	ENSMUST00000236452.1	742	129aa	Protein coding	-	Q8K4E2	GENCODE basic
Cd226-208	ENSMUST00000236835.1	451	119aa	Protein coding	-	A0A494BBC0	CDS 3' incomplete
Cd226-206	ENSMUST00000236644.1	446	38aa	Protein coding	-	A0A494BAJ4	CDS 3' incomplete
Cd226-209	ENSMUST00000237110.1	408	24aa	Protein coding	-	A0A494BBL3	CDS 3' incomplete
Cd226-203	ENSMUST00000235651.1	2456	154aa	Nonsense mediated decay	-	A0A494BB66	
Cd226-210	ENSMUST00000237979.1	1364	187aa	Nonsense mediated decay	-	Q8K4E4	
Cd226-204	ENSMUST00000236450.1	592	No protein	Retained intron	-	-	

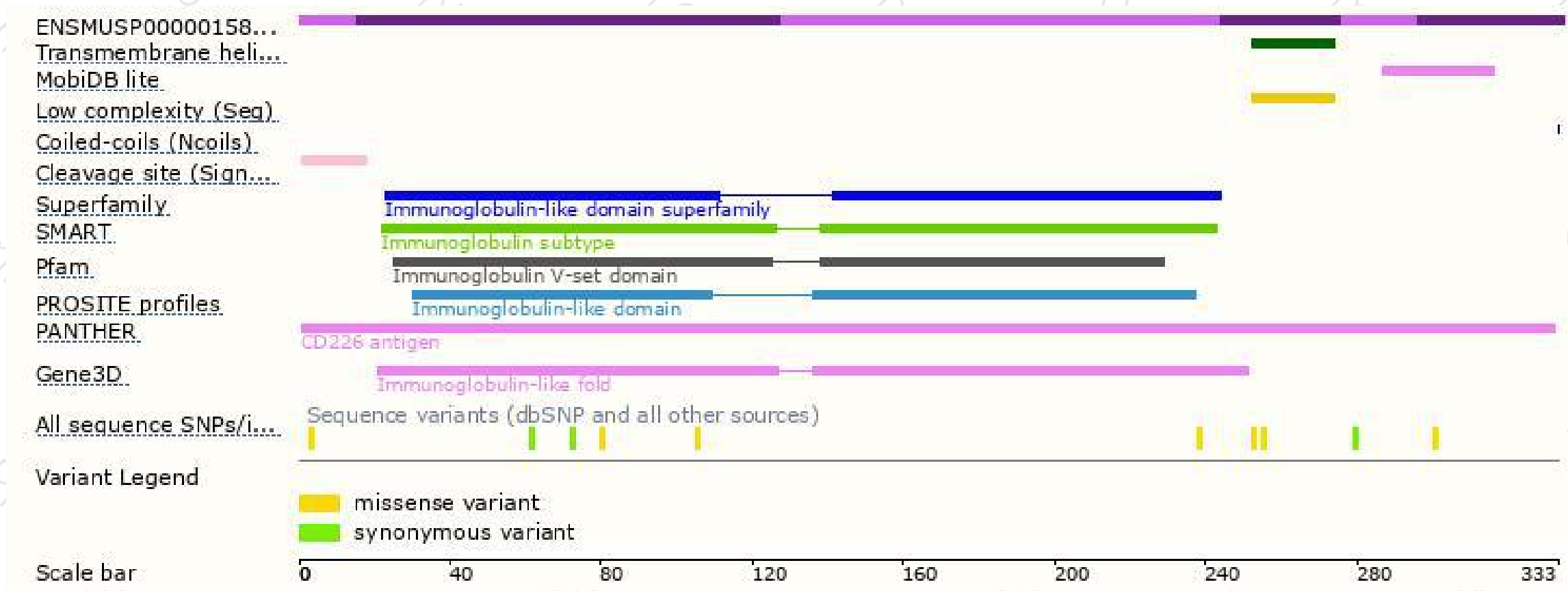
The strategy is based on the design of *Cd226-201* transcript,the transcription is shown below:



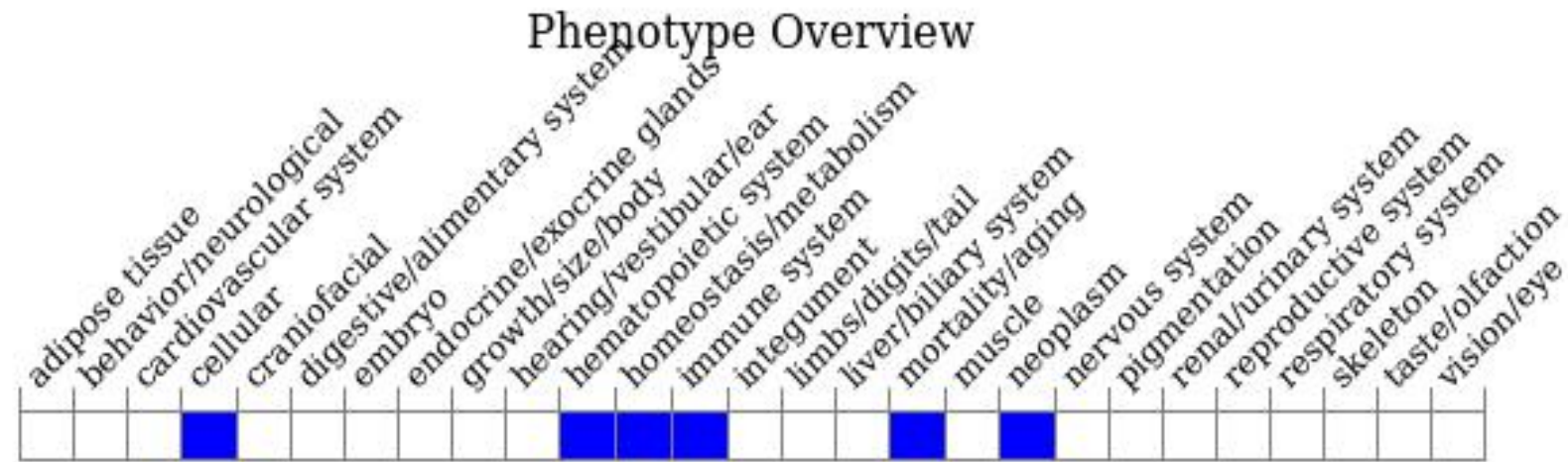
Genomic location distribution



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 knock-out allele exhibit impaired NK cell cytotoxicity and increased incidence of tumor formation and mortality.

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

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