

IMPROVED ANTIBODIES AGAINST ERBB4/HER4

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Keywords: Research Tools, Diagnostics, Monoclonal/Polyclonal Antibodies

Background:

The Eunice Kennedy Shriver National Institute of Child Health and Human Development, Section on Molecular Neurobiology is seeking statements of capability or interest from parties interested in collaborative research to further evaluate or commercialize specific rabbit monoclonal antibodies generated against the ErbB4 receptor (also known as HER4).

Technology:

ErbB4/Her4 is a receptor tyrosine kinase that regulates cell proliferation, cell differentiation and cell survival. ErbB4 has been implicated in the pathology of numerous cancers (e.g., breast cancer, non-small cell lung carcinoma, adenocarcinoma), as well as psychiatric disorders (e.g., schizophrenia). As a result, ErbB4 is an excellent target for developing therapies against these diseases. Unfortunately, the study of ErbB4 has been slowed by the lack of highly specific and functional antibodies against the receptor.

In order to overcome the deficiencies with current ErbB4 antibodies, NIH inventors have generated three rabbit monoclonal antibodies with improved properties and versatility. Specifically, the mAb-6, mAb-7 and mAb-10 hybridomas produce antibodies with a high degree of specificity and affinity for ErbB4. These antibodies recognize specific epitopes on the intracellular domains of ErbB4 without cross-reaction against other proteins, and can be used successfully in the immunostaining of fixed tissue.

Potential Commercial Applications/Possible Markets Identified:

- Basic research tool for the study of ErbB4
- Reagent for diagnostic applications such as Western Blotting, ELISA, immunofluorescence and immunohistochemistry in fixed tissue samples
- Reagent for biochemical techniques such as immunoprecipitation

Main Advantages of Technology/Invention:

- Potential to be the gold standard for ErbB4 antibodies due to its specificity and affinity
- Greater affinity for ErbB4 than currently available antibodies, giving them superior properties in diagnostic and biochemical applications
- Unlike currently available polyclonal antibodies to ErbB4, the monoclonal antibodies do not cross-react with other proteins
- Unlike currently available antibodies, these antibodies are capable of immunostaining fixed tissue samples
- The epitopes on ErbB4 that are recognized by each monoclonal antibody have been mapped



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R&D Status: Pre-clinical in vitro

Further R&D Needed:

- The hybridoma cell lines have been developed and resulting antibodies have been extensively characterized by different approaches and using ErbB4 knockout mice as negative controls.
- The antibodies will prove useful for a large variety of research projects involving the analysis of ErbB4 function in the brain and elsewhere. These antibodies will be instrumental to study the role of ErbB4 for synaptic transmission and plasticity, and its involvement in the pathophysiology underlying schizophrenia.

IP Status:

- Research Material. Patent protection is not being pursued for this technology pursuant to NIH policy.

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