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gk^{K414E} - Mouse Strain RES192**Mouse Information**

Common Name:	gk ^{K414E}
MGI Official Name:	Gck ^{tm2Mgn}
Description:	This line of mice contains a gk ^{K414E} point mutation that was introduced by gene knock-in. This point mutation was identified in a MODY-GK pedigree. These mice will be useful for studies of sustained hyperglycemia since they contain only a single mutation and are congenic with the C57BL/6J strain.
Categories:	None specified.

Genetic Alterations**1) Targeted Mutagenesis**

Type of Allele	Global Mutation				
Targeted Gene	Glucokinase (Gck - NCBI GeneID:103988)				
Targeted Allele	targeted mutation 2 (Gck ^{tm2Mgn} - MGI:3701697)				
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.				
Targeting Vector Genbank File	pBOB2_K414E.gb				
Citations	<table border="1"> <thead> <tr> <th>PubMedID</th> <th>Citation</th> </tr> </thead> <tbody> <tr> <td>17353190</td> <td>Glucokinase thermolability and hepatic regulatory protein binding are essential factors for predicting the blood glucose phenotype of missense mutations. (2007) <i>J Biol Chem</i> 282: 13906-16 (Added 2008-03-29 16:59:08)</td> </tr> </tbody> </table>	PubMedID	Citation	17353190	Glucokinase thermolability and hepatic regulatory protein binding are essential factors for predicting the blood glucose phenotype of missense mutations. (2007) <i>J Biol Chem</i> 282 : 13906-16 (Added 2008-03-29 16:59:08)
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Strain Information

Strain Type:	Congenic Strain
Chimera/Founder Genetic Background:	129S6/SvEvTac
Current Genetic Background:	C57BL/6J (date recorded: Not provided)
Strain Description:	After achieving germline transmission mice carrying the gk ^{K414E} allele were backcrossed for eleven generations into a C57BL/6J strain.


Associated Images**Image 1**

Description:
Gene targeting strategy used to generate point mutations in the gk gene. Uppermost map is

Access Status

 This resource is publicly viewable.


Request this Resource

 Request from a repository

Primary contributor: [Magnuson Lab](#)

Resource Tags

Gck, gk^{K414E}, mouse, mouse strain

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Resource History & Actions

Approved on Feb 02, 2007
Last modified on Sep 20, 2007

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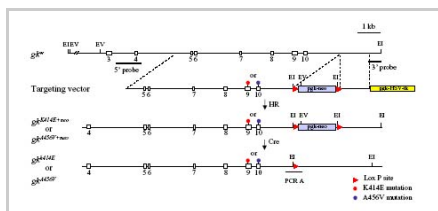
Related resources**BCBC**

No matching resources

Other Consortia

No matching resources

Data courtesy of [dkCOIN](#). Only public resources are displayed.



a diagram of the mouse *gk* gene showing locations of exons 3 to 10 (indicated by open boxes). The locations of the DNA fragments used as 5' and 3' hybridization probes are shown. E1, EcoRI; EV, EcoRV. Second map from top is of the gene targeting vector carrying either the K414E mutation in exon 9 depicted by the red circle or the A456V mutation in exon 10 as indicated by the blue circle. A neomycin resistance cassette (pgk-neoR), which is flanked with two loxP sites depicted by red triangles, and a HSV-thymidine kinase cassette (pgk-HSV-TK), were used for positive and negative selection, respectively. Third map from top is of the recombinant *gk* allele after homologous recombination (HR) carrying a floxed pgk-neoR cassette and the respective point mutation in exon 9 or 10. Fourth map from top is of the mutant *gk* allele after Cre recombination.

Reference:
17353190

Repositories

MMRRC

[Request via www.mmrrc.org website](http://www.mmrrc.org)

Stock #: 015201-UCD

Availability Notes: *Not provided*

BCBC members may [Login](#) to request this resource.

Contact Information

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Associated Publications

No publications associated

Comments

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