



## Test Information

### Test codes:

IFNGAB (Autoantibodies to IFN $\gamma$ )  
GMCSFA (Autoantibodies to GMCSF)

### Method:

ELISA followed by Flow cytometry

### Reference range:

Negative

### Specimen requirements:

1 mL serum

### Transport requirements:

Ship refrigerated or frozen

### Turn around time:

14 days

## Clinical Significance

The association of anti-cytokine antibodies with immune dysregulation, immune deficiency or autoimmunity is increasingly being recognized. For example, anti-GMCSF autoantibodies have long been established to be associated with pulmonary alveolar proteinosis (PAP). And, anti-IFN $\gamma$  autoantibodies have been noted to be associated with chronic, treatment refractory, extrapulmonary infections with non-tuberculous mycobacterial (NTM) species, anti-IL17 autoantibodies with chronic mucocutaneous candidiasis (CMC) and anti-IFN $\alpha$  autoantibodies with systemic lupus erythematosus (SLE $\alpha$ ).

Low titer anti-cytokine autoantibodies may be detected in normal individuals and may serve a regulatory purpose. However, anti-cytokine autoantibodies associated with pathological findings tend to be of high titer and demonstrate significant neutralizing activity in vitro. Recognition of these autoantibodies is of benefit since it may direct the use of adjunctive immunotherapy to modulate the autoantibody titer while continuing with conventional therapies.

## Laboratory Tests Available

Advanced Diagnostic Laboratories tests for the presence of anti-IFN $\gamma$  and anti-GMCSF autoantibodies. Detection of these autoantibodies is performed by ELISA to assess titer and by Phospho flow cytometry to assess the ability of the autoantibody to neutralize cytokine mediated signaling.

## Coming Soon

Anti-IL17 and anti-IL12 autoantibodies: binding and functional analysis.

## References:

1. Browne, S.K. Anticytokine autoantibody-associated immunodeficiency. *Ann. Rev. Immunol.* 2014, 32, 635–657.
2. Uchida, K.; Nakata, K.; Trapnell, et al. High-affinity autoantibodies specifically eliminate granulocyte-macrophage colony-stimulating factor activity in the lungs of patients with idiopathic pulmonary alveolar proteinosis. *Blood* 2004, 103, 1089–1098.
3. Chi, C.Y.; Chu, C.C.; Liu, J.P.; et al. Anti-IFN-gamma autoantibodies in adults with disseminated nontuberculous mycobacterial infections are associated with HLA-DRB1\*16:02 and HLA-DQB1\*05:02 and the reactivation of latent varicella-zoster virus infection. *Blood* 2013, 121, 1357–1366.
4. Puel, A.; Doffinger, R.; Natividad, A.; et al. Autoantibodies against IL-17A, IL-17F, and IL-22 in patients with chronic mucocutaneous candidiasis and autoimmune polyendocrine syndrome type I. *J. Exp. Med.* 2010, 207, 291–297.
5. Walter, J.E.; Rosen, L.B.; Csomos, et al. Broad-spectrum antibodies against self-antigens and cytokines in RAG deficiency. *J. Clin. Investig.* 2015, 125, 4135–4148.
6. Morimoto, A.M.; Flesher, D.T.; Yang, J.; et al. Association of endogenous anti-interferon-alpha autoantibodies with decreased interferon-pathway and disease activity in patients with systemic lupus erythematosus. *Arthritis Rheum.* 2011, 63, 2407–2415.
7. Vijaya Knight, Patricia A. Merkel and Michael D. O'Sullivan. Anticytokine Autoantibodies: Association with Infection and Immune Dysregulation. *Antibodies* 2016, 5(1), 3; doi:10.3390/antib5010003