

Technology Offer

Aptamers for the Treatment and Diagnosis of Diseases Seropositive for Autoantibodies

Ref. No.: CH553

Technology

The known thrombin aptamer Arc183 – initially developed as an anti-coagulant for thrombin inhibition – has been found to specifically bind and neutralize autoantibodies against G-protein coupled receptors (AAB) such as adrenergic alpha-1-, adrenergic beta-1- and beta-2 receptors, the endothelin 1 ETA receptor, the muscarinic M2 receptor, the angiotensin II AT1 receptor, and/or the PAR receptors. These AABs are not only present in defined cardiovascular diseases (e.g. idiopathic dilated cardiomyopathy, Chagas' cardiomyopathy, peripartum cardiomyopathy, myocarditis, hypertension, pulmonary hypertension and malignant hypertension) but they are also present in other diseases, e.g. Chagas' megacolon, Chagas' megaesophagus, Chagas' neuropathy, glaucoma, diabetes mellitus, Alzheimer's disease, benign prostatic hyperplasia, psoriasis, scleroderma, Raynaud's syndrome and kidney allograft rejection. The pathogenetic function of the AABs is well documented, especially for cardiomyopathies and kidney rejection, and the removal of AABs by apheresis and treatments for AAB neutralization are under investigation. The aptamer strongly inhibits the agonistic effect of patients' AABs via their detected function, as demonstrated in a bioassay that analysed the beating frequency of rat cardiomyocytes. The aptamer was also found to clear human serum of AABs when coupled to an apheresis column.

Benefits

- ✓ Novel second medical indication for the thrombin aptamer Arc 183
- ✓ Possible therapeutic applications in diseases positive for AABs against G-protein coupled receptors
- ✓ IC50 values of 100 nM or less in a rat cardiomyocyte beating assay
- ✓ Suitable as specific binder in apheresis: An alternative to the costly and risky apheresis process based on unspecific immunoadsorption

Application

- Thrombin aptamer for therapy and diagnosis of diseases associated with the presence of pathogenic autoantibodies against G-protein receptors
- Suitable for specific apheresis

Commercial Opportunity

Searching for a financial investor

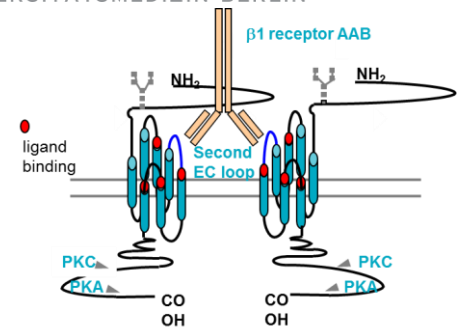


Fig. 1: AAB binds to the second extracellular loop of beta 1 receptor and stabilizes the active form of the receptor (receptor dimer) – AABs act as agonists

Key Words

Aptamer, Arc 183, autoantibody, G protein coupled receptor, cardiomyopathy, apheresis, kidney rejection

Developmental Status

Clinical Phase I start planned in Q1/2016

IP Status

Granted patent in US

Pending patent applications in EP, JP, BR, CN, CA, AU, IN (Priority Date 7 March 2011)

publication [here](#)

Patent Owner

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