UNIVERSITYOFMARYLAND
UMVENTURES
MPOWERINGTHESTATE

www.umventures.org

Use of ELA peptide for treatment of cardiovascular disease and for improving fluid homeostasis

Summary

Cardiovascular disease (CVD) continues to be one of America's most serious and costly health issues. Though many therapeutic options exist to treat CVD, the majority of treatments address the symptoms of the disease and not the disease itself. This technology is a new class of therapeutic fusion proteins, using the hormone, Elabela (ELA) to mitigate heart dysfunction and improve cardiac performance.

Key Investigator

Da-Wei Gong, PhD

Field

Cardiovascular Disease
Diabetes

Technology

Hormone Peptides
Fusion Peptides Therapeutics

Advantages

New class of therapeutics
Mitigates heart dysfunction
Improves cardiovascular health

Status

Available for licensing
Available for sponsored research

Patent Status

US & European Patent Pending (PCT/US2015/055389)

UMB Docket Reference

DG-2014-128

External References

Wang, Z., et al. (2015) *Elabela-apelin receptor signaling pathway is functional in mammalian systems.* Sci Rep. Feb 2; 5:8170

Technology

Growing evidence continues to support that the apelin receptor (APJ) pathway is critical in maintaining the homeostasis of the cardiovascular system and fluid metabolism. Apelin has been identified as the "natural" ligand for the novel G protein–coupled receptor, APJ, which enhances myocardial contractility, improves cardiac output, and slows down the progression of heart failure. ELA, a secretory peptide hormone, was recently discovered to also act on the APJ signaling pathway. UMB inventors have created pharmacologically, active fusion proteins, Fc-ELA-32 and Fc-ELA-21, to prolong the half-life of ELA *in vivo*. Investigators have shown that Fc-ELA significantly mitigates heart dysfunction and improves cardiac performance. In addition, ELA-32 treatment increased diuresis, relaxed blood vessels, reduced heart fibrosis, and has an angiogenic that is activated directly through APJ.

Market

CVD continues to be the leading cause of death in the United States and has become the costliest chronic disease. Overall, the CVD market is set to grow from $129.2 billion in 2015 to $146.4 billion by 2022 (CAGR 1.8%). The American Heart Association projects that upwards of 45% (131.2 million) of Americans will experience CVD such as high blood pressure, coronary heart disease, atrial fibrillation, congestive heart failure, and stroke by 2035. The upsurge in CVD is forecasted to cost $1.1 trillion in both direct medical costs and lost productivity. Factors that are contributing to projected burden of CVD include the dramatic rise in obesity, hypertension, poor diet, and Type 2 diabetes. Given the significant population afflicted by CVD, there is a tremendous interest in the development of new therapeutics. However, the adoption of new therapeutics have been met with resistance due to the associated high costs and unestablished benefits compared to proven CVD-related pharmaceuticals, many of which are now generics. These therapies include antihypertensives, beta blockers, ACE inhibitors, statins, beta agonists, alpha blockers, alpha agonists, sodium channel blockers, calcium channel blockers, vasodilators, renin inhibitors, angiotensin receptor blockers, diuretics and thrombolytics. Cholesterol and high blood pressure medications account for the majority of CVD prescribed treatments and are among the most expensive. With the list price of $14,000/year for recently approved CVD medications, the market is looking for lower cost solutions and proof of long-term benefits. With the increasing prevalence of CVD, there will continue to be a need to develop more targeted and effective therapeutic options.

Technology Status

- Continued *in vivo* testing
- Investigation of hormone regulating effects for the circulation system and signaling pathways involved

Contact: Rebecca Bettes, MS, MBA
rbettes@umaryland.edu
410-706-6631

University of Maryland, Baltimore
620 W. Lexington St., 4th Floor
Baltimore, MD 21201