PATHWAY® HER-2/*neu* (4B5)

Test Highlights

- The PATHWAY® HER2 (4B5) clone is designed to detect the internal domain of the c-erbB-2 oncoprotein.
- HER2 overexpression is used to aid in the determination of patients for whom Herceptin® therapy is indicated.

Disease Overview

- Breast cancer is the most common carcinoma occurring in women and the second leading cause of cancer-related death.
- Early detection and appropriate treatment therapies can significantly affect overall survival.
- Herceptin is a humanized monoclonal antibody that binds to the HER2 protein on cancer cells.
- HER2-positive patients often benefit from Herceptin treatment.

Genetics

The HER2 oncoprotein is an approximately 185 kDa transmembrane glycoprotein that is structurally similar to epidermal growth factor receptor (EGFR).

Pathophysiology

The HER2 protein is expressed in up to 20 percent of adenocarcinomas from various sites, 15 to 30 percent of invasive ductal breast cancers, and almost all cases of Paget disease of the breast.

Indications for Ordering

The detection of HER2 protein overexpression is used as an aid in determination of patients for whom Herceptin therapy is indicated.

Additional Ordering Notes

The biopsy site and fixative used should be provided. The submitted sample should contain sufficient variable tumor.

Interpretation

Weak (2+) to intense (3+) circumferential membrane staining in >10 percent of cancer cells is considered positive.

Limitations

Tissue fixed in non-formalin fixatives has not been tested using this method.

Methodology

- Ventana PATHWAY® HER2 (4B5) is used in combination with Ventana iVIEW DAB detection kit, which uses biotinylated secondary antibodies to locate the bound PATHWAY® HER2 (4B5) primary antibody (produced by using a synthetic peptide corresponding to a site on the internal domain of the HER2 protein). This is followed by the binding of an avidin/streptavidin-enzyme conjugate to the biotin. The complex is then visualized using a precipitating enzyme-generated product.
- In a normal cell no membrane staining is observed. Abnormal cells will demonstrate a weak (2+) to intense (3+) complete staining pattern of the membrane in greater than 10 percent of cancer cells.

Reference

1. PATHWAY® anti-HER2/*neu* (4B5) Rabbit Monoclonal Primary Antibody data sheet. Tucson, AZ: Ventana Medical Systems; 2007.

Test Information

2002216	HER-2/*neu* (PATHWAY®) (4B5) with Reflex to FISH if 2+ or 3+
2002217	HER-2/*neu* (PATHWAY®) (4B5) with Reflex to FISH if 2+
2002218	HER-2/*neu* (PATHWAY®) (4B5) Tissue Assay, Paraffin

For specific collection, transport, and testing information, refer to the ARUP Web site at www.aruplab.com.

For information on test selection, ordering, and interpretation, refer to ARUP Consult® at www.arupconsult.com.