ERAD Therapeutics Inc. Update

SYNOPSIS

ERAD Therapeutics, Inc., is a manufacturing/clinical stage company focused on developing therapies for rare diseases. To accomplish this goal the company has secured an exclusive license from the Hospital for Sick Children in Toronto, Canada to develop modified Cholera Toxin (mCT) for treatment of rare genetic diseases caused by destruction of essential proteins that are slightly mis-folded. Despite the slight mis-folding, these proteins do retain activity. Thus, the disease is caused by the body's own internal auditing process that degrades an otherwise functional protein because of detection of its slightly abnormal shape.

The destruction of slightly mis-folded proteins is carried out in the intracellular region known as the endoplasmic reticulum. This process has been designated as Endoplasmic Reticulum Associated Degradation (ERAD). The mCT enters cells and is able to temporarily block the degradation process. This allows the mutated proteins to escape degradation and traffic to its site of function, thus restoring normal activity.
There are more than 35 ERAD diseases which fall into this category, and are potential targets for treatment with mCT.

1. Tay-Sachs Disease

Tay-Sachs Disease (TSD), a currently untreatable and fatal disease, is caused by a single amino acid change in the enzyme-protein Hexosaminidase A. This enzyme is essential for breaking down certain fatty acids. The absence of normal enzymatic function causes the buildup of unprocessed fats in cells, especially in the brain, resulting in neurological abnormalities.

The mCT, in addition to targeting all cells in the body, has a unique ability to transit the blood brain barrier (BBB) and gain entry to neuronal cells. The neurological nature of TSD and mCT crossing the BBB, makes it ideal for treatment of this disease.

In experiments using cells derived from TSD patients we demonstrated, in 6 different studies, that treatment with mCT is able to salvage statistically significant levels of the Hex A enzyme activity in the diseased cells.

As there are no animal models of TSD, and there are no currently available therapeutics, these data derived from patient cell lines , is sufficient proof of concept to advance this drug into clinical trials. We are moving forward on manufacturing mCT for clinical development. We anticipate filing an IND in 15-18 months. Given the ultra-rare incidence of TSD it is anticipated that the clinical study will require 5-10 patients for the study, likely to be completed in under one year and cost $ 1 million.

2. Enzyme Replacement Therapy that Crosses the Blood Brain Barrier

ERAD Therapeutics, Inc. is also developing a novel agent for treatment of Gaucher Disease. This approach is based on the finding that an inert component of mCT, called the B-subunit (CTB) can potentially be engineered to deliver enzymes and other large proteins across the blood brain barrier and to all cells through out the body.

CTB-linked Enzyme Replacement Therapy (ERT) should provide a superior treatment for patients with Gaucher Disease. By crossing the blood brain barrier (BBB), this may allow for prevention and/or treatment of previously unaddressed neurological conditions associated with all three forms of Gaucher Disease. While there are currently three FDA approved ERTs for Gaucher Disease, with $1.6 billion in annual sales, none of them can cross the BBB to address these often fatal neurological conditions.

Of critical importance to our company has been the emergence of an unanticipated link between Gaucher Disease and Parkinson Disease. While an absolute deficiency of a critical enzyme (glucocerebrosidase) causes Gaucher Disease, a relative deficiency of the same enzyme in the brain has recently been closely associated with all forms of Parkinson Disease. This discovery indicates that our ERT, which has unique access to brain cells, potentially offers a new therapeutic option for Parkinson's. This has a potentially significant impact on the value of our ERT product.

ERAD THERAPEUTICS INC. ACCOMPLISHMENTS TO DATE:

- Development of mCTs for ERAD blockade
- Demonstration of protein rescue and restoration of near normal cellular function in cell lines in both Tay-Sachs and other ERAD Diseases.
- Filed multiple new provisional patents on new clinical targets
- Raised ~ $1,000,000 for corporate and scientific development activities

- Incorporation in USA to access large capital pools
- **Filed new Intellectual Property surrounding the exploitation of CTB to transport therapeutic molecules across the BBB**

- Collaboration with NRC of Canada for the manufacture of our first two products

MOVING FORWARD

The company is focusing on two development programs:

(1) mCT to rescue Hexosamindase A in Tay-Sachs Disease to restore normal cellular function
(2) CTB-GCC - exploitation of the ability of the CTB subunit to deliver the deficient enzyme in Gaucher Disease across the BBB and thus address all three types of GD. This molecule may also prove valuable in the treatment of idiopathic Parkinson disease.

    a. Collaboration with the NRC of Canada to manufacture CTB-GCC and working with the Beyond the Blood-Brain-Barrier group to validate its delivery across the BBB and its activity in the lysosomes.

Upon completion of our current development programs, the company intends to have a clear path forward to clinical trials in Tay-Sachs Disease.