

Using Genetic Testing to Diagnose Interferon- γ Receptor Deficiency

Indications:

- Susceptibility to atypical mycobacteria, such as bacillus Calmette-Guérin (BCG) and environmental nontuberculous mycobacteria, in otherwise healthy individuals, with exclusion of alternate causes of immunodeficiency
- Detection of altered expression of the interferon- γ receptor or abnormal levels of IFN- γ
- Family history of mycobacterial infections or a family history of IFN- γ receptor deficiency

Benefits:

- Genetic testing can distinguish IFN- γ receptor deficiency from different genetic causes of Mendelian Susceptibility to Mycobacterial Disease and, in some cases, differentiate between mild and severe forms of IFN- γ receptor deficiency, providing an indication of disease prognosis and facilitating selection of the most appropriate therapy

Background:

- Inherited susceptibility to mycobacterial infections, commonly referred to as Mendelian Susceptibility to Mycobacterial Disease (MSMD), can arise from a rare immunodeficiency characterized by defects in the IFN- γ -mediated immune response.^{1,2}
- Severity of MSMD depends on the underlying genetic cause.
- IFN- γ receptor deficiency is the most common cause of inherited susceptibility to mycobacterial infections. It is caused by autosomal dominant or autosomal recessive loss-of-function mutations in *IFNGR1*^{3,4} or, in rare cases, by autosomal recessive loss-of-function mutations in *IFNGR2*.⁵
- Depending on the underlying genetic defect, disease severity can range from a mild form, which is easily treated by prophylactic antibiotics and IFN- γ therapy, to a severe form, for which stem-cell transplantation is recommended.²

References: 1. Rosenzweig SD & Holland SM (2005) *Immunol Rev* 203:38-47. 2. Remus N et al (2001) *Pediatr Res* 50:8-13. 3. Jouanguy E et al (1999) *Nat Genet* 21:370-378. 4. Jouanguy E et al (1996) *N Engl J Med* 335:1956-1961 5. Dorman SE et al (1998) *J Clin Invest* 101:2364-21369

Ordering Information: please see other side

Ordering Information for Interferon- γ Receptor Deficiency Testing

Indications for Testing

- Susceptibility to atypical mycobacteria, such as bacillus Calmette-Guérin (BCG) and environmental nontuberculous mycobacteria, in otherwise healthy individuals
- Detection of altered expression of the IFN- γ receptor or abnormal levels of IFN- γ
- Exclusion of alternate causes of immunodeficiency
- Family history of mycobacterial infections or a family history of IFN- γ receptor deficiency

Ordering Information

Gene(s)	CPT Codes	Test Code
IFNGR1	83891(1) 83892(1) 83898(8) 83904(16) 83909(16) 83912(1)	100901
IFNGR2	83891(1) 83892(1) 83898(7) 83904(14) 83909(14) 83912(1)	100902
Multi-Gene Panel**		
IFNGR1, IFNGR2	83891(1) 83892(1) 83898(15) 83904(30) 83909(30) 83912(3)	100999

**For the multi-gene panel, a summary report will be issued in addition to an abbreviated report for each individual gene.

Family Testing (single amplicon)

IFNGR1	83891(1) 83892(1) 83898(1) 83904(2) 83909(2) 83912(1)	100901
IFNGR2	83891(1) 83892(1) 83898(1) 83904(2) 83909(2) 83912(1)	100902

Test Methodology

- Amplification by polymerase chain reaction (PCR); sequencing of entire protein-coding region

Sample Requirements

- For blood samples:
 - 2 mL whole blood in EDTA tube (lavender top)
 - Samples can be stored briefly at 4°C, but should be shipped on day of collection.
- For buccal swab samples:
 - Please contact client services at 1-866-647-0735 for instructions.
- All sample types should be shipped overnight at room temperature.
- To request a sample shipping kit, please call 1-866-647-0735.

Turn-around Times

Turn-around times typically range from 7 to 21 days of receipt of sample and all required forms, but may vary depending on test volume and test-specific technical difficulties. Current TATs are posted on our website. Please schedule patient follow-up appointments for discussion of test results conservatively at 6 weeks.

**For more information, please contact Correlagen Diagnostics, Inc., at 1-866-647-0735
or visit us on the web at www.correlagen.com.**