Innovations
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Monoclonal Antibody against αB-Crystallin's Function, A Heat Shock Protein implicated in Cancer & Fibrosis

Category

Technology: Monoclonal Antibody
Developed: 2017

Problem

αB-Crystallin is a potential therapeutic target in many diseases

Technology Overview

A monoclonal antibody that selectively inhibits the function of αB-Crystallin through ABCP binding

IP Status

- Available for Exclusive or Non-Exclusive Licensing

Value Proposition

- Monoclonal antibody
- Inhibits function

Market Attractions

- Detection of protein
- Protein modification
- Therapeutics

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Problem: αB-crystallin, a heat shock protein, is implicated in the pathogenesis of several diseases or disease processes. In triple negative basal-type breast cancers, higher expression levels of αB-crystallin are directly related to poor prognosis. αB-crystallin is highly expressed and obligatory in fibrosis in lungs, retina and lens and is involved in pathological angiogenesis in the retina. As a result, αB-crystallin is thought to be a potential therapeutic target for many medical conditions including cancer and fibrosis.

Technical Solution and Key Value Propositions:

αB-crystallin functions as a molecular chaperone and has anti-apoptotic effects mediated through its core domain peptide, ABCP. Dr. Nagaraj's team at the University of Colorado has developed and characterized a monoclonal antibody against ABCP (ABCP Ab). Using western blotting, ABCP Ab was shown to selectively recognize the core domain peptide of αB-crystallin, but not the core domain of αA-crystallin and Hsp27 (Fig. 1). It was also shown to detect αB-crystallin in both human and wild type mouse lenses, but not in αB-crystallin knock-out mouse lenses (Fig. 2). Subsequent *in vitro* functional assays showed that ABCP Ab efficiently inhibits the chaperone function of αB-crystallin for several proteins in vitro.

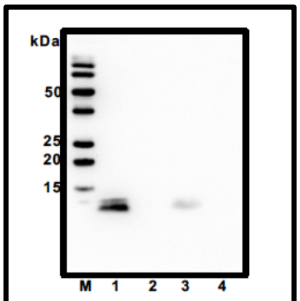

Fig. 1 Western blotting using the antibody against chaperone peptides of 1= αA-crystallin, 2= αB-crystallin, 3= Hsp20 and 4= Hsp27.

Through their ability to selectively recognize a target, monoclonal antibodies are widely used to study mechanisms of action and in high-throughput screens for new therapeutics.

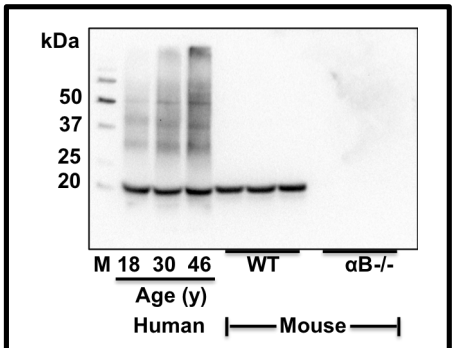

Fig. 2 Western blotting using ABCP antibody: left to right, human lenses (age 18, 30 and 46), 3x WT mouse lenses, 3x knockout mouse lenses

Highlights:

- Target protein highly implicated in diseases
- Recognizes both human and mouse proteins in western blots, ELISA, immunohistochemistry, and immunocytochemistry.
- Inhibits protein function

Key Documents and Sources:

"A Monoclonal Antibody Targeted to the Functional Peptide Inhibits the Chaperone Activity of Human αB-Crystallin" Rooban B. Nahomi, Sandip K. Nandi, and Ram H. Nagaraj is available under CDA.