**Gene symbol**

GRIK3

**Full name of gene**

glutamate ionotropic receptor kainate type subunit 3[3]

**Overview**

This gene creates a protein that helps form receptors for the transmitter glutamate.[13] Problems creating or absorbing glutamate are linked to schizophrenia, depression, and memory problems.[13] Sustained exposure to excess glutamate in CFS patients causes sickness, neurotoxicity, stress, and peripheral nervous sensitivity. Currently, GRIK3 mutations are linked to recurrent major depressive disorder, developmental delays, and a 30% increase in the risk for schizophrenia.[2][3][4][5][6][9]

This gene is located on chromosome 1, and the protein it creates acts in your brain and nervous system.

<body highlight brain>

**What are some common mutations in the gene?**

T928G (Ser310Ala) polymorphism[1][6][9]

{Actual name of the variant:

NG\_011447.1:g.179368T>G

NG\_011447.1:g.179368T>G

NM\_000831.3:c.928T>G}

<Variant variant = “T928G” position = “[1063](https://www.ncbi.nlm.nih.gov/sites/nuccore/NM_000831.3?report=graph&v=563:1563&content=5&m=1063!&mn=rs6691840&dispmax=1&currpage=1)” >

<variant view sith T-> G transformation>

This mutation is a change at a specific point in the GRIK3 gene from thymine (T) to guanine (G), resulting in incorrect protein formation. This substitution of a single nucleotide is known as a missense mutation.

**What does this mean? (Homozygous variant)**

In the gene family of glutamate receptors, there is a T/G polymorphism at codon 928 in the ionotropic glutamate receptor kainite 3 gene (GRIK3) that causes a serine to alanine change at position 310 in the extracellular N terminus of the protein.[4]

**What is the effect of this variant? (Homozygous variant) (no severity)**

You are at greater risk for schizophrenia, depression, and glutamate problems. See below for more information.

**How common is this variant in the general population? (Homozygous variant)**

This variant affects 0.1% of the general population.

**How sure are we? (Homozygous variant)**

**How common is the variant in the ME/CFS community? (Homozygous variant)**

**What are the effects of variances in GRIK3?**

The variants in GRIK3 have strong associations with increased risk of schizophrenia, but for most patients this may not change treatment for CFS. Its variant’s association with glutamate and other neurological issues may interact with other genes, so we have included it in this disease panel.

**GRIK3 Variant Effects (no severity or efficiency)**

T928G 0.1% population frequency

This gene creates a protein that helps form receptors for glutamate that act as excitatory neurotransmitters in your brain and nervous system.[1] Excitatory transmitters increase the chance that the neuron will fire, enhancing electrical flow among brain cells.[13] Glutamate is the most important transmitter for normal brain function, but elevated levels are toxic to neurons.[11]

GRIK3 Ser310Ala polymorphism has been linked to schizophrenia and major depression.[3][5] The Ser310Ala allele in homozygosity is associated with higher scores in harm avoidance anticipatory worry, and shyness, with lower scores in exploratory excitability, responsibility, resourcefulness, helpfulness, compassion, self-directedness, and cooperativeness.[4] This pattern of scores is akin to that observed in depressed patients.[4] GRIK3 rs6691840 polymorphism was found to increase the risk of schizophrenia by 30%.[3][9] Microdeletions have also been indicated in severe developmental delays.[2]

**What should I do about this?**

CFS is linked to improper Glutamate:GABA balance, as well as exposure to extracellular glutamate caused by neuroinflammatory stimuli. Sustained exposure to extracellular glutamate in CFS patients causes sickness behavior, neurotoxicity, stress, and peripheral nervous sensitivity. Complementary dietary supplemental regimes may include: Omega-3 PUFAs, CoQ10, N-acetylcysteine, vitamin B12, curcumin, zinc, magnesium, L-Taurine, and L-carnetine.[10]

**Novel variant**

**What does this mean? (Novel variant)**

**What is the effect of this variant? (Novel variant) How sure are we? (Novel variant)**

**How common is this variant in the general population? (Novel variant)**

**How common is the variant in the ME/CFS community? (Novel variant)**

**Compound variant**

**What does this mean? (Compound variant)**

**What is the effect of this variant? (Compound variant)**

**How sure are we? (Compound variant)**

**How common is this variant in the general population? (Compound variant)**

**How common is the variant in the ME/CFS community? (Compound variant)**

**Wildtype variant**

**What does this mean? (Wildtype variant)**

**What is the effect of this variant? (Wildtype variant)**

**How sure are we? (Wildtype variant)**

**How common is this variant in the general population? (Wildtype variant)**

**How common is the variant in the ME/CFS community? (Wildtype variant)**

**Location of that gene**

GRCh38 38.1/141

**What are the effects of mutations? (Intro paragraph / sentence)**

**What are the effects of mutations?**

**MILD LOSS OF FUNCTION**

**What are the effects of mutations?**

**MODERATE LOSS OF FUNCTION**

**What are the effects of mutations?**

**SIGNIFICANT LOSS OF FUNCTION**

**Hover text content**

**References**

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**Confidence**

**chr**

36795527

**pos**

37034129

**end**

**-**

**orient type**

protein\_coding