

## Product datasheet for **RC401201**

### Glucokinase (GCK) (NM\_000162) Human Mutant ORF Clone

#### Product data:

Product Type:	Mutant ORF Clones
Product Name:	Glucokinase (GCK) (NM_000162) Human Mutant ORF Clone
Mutation Description:	T149I
Affected Codon#:	149
Affected NT#:	446
Nucleotide Mutation:	GCK Mutant (T149I), Myc-DDK-tagged ORF clone of Homo sapiens glucokinase (hexokinase 4) (GCK), transcript variant 1 as transfection-ready DNA
Effect:	Diabetes, MODY2
Symbol:	GCK
Synonyms:	FGQTL3; GK; GLK; HHF3; HK4; HKIV; HXKP; LGLK; MODY2; PNDM1
E. coli Selection:	Kanamycin (25 ug/mL)
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
Tag:	Myc-DDK
ACCN:	NM_000162
ORF Size:	1395 bp
Restriction Sites:	Sgfl-Mlul



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**ORF Nucleotide Sequence:**

>RC401201 representing NM\_000162  
 Red=Cloning site Blue=ORF Green=Tags(s)

TTTTGTAATACGACTCACTATAGGGCGGCCGGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
 GCC**CGGATCGCC**

ATGCTGGACGACAGCCAGGATGGAGGCCCAAGAAGGAGAAGGTAGAGCAGATCCTGGCAGAGTTCC  
 AGCTGCAGGAGGAGACCTGAAGAAGGTGATGAGACGGATGCAGAAGGAGATGGACCGCGCCTGAGGCT  
 GGAGACCCATGAAGAGGCCAGTGTGAAGATGCTGCCACCTACGTGCGCTCCACCCAGAAAGGCTCAGAA  
 GTCGGGGACTTCTCTCCCTGGACCTGGGTGGCACTAACTTCAGGGTGTGCTGGTGAAGGTGGGAGAAG  
 GTGAGGAGGGCAGTGGAGCGTGAAGACCAAACACCAGATGACTCCATCCCGAGGACGCCATGACCGG  
 CACTGCTGAGATGCTCTCGACTACATCTCTGAGTGCATCTCCGACTTCTGGACAAGCATCAGATGAAA  
 CACAAGAAGCTGCCCTGGGCTTCATCTCTCCTTTCTGTGAGGCACGAAGACATCGATAAGGGCATCC  
 TTCTCAACTGGACCAAGGGCTTCAAGGCCTCAGGAGCAGAAGGGAACAATGTCGTGGGGCTTCTGCGAGA  
 CGCTATCAAACGGAGAGGGGACTTTGAAATGGATGTGGTGGCAATGGTGAATGACACGGTGGCCACGATG  
 ATCTCCTGCTACTACGAAGACCATCAGTGCAGGTCGGCATGATCGTGGGCACGGGCTGCAATGCCTGCT  
 ACATGGAGGAGATGCAGAATGTGGAGCTGGTGGAGGGGACGAGGGCCGATGTGCGTCAATACCGAGTG  
 GGGCGCCTTCGGGACTCCGGCGAGCTGGACGAGTTCTGCTGGAGTATGACCGCCTGGTGGACGAGAGC  
 TCTGCAAACCCGGTCAGCAGCTGTATGAGAAGCTCATAGGTGGCAAGTACATGGGCGAGCTGGTGGCGC  
 TTGTGCTGCTCAGGCTCGTGACGAAAACCTGCTCTCCACGGGGAGGCCCTCCGAGCAGCTGCGCACACG  
 CGGAGCCTTCGAGACGCGCTTCGTGTCGAGGTGGAGAGCGACACGGGCGACCGCAAGCAGATCTACAAC  
 ATCCTGAGCACGCTGGGGCTGCGACCTCGACCACCGACTGCGACATCGTGCAGCGCCCTGCGAGAGCCG  
 TGTCTACGCGCGCTGCGCACATGTGCTCGCGGGGCTGGCGGGGCTCATCAACCGCATGCGCGAGAGCCG  
 CAGCGAGGACGTAATGCCATCACTGTGGCGTGGATGGCTCCGTGTACAAGCTGCACCCAGCTTCAAG  
 GAGCGGTTCCATGCCAGCTGCCAGGCTGACGCCAGCTGCGAGATCACCTTTCAGTGTGGAGGAGG  
 GCAGTGGCCGGGGCGCGCCCTGGTCTCGCGGTGGCCTGTAAGAAGGCCTGTATGCTGGCCAG

AG**CGGACCG**ACGCGTACGCGGCCGCTCGAGCAGAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCC  
 TGGATTACAAGGATGACGACGA TAAGGTTTAA

**Protein Sequence:**

>RC401201 representing NM\_000162  
 Red=Cloning site Green=Tags(s)

MLDDRARMEAAKKEKVEQILAEFQLQEEDLKKVMRRMQKEMDRGLRLETHEEASVKMLPTYVVRSTPEGSE  
 VGDFLSLDLGGTNFRVMLVKVGEEGQWSVKTKHQMYSIPEDAMTGTAEMLFDYISECISDFLDKHQMK  
 HKKLPLGFIFSPVRHEDIDKGILLNWTGFKASGAEGNNVGLLRDAIKRRGDFEMDVVAMVNDTVATM  
 ISCYYEDHQCEVGMIVGTGCNACYMEEMQNVELVEGDEGRMCVNTWGFAGDSGELDEFLLLEYDRLVDES  
 SANPGQQLYEKLIGGKYMGEVRLVLLRLVDENLLFHGEASEQLRTRGAFETRFVSQVESDTGDRKQIYN  
 ILSTLGLRPSTTDCDIVRRACESVSTRAAHMCSAGLAGVINRMRESRSEDVMRITVGVDSVYKLGHPK  
 ERFHASVRRLLTPSCEITFIESEEGSGRGAALVSAVACKKACMLGQ

**SGP**TRRRLE**QKLI**SEEDLAANDILDYKDDDDK**V**

**Restriction Sites:**

SgfI-MluI

**Cloning Scheme:**

**OTI Disclaimer:**

The molecular sequence of this clone aligns with the gene accession number as a point of reference only. However, individual transcript sequences of the same gene can differ through naturally occurring variations (e.g. polymorphisms), each with its own valid existence. This clone is substantially in agreement with the reference, but a complete review of all prevailing variants is recommended prior to use. [More info](#)

**OTI Annotation:**

This clone was engineered to express the complete ORF with an expression tag. Expression varies depending on the nature of the gene.

**Components:**

The ORF clone is ion-exchange column purified and shipped in a 2D barcoded Matrix tube containing 10ug of transfection-ready, dried plasmid DNA (reconstitute with 100 ul of water).

**RefSeq:**

[NP\\_000153](#)

**RefSeq Size:**

1395 bp

**RefSeq ORF:**

1398 bp

**Locus ID:**

2645

**Cytogenetics:**

7p13

**Protein Families:**

Druggable Genome

**Protein Pathways:**

Amino sugar and nucleotide sugar metabolism, Galactose metabolism, Glycolysis / Gluconeogenesis, Insulin signaling pathway, Maturity onset diabetes of the young, Metabolic pathways, Starch and sucrose metabolism, Type II diabetes mellitus

**MW:**

51.2 kDa

**Gene Summary:**

This gene encodes a member of the hexokinase family of proteins. Hexokinases phosphorylate glucose to produce glucose-6-phosphate, the first step in most glucose metabolism pathways. In contrast to other forms of hexokinase, this enzyme is not inhibited by its product glucose-6-phosphate but remains active while glucose is abundant. The use of multiple promoters and alternative splicing of this gene result in distinct protein isoforms that exhibit tissue-specific expression in the pancreas and liver. In the pancreas, this enzyme plays a role in glucose-stimulated insulin secretion, while in the liver, this enzyme is important in glucose uptake and conversion to glycogen. Mutations in this gene that alter enzyme activity have been associated with multiple types of diabetes and hyperinsulinemic hypoglycemia. [provided by RefSeq, Aug 2017]