IRF5 (Interferon regulatory factor 5)

Summary of IRF5

IFN-regulatory factor 5 gene increases IFN-alpha. Interferon alpha induces the kynurenine pathway and is associated with depression because of NMDA overactivity (Ref)

Recommended name:
Interferon regulatory factor 5

Short name:
IRF-5

The Function of IRF5

Transcription factor involved in the induction of interferons IFNA and INFB and inflammatory cytokines upon virus infection. Activated by TLR7 or TLR8 signaling. IFN-regulatory factor 5 gene.Increases IFN-alpha. Must have STAT4 T allele to make this harmful. IFNa=depression Interferon alpha induces the kynurenine pathway and is associated with depression because of NMDA overactivity (Ref)

Genetics Home Reference provides information about rheumatoid arthritis. systemic lupus erythematosus Genetics Home Reference provides information about systemic lupus erythematosus. systemic scleroderma Several normal variations in the IRF5 gene have been associated with an increased risk of developing systemic scleroderma, which is an autoimmune disorder characterized by the buildup of scar tissue (fibrosis) in the skin and internal organs. Although the IRF5 gene is known to stimulate the immune system in response to viruses, it is unknown how the gene variations contribute to the increased risk of systemic scleroderma. Researchers believe that a combination of genetic and environmental factors may play a role in development of the condition.

ulcerative colitis Genetics Home Reference provides information about ulcerative colitis. autoimmune disorders Studies have associated normal variations in the IRF5 gene with an increased risk of several autoimmune disorders. Autoimmune disorders occur when the immune system malfunctions and attacks the body's tissues and organs. These disorders include systemic lupus erythematosus, Sjögren syndrome, and rheumatoid arthritis. There is some evidence that certain variations of the IRF5 gene are associated with increased activity of the gene and elevated cytokines. However, it is unknown what role, if any, these effects play in the increased risk of autoimmune disorders. Researchers believe that a combination of genetic and environmental factors may contribute to the development of these conditions.

The protein produced from the IRF5 gene, called interferon regulatory factor 5 (IRF5), acts as a transcription factor, which means that it attaches (binds) to specific regions of DNA and helps control the activity of certain genes. When a virus is recognized in the cell, the IRF5 gene is turned on (activated), which leads to the production of IRF5 protein. The protein binds to specific regions of DNA that regulate the activity of genes that produce interferons and other cytokines. Cytokines are proteins that help fight infection by promoting inflammation and regulating the activity of immune system cells. In particular, interferons control the activity of genes that help block the replication of viruses, and they stimulate the activity of certain immune system cells known as natural killer cells.

The following transcription factors affect gene expression (R):

- IRF-7A
- AP-1
- c-Jun
- ATF-2
- p53

Gene Pathways:

- Immune System
- Toll-like receptor signaling pathway

Molecular Function:

- Regulatory Region Dna Binding
- Transcription Factor Activity, Sequence-Specific Dna Binding

Biological Processes:

- Defense Response To Virus
- Interferon-Gamma-Mediated Signaling Pathway
- Positive Regulation Of Apoptotic Process
- Positive Regulation Of Interferon-Alpha Production
- Positive Regulation Of Interferon-Beta Production
- Positive Regulation Of Interleukin-12 Production
- Positive Regulation Of Transcription From Rna Polymerase Ii Promoter
- Response To Muramyl Dipeptide
- Response To Peptidoglycan
- Transcription, Dna-Templated
- Type I Interferon Signaling Pathway