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A Synthetic Antibody that Binds to AKT1

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Inventors

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Invention Description

AKT1 is an enzyme associated with a variety of physiological responses including insulin-stimulated protein synthesis, apoptosis inhibition and the mediation of the effects of several growth factors. Importantly, elevated levels of AKTI have been reported in breast, ovarian and pancreatic cancers and are associated with tumorigenesis, tumor invasiveness and chemoresistance. This observation suggests that the ability to specifically target AKT1 might be helpful in the treatment of certain cancers.

Researchers at Arizona State University's Biodesign Institute have developed a synthetic antibody (synbody) to AKT1. The synbody is a combination two peptides joined by a linker. It has significant affinity for AKT1 with a K_d of 1.4 nM. The high specificity is shown in the immunoprecipitation in (a) and high selectivity is illustrated by the minimal amount of AKT2 and AKT3 that are bound by the synbody (b).

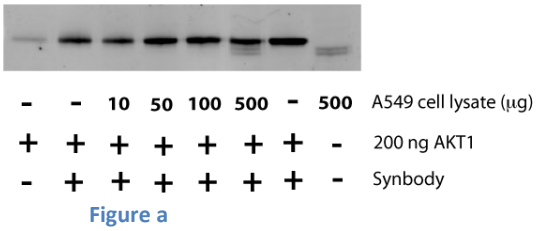

Figure a

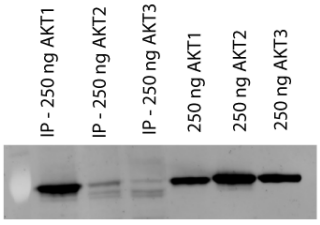

Figure b

a) Western blot of 200 ng of recombinant AKT1 pulled down in the presence of increasing concentrations of A549 cell lysate. The outside lane demonstrates the precipitation of native AKT1 from 500 μg of cell lysate. b) IP purified 250 ng of AKT1, AKT2 and AKT3 from 500 μg of cell lysate

Intellectual Property Status:

Patent Pending

Potential Applications

- **Cancer treatment**
- **Cancer diagnosis**

Benefits and Advantages

- **Minimized adverse reactions due to synthetic nature**
- **Cost effective manufacture of active agent**
- **Due to small size, better tumor penetration**
- **Small size and synthetic nature can lead to novel toxin and drug conjugates**

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