

## Natural Killer Cell Function

**Test Name:** Natural Killer Cell Function Assay

**Alternate Names:** NK function  
NK LU30

**Test Code:** 2108

**CPT Code:** 88184 and 88185 x 2

### Clinical Utility:

This assay evaluates the functional capacity of natural killer cells. Natural killer cells mediate killing of virally infected cells and tumor cells. Decreased natural killer cell function has been observed in patients with recurrent viral infections and cancer patients.

### Specimen Requirements:

- **Ensure drawing laboratory has ordered and received shipping kit from IBT Laboratories.**
- 12 mL blood ACD tubes and shipped with cold packs **priority overnight**. See packaging instructions sheet for shipping requirements.
- Preferred specimen should arrive within 24 hours of draw, but samples accepted up to 32 hours.
- Samples accepted Monday-Friday.

### Background For Test Application:

Natural killer (NK) cells are part of the innate immune system. They assist in the elimination of virally infected cells and tumor cells. Once activated NK cells kill the target cells by releasing granules containing perforin and granzymes. These compounds kill the target cells by punching holes in their membrane and initiating an apoptotic cascade. NK cells also release a variety of cytokines and chemokines, including interferon gamma. This production of interferon gamma is crucial in interplay between the innate immune response and the adaptive immune response. Phenotypically NK cells are defined as CD3- and CD56+. The NK cell function assay evaluates the ability of NK cells present in peripheral blood mononuclear cells (PBMC) to lyse K562 cells.

### Units and Normal Reference Range:

The LU10 value is the number of lytic sets contained within a population of 10 million lymphocytes. One lytic set is the number of lymphocytes required to lyse 10 percent of target cells. The reference range varies depending on sample age (see report). The reference interval is the central 95<sup>th</sup> percentile of range from a healthy population.

### Method:

1. PBMC are isolated from whole blood.
2. Isolated PBMC are mixed at various ratios with fluorescently labeled K562 target cells.
3. Following an incubation period the percent lysed K562 cells at each concentration is determined by flow cytometry.

**Related Tests:** The following may be appropriate for some patients:

- 403106 T-B-NK Immunophenotyping
- 403091 TLR Function

### References:

1. Orange JS. 2006. Human natural killer cell deficiencies. *Current Opinion in Allergy and clinical immunology*. 6:399-409.
2. Waldhauer I and Steinle A. 2008. NK cells and cancer immunosurveillance. *Oncogene*. 27:5932-5943.
3. Strowig T, Brilot F, and Münz C. 2008. Noncytotoxic Functions of NK Cells: Direct Pathogen Restriction and Assistance to Adaptive Immunity. *The Journal of Immunology*. 180:7785-7791.
4. Cheent K and Khakoo SI. 2009. Natural killer cells: integrating diversity with function. *Immunology*. 126:449-457.
5. Etzioni AE, Eidenschenk C, Katz R, Beck R, Casanova JL, and Pollack, S. 2005. Fatal varicella associated with selective natural killer cell deficiency. *Journal of Pediatrics*. 146:423-425.
6. Beano A, Signorino E, Evangelista A, Brusa D, Mistrangelo M, Polimeni AM, Spadi R, Donadio M, Ciuffreda L and Matera L. 2008. Correlation between NK function and response to trastuzumab in metastatic breast cancer patients. *Journal of Translational Medicine*. 6:25-34.

For more information, contact

**IBT Laboratories**

11274 Renner Boulevard, Lenexa, KS 66219

**913.492.2224 800.637.0370**

www.ibtlabs.com

**Blood Sample Packaging Instructions For Refrigerated Samples**  
***Prior to packaging gel pack must be refrigerated for at least 24 hours***  
***and ice pack must be in freezer for at least 24 hours***

1. Place blood tube (not supplied) in Styrofoam multi-tube pack with absorbent paper strip and tape closed  
Note: The type of blood tube required is test specific



2. Wrap Styrofoam multi-tube pack with **REFRIGERATED** Gel Pack



3. Place Styrofoam multi-tube pack/  
Gel Pack(item #2) in plastic Ziploc bag



4. Place **FROZEN** ice pack (Koolit) in bottom of Styrofoam cooler box



5. Place barrier material (ie bubble wrap (1 inch thick)) on top of **FROZEN** ice pack



6. Place Ziploc bag (item #3) on top of barrier material in cooler box (item #5)



7. Place lid on Styrofoam cooler box and tape closed, place in shipping box, tape closed, make sure there is a Live Cell Test sticker on outside and ship FedEx **PRIORITY OVERNIGHT** to IBT

