

These mice, which contain an inactivating, K414E mutation within the Gck gene, provide a model for Maturity Onset Diabetes of the Young, or MODY-GK.

During the generation of this line, male chimeric mice derived by injecting correctly targeted TL1 mESCs into blastocysts from C57Bl/6 animals were mated directly with 129S6 female mice, thereby maintaining the mutation in an inbred state.

Cryostocks of both 8-cell embryos and sperm from this line exist only at the VCMR.

Keywords: [glucokinase](#) [Gck](#) [gck<sup>K414E</sup>](#) [MODY](#) [Mgn](#)

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## Mouse Information

Common Name	gk <sup>K414E</sup>
Research Applications	<i>Not provided</i>
MMRRC ID	<i>Not provided</i>
Jackson Laboratories Stock No	<i>Not provided</i>
VCMR ID	GP, GQ
Additional Strain Information	<i>Not provided</i>

## Genetic Alteration

Mutation #1: Targeted Mutagenesis	
Type of Allele	Global Mutation
Targeted Gene	Name: Glucokinase Symbol: Gck NCBI: <a href="#">103988</a>
Allele	Name: targeted mutation 2 Symbol: Gck <sup>tm2Mgn</sup> MGI: <a href="#">MGI:3701697</a>
Description of Targeting Vector	A single base pair mutation was introduced into exon 9 via site specific mutagenesis to change amino acid 414 from lysine to glutamic acid. Genotype by DNA PCR using primers 5'-TGT CTC AAT TTG CTG TGT CCT CCA-3' and 5'-ATG TGT GAG TGT GCC AAT ATG AGT-3'. These primers will amplify a 636 bp fragment from the wild type allele and a 741 bp fragment from the targeted (mutant) allele. These animals are homozygous lethal. Heterozygous mice are viable. They are hyperglycemic and hypoinsulinemic when compared to wild type.

Vector Genbank File	<a href="#">pBOB2.K414E.gb</a>
Allele Map	<i>Not Provided</i>
PCR Genotyping Protocol	<a href="#">Gck.K414_PCR_genotyping_protocol.docx</a>
Citations	<p><b>Publication</b></p> <p><u><a href="#">Glucokinase thermolability and hepatic regulatory protein binding are essential factors for predicting the blood glucose phenotype of missense mutations.</a></u> (2007) <i>J Biol Chem</i> <b>282</b>: 13906-16 (Added 12/10/2013)  PMID: <a href="#">17353190</a></p>

## Background Strain Information

Strain Type	Inbred Strain
Chimera/Founder Genetic Background	129S6/SvEvTac
Current Genetic Background	<i>Not provided</i>
Number of Generations Backcrossed	NA
Strain Description	<p>100% 129S6 at cryopreservation</p> <p>Cryopreserved in 2007.</p> <p>Vial ID GP - embryos at the 8 cell stage.</p> <p>Vial ID GQ - sperm cryopreserved in vials.</p>

## Attachments

 [gkk414e.neo\\_wt\\_protocol.doc](#) - Added on July 27, 2010 at 10:28 AM by Jill Lindner

PCR protocol for genotyping mice.

 [K414EA456V\\_targeting\\_vector.jpg](#) - Added on July 19, 2010 at 10:17 AM by Mark Magnuson

K414E and A456V targeting vectors



